# PLANNING COMMISSION MEETING

**May 15, 2024 at 7:00 PM**

**Boardman City Hall Council Chambers**

## AGENDA

1. **CALL TO ORDER**
2. **FLAG SALUTE**
3. **ROLL CALL**
4. **APPROVAL OF MINUTES**
   - **A.** Planning Commission Meeting Minutes April 17, 2024
5. **PUBLIC HEARINGS**
   - **A.** CONTINUED - Conditional Use Permit CUP24-000001: City of Boardman, owner and applicant. Property is described as portions of the right-of-way for N Main Street and Boardman Avenue and is zoned Commercial, Tourist Commercial, and Residential. The request is to install a traffic signal meeting required warrants and improvements to Boardman Avenue between NE and NW 1st Streets to consist of full road - reconstruction, sidewalk, curb and gutter, storm drainage improvements, and on-street parking. Criteria for approval are found at the BDC Chapter 2.2 Commercial and Chapter 4.4 Conditional Use Permits. It is being processed as a Type III decision.
   - **B.** Site Design Review, RVW24-000020: Van Voorhees, applicant and Joe Kumar, owner. Property is described as tax lots 100 and 200 of Assessor's Map 4N 25E 09CC and is zoned Commercial – Service Center. The request is to approve a hotel. Criteria for approval are found at the Boardman Development Code (BDC) Chapter 4.2 Development Review and Site Design Review along with standards in Chapter 2.2.180 Tourist Commercial Sub-District and Chapter 3 Design Standards. It is being processed as a Type III decision.
   - **C.** Site Design Review, RVW24-000023: Angie Sullivan, applicant and Double T Farming LLC, owner. Property is described as tax lot 300 of Assessor's Map 4N 25E 11C and is zoned Commercial – Service Center. The request is to approve a flex building. Criteria for approval are found at the Boardman Development Code (BDC) Chapter 4.2 Development Review and Site Design Review along with standards in Chapter 2.2.200 Service Center Sub District and Chapter 3 Design Standards. It is being processed as a Type III decision.
6. **DISCUSSION ITEMS**
   - **A.** Planning Official Report
7. **PUBLIC COMMENT**

   INVITATION FOR PUBLIC COMMENT – The commission chair will announce that any interested audience members are invited to provide comments. Anyone may speak on any topic other than: a matter in litigation, a quasi-judicial land use matter; or a matter scheduled

for public hearing at some future date. The commission chair may limit comments to 3 minutes per person for a total of 30 minutes. Please complete a request to speak card prior to the meeting. Speakers may not yield their time to others.

**8. COMMISSION COMMENTS**

**9. ADJOURNMENT**

**A.** Future Meetings

Zoom Meeting Link: https://us02web.zoom.us/j/2860039400?omn=89202237716

This meeting is being conducted with public access in-person and virtually in accordance with Oregon Public Meeting Law. If remote access to this meeting experiences technical difficulties or is disconnected and there continues to be a quorum of the council present, the meeting will continue.

The meeting location is accessible to persons with disabilities. Individuals needing special accommodations such as sign language, foreign language interpreters or equipment for the hearing impaired must request such services at least 48 hours prior to the meeting. To make your request, please contact a city clerk at 541-481-9252 (voice), or by e-mail at city.clerk@cityofboardman.com.

# PLANNING COMMISSION MEETING

**April 17, 2024 at 7:00 PM**

**Boardman City Hall Council Chambers**

**MINUTES**

## 1. CALL TO ORDER

Commission Chair Barresse called the meeting to order at 7:00 PM.

A. Introduction of New Planning Commissioner

Commission Chair Barresse introduced and welcomed new Planning Commissioner David Jones.

## 2. FLAG SALUTE

## 3. ROLL CALL

Commissioners Present: Commissioner Jami Carbray (arrived 7:26 PM), Commissioner Mike Connell, Commissioner Ragna TenEyck (via Zoom), Commissioner Zack Barresse, Commissioner Sam Irons, Commissioner David Jones

Commissioner Absent: Commissioner Jennifer Leighton

## 4. APPROVAL OF MINUTES

A. Planning Commission Meeting Minutes March 20, 2024

Motion to approve Planning Commission Meeting Minutes, March 20, 2024.

Motion made by Commissioner Irons, Seconded by Commissioner Connell.
Voting Yea: Commissioner Connell, Commissioner TenEyck, Commissioner Barresse, Commissioner Irons, Commissioner Jones
Voting Abstaining: Commissioner Carbray (was not present for the vote)

## 5. PUBLIC HEARINGS

Pause in meeting from 7:05-7:12PM as video and internet were not working properly.

A. Site Design Review, RVW24-000008: Rosa Cardenas, owner and Alberto Gutierrez, applicant. Property is described as tax lot 1100 of Assessor's Map 4N 25E 09AD and is zoned Light Industrial. The request is to approve an Auto Body Shop. Criteria for approval are found at the Boardman Development Code (BDC) Chapter 4.2 Development Review and Site Design Review along with standards in Chapter 2.4 Light Industrial District and Chapter 3 Design Standards. It is being processed as a Type III decision.

Commission Chair Barresse opened the public hearing at 7:12 PM

Commission Chair Barresse read the rules of conduct of the hearing and asked the commissioners if they wished to abstain from this hearing. There were none.

Commission Chair Barresse asked if anyone in the audience wished to challenge any of the commissioners' impartiality. There were none.

Staff Report:

Associate Planner Nancy Orellana presented the staff report as presented in the packet. The use is allowable outright. Size of the shop determines need for Planning Commission approval.

Commissioner Barresse asked if there was additional correspondence received on the application. There was none.

Applicant Testimony:

Rosa Cardenas stated she and her husband, Alberto Gutierrez, have been residents in the community for 26 years and have raised their five kids here. Alberto and three of their children will work in the shop. They owned an auto body business prior to living in Boardman, and Alberto has been working in auto body work since before moving to the area.

Commissioner Barresse asked if there were any concerns from the emergency services or other entities. Planning Official McLane stated there are no concerns, everything is set. The building will have higher levels of requirements through the building inspection process as there will be an indoor paint room and paint storage.

Public testimony in favor of the application. There was none.

Public testimony against the application. There was none.

Neutral public testimony. There was none.

The public testimony portion of the hearing was closed at 7:20 PM.

Motion to approve Site Design Review RVW24-000008 as presented.

Motion made by Commissioner Jones, Seconded by Commissioner Irons.
Voting Yea: Commissioner Connell, Commissioner TenEyck, Commissioner Barresse, Commissioner Irons, Commissioner Jones
Voting Abstaining: Commissioner Carbray (was not present for vote)

B. Conditional Use Permit CUP24-000001: City of Boardman, owner and applicant. Property is described as portions of the right-of-way for N Main Street and Boardman Avenue and is zoned Commercial, Tourist Commercial, and Residential. The request is to install a traffic signal meeting required warrants and improvements to Boardman Avenue between NE and NW 1st Streets to consist of full road -reconstruction, sidewalk, curb and gutter, storm drainage improvements, and on-street parking. Criteria for approval are found at the BDC Chapter 2.2 Commercial and Chapter 4.4 Conditional Use Permits. It is being processed as a Type III decision.

Commission Chair Barresse opened the public hearing on at 7:24 PM.

Commission Chair Barresse read the rules of conduct of the hearing and asked the commissioners if they wished to abstain from this hearing. There were none.

Commission Chair Barresse asked if anyone in the audience wished to challenge any of the commissioners' impartiality. There were none.

Staff Report
Planning Official McLane presented her staff report from the findings of fact provided. To summarize, this application is to address concerns around student and pedestrian safety on the intersection of Main Street and Boardman Avenue. After a loss of life at the intersection, a Rectangular Rapid Flashing Beacon (RRFB) was installed to assist in pedestrian safety; this is a high pedestrian traffic intersection due to the proximity of the schools, convenience stores, and restaurants. The concerns are regarding the continuous student flow during peak pedestrian crossing using the RRFB while it creates traffic backups along Main Street that can impact queuing on the west bound Interstate 84 off ramp creating potential impediments into the west bound travel lanes.

Planning Official McLane stated the City of Boardman is working to become compliant with the Interchange Area Management Plan (IAMP). The original IAMP was set to close Front Street. The City is working to preserve Front Street access. This project is included in the recently adopted Capital Improvement Plan. She stated the bidding and construction process will begin this year and conclude next year. She shared details on the schematic layout.

Matt Hughart with Kittleson & Associates is available via Zoom to answer any questions from Planning Commissioners.

Commission Chair Barresse asked if roundabouts were an option in the area. Planning Official McLane started the process with Kittleson and engaged ODOT in a conversation about the IAMP and evaluation of the Main Street corridor and the City asked Kittleson to look at the whole corridor. There are some significant limitations on how to improve traffic flow along Main Street given that ODOT's ability to replace the overpass is significantly limited and it's not a couple million dollars to replace that infrastructure, it's probable $25 million dollars to replace that infrastructure. The overpass is not very good for pedestrians, it's not wide enough to afford a turn lane, and there are a lot of limitations, so the roundabout that you are seeing in the document was really the City and Kittleson's attempt to address some issues that ODOT raised. Planning Official McLane continued to explain how roundabouts in different configurations and alternatives was met with opposition and the decision was made that roundabouts were not the correct step to take. The focus was the intent along the Main Street corridor, but there was a real City focus to address the safety issues at Boardman and Main. The Main Street Interchange Area Management Plan does need an update, being that it is about 15 years old. The City worked in retaining a "tactical memorandum" as background and support. Background for the corridor and support for the Main Street/Boardman Avenue Light. Planning Official McLane stated that she doesn't believe roundabouts will be built in the next year and a half or that they will be considered in the next 5 years. Commissioner Connell stated that trucks can impede roundabout traffic control. Planning Official McLane touched a little more on trucks in roundabouts and said that the roundabout is a discussion for another day.

Commission Chair Barresse asked if there was a traffic estimate would be after the installation of the stoplight. Planning Official McLane said she doesn't think that numbers would drop, but local traffic would learn to maneuver and get from where they

are to where they need to be by utilizing the loops. We're going to have to figure out how to have proper signs and direct the public. The amount of traffic won't necessarily change, but the way the traffic is moved will change.

Commission Chair Barresse asked if the North West and East Front Streets will match the South West and East Front Streets. Planning Official McLane shared information on how the loop streets on the North which are NW Front Street, NE Front Street and Boardman Ave will also be reflected on the South side which will be SW Front Street, SE Front Street, and Oregon Trail Boulevard. Oregon Trail Boulevard currently only exists in the east side. Development of a hotel on the SW quadrant will trigger the city to work with the developer to create Oregon Trail down to Main. This summer, we will be rebuilding SE Front and SE First.

Commission Chair Barresse asked if there are planned improvements to North Front Streets as a part of the proposed traffic signal plan. Planning Official McLane said that improvements to North Front Streets are not a part of the proposed traffic signal plan, but there is another development proposal that will be in front of the Planning Commission during the May 2024 meeting that will probably drive improvements to NW First and NW Front St.

Commissioner Connell asked if all freeway traffic wanting to go to Sinclair would have to make a right turn and go around. Planning Official McLane gave instructions stating motorists would have to go to the light, at the light, turn left, and then, make another left.

There was discussion on how motorists would be able to get to the businesses on the west side of Main Street.

Planning Official McLane shared that ODOT wants to close Front Streets, but the City wants to preserve Front Streets. The agreement with ODOT is that the Front Streets won't be closed, but will be made right-in, right-out. ODOT also wants the City to eliminate accesses on to Main Street that will eliminate the Main St access to Chevron, C&D, and Sinclair to which the City said they will meet ODOT half way and limit left hand turns along that street, but the City won't eliminate access points into those businesses. The City does not want to close the Front Streets or the Main Street accesses to the businesses, but to get where ODOT wants to be, relative to protecting their infrastructure, they are asking to make Front Streets right-in, right-out, and to limit left hand turns on that section of Main Street.

Commission Chair Barresse asked if there is a minimum distance ODOT is asking to disallow left-hand turns prior to intersection. Planning Official McLane answered that the standard is 1320ft and Boardman Avenue does not meet that, but because there is a built environment, they are willing to allow that first full intersection at Boardman Avenue. At the south side, Oregon Trail is pretty close to the quarter mile. As the same standard is applied to the southside, there will be no left-hand turns along Main from the interchange until Oregon Trail. There will be right-hand, again preserving the Main Street accesses and maintain Front Streets as right-in, right-out. The alternative would

be closing them.

Commission Chair Barresse asked if there had been any thoughts into closing Front Streets. Commissioner Connell answered that Front Streets couldn't be closed with SAGE Center.

Commissioner Jones asked what the consequences would be if the City does not comply with ODOT's requests. Planning Official McLane answered that there is a relationship to be maintained between the City and ODOT and although she doesn't believe that ODOT will shut down Front Streets tomorrow, it is important to work together. She used the City of Woodburn as an example of how the interchange traffic has made it difficult to get in and out of the area, but is clearly managed with lights and signs. It's not easy to get to the gas station and get back on the freeway, but it's probably safer today to get off the freeway, go to the gas station, and get back on, it's just going to take longer.

Commissioner Jones said that his concern is to not be able to make the left hand turn to Sinclair and Sunrise or significantly limiting access for people that don't know Boardman. Planning Official McLane said that she agrees that it is the imperfect solution, but part of the reason why this is being done is for safety of the kids when they're accessing school in the morning, lunch time traffic, and when they're going home at the end of the school day.

Commissioner Jones said that he doesn't mind the stop light, but doesn't agree with not being able to make a left turn on Main Street. Commissioner Connell answered that if you don't limit the left-hand turns, the stop light will become inconsequential because motorists will want to turn left if the option is there and with the stop light right in front of them, when they're stopped, they will be waiting on traffic, and approaching traffic will have to maneuver around that stopped vehicle. Planning Official McLane agreed with Commissioner Connell and said that traffic could impede to the Front Streets, to the off-ramps, or to the travel lanes.

Commissioner Irons stated that between 3pm and 5pm, North Main specifically is a nightmare. Commissioner Irons asked with this light coming into effect, is ODOT going to do anything to control traffic coming onto North Main Street. Planning Official McLane answered that there was a very pointed conversation with ODOT and the City told ODOT that there are other things in the IAMP that are not the City's responsibility, but ODOT's responsibility. One of the items is to take that westbound off ramp and separating it so that there is a protected left-hand turn which will allow motorists to make a left, go straight, or make a right at the off ramp. We had a pointed conversation with ODOT if we're doing our part and if we're doing what you want us to be doing around Front Streets and we want to retain the accesses on Main, but to do that, we're going to limit left turns, we need you to step up and make improvements to the off ramp. There was significant agreement from ODOT and yes, they need to do that. Timing for ODOT is questionable, but we really pushed two things: 1. The off and on ramps meaning that we have two lanes as opposed to one which helps with the stacking and queuing on the off ramps. 2. The other piece is when you do take the

westbound off ramp and you're trying to make that left, there is a fence that is a problem.

Commissioner Connell stated that there is also an issue with the fence heading east when you want to make the left-hand turn heading north on Main Street. Planning Official McLane said that you can't see what the oncoming across the bridge traffic is. We made it really clear that we need ODOT to meet us halfway and work on those improvements. So, there was agreement that they need to do that. Timing will be the question, but in your decision tonight, you can certainly encourage ODOT to move forward with their improvements that will continue to help the overall situation with the interchange.

Commission Chair Barresse asked if there were any other lingering questions for staff before public testimony, and if there was only one correspondence for this hearing. Planning Official McLane responded yes there was only one correspondence for this hearing.

Commissioner Connell asked if there was any set design in regards to signage. Let's say people have the Sinclair bonus program, they need to know how to get around to get in there but with the freeway traffic, do we know how we're going to sign all that. Planning Official McLane answered that we know that we're going to do it like any other interchange like the freeway signs with the arrows. We have not designed all of that, it will be a part of the construction project, it's one of the requirements.

Commission Chair Barresse asked if there was anything else the City would like to present. Planning Official McLane shared that site team was held the previous week with the utility providers and service providers and there was lots of support for the project. Part of the issue with utility providers is that we want them to know that we're ripping the street up and if they have anything they want to put in the street, now would be the time to coordinate with the City so that we don't pave it down and then 6 months later have to rip it out to put whatever it may be in. With the Fire Marshall, who always attends these Site Team Meetings and of course, the light will have to be programmed to allow the fire trucks and ambulance passage. That's part of the light process.

Commission Chair Barresse asked if there was anyone who would like to speak in favor of the application. There was none.

Commission Chair Barresse asked if there was anyone who would like to speak against the application.
Opposing Testimony:

Alex Hattenhauer, 122 W. 17th St The Dalles, OR.
Mr. Hattenhauer is the owner of Sinclair gas station and convenience store. Mr. Hattenhauer said that he understands the safety concerns, but would like to know where he can obtain data about near misses because he didn't see information

supporting near misses when researching accident information on ODOT's page. Mr. Hattenhauer stated that he understands the need for safety measures, but is against limiting left-hand turns because it will put a strain on his business and push travelers to seek business elsewhere. Mr. Hattenhauer stated that his business will be impacted and once the median is in, he will probably have to let go of some employees because he won't be able to afford payroll. Mr. Hattenhauer asked if ODOT has considered asking trucks to exit through the Port of Morrow exit in order to help the flow of traffic.

Commissioner Jones asked Mr. Hattenhauer if he believes that the median will pose more of a benefit to the competing gas station. Mr. Hattenhauer replied that Chevron will benefit from the travelers that are passing by. Chevron will also have some impact by losing the customers coming from the Port of Morrow, but not as big of an impact as Sinclair.

Greg Miller 201 W. 1st The Dalles, OR.
Mr. Miller is the Operations Manager for Hattenhauer Distributing. Mr. Miller stated that he has seen the types of impacts changes like this have had on other businesses. This impact will affect the amount of people that are currently employed at Sinclair, and many others will be affected by this change, including vendors. Mr. Miller stated that he is not opposed to the safety matter, but the limiting of the left-hand turns.

Karen Purcell 229 SW Locust Rd Boardman, OR
Ms. Purcell is the owner of the Sunrise Café. Ms. Purcell stated that she is ok with the light, but cutting off Front Street will be a big change. Not making a left-hand turn will impact the business because travelers will not want to go around the whole block to get to the business. Ms. Purcell stated that she disagrees with how this project is being routed and that ODOT talks and threatens, but she is unsure of how long conversations will last. Ms. Purcell does not want to lose her business.

Mr. Hattenhauer stated that he is contracted with Sinclair Corporation and there can be financial consequences if a business cannot perform. Businesses Impacts can affect families and their livelihood.

Dora Reyna 104 Rome St. Boardman, OR
Ms. Reyna has been working for Hattenhauer Distributing for over 24 years. Ms. Reyna says that Hattenhauer Distributing likes to help families and high school kids. Ms. Reyna says that colleges hire high school students that work at Hattenhauer because they are trained to be responsible and with impacts to the business, they will not be able to afford to hire employees and it will also affect customers.

Commission Chair Barresse asked if there was any neutral testimony of the application. There was none.

Rebuttal
Planning Official McLane stated that Chief Stokoe or acting Chief Dieter can share background information on near misses that have been witnessed at this intersection

on a regular basis. Truck traffic isn't witnessed much at this intersection, but the trucks that are seen are mostly in the area to deliver products to retail businesses. Business impacts are inevitable, but is the imperfection solution in order to preserve the Front Streets and implement the Main Street IAMP. The Main Street IAMP was adopted by the City in 2009 and needs to be implemented now because the traffic counts show over 8,000 vehicles per day, and there are safety concerns. The importance of restricting left-hand turns is to manage the area as a whole, and making sure additional backups are not created. The IAMP envisions that the Front Streets will be right in, right out.

Commission Chair Barresse asked if the proposed lights in the Plan were on the off ramps and if the right in, right out was a part of that plan, and would it affect the North and South Front Streets. Planning Official McLane answered that because of the distance between the Front Streets and the Intersection, you would still have to see them as right in, right out.

Commission Chair Barresse asked if the off-ramp lights are a part of this proposal, or if the light at Boardman and Main is the only light being proposed. Planning Official McLane answered that the light at Boardman Ave. and Main St. is the only light that is a part of this current proposal.

Matt Hughart stated that he understands the concerns and impacts, but can share that the left-hand turn will operate with a blinking yellow turn signal. This won't solve all the issues heard, but will make the left turn maneuver easier than waiting for the green turn signal.

Commissioner Carbray asked if the purpose of the light was for safety purposes. Planning Official McLane answered that although conversations surrounding the light began before she worked with the City, the primary reason is for safety purposes. Commissioner Carbray asked if there have ever been conversations about having the high schoolers not use that road, and have them come on to Main St. through Columbia Ave. Commissioner Connell answered that the concern was mostly for foot traffic.

Planning Official McLane answered that pedestrian traffic and lunch traffic crossing. Currently, when the RRFB flashes, the students go, but they might cross at different times during lunch. During the times when traffic counts were done, the weather was cold and wet on most days and the full extent of impacts on days with good weather might not have been captured.

Public Hearing was closed at 8:45 pm.

Commission Chair Barresse asked if there were any questions for Staff and deliberation.

Commissioner Irons asked what type of median barrier would be installed. Planning Official McLane answered that she isn't exactly sure what type of barrier will be installed, but it will be a curb type of barrier that will not impede turning for trucks. Matt Hughart answered that his guess is that it will look like the raised yellow rolled curb medians at Elm and 395 intersection.

Commissioner Connell stated that he is very bothered by the impact this median will have on Sinclair, but he is also worried about the kids' safety at that intersection. Commissioner Connell said that he knew the person that died at the intersection, and never wants to see that again, and much less with a child. He hopes that the City will accommodate to the businesses with signage and whatever else that can be done in order to help direct customers to the business, but will still vote for the light because he will be devastated if a child is hurt or killed and must put the kids' safety first.

Commission Chair Barresse stated that he would like to hear each of the Commissioners' opinions.

Commissioner Jones stated that he agrees with the light and thinks that it will have to be done sooner or later, but does not agree with the barrier and the impacts it will have on the businesses. He shared that he would be very upset if he owned Sinclair and the impact his business would have.

Commissioner Carbray stated that she is in the middle. She understands the safety concerns, but believes that with the light, the kids will be just as reckless and they will walk against the light. The light will be helpful for traffic because she has waited at the intersection leaving the high school during the high traffic time. The change would be a significant impact for Sinclair. Commissioner Carbray stated that the solution might be to not let the kids out of the campus for lunch as other high schools have done. Commissioner Carbray stated that it is the kids that are the problem, and not necessarily the traffic.

Commissioner Jones asked if the options of a tunnel or bridge have been looked at. Planning Official McLane answered that there isn't any right-of-way for that type of an easement.

Commissioner Irons stated that he knows what happens at that specific intersection, with pedestrian traffic, and not just kids, but also adults, as he responded to the call that was talked about. He hears the complaints about near misses, but Chief Stokoe may be a better resource to speak about that. It is not just the kids, there is a lot of pedestrian traffic specifically in summer when the weather is nice, and so his concern is for the general public safety.

Commissioner TenEyck stated that the right in, right out seems so tight in that intersection, so she is concerned for the trucks that will have to maneuver around the intersection. Maybe the kids would hate having a cross guard, but maybe that is what is needed to direct the kids and tell them to stop.

Commissioner Connell answered that the person that was killed at the intersection was an adult.

Commissioner Irons asked if there was any widening of Main St. in the plans for the intersection itself. Planning Official McLane answered that there isn't much right-of-way for widening. New pavement and current pavement will have new striping so that the lines will be more clearly delineated.

Commissioner Connell stated that he would like to see signs saying that truck traffic is not allowed. What would ODOT's alternative be and how much does the City have to listen to ODOT. Planning Official McLane stated that with ODOT, it is a two-way relationship that must be maintained.

Matt Hughart added that if you boil the area down, the offending issue is how close Front Streets exist to the intersection. ODOT does have jurisdictional control over the streets that have or potentially have the potential to negatively impact the safety and operations of the freeway. If a local street and traffic issue are affecting the Intersection, you have a major safety concern. Turning Front Street into right in, right out, by putting a median across it is the compromised solution. Increasing demand over time will push Boardman to levels where the light is needed to redirect traffic and help with pedestrian management crossing.

Commissioner Jones asked if ODOT is looking into expanding the on-ramp. Matt Hughart responded that there probably hasn't been the need to look into it, but he cannot speak on behalf of ODOT. What he thinks is that ODOT needs to widen the overpass, but doesn't see it happening anytime soon.

Commissioner Connell asked why widening the overpass isn't currently an option. Commission Chair Barresse stated that he feels that the negative impact on local businesses cannot be overlooked. Matt Hughart shared that Boardman is growing and the effects of growth are starting to show. Boardman is going to undergo an update to the TSP and will need to look at how the City can improve circulation across the freeway, and what changes need to be made. The current issue on Main Street is a temporary solution that will help the growth that Boardman is undergoing.

Commissioner Connell would like to know why changes aren't being done to the overpass now, and waiting until there is an issue. Waiting until something bad, or absolutely necessary is not the solution. Planning Official McLane answered that the City is not waiting, but has been having those conversations since 2007 and in 2009 when the Main Street IAMP was adopted. The City is on the list, but still hasn't made it to the critical part of the list which is the Statewide Transportation Improvement Program List which is a six-year list, and the City is not there yet. ODOT knows that Boardman needs a wider bridge. The only thing that can be done is to continue to push and let ODOT know that they need to widen the ramps, and improve the overpass. The overpass is ODOT's to improve. Planning Official McLane suggested that the Planning Commission make a decision about what is in front of them, and not concentrate on the things that cannot be decided by the Planning Commission.

Commissioner Connell replied that he isn't asking for the problems to be solved, but reassurance that the problems are being addressed.

Commission Chair Barresse stated that the matter should be continued so that the Planning Commissioners can do their due diligence in order to make a decision.

Commissioner Jones stated that he believes that it seems like the City is always trying to go through ODOT, and ODOT doesn't have any "skin in the game".

Commissioner Connell replied that it's important to note that Boardman is a Freeway Town, and ODOT runs the freeways. Commissioner Jones replied that ODOT isn't going to come in and close the freeway. Planning Official McLane answered that ODOT could close all Front Streets. Commissioner Connell asked if it was okay to ask ODOT to join the next meeting. Planning Official McLane answered that she will ask ODOT to join the next meeting.

Commissioner TenEyck asked if it is okay to table the hearing and decision until the next meeting. Planning Official McLane answered that it would be ok, and asked for specifics when making a motion to continue the hearing for the next meeting and what specific information the Planning Commission is requesting.

Commission Chair Barresse asked if ODOT can speak to the allowing of left-hand turns, and the light without the median. Planning Official McLane answered that ODOT can either speak on it, or the City Engineer.

Commissioner Carbray asked if there was a way to install the light without the median, and then add the median if it doesn't work without the median.

Motion to continue the hearing for May 15, 2024 at 7:00pm at Boardman City Hall Council Chambers with more information from staff as to how the light can be installed, but without the median and with the stipulation of ODOT being present at the meeting. Motion made by Commissioner Jones, Seconded by Commissioner Carbray.
Voting Yea: Commissioner Connell, Commissioner TenEyck, Commissioner Barresse, Commissioner Irons

Public Comment-

Ms. Reyna said thank you for listening to what they had to say.

Mr. Hattenhauer said during trying times, support troops, law enforcement, first responders, the world keeps moving, and thanked everyone.

## 6. DISCUSSION ITEMS

A. Planning Official Report

Planning Official McLane handed a memorandum to the Commissioners with information from the Municipal Code about Planning Commission meeting times. There was recent inquiry into changing the date and time to accommodate

regular schedule conflicts. General consensus was changing the meeting to the 3rd Thursday of each month, time beginning at 6:00 PM. This will begin in June, a new meeting calendar will be presented for adoption in May. Planning Official McLane also stated that the Planning Department will be working on creating a monthly report summarizing work in progress for their review.

**7. PUBLIC COMMENT**

INVITATION FOR PUBLIC COMMENT – The commission chair will announce that any interested audience members are invited to provide comments. Anyone may speak on any topic other than: a matter in litigation, a quasi-judicial land use matter; or a matter scheduled for public hearing at some future date. The commission chair may limit comments to 3 minutes per person for a total of 30 minutes. Please complete a request to speak card prior to the meeting. Speakers may not yield their time to others.

**8. COMMISSION COMMENTS**

**9. ADJOURNMENT**

Commission Chair Barresse adjourned the meeting at 9:50 PM.

A. Future Meetings:

May 15, 2024

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**FINAL FINDINGS OF FACT**
**CONDITIONAL USE PERMIT**
**CUP24-000001**

**REQUEST: To approve the installation of a ~~traffic light~~HAWK (High-Intensity Activated CrossWalK) signal with related street improvements at the corner of North Main and Boardman Avenue to include conversion of the North Main Street intersection with the NE and NW Front Streets to a right-in/right-out configuration. To determine that the installation is in conformance with the Main Street Interchange Area Management Plan and meets necessary warrants.**

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**APPLICANT/OWNER:** City of Boardman
Post Office Box 229
Boardman, Oregon 97818

**ZONING OF THE AREA:** Commercial (Tourist Commercial Sub District) and Residential

**PROPERTY LOCATION:** The subject property includes the rights-of-way for both Main Street and Boardman Avenue north of the Main Street Interchange. Adjacent businesses include C&D, Chevron, Sinclair, the Boardman Office Center, and Riverside High School.

I. **BACKGROUND:** A number of years ago the City of Boardman experienced a loss of life at the subject intersection after which the currently installed Rectangular Rapid Flashing Beacon (RRFB) was installed. During peak pedestrian crossings, predominantly at school departure times, use of the RRFB can create traffic backups along Main Street that can impact queuing on the west bound Interstate 84 off ramp creating potential impediments into the west bound travel lane.

This area is subject to the Boardman Main Street Interchange Area Management Plan (MS IAMP) and any development or street projects within the Management Area must conform to the requirements of the IAMP. In the MS IAMP there are streetlights envisioned at the ramp intersections but not other intersections. About two years ago the City engaged Kittelson & Associates to do an evaluation of the Main Street corridor to accomplish an update to the planning level analysis documented in the 2009 MS IAMP. The purpose was to provide an updated list of improvement projects to support multi-modal circulation improvements along the corridor and at the interchange.

After lengthy discussion with the Oregon Department of Transportation (ODOT) concerning the necessary planning process to authorize the installation of a streetlight it was determined that an amendment to the MS IAMP would not be necessary but signal warrants needed to be identified and no impacts to the interchange could occur. Signal warrants were justified and the streetlight was shown not to impact the interchange in the Kittleson & Associates Main Street corridor assessment. Installation of the center median is also justified to convert NW and NE Front Street to right-in/right-out and for traffic queueing/staging at the signalized intersection.

It should be noted that the MS IAMP does say the following about access to Main Street in the vicinity of the Interchange: "A key element of the IAMP is to the long-range preservation of operational efficiency and safety of the interchange is the management of access to Main

Street. Because access points introduce a number of potential vehicular conflicts on a roadway and are frequently the causes of slowing or stopping vehicles, they can significantly degrade the flow of traffic and reduce the efficiency of the transportation system. However, reducing the overall number of access points and providing greater separation between them can minimize the impacts of these conflicts." The proposed center median and limiting left hand turns on North Main Street between Front Street and Boardman Avenue affectively achieves the intent of this statement without closing those accesses.

In limiting NE and NW Front Streets to a right-in/right-out configuration the Boardman Avenue and North Main Street intersection allows full turning movements. For comparison the same configuration on South Main Street would mean that Oregon Trail Boulevard will also allow full turning movements.

The street light installation, including street, sidewalk, and parking improvements, has been designed. It is anticipated that the project will go to bid in July 2024 with construction starting in March or April of 2025 and ending in July or August of that same year. The duration of time between the construction bidding process and the start of construction is for the procurement of long-lead time equipment and materials.

This project is identified in the Capital Improvement Plan adopted by the Boardman City Council on April 2 of this year. The City Manager and Planning Official have met with several of the immediately impacted landowners to discuss the project, the safety concerns it is addressing, mitigation of construction impacts, and to express our understanding of how this can create negative impacts to business operations.

*After the initial Planning Commission public hearing on April 17 staff did follow up with ODOT to further discuss the impacts of the proposal and their participation in accomplishing the requirements as laid out in the MS IAMP. Based on that conversation and further review of the Kittelson & Associates Main Street Assessment the city is modifying their project in two ways. First the street light infrastructure will be installed but the signal will initially be a High-Intensity Activiated CrossWalK, or HAWK and second the median will only affect the Front Street intersection allowing, for now, left turns across Main Street between Front Street and Boardman Avenue. The modification of Front Streets to a right-in/right-out configuration is maintained.*

***What is a HAWK signal?*** *It is a device used to assist people with safely crossing busy streets. They work the same as other button-activated signals, either by pushing a button or an automatic sensor, which directs the person walking or biking to wait for the signal to change and traffic to stop allowing them to cross safely. For a driver, the HAWK signal appears differently than other traffic lights. At rest, HAWKs remain dark. Once triggered, it will then go through a series of yellow and red sequences requiring motorists to slow down and stop. After the people walking and biking cross, the HAWK will go dark again, allowing motorists to continue through the intersection.*

***Why are they helpful?*** *HAWK signals provide safer crossing alternatives for people walking and biking than traditional crosswalks especially in mid-block locations with heavy demand. Because the devices are only activated when walkers or bikers are present, people driving experience minimal delays. HAWK signals can also be installed at the intersection of an arterial road with a smaller side street, which would not otherwise warrant a traffic light signalized crossing. This amounts to easier crossing on busy streets for people walking and biking. Data also suggests*

*that HAWK signals crate safer crossings, reduce crashes, and increase driver compliance with crosswalk laws.*

*The city is maintaining the conversion of the Front Street intersection to a right-in/right-out configuration for several reasons outlined here:*

1. *The City's Level of Service, or LOS, standard is C which is higher than ODOTs and allows for less congestion.*
2. *Access points introduce a number of potential vehicular conflicts on a roadway and are frequently the causes of slowing or stopping vehicles, they can significantly degrade the flow of traffic, and reduce the efficiency of the transportation types. Reducing the overall number of access points and providing greater separation between them can minimize the impacts of these conflicts. Reducing Front Street to a right-in-right-out configuration reduces a significant vehicular conflict adjacent to the west bound off-ramp.*
3. *At the time the MS IAMP was adopted the LOS for Main Street and North Front Street was C. Today it is D which, under the MS IAMP, does require action on the part of the city. It should be noted that the LOS for South Front Street is also at a LOS of D. Without action both of those intersections are identified to achieve a LOS of F by 2042.*
4. *The MS IAMP does identify that the City is to work towards two items, the first being development of the local street network both east and west of Main Street and second to limit access at Main Street at both north and south Front Street. The first step of this is to limit those intersections to right turn only.*

*For these reasons this request needs to be approved as presented*

II. **APPROVAL CRITERIA:** The Boardman Development Code Residential and Commercial use zones both identify in their respective Tables of allowed uses that "transportation projects that are not designated improvements in the Transportation System Plan" are subject to a Conditional Use Permit. While street lights are envisioned in the MS IAMP they are planned for the on- and off-ramps, not other intersections. The applicable criteria are found in Chapter 4.4 Conditional Use Permits at 4.4.400 Criteria, Standards and Conditions of Approval which is in **bold** text with responses in regular text.

**4.4.400 Criteria, Standards and Conditions of Approval**

**The City shall approve, approve with conditions, or deny an application for a conditional use or to enlarge or alter a conditional use based on findings of fact with respect to each of the following standards and criteria:**

**D. Transportation System Facilities and Improvements**

**1. City or County facilities and improvements. Construction, reconstruction, or widening of highways, roads, bridges or other transportation facilities that are (1) not designated in the City's adopted Transportation System Plan ("TSP"), or (2) not designed and constructed as part of an approved subdivision or partition, are allowed in all Districts subject to a Conditional Use Permit and satisfaction of all of the following criteria:**

**a. The project and its design are consistent with the City's adopted TSP, or, if the city has not adopted a TSP, consistent with the State Transportation Planning Rule, OAR 660-012 ("the TPR").**

**b. The project design is compatible with abutting land uses in regard to noise generation and public safety and is consistent with the applicable zoning and development standards and criteria for the abutting properties.**

**c. The project design minimizes environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities; and a site with**

**fewer environmental impacts is not reasonably available. The applicant shall document all efforts to obtain a site with fewer environmental impacts, and the reasons alternative sites were not chosen.**

d. **The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.**
e. **The project includes provisions for bicycle and pedestrian access and circulation consistent with the comprehensive plan, the requirements of this ordinance, and the TSP or TPR.**

The proposed ~~street light~~HAWK signal and related improvements are on a city facility and involves the construction of the area in and around the Main Street and Boardman Avenue intersection. The construction will involve the installation of the ~~streetlight~~ HAWK signla and its components, improved street base and new pavement in the intersection and along Boardman Avenue to both the east and west, new sidewalk and improved access points, a median along North Main ~~from the Interchange to the subject intersection~~to convert the Front Street intersection into a right-in/right-out only configuration, and new striping throughout the area.

Staff have determined that the ~~street light~~HAWK signal is consistent with the MS IAMP as it does conform to the Access Management Plan by:

- Continuing to restrict access to the interchange and interchange ramps and is, in fact, working to eliminate impacts to the interchange ramps from traffic that currently backs up when continual use of the RRFB causes delays of northbound travelers on Main Street.
- Improve safety factors not only within the interchange but also along Main Street and at this intersection in particular.
- Eliminating or reducing turning conflicts along the Main Street corridor ~~from just north of the interchange to the Main Street and Boardman Avenue intersection~~at the Front Street intersection.
- Assuring that all current accesses are maintained to allow some level of ingress or egress and improving several accesses with improvements that also support pedestrian utilization.

Staff have also determined that the ~~street light~~HAWK signal is warranted based on the following:

- While not within the standard time frame for consideration there has been a pedestrian loss of life at this intersection.
- This intersection is a primary school crossing area for Riverside High School during the arrival, lunch, and departure times. Use of the current RRFB creates backups along Main Street impacting the west bound off ramp queuing and can result in traffic backing up into the west bound travel lane. This is further discussed on page 7 of the Kittelson & Associates analysis that is attached.
- Pedestrian volume outside of school pedestrian usage continues to increase along Main Street.
- Crash data from 2016 through 2020 identified in the Kittelson & Associates report shows that there are a variety of different types of crashes throughout the study corridor.

Abutting land uses are commercial in nature with the exception of the school. The school building is located 1,000 feet or more from the intersection with school green space and recreational space in between. The C&D Drive-In is most affected by the installation of the ~~streetlight~~ HAWK signal and design of the project took into consideration their setback distance from the road with a desire to maintain their outdoor seating on the west side of their development. On street parking has been the most effected element through the design process with a number of angle and parallel parking spaces being removed. At least as many, if not more, parking spaces are being constructed resulting in a positive number of parking spaces. The new parking opportunity is being developed along the frontage of the

Riverside High School with discussion ongoing to extend the parking further to the east from the current terminus shown on the Schematic Layout.

This project is locationally dependent. It is not specifically being designed to move more traffic, but to move current traffic more efficiently and safely.

Safety is one of the primary reasons for pursuing the street light project based on the loss of life from some years ago along with the reporting of a significant number of near misses with both cars and pedestrians.

Pedestrian, and by extension bicycle, movement and safety will be improved with the ~~street light~~HAWK signal allowing for protected crossing times and spacing those crossing times to reduce if not eliminate backups along Main Street that can currently affect the queuing of west bound travelers on the west bound off ramp.

2. **State facilities and improvements. The State Department of Transportation ("ODOT") shall provide a narrative statement with the application demonstrating compliance with all of the criteria and standards in Section 4.4.400.D. 1.b. – e. above. Where applicable, an Environmental Impact Statement or Environmental Assessment may be used to address one or more of these criteria.**

The intersection of Main Street and Boardman Avenue is not a state facility. It is within the Management Area of the MS IAMP which was addressed through significant conversation with ODOT staff about the light, the mechanism to approve the installation of the street light, and will also include conversation with ODOT about management of the light once installed. The above criteria for a state facility have been deemed to not be applicable.

3. **Proposal inconsistent with TSP/TPR. If the City determines that the proposed use or activity or its design is inconsistent with the TSP or TPR, then the applicant shall apply for and obtain a plan and/or zoning amendment prior to or in conjunction with conditional use permit approval. The applicant shall choose one of the following options: a. If the city determination of inconsistency is made prior to a final decision on the conditional use permit application, the applicant shall withdraw the conditional use permit application; or b If the city determination of inconsistency is made prior to a final decision on the conditional use permit application, the applicant shall withdraw the conditional permit application, apply for a plan/zone amendment, and re-apply for a conditional use permit if and when the amendment is approved; or**
    a. **If the city determination of inconsistency is made prior to a final decision on the conditional use permit application, the applicant shall submit a plan/zoning amendment application for joint review and decision with the conditional use permit application, along with a written waiver of the ORS 227.178 120-day period within which to complete all local reviews and appeals once the application is deemed complete; or**
    b. **If the city determination of inconsistency is part of a final decision on the conditional use permit application, the applicant shall submit a new conditional use permit application, along with a plan/zoning amendment application for joint review and decision.**

The city has determined that the installation of the ~~street light~~HAWK signal is consistent with the MS IAMP and is therefore consistent with the Transportation Planning Rule. See the discussion under 1. above and the attached Boardman Main Street Circulation Assessment dated March 2024 and prepared by Kittelson & Associates.

4. **Expiration. A Conditional Use Permit for Transportation System Facilities and Improvements shall be void after three (3) years.**

It is the intent of the City to have this project go to bid in July 2024 with construction to start in March or April 2025 and concluding in July or August 2025.

**III. LEGAL NOTICE PUBLISHED:** March 26 and April 23, 2024
East Oregonian

**IV. PROPERTY OWNERS NOTIFIED:** March 26, 2024
List on file.

**V. AGENCIES NOTIFIED:** Teresa Penninger, Rich Lani, David Boyd, and Cheryl Jarvis-Smith, Oregon Department of Transportation; Marty Broadbent and Michael Hughes, Boardman Fire Rescue District; Emily Roberts, Morrow County Health District; Mike Lees and Rolf Prag, City of Boardman.

**VI. HEARING DATES:** April 17 and May 15, 2024
Boardman City Hall

**VII. COMMENTS RECEIVED:** The following summarize comments received:

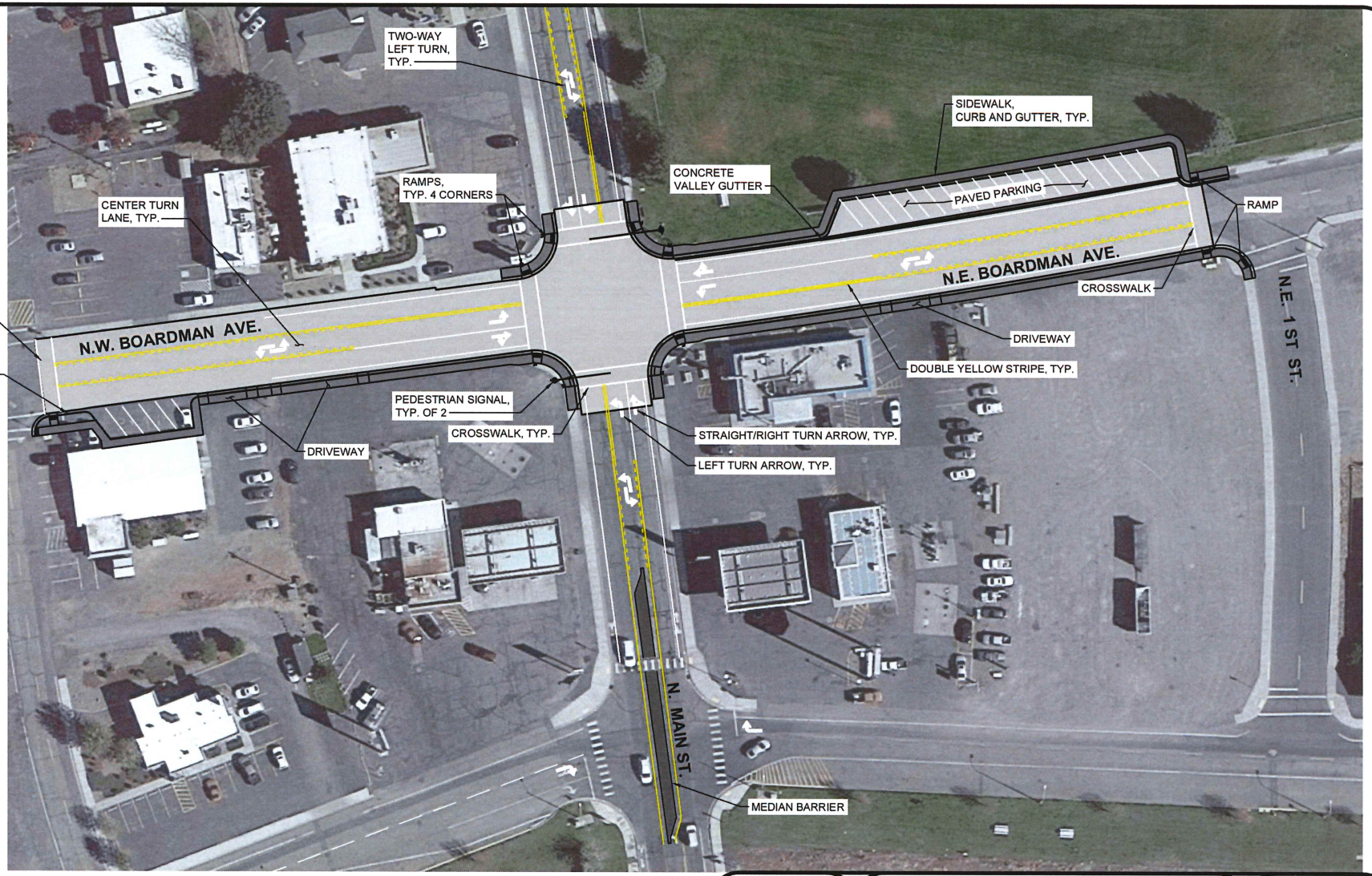
- Letter dated April 10, 2024, from Alex Hattenhauer, Hattenhauer Distributing, in opposition.
- Site Team was held on April 11, 2024, with local utilities, the Fire Marshall, and ODOT staff in attendance. No changes to the proposal emerged from this discussion.
- Public comment was received at the Planning Commission public hearing held on April 17 from Alex Hattenhauer, Greg Miller, Karen Purcell, and Nora Reyna and is summarized in the meeting minutes.

**VIII. PLANNING OFFICIAL RECOMMENDATION:** The Planning Official recommends that the Planning Commission approve this request as presented affirming that the ~~traffic signal~~HAWK signal is consistent with the MS IAMP and is warranted.

_____

Zack Barresse, Chair Date

ATTACHMENTS:
Schematic Layout
Boardman Main Street Circulation Assessment (March 2024)
Boardman Main Street Interchange Area Management Plan (2009)
April 10, 2024, letter in opposition – Alex Hattenhauer, Hattenhauer Distributing




anderson perry

CITY OF
BOARDMAN, OREGON
N. MAIN STREET IMPROVEMENTS

SCHEMATIC LAYOUT

FIGURE
1

X:\Clients\Boardman OR\439-77 N Main SI\CAD\439-77-Fig1.dwg, Layout1, 5/6/2024 2:25 PM, lmurphy

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

# TECHNICAL MEMORANDUM

| | |
|---|---|
| Date: | March 2024 Project #: 27246 |
| To: | Brandon Hammond, Carla McLane, Rick Stokoe, & Mike Lees; City of Boardman<br>Teresa Penninger; Oregon Department of Transportation |
| From: | Matt Hughart, AICP and Ali Razmpa, PE |
| Project: | Boardman Main Street Circulation Assessment |
| Subject: | Existing Conditions, Future Conditions, and Circulation Improvements |

This report provides an update to the planning level analysis first documented in the 2009 *Boardman Main Street Interchange Area Management Plan (IAMP)*. The purpose of the study is to provide the City of Boardman with an updated list of improvement projects to support multi-modal circulation improvements along Boardman's Main Street corridor and the I-84/Main Street interchange.

## BACKGROUND

In 2009, the City of Boardman and Oregon Department of Transportation (ODOT) adopted the *Boardman Main Street IAMP*. The purpose of the IAMP was to formally identify circulation and access management improvements that would be needed to keep the I-84/Main Street interchange and the supporting local roadway network functioning safely and efficiently. Since 2009, Boardman and the adjacent Port of Morrow (POM) have experienced significant residential and employment growth which has led to a measurable increase in traffic volumes along the Main Street corridor. This growth has necessitated an updated look at operations along the Main Street corridor stretching from Columbia Avenue to Wilson Lane.

Consistent with the original IAMP planning process, a planning-level update was performed, documenting the current IAMP study area conditions (existing infrastructure and traffic conditions), the future no-build conditions (assuming expected local and regional growth with no infrastructure improvements), and the evaluation and selection of new/additional corridor capacity, access, and intersection improvements.

### Main Street Study Area

To help define the extent of the land use and traffic operations review for this update, the study area includes the Main Street corridor from Columbia Avenue to Wilson Lane and select intersections as illustrated in Figure 1.

## Exhibit 1 –Study Area and Study Intersections

# EXISTING CONDITIONS

## Existing Traffic Volumes and Peak Hour Operations

Intersection turning movement counts were collected at the following study intersections in March 2022:

1. N Main Street/Columbia Avenue
2. N Main Street/Boardman Avenue
3. N Main Street/N Front Street
4. N Main Street/I-84 WB Ramp Terminal
5. S Main Street/I-84 EB Ramp Terminal
6. S Main Street/S Front Street
7. S Main Street/Oregon Trail Boulevard
8. S Main Street/City Center Circle
9. S Main Street/Kincade Road
10. S Main Street/Willow Fork Drive
11. S Main Street/Wilson Lane

A description of the analysis conducted with this data is summarized in the following sections. *Appendix A contains the traffic count worksheets*.

### *Seasonal Adjustments*

Following the methodology outlined by ODOT's Analysis Procedures Manual (APM), a seasonal adjustment factor was applied to the traffic counts collected for the existing conditions analysis to estimate 30th highest hour volumes given Boardman's significant level of highway-oriented retail establishments. Consistent with the previous 2009 IAMP, ATR #25-008, located on I-84 west of US 730, was determined to have the most similar traffic characteristics within the study area. The seasonal adjustment factor calculations for the intersection counts collected in March is 1.28 as noted in Table 2.

**Table 1 - Seasonal Adjustment Factor Calculations**

| | 2019 | 2018 | 2017 | 2016 | 2015 | Avg |
|---|---|---|---|---|---|---|
| ATR 25-008 | | | | | | |
| Peak Month (August) | 123 | 122 | ~~125~~ | ~~122~~ | 124 | 123 |
| Count Month (March) | 96 | 97 | ~~99~~ | ~~96~~ | 96 | 96 |

- The average peak month (August) is: (122% + 123% + 124%) / 3 = 123%
- The average count month (March) is: (96% + 97% + 96%) / 3 = 96.3%
- The seasonal adjustment factor is 123%/96.3% = **1.28**

After applying the 1.28 seasonal adjustment factor, the intersection turning movement volumes at the I-84/Main Street interchange were analyzed to discern any notable traffic patterns that would help inform the IAMP update process as noted in the following sections.

### *Existing Intersection Operations*

ODOT uses volume-to-capacity (v/c) ratios to assess intersection operations. Table 6 of the *Oregon Highway Plan* (OHP) provides maximum volume-to-capacity ratio targets for all signalized/roundabout and unsignalized intersections. Table 2 summarizes the applicable v/c ratio that will be used to evaluate the existing and future operations at the ODOT owned/maintained I-84/Main Street ramp terminals.

**Table 2 – ODOT Mobility Targets**

| Intersection | OHP Mobility Target |
|---|---|
| Main Street/I-84 WB Ramp Terminal | v/c = 0.85 Main Street Approach/0.80 ramp approach |
| Main Street/I-84 EB Ramp Terminal | v/c = 0.85 Main Street Approach/0.80 ramp approach |

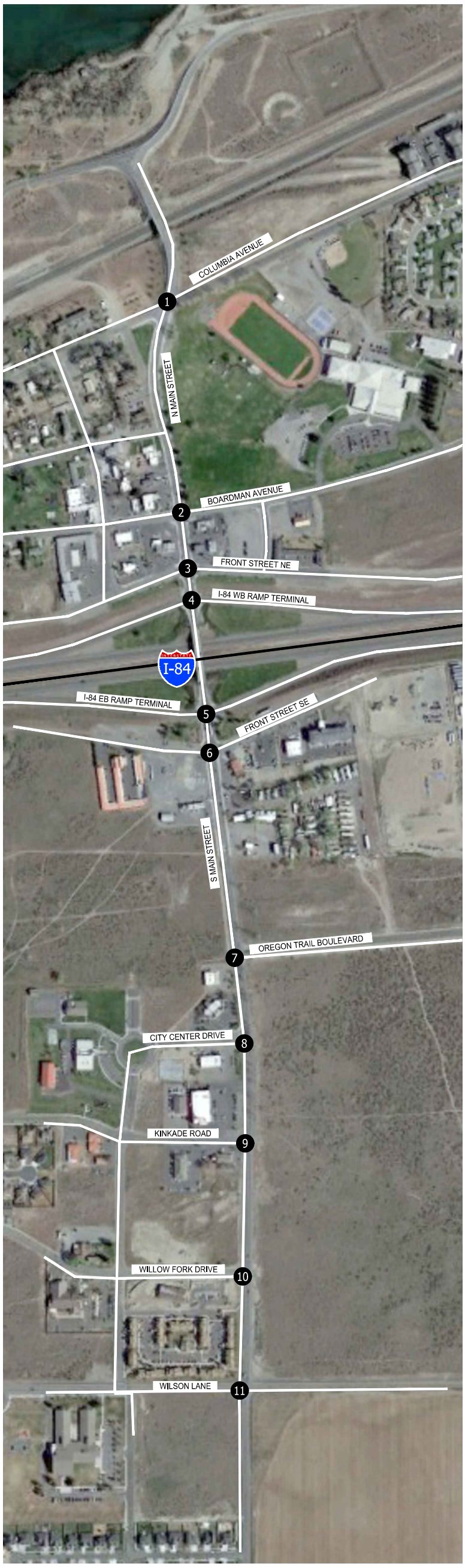
The operational standard for intersections involving only City roadways is based on level-of-service (LOS). The City maintains a LOS standard of "C" or better for all intersections.

Using these standards, an operations assessment was performed at the previously noted intersections. The existing traffic conditions at the study intersections are summarized in Figure 1 during the weekday PM peak hour (4:00-5:00 PM). As shown, the study intersection operations satisfy applicable ODOT and City of Boardman mobility targets/standards. *Appendix B contains the existing traffic operations worksheets.*

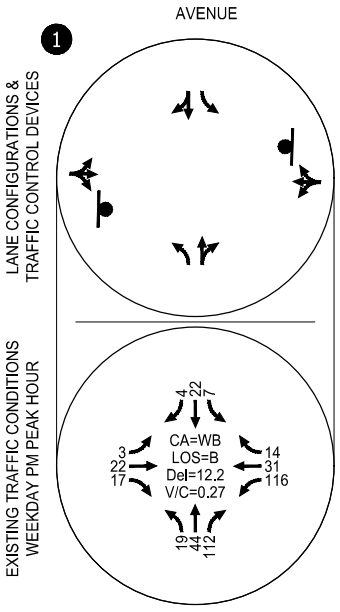
While all of the study intersections have the capacity to accommodate existing PM peak hour demand, observations at the ramp terminal intersections found that offramp movements can experience periods of delay. This delay is attributed to continuous demand along the Main Street corridor, the lack of left-turn lanes onto each on-ramp, the close spacing of the north and south Front Street intersections, and periods of occassional vehicle queue spillback generated by a pedestrian crossing beacon at the Boardman Avenue intersection.

### *Intersection Crash History*

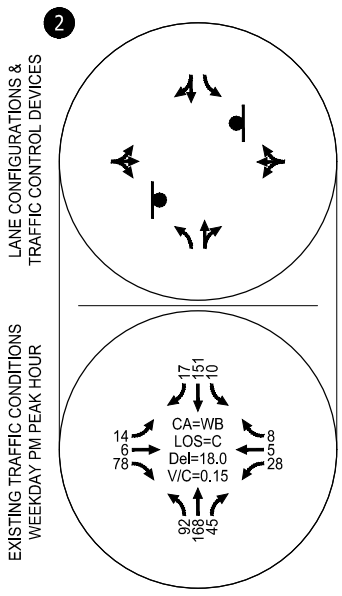
Study intersection crash histories were obtained and reviewed in an effort to identify potential safety issues. ODOT provided crash records for the study intersections for the five-year period from January 1, 2016 through December 31, 2020. *Appendix C provides the ODOT crash report which provides more details on the reported crashes.* Table 3 summarizes the ODOT crash data.



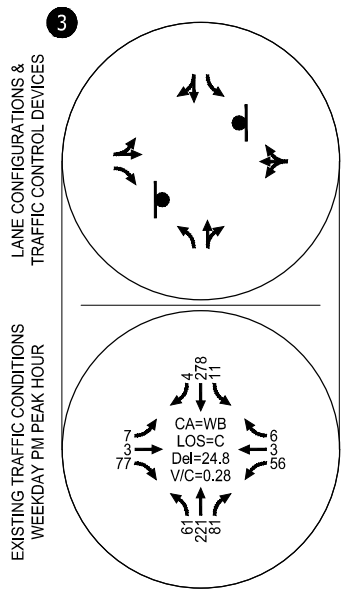

MAIN STREET/ COLUMBIA AVENUE



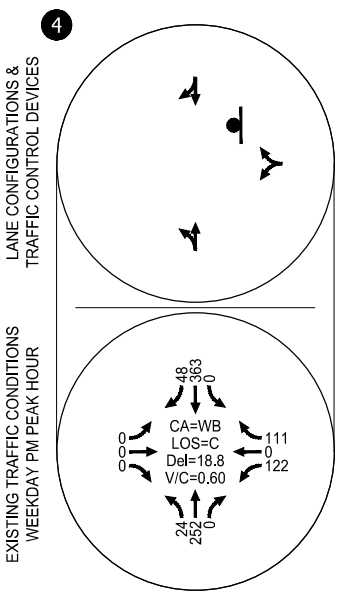

MAIN STREET/ BOARDMAN AVENUE



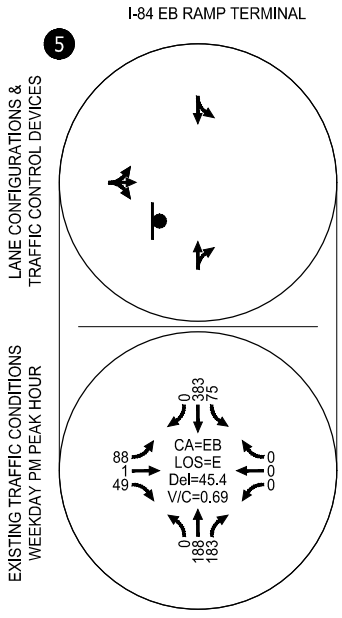

MAIN STREET/ FRONT STREET NE



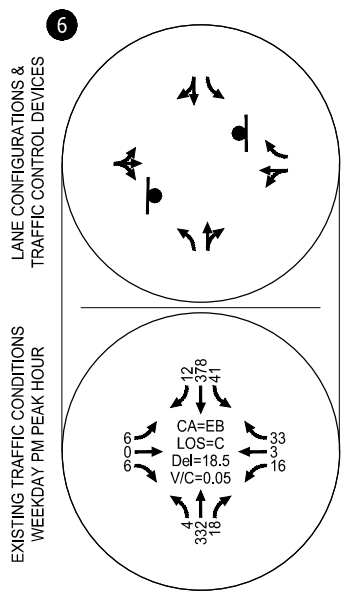

MAIN STREET/ I-84 WB RAMP TERMINAL



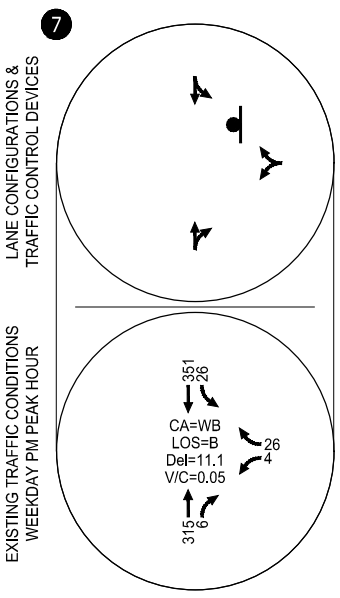

MAIN STREET/ I-84 EB RAMP TERMINAL



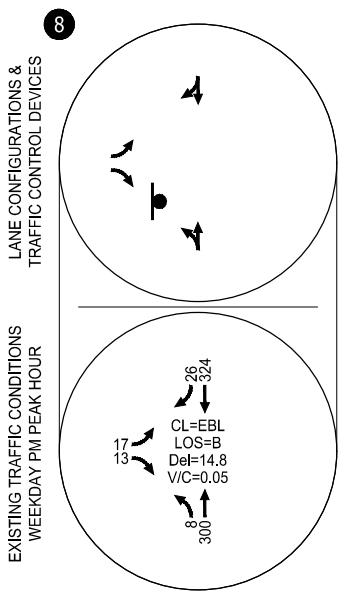

MAIN STREET/ FRONT STREET SE



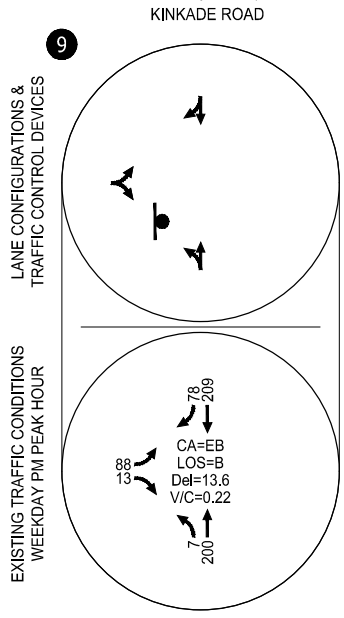

MAIN STREET/ OREGON TRAIL BOULEVARD



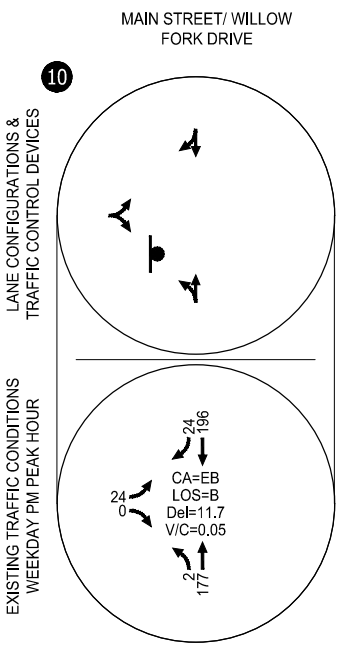

MAIN STREET/ CITY CENTER DRIVE



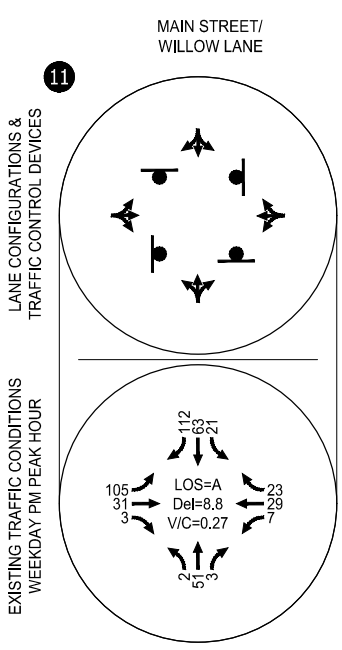

MAIN STREET/ KINKADE ROAD




MAIN STREET/ WILLOW FORK DRIVE




MAIN STREET/ WILLOW LANE




##- Study Intersections

Existing Traffic Conditions
Weekday PM Peak Hour
City of Boardman, Oregon

Figure
1



KITTELSON & ASSOCIATES

**Table 3 – Reported Crash History (January 1, 2016 – December 31, 2020)**

| Study Intersection | Crash Type | | | | | Severity | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Angle | Turn | Rear-End | Sideswipe | Other | PDO | Injury | Fatal | |
| N Main Street/ Columbia Avenue | - | - | - | - | - | 0 | 0 | 0 | 0 |
| N Main Street/ Boardman Avenue | 1 | - | - | - | - | 1 | 0 | 0 | 1 |
| N Main Street/ N Front Street | - | 1 | - | - | - | 1 | 0 | 0 | 1 |
| N Main Street/ I-84 WB Ramp Terminal | 2 | 4 | 3 | - | - | 4 | 5 | 0 | 9 |
| S Main Street/ I-84 EB Ramp Terminal | 1 | 2 | - | - | - | 3 | 0 | 0 | 3 |
| S Main Street/ S Front Street | - | - | - | - | - | 0 | 0 | 0 | 0 |
| S Main Street/ Oregon Trail Boulevard | - | - | 1 | - | - | 1 | 0 | 0 | 1 |
| S Main Street/ City Center Circle | - | - | - | - | - | 0 | 0 | 0 | 0 |
| S Main Street/ Kincade Road | - | - | - | - | - | 0 | 0 | 0 | 0 |
| S Main Street/ Willow Fork Drive | - | - | - | - | - | 0 | 0 | 0 | 0 |
| S Main Street/ Wilson Lane | 2 | 1 | - | - | - | 2 | 1 | 0 | 3 |

PDO = Property Damage Only

Intersection crash rates were calculated and compared to statewide crash rate performance thresholds. For this analysis, the critical crash rate was calculated and compared to the 90$^{th}$ percentile crash rates for urban intersections by traffic control and 3- versus 4-legged configurations (as appropriate). This is shown in Table 4.

**Table 4 – Intersection Crash Rate Assessment**

| Study Intersection | Total Crashes | Observed Crash Rate | 90$^{th}$ Percentile Rate by Lane Type and Traffic Control | Observed Crash Rate > 90$^{th}$ Percentile Rate? |
|---|---|---|---|---|
| N Main Street/ Boardman Avenue | 1 | 0.09 | 0.41 | No |
| N Main Street/ N Front Street | 1 | 0.07 | 0.41 | No |
| N Main Street/ I-84 WB Ramp Terminal | 9 | 0.54 | 0.29 | Yes |
| S Main Street/ I-84 EB Ramp Terminal | 3 | 0.17 | 0.29 | No |
| S Main Street/ Oregon Trail Boulevard | 1 | 0.08 | 0.29 | No |
| S Main Street/ Wilson Lane | 3 | 0.37 | 0.41 | No |

### *Existing Operations/Crash Findings*

While the operations analysis indicates that all study intersections have capacity during the peak time periods, a review of the crash history and field observations along the Main Street corridor revealed several characteristics that can impact corridor operations:

- Although not summarized in the operations analysis, the EB and WB I-84/Main Street off ramps are single-lane ramps with shared single-lane stop-controlled approaches to Main Street. During peak time periods, volumes on the off ramps can generate some relatively long queues, especially when there are large trucks exiting the freeway.
- The N Main Street/I-84 WB Ramp Terminal intersection exceeds the critical crash rate based on lane type and traffic control. A detailed review of the intersection crash data revealed that all three rear-end crashes occurred on the westbound I-84 offramp approaching the intersection and all seven turning/angle crashes involved vehicles making left- and right-turns from the westbound offramp ramp approach and interacting with northbound or southbound Main Street vehicles.
    - While the crash data is limited in detail, it appears that some of these crashes could be mitigated by improved access management along the N Main Street corridor (the closely spaced north and south Front Street intersections introduce additional turning movements within close proximity of the ramp terminals) and traffic control improvements at the ramp terminal intersections. These mitigation scenarios will be explored later in this report.
- Field observations were made at the N Main Street/Boardman Avenue intersection during multiple days and time periods to better understand how the adjacent Rectangular Rapid Flashing Beacon (RRFB) impacts traffic circulation along the N Main Street corridor. Key findings from these observations include:
    - The highest concentration of pedestrian crossings were observed to occur during the 10:45 – 11:45 AM time period which coincides with Riverside Jr/Sr High School lunch period. During this period, students were observed walking from the campus to various lunch destinations along the N Main Street corridor. The RRFB was consistently utilized to assist in the crossing of the north leg of N Main Street.
    - While students typically crossed in groups, there were instances where repeated back-to-back activations of the RRFB led to the formation of northbound vehicle queues on N Main Street. In some instances, particularly when there were multiple trucks involved, these vehicle queues were observed backing up to and beyond the I-84 WB Ramp Terminal intersection. This is generally a significant safety concern as the interruption of traffic flow can lead to backups on the offramp, which can in turn impact the I-84 westbound freeway lanes under worst case circumstances.
    - Other peak activation periods of the RRFB occurred in the 6:45-7:45 AM time period and 2:45-3:34 PM time period, however the number of pedestrians were observed to be measurably lower, more spread out, and less likely to generate significant vehicle queues along N Main Street.

# FUTURE 2042 CONDITIONS

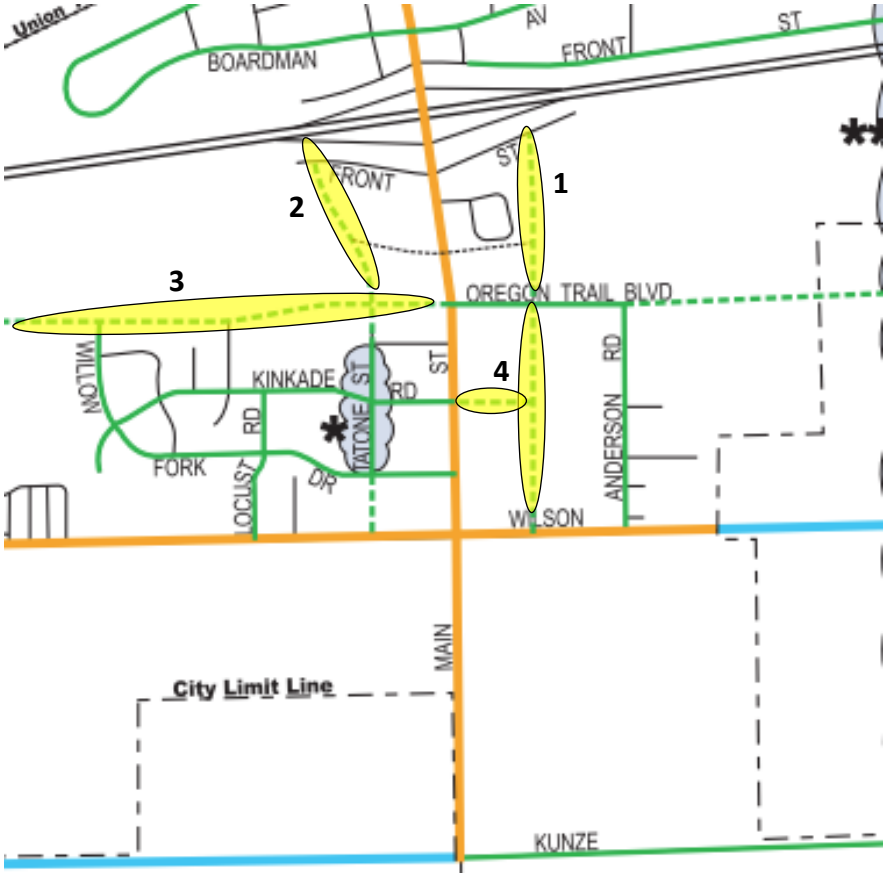
This section documents the future travel demand and forecast traffic operations along the Main Street study corridor. The future traffic projections are based on anticipated land use and development through the year 2042 using the same cumulative traffic forecast methodology from the 2009 IAMP.

## Future 2042 Land Uses/Development Projections

Based on an updated land use inventory, a review of current development patterns, and discussions with City of Boardman staff, an updated land use forecast was performed for all vacant/undeveloped parcels located within the larger Main Street study corridor. *Appendix D contains a detailed description of assumed future developments for these parcels*.

From this land use forecast, a future trip generation profile was developed for each vacant parcel with anticipated weekday PM peak hour trips distributed to/from the Main Street corridor and study intersections. This distribution was based on the type of land use (highway-oriented commercial/retail uses with a focus to/from the I-84 corridor, Boardman supporting commercial/retail uses with a focus to/from local residential neighborhoods, and residential uses with a commuting focus to/from local and regional employment centers), and future roadway connections shown in the 2009 IAMP's Roadway Network and Classification Plan (see Exhibit 2).

**Exhibit 2 – Excerpt from the 2009 IAMP's Roadway Network and Classification Plan Map**



From this map, the following connections were assumed to be constructed as part of future development within the 20-year timeframe of this assessment:

1. A new backage road connection linking SE Front Street to Oregon Trail Boulevard (likely is being constructed in the 2024-2025 period).
2. A new backage road connection linking SW Front Street to a future westerly extension of Oregon Trail Boulevard.
3. A westerly extension of Oregon Trail Boulevard from S Main Street to Faler Road.
4. A new local street grid pattern on the east side of S Main Street connecting Oregon Trail Boulevard to Wilson Lane with a connection to S Main Street.

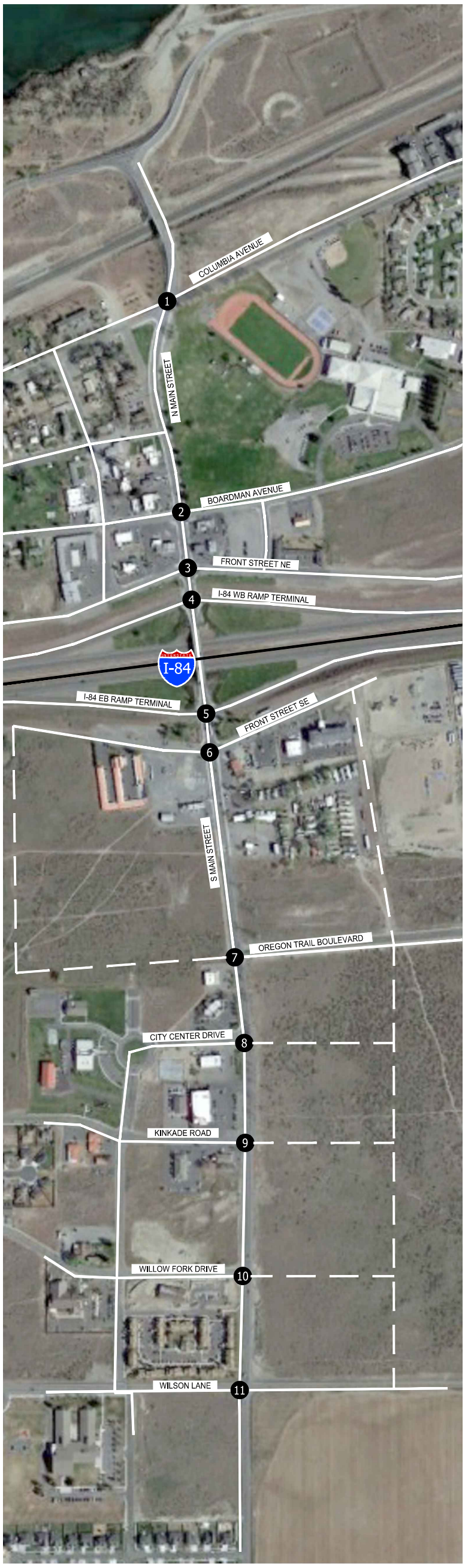
## Future 2042 Traffic Conditions

Future year 2042 No-Build weekday PM peak hour traffic volumes were determined by applying the growth projections and development-related trips to the existing traffic network. The resulting future year 2042 No-Build weekday PM peak hour traffic volumes are shown in Figure 2. As shown in the figure, intersection capacity and/or operational performance issues are forecast at the following intersections:

- N Main Street/Boardman Avenue – the critical westbound approach is forecast to operate at LOS E conditions during the weekday PM peak hour. This is primarily due to the limited capacity of the single-lane stop-controlled Boardman Avenue approach and forecast traffic growth along the Boardman Avenue corridor.
- N Main Street/N Front Street – the critical westbound Front Street approach is forecast to operate above capacity during the weekday PM Peak hour. This is primarily due to increasing forecast north/south demand on Main Street and the impacts of anticipated highway-oriented development along the N Front Street corridor.
- N Main Street/I-84 WB Ramp Terminal – the critical westbound offramp approach is forecast to operate above capacity during the weekday PM Peak hour. This is primarily due to anticipated long-term traffic growth and the limited capacity of the single lane stop-controlled offramp approach to Main Street.
- S Main Street/I-84 EB Ramp Terminal – the critical eastbound approach is forecast to operate above capacity during the weekday PM Peak hour. This is primarily due to anticipated traffic growth on Main Street, forecast left-turn demand, and the limited capacity of the single-lane stop-controlled offramp approach to Main Street.
- S. Main Street/Front Street SE – the critical eastbound approach is forecast to operate at LOS E conditions during the weekday PM peak hour. This can be attributed to anticipated highway-oriented retail growth on the southwest corner of the interchange.

*Appendix E contains the 2042 no-build traffic conditions worksheets.*

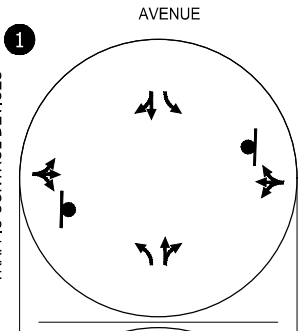
While relatively consistent with the forecast operations from the 2009 IAMP, the forecast operations at the N Main Street/Boardman Avenue and S Main Street/I-84 EB Ramp Terminal intersections necessitated the reinvestigated of several improvement alternatives.



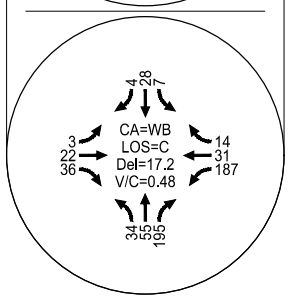

MAIN STREET/ COLUMBIA AVENUE

1

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



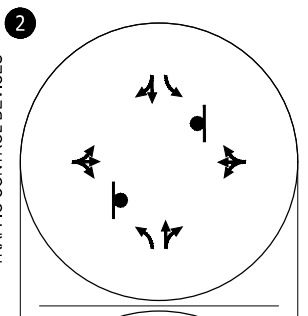
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



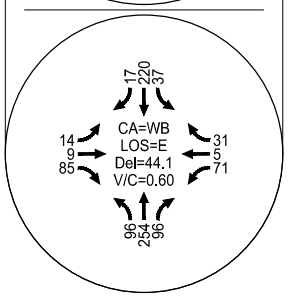

MAIN STREET/ BOARDMAN AVENUE

2

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



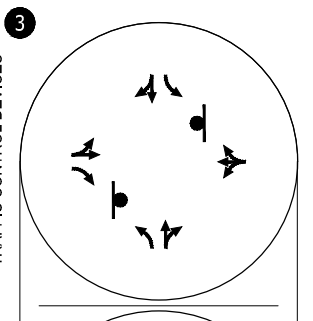
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



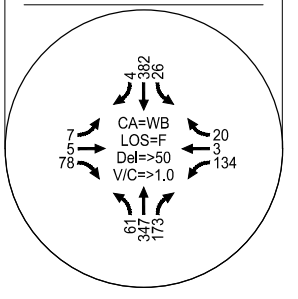

MAIN STREET/ FRONT STREET NE

3

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



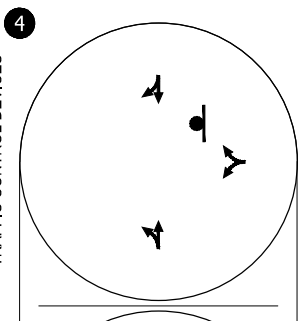
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



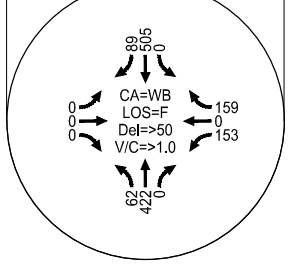

MAIN STREET/ I-84 WB RAMP TERMINAL

4

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



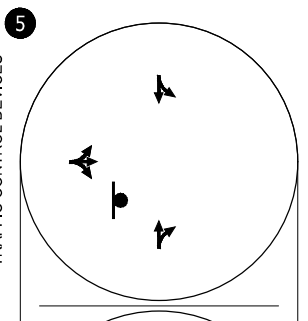
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



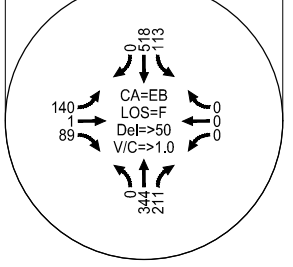

MAIN STREET/ I-84 EB RAMP TERMINAL

5

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



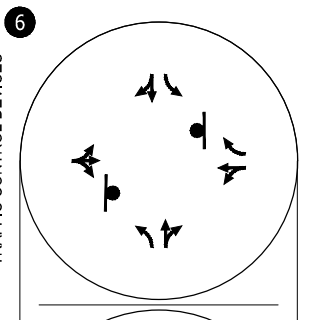
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



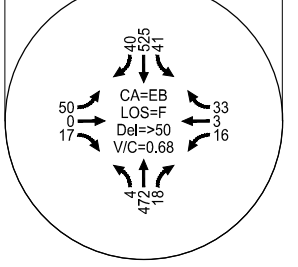

MAIN STREET/ FRONT STREET SE

6

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



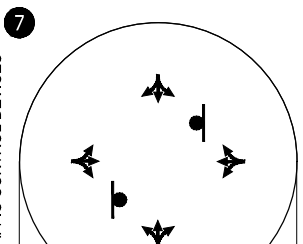
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



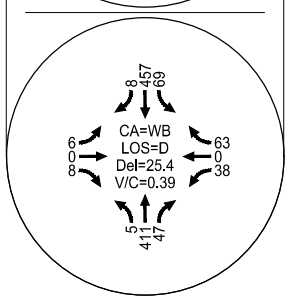

MAIN STREET/ OREGON TRAIL BOULEVARD

7

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



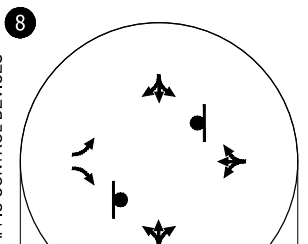
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



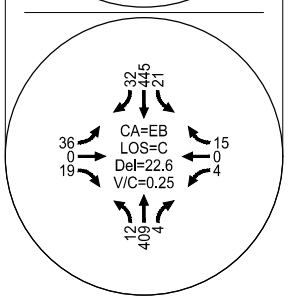

MAIN STREET/ CITY CENTER DRIVE

8

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



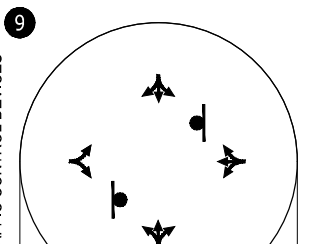
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



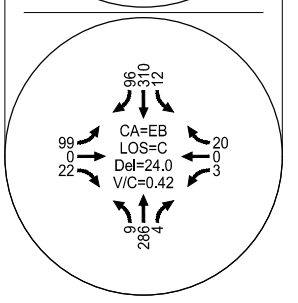

MAIN STREET/ KINKADE ROAD

9

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



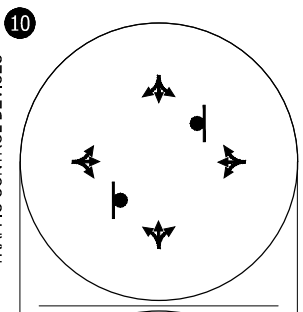
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



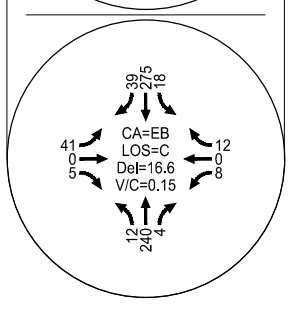

MAIN STREET/ WILLOW FORK DRIVE

10

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



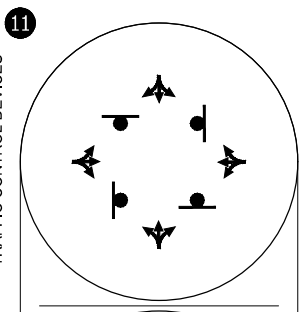
2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR



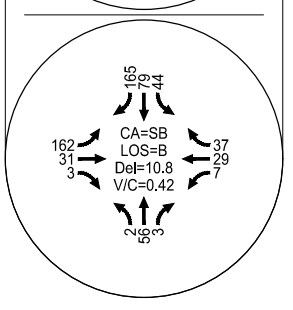

MAIN STREET/ WILLOW LANE

11

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES



2040 NO-BUILD TRAFFIC CONDITIONS WEEKDAY PM PEAK HOUR




##- Study Intersections

## 2042 No-Build Future Traffic Conditions
## Weekday PM Peak Hour
## City of Boardman, Oregon

Figure
2



KITTELSON & ASSOCIATES

# INTERCHANGE CONCEPT REDEVELOPMENT & EVALUATION

This section of the report documents the development and evaluation of new interchange and access configuration concepts for Boardman's Main Street corridor.

## Initial Interchange Concept Development

The initial interchange improvement concepts considered in this section were developed by the project team to address the existing and forecast capacity, operations, safety, and access management conditions within the study area. In particular, concepts were developed that focus on addressing the following issues:

- Mitigating the forecast LOS constraints at the critical Boardman Avenue approaches to the N Main Street intersection.
- Improving the turning movement conflicts between the closely spaced north and south Front Street intersections with the I-84 Ramp Terminal intersections.
- Mitigating the forecast over capacity conditions at the N Main Street/I-84 Westbound Ramp Terminal and S Main Street/I-84 Eastbound Ramp Terminal intersections without widening the I-84/Main Street overpass.

### *N Main Street/Boardman Avenue Intersection Improvements*

The 2009 IAMP did not specifically identify future improvements at the N Main Street/Boardman Avenue intersection. However, as documented in the existing conditions section of this report, the intersection has an RRFB crossing, that under certain circumstances, can lead to long vehicle queues along the corridor that can extend back to the I-84 WB ramp terminal and interrupt traffic flow from the offramp. In addition to the RRFB-related queuing issues, the westbound Boardman Avenue approach is forecast to operate at LOS E conditions during the weekday PM peak hour. Based on these findings, improvement scenarios were investigated that would better accommodate the pedestrian crossings and address the forecast operational deficiencies.

#### *Traffic Control Options*

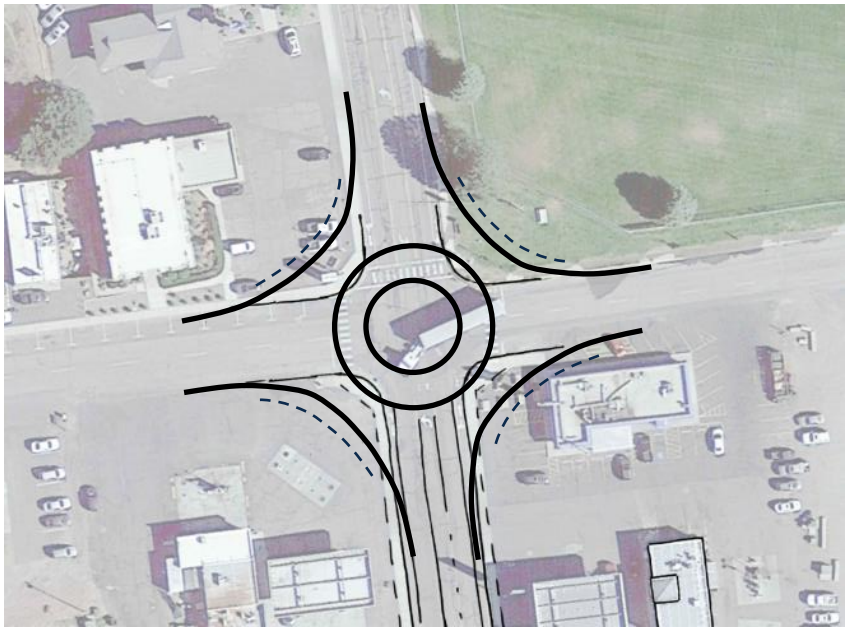
Given the forecast operations and the likely increased volume impacts that could be generated in the near-term by other projects currently in the 2009 IAMP (restrictions of N Front Street to right-in/right-out movements and a raised median along the N Main Street corridor), the need for traffic control improvements was investigated at a planning level.

**Roundabout**

From an operations perspective and considering it is less than 500 feet north of the I-84 WB ramp terminal, a single lane roundabout would be an appropriate treatment at the N Main Street/Boardman Avenue intersection. However, given the interchange is expected to continue to serve freeway oriented freight traffic, any roundabout treatment would need to be large enough to accommodate the circulation needs of large trucks and trailers. A conceptual sizing footprint of a roundabout large enough to

accommodate WB-67 trucks is shown in Exhibit 3. As shown, there would be significant private property impacts and right-of-way acquisition needs in the northwest, southwest, and southeast quadrants. Based on these impacts, it was determined that a roundabout is not a reasonably viable near or long-term traffic control option.

**Exhibit 3 – N Main Street/Boardman Avenue Conceptual Roundabout Footprint**



### Signalization

Given the existing north, south, east, and west approaches all have adequate width to support separate left-turn and shared through/right movements, a traffic signal was investigated. A planning-level signal warrant analysis was conducted at the intersection in accordance with the procedures outlined in ODOT's preliminary traffic signal warrant analysis. From this analysis, it was found that the intersection would meet this preliminary signal warrant which focuses on high volumes on the intersecting minor street with high volumes on the major street. While meeting this preliminary signal warrant is not an outright indicator that signalization should be implemented, it does suggest there is sufficient projected demand to meet a basic volume-based criteria. In addition, a traffic signal could replace the existing RRFB with a standard signal-integrated pedestrian crossing phase. The pedestrian crossing phase would eliminate repeated back-to-back activations and minimize instances of vehicle queue spillback along the N Main Street corridor. For these reasons, signalization was found to be a reasonably viable and implementable near- or long-term traffic control treatment at the N Main Street/Boardman Avenue intersection. A more detailed operations analysis of a figure signalization scenario is presented later in this report.

## Initial Interchange Concept Evaluation

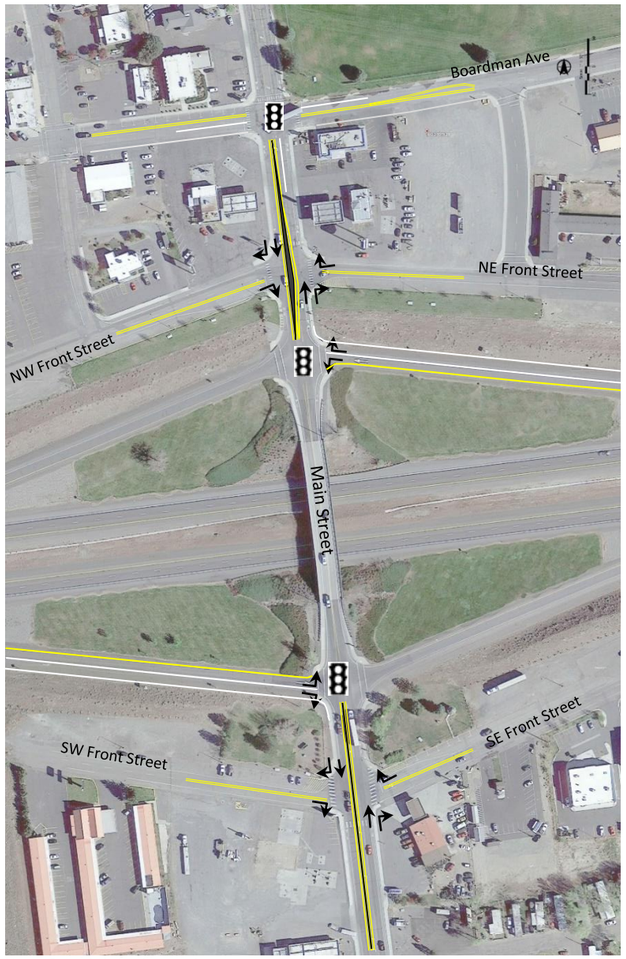
In response to these issues, two interchange improvement concepts were developed as documented in the following tables. Each table contains the following planning-level evaluation:

- A graphical illustration that conveys the basic components of the concept overlaid on an aerial photograph.
- A short narrative summarizing the main infrastructure components of the concept.
- A planning-level evaluation using the operations/land use/access spacing/cost/constructability evaluation criteria from the original IAMP.

The respective 2042 intersection operations associated with each concept are shown in Figures 3 and 4 which follow each evaluation table. *Appendices F and G contains the traffic conditions worksheets.*

**Table 5 – Circulation Alternative #1 Summary and Evaluation**

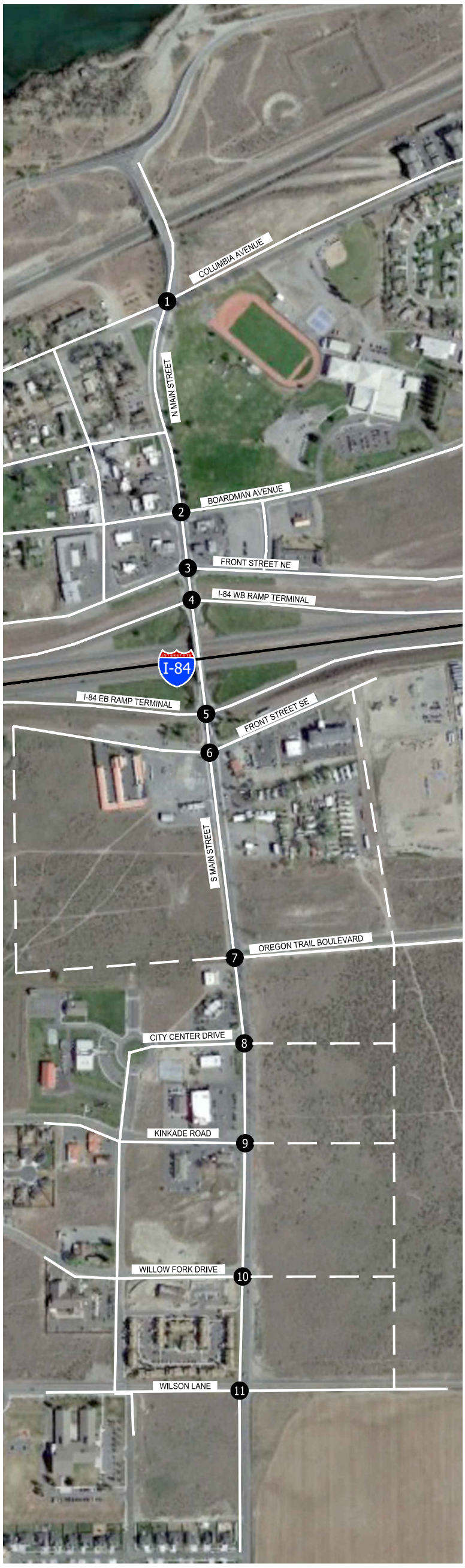
| Circulation Alternative #1 | Evaluation Information | | | | Evaluation Results | |
|---|---|---|---|---|---|---|
| **Concept Description and Illustration** | **Category** | **Evaluation Criteria** | **Scoring Key** | | **Score** | **Comments** |
| Circulation Alternative #1 signalizes the two I-84 EB and WB ramp terminals (when warranted) and converts the N Main Street/NE Front Street and S Main Street/SE Front Street intersections to limited access right-in/right-out through a median on Main Street. To accommodate anticipated re-routing of traffic volumes, the N Main Street/Boardman Avenue intersection would be signalized (when warranted) along with widening of the eastbound and westbound Boardman Avenue approaches. Given the complexity and cost, no widening is assumed on the Main Street overpass of I-84. The rationale for this alternative is to develop an attainable (primarily from a cost perspective) corridor improvement that better manages the close spacing of the two Front Street intersections and incorporates long-term intersection traffic control at the adjacent interchange and supporting intersections. | Transportation | Addresses the identified operational deficiencies at the Front Street, WB ramp terminal, and EB ramp terminals | +1 | Fully addresses the identified operation, capacity, and queuing concerns | **-1** | **While the signalization of the WB I-84 ramp terminal intersection would improve intersection operations (see the following Figure 3), the I-84 EB ramp terminal would operate over capacity. In addition, the lack of a NB/SB Main Street left-turn lane at both the EB and WB ramp terminals will create long vehicle queues on Main Street and limit the operational efficiency of the intersections and the Main Street corridor.** |
| | | | 0 | Only partially addresses the identified operations, capacity, and queuing concerns | | |
| | | | -1 | Does not fundamentally address the major operations, capacity, and queueing concerns | | |
| | | Improves walking and biking along Main Street | +1 | Improves walking and biking to existing and future destinations along Main Street | **+1** | **Pedestrian and bicycle movements along Main Street will improve with fewer turning movement interactions at the two Front Street intersections and signalized crossings at Boardman Avenue and the two I-84 ramp terminal volume intersections.** |
| | | | 0 | Does not improve walking or biking to existing or future destination along Main Street relative to existing conditions. | | |
| | Land Use/ Economic Development | Minimizes right-of-way impacts | +1 | Alternative provides for long-term growth in the study area with minimal ROW and/or circulation impacts | **0** | **Likely to be no right-of-way impacts. However, a median along N Main Street will have access impacts to adjacent retail establishments along Main Street and Front Street.** |
| | | | 0 | Alternative provides for long-term growth but has some ROW and/or circulation impacts | | |
| | Access Spacing | Moves in the direction of ODOT access spacing requirements | +1 | Improves or moves in the direction meeting of ODOT's access spacing guidelines | **+1** | **While the alternative does not close the two Front Street intersections, the limited access right-in/right-out configuration will minimize turning movements near the two ramp terminals and improve the safety and operations along the Main Street corridor.** |
| | | | 0 | Does not meet, improve, or move in the direction of meeting ODOT's access spacing guidelines relative to existing conditions. | | |
| | Cost | Cost relative to other concepts | +1 | Low construction costs | **0** | **This concept has a planning level cost estimate of approximately $2.5M.** |
| | | | 0 | Moderate construction costs | | |
| | | | -1 | Substantial construction costs | | |
| | Implementation | Constructability | +1 | Project can be constructed with relative ease and/or can maintain existing traffic during construction. | **+1** | **Minimal implementation issues.** |
| | | | 0 | Construction of improvements will be a physical challenge and/or will require major detours during construction. | | |
| | | | | | **+2** | **Total Score** |

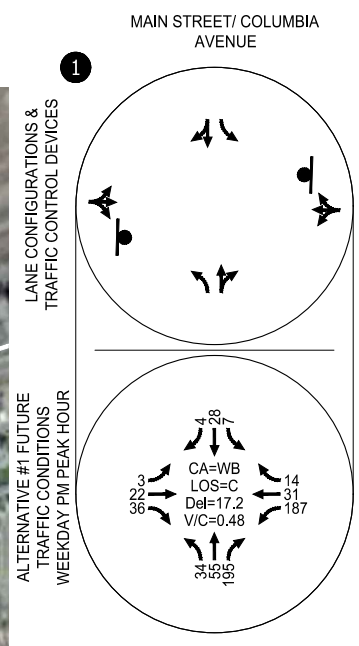


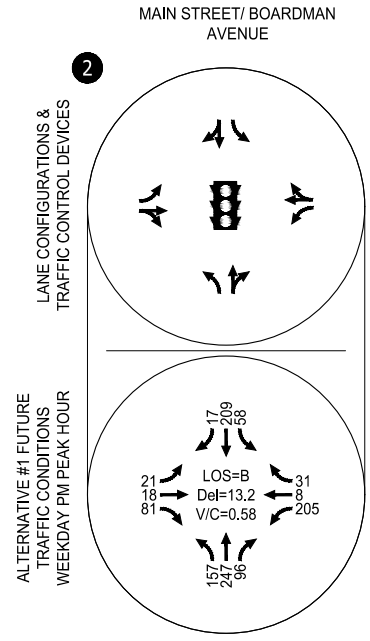

Note: Graphic is for illustrative purposes only.

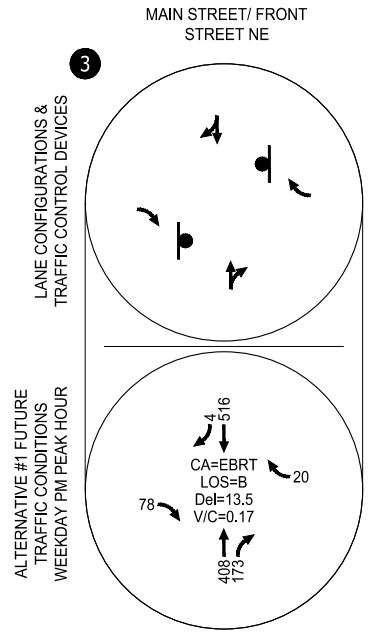
**Miscellaneous Evaluation Comments**

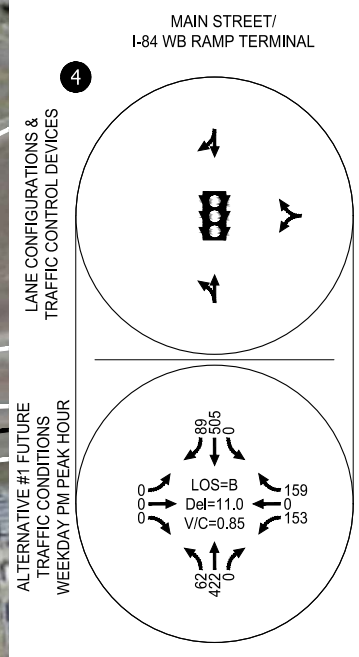
- While signalization of the I-84 WB and EB ramp terminals is possible, it is unlikely that such a mitigation measure would be considered without an affiliated widening of the Main Street overpass structure that would accommodate separate northbound and southbound left-turn lanes.
- Signalization of the I-84 WB and EB ramp terminals would not preclude the ability to accommodate oversized freight loads. ODOT has noted that oversized height-related loads have needed to utilize the off- and on-ramps due to clearance issues with the Main Street overpass over I-84.

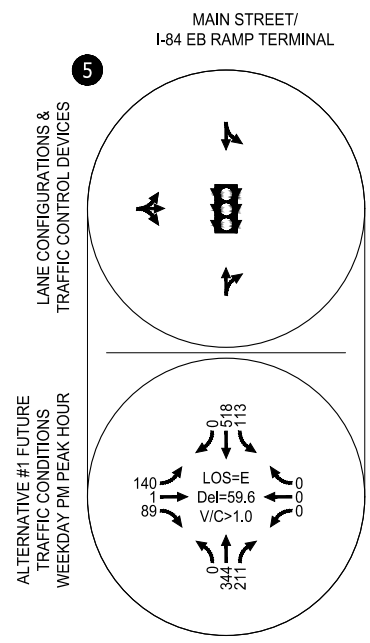


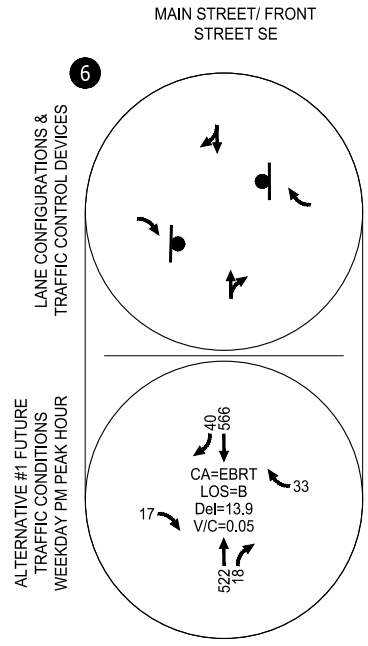



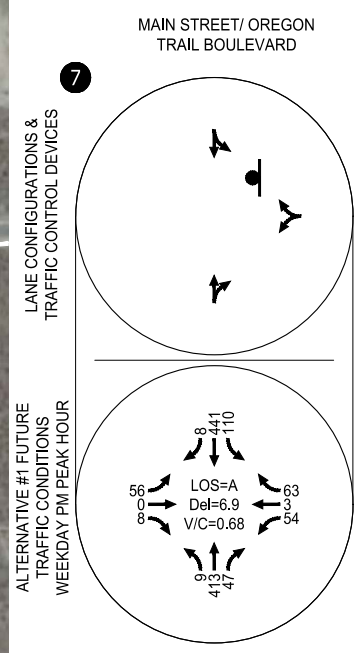



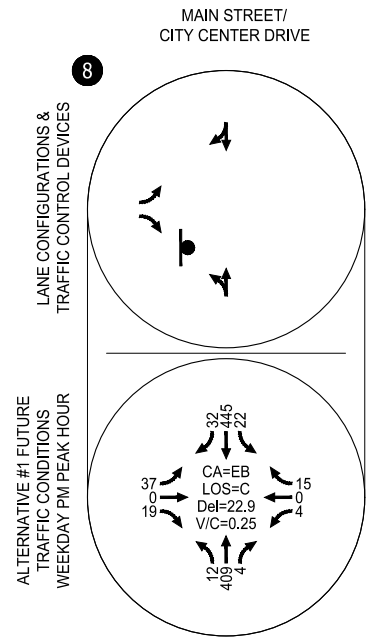



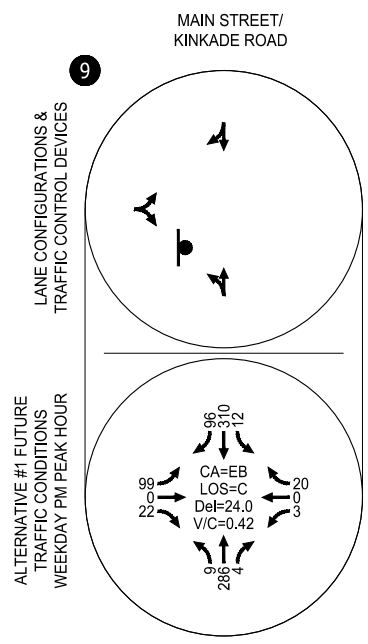



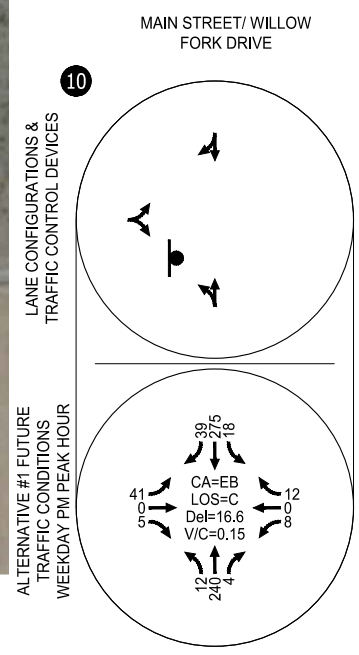



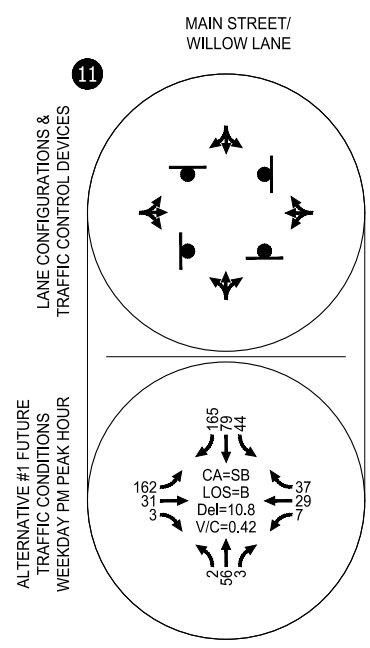



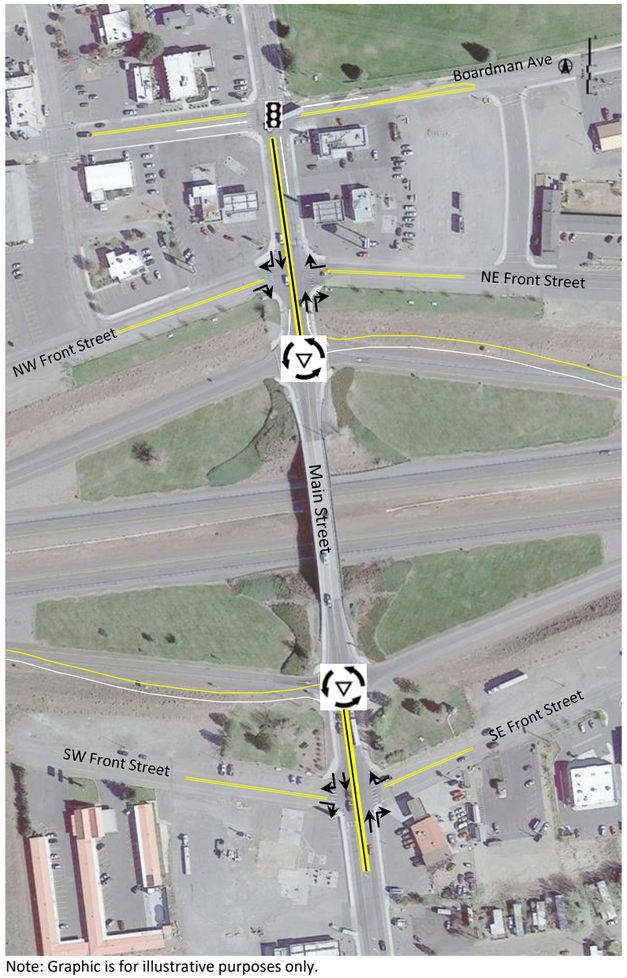

##- Study Intersections

Circulation Alternative #1, Future Traffic Conditions
Weekday PM Peak Hour
City of Boardman, Oregon

Figure 3

**Table 6 – Circulation Alternative #2 Summary and Evaluation**

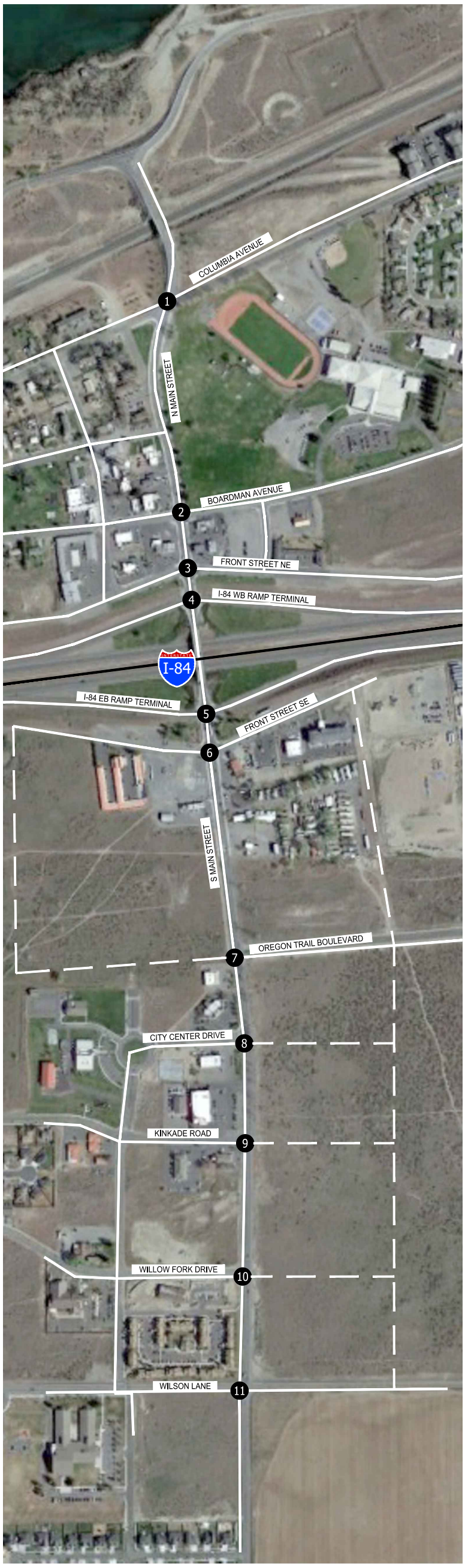
| Circulation Alternative #2 | Evaluation Information | | | | Evaluation Results | |
|---|---|---|---|---|---|---|
| **Concept Description and Illustration** | **Category** | **Evaluation Criteria** | **Scoring Key** | | **Score** | **Comments** |
| Circulation Alternative #2 includes single lane roundabouts at the two I-84 EB and WB ramp terminals and converts the N Main Street/NE Front Street and S Main Street/SE Front Street intersections to limited access right-in/right-out through medians on Main Street. To accommodate anticipated re-routing of traffic volumes, the N Main Street/Boardman Avenue intersection would be signalized (when warranted). The rationale for this alternative is to better manage the close spacing of the two Front Street intersections and address the long-term operations at the I-84 ramp terminals without a widening of Main Street over I-84. | Transportation | Addresses the identified operational deficiencies at the Front Street, WB ramp terminal, and EB ramp terminals | +1 | Fully addresses the identified operation, capacity, and queuing concerns | **+1** | **Roundabouts at the I-84 ramp terminals will provide improved long-term capacity (see the following Figure 4) and address northbound and southbound left-turn movement without a widening of the Main Street overpass. The limited access restrictions at the two Front Street intersections will improve operations along the Main Street corridor.** |
| | | | 0 | Only partially addresses the identified operations, capacity, and queuing concerns | | |
| | | | -1 | Does not fundamentally address the major operations, capacity, and queueing concerns | | |
| | | Improves walking and biking along Main Street | +1 | Improves walking and biking to existing and future destinations along Main Street | **+1** | **Pedestrian and bicycle movements along Main Street will improve with fewer turning movement interactions at the two Front Street intersections a signalized crossings at Boardman Avenue, and pedestrian crossing accommodations at the I-84 ramp terminal roundabouts.** |
| | | | 0 | Does not improve walking or biking to existing or future destination along Main Street relative to existing conditions. | | |
| | Land Use/ Economic Development | Minimizes right-of-way impacts | +1 | Alternative provides for long-term growth in the study area with minimal ROW and/or circulation impacts | **0** | **Likely to be no right-of-way impacts to private properties as the roundabouts can likely be constructed within existing ODOT right-of-way. However, a median along N Main Street will have access impacts to adjacent retail establishments along Main Street and Front Street.** |
| | | | 0 | Alternative precludes long-term growth or has significant ROW and/or circulation impacts | | |
| | Access Spacing | Moves in the direction of ODOT access spacing requirements | +1 | Improves or moves in the direction meeting of ODOT's access spacing guidelines | **+1** | **While the alternative does not close the two Front Street intersections, the limited access right-in/right-out configuration will minimize turning movements near the two ramp terminals and improve the safety and operations along the Main Street corridor.** |
| | | | 0 | Does not meet, improve, or move in the direction of meeting ODOT's access spacing guidelines relative to existing conditions. | | |
| | Cost | Cost relative to other concepts | +1 | Low construction costs | **-1** | **This concept has a planning level cost estimate of approximately $10M.** |
| | | | 0 | Moderate construction costs | | |
| | | | -1 | Substantial construction costs | | |
| | Implementation | Constructability | +1 | Project can be constructed with relative ease and/or can maintain existing traffic during construction. | **0** | **Construction of the roundabouts is likely to require some detours and/or temporary lanes to maintain traffic flow.** |
| | | | 0 | Construction of improvements will be a physical challenge and/or will require detours during construction. | | |
| | | | | | **+2** | **Total Score** |



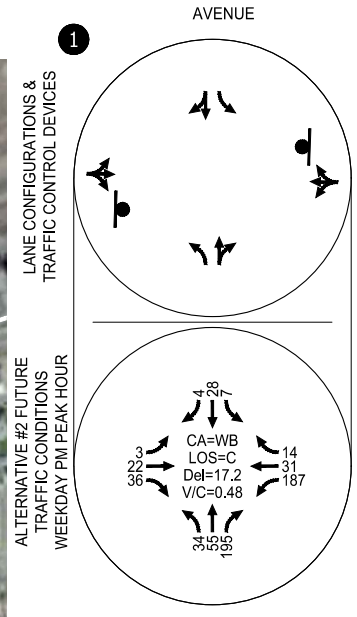

Note: Graphic is for illustrative purposes only.

**Miscellaneous Evaluation Comments**

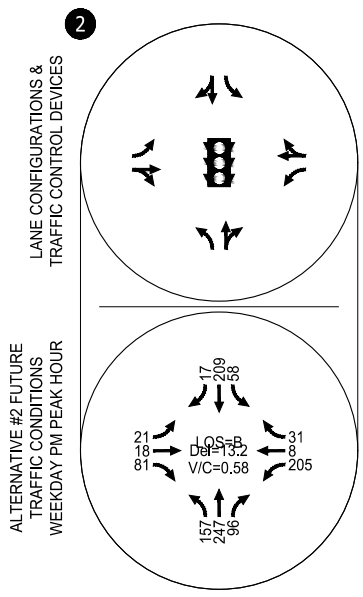
- The accommodation of roundabouts at the I-84 EB and WB ramp terminals will require realignment of the respective offramps. Additional design efforts would need to explore the ramifications of accommodating the offramp realignments considering the sloped embankments at the interchange.
- Additional design efforts would need to explore the size of the roundabouts and their ability to accommodate oversized freight movements.



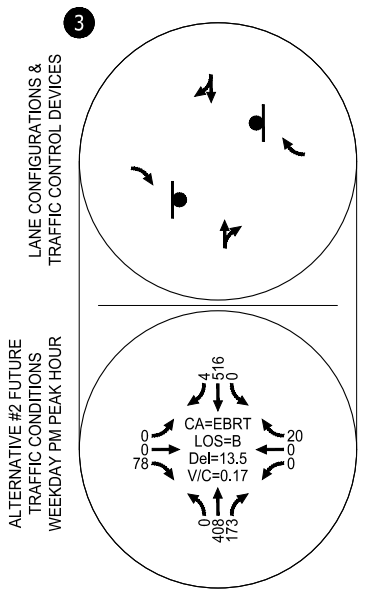

MAIN STREET/ COLUMBIA AVENUE



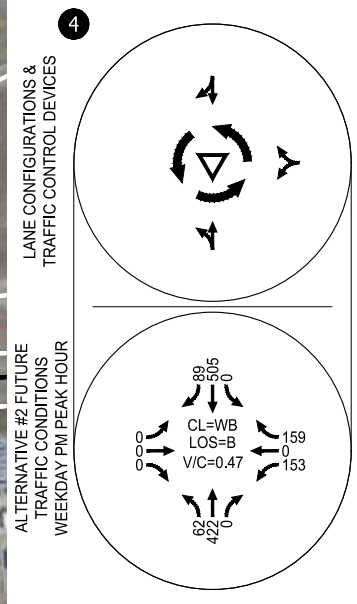

MAIN STREET/ BOARDMAN AVENUE



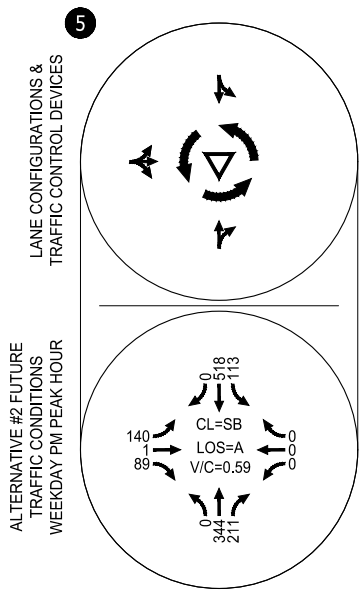

MAIN STREET/ FRONT STREET NE



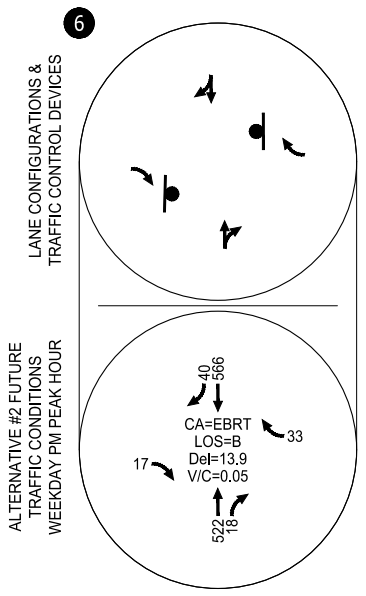

MAIN STREET/ I-84 WB RAMP TERMINAL



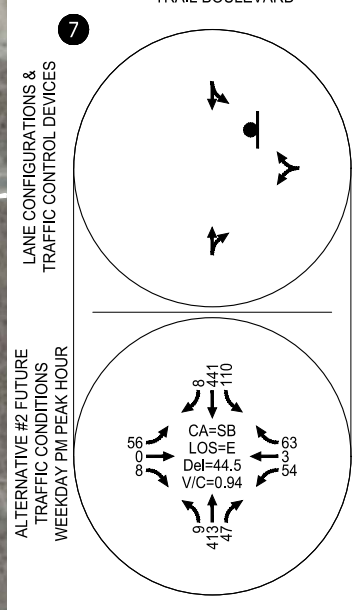

MAIN STREET/ I-84 EB RAMP TERMINAL



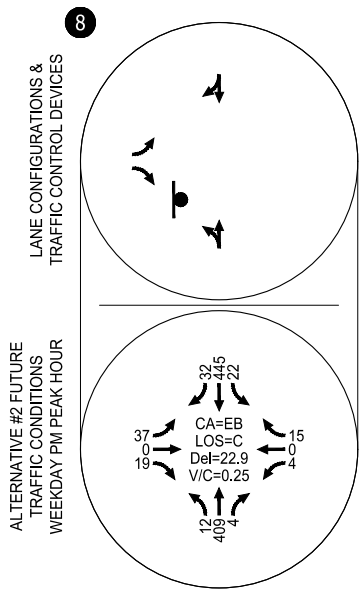

MAIN STREET/ FRONT STREET SE



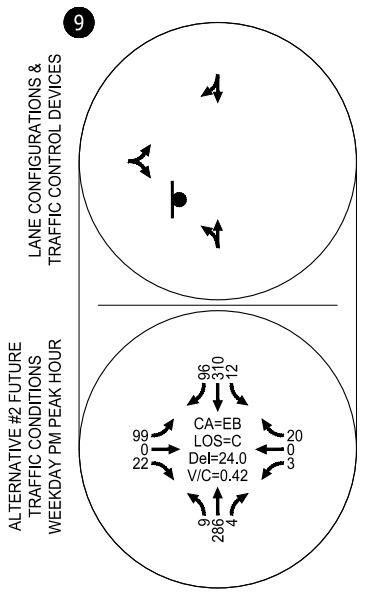

MAIN STREET/ OREGON TRAIL BOULEVARD



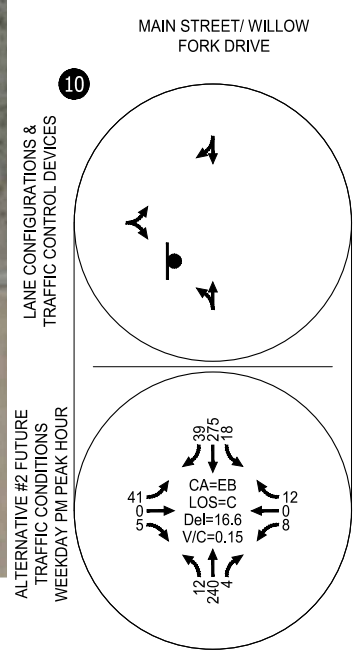

MAIN STREET/ CITY CENTER DRIVE



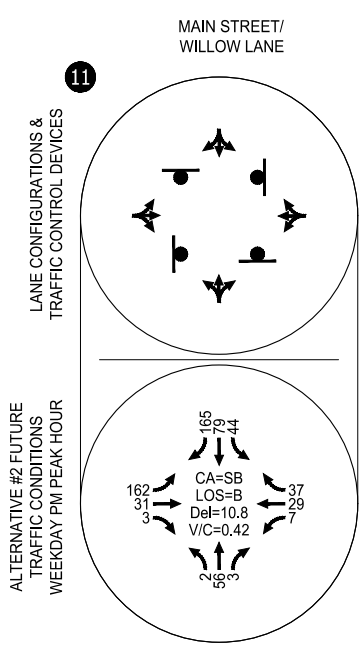

MAIN STREET/ KINKADE ROAD




MAIN STREET/ WILLOW FORK DRIVE




MAIN STREET/ WILLOW LANE




##- Study Intersections

Circulation Alternative #2 Future Traffic Conditions
Weekday PM Peak Hour
City of Boardman, Oregon

Figure
4

## Preferred Circulation Alternative Evaluation

As documented in the previous section, Circulation Alternative #1 and #2 both meet many of the important multimodal circulation and access spacing evaluation criteria. However, when reviewing the detailed intersection operations of Circulation Alternative #1 at the I-84 ramp terminals, the lack of a NB/SB left-turn lane (which can only be achieved with a widening or complete rebuild of the Main Street I-84 overpass structure) will significantly limit the long-term capacity and operational efficiency of the ramp terminal intersections as well as the Main Street corridor. For this reason, Circulation Alternative #1 was determined to not fundamentally address the long-term needs of the Main Street corridor. Despite the higher cost and constructability challenges of the roundabout treatments, Circulation Alternative #2 was further evaluated from a geometric, access management, and freight accommodations perspective.

### *Refined Geometric Layouts*

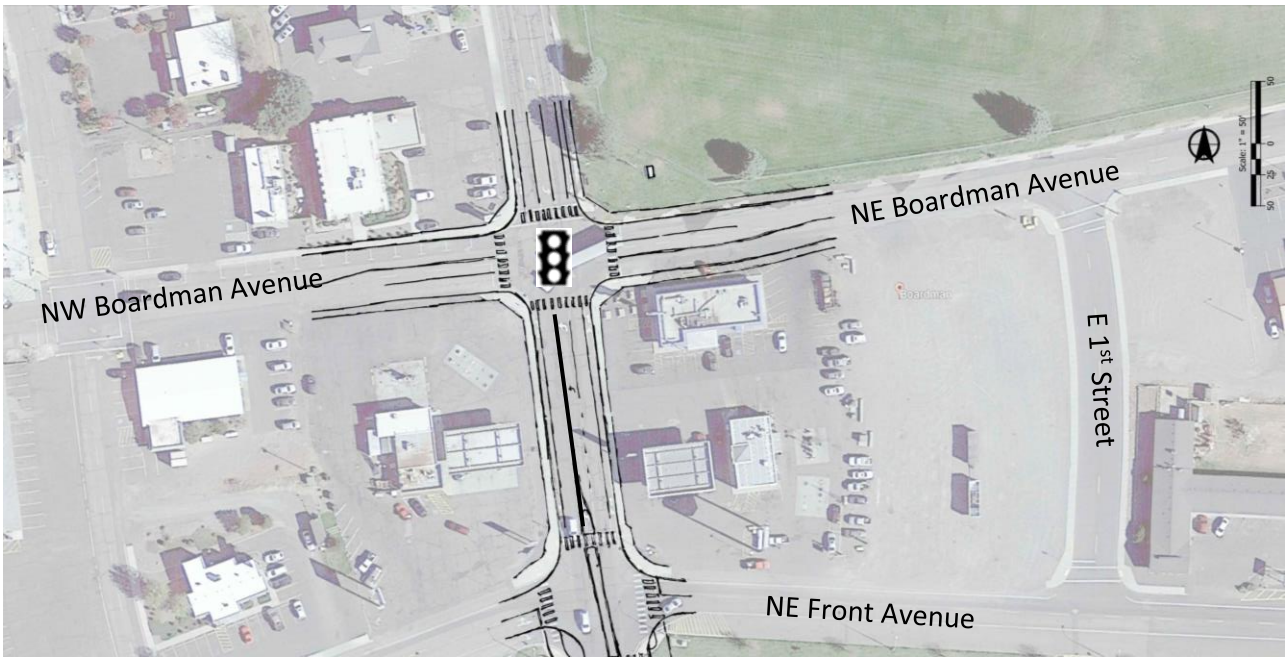
Refined geometric layouts of various components of Circulation Alternative #2 were prepared taking into consideration known right-of-way constraints, forecast traffic demands, the vehicle/truck types associated with the I-84 Main Street interchange, and multimodal considerations. The refined components of Circulation Alternative #2 are summarized and illustrated in the following sections of this report.

#### *Main Street/Boardman Avenue*

Figure 5 illustrates a refined layout of the Main Street/Boardman Avenue intersection as a widened signalized intersection. Specific improvements associated with this project would include:

- Installation of a traffic signal and the removal of the existing rectangular rapid flashing beacon (RRFB) on the north leg of the intersection.
- Widening of NE Boardman Avenue to accommodate a three-lane section. This widening would include removal of the head-in parking along the north side of the C&D Drive-in.
- Reallocation of the NW Boardman Avenue travel lanes to accommodate a three-lane section. This would include the partial removal of the on-street parking along the north curb line between Main Street and W 1st Street.
- Installation of a raised median on Main Street from the Boardman Avenue intersection to terminate near the I-84 WB Ramp Terminal intersection. The raised median would modify Front Avenue and all commercial driveways in this section to right-in/right-out movements.

**Figure 5 – Refined Sketch Level Layout of Main Street/Boardman Avenue (for illustrative purposes only)**




### Signalized Queuing Conditions

As noted in either Figure 3 or Figure 4, future signalization of the Main Street/Boardman Avenue intersection under a simple permissive phasing configuration will allow the intersection to operate at LOS B conditions with a V/C ratio of 0.58 during the weekday PM peak hour. This phasing set up will also result in 95$^{th}$ percentile queues that can be accommodated within the defined lane storage areas as summarized in *Appendix F or G*.

### *I-84/EB & WB Ramp Terminals*

Figure 6 illustrates three potential configurations for roundabout treatments at the I-84 EB and WB ramp terminal intersections. It is noted that the refined layout configurations were prepared at a scaled proof-of-concept level. While still a sketch, the following characteristics were included in each layout:

- Maximizing the spacing between the roundabouts and the Main Street overpass structure while also still maintaining spacing and viable geometrics at the north and south Front Street intersections. It is recognized that further refinement of the design would be needed to identify potential impacts to the overpass structure.
- Inscribed circle diameter of 140 feet which is typically the minimum size needed to support the turning movement requirements for a WB-67 truck. The wheel paths for this design vehicle are also shown in Figure 5.
- Pedestrian and bicycle accommodations.

A high-level assessment of each roundabout concept is outlined below.

#### Traditional Single Lane Roundabout

This configuration includes a traditional single-lane roundabout that would incorporate right-in/right-out access to Front Street.

- With access restrictions to Front Street, the design would accommodate all circulation movements, providing an efficient u-turn maneuver for specific movements exiting both north and south Front Street.
- At a sketch level layout, the design would need additional refinement to determine the ability to not impact the I-84 overpass structure.

#### Tear-Drop Single Lane Roundabout

This configuration is like the traditional shaped roundabout but includes a tear-drop shaped circulating island that would restrict full internal circulating movements.

- Tear-drop shape circulating island would eliminate the u-turn movement demand that would be generated by the access restrictions to north and south Front Street. This would be particularly problematic for S Front Street where there is a near-term parallel local street network.
- At a sketch level layout, the design would not result in a smaller roundabout or provide the ability to locate the roundabouts further away from the I-84 overpass bridge structure.

#### 5-Legged Single-Lane Roundabout

This single-lane roundabout configuration incorporates Front Street movements resulting in a 5-legged design.

- As shown, incorporating Front Street into the roundabout design would necessitate a much larger oval shaped roundabout footprint.

- The incorporation of Front Street movements into the roundabout is inconsistent with Oregon and Federal Highway Administration (FHWA) local access and hierarchy practices involving direct local street access at an interchange ramp terminal.
- There are likely more constructability challenges associated with the larger footprint.

Following the three roundabout concept sketches shown in Figure 6, Figures 7 and 8 provide a detailed image of the traditional single lane roundabout with the signalized configuration of the Main Street/Boardman Avenue intersection.

**Figure 6 – Refined Sketch Level Layout of the I-84 EB and WB Ramp Terminals (for illustrative purposes only)**

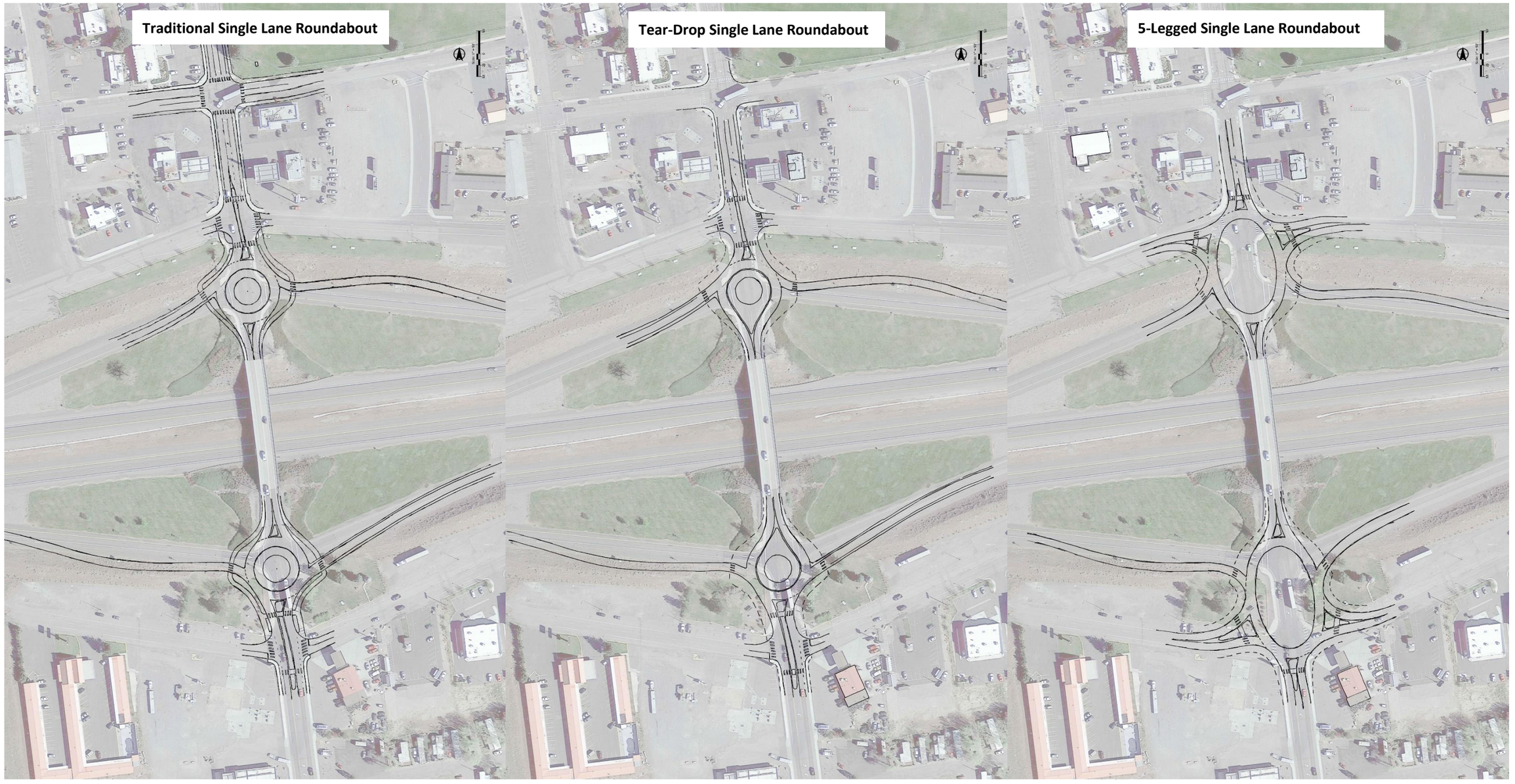


**Figure 7 – Refined Circulation Alternative #2 Sketch-Level Layout (for illustrative purposes only)**

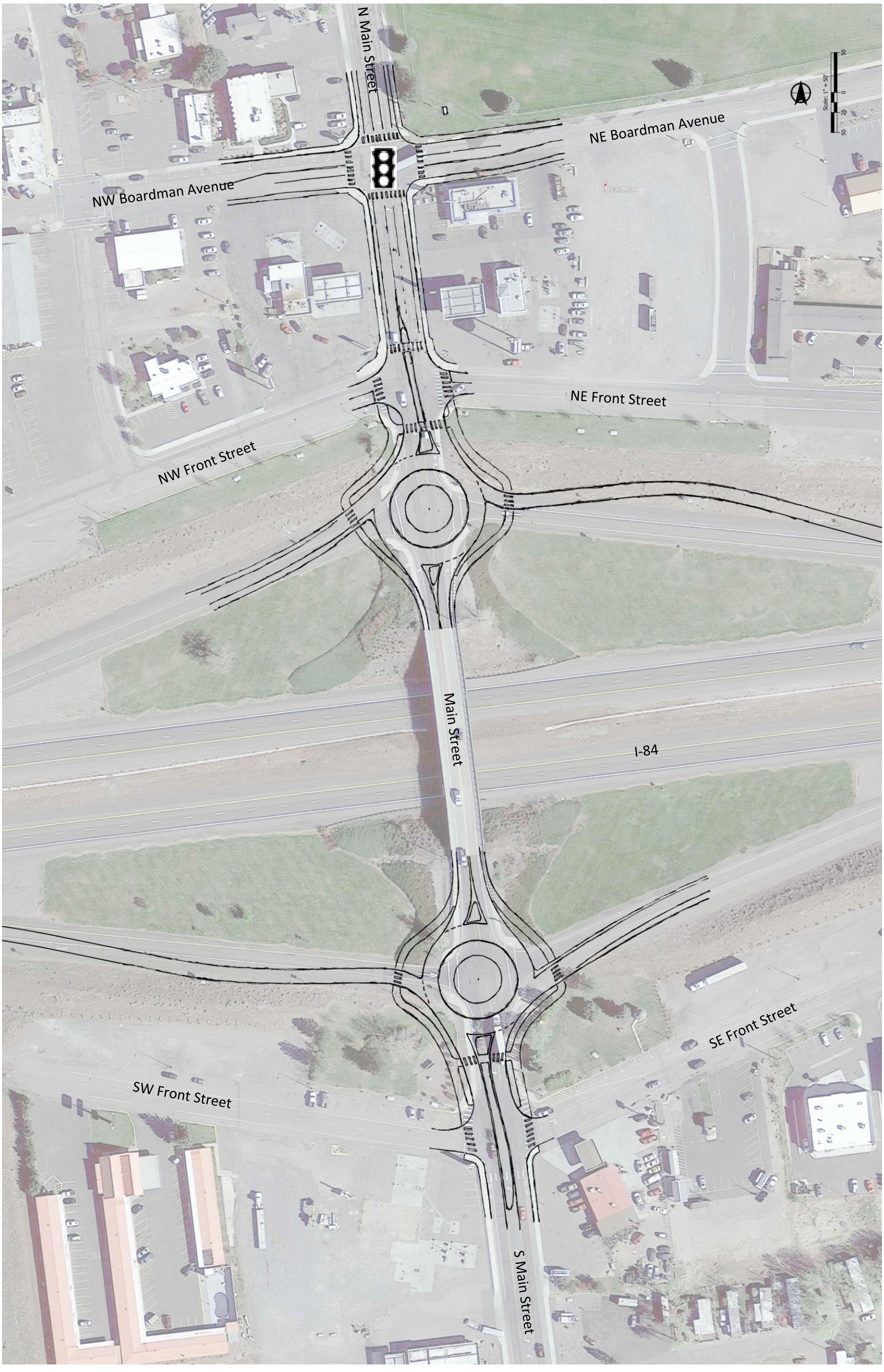
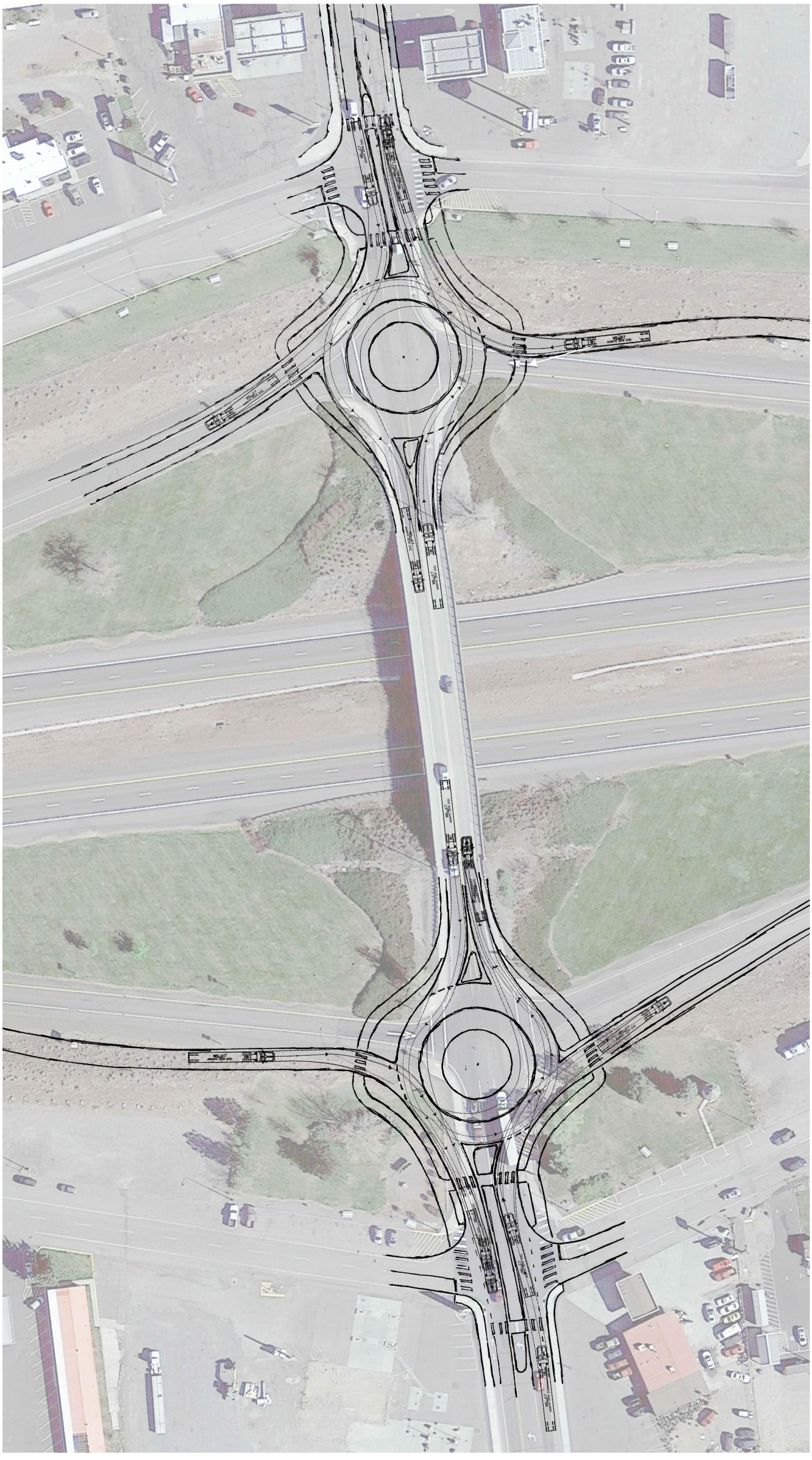


**Figure 8 – Refined Circulation Alternative #2 Sketch-Level Layout (with WB-67 Truck Turning Template)**



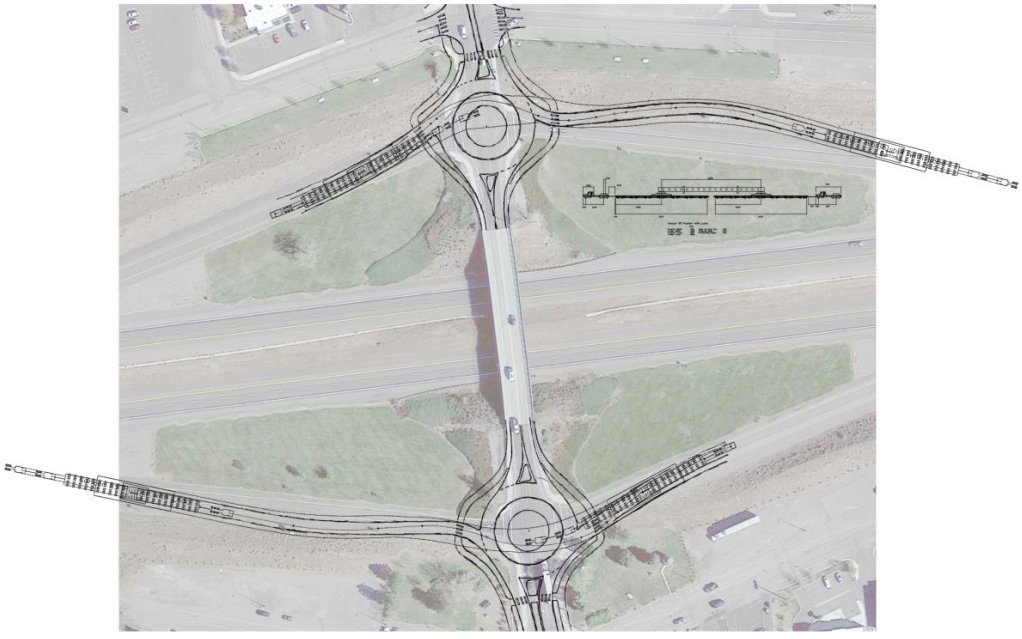
### *Truck Turning Evaluation*

Recognizing that roundabouts have traditionally been a source of concern from truck drivers and businesses that operate large fleets of trucks (such as many of the businesses in the POM), a truck turning analysis was performed using the preliminary roundabout sketch shown in Figure 7. Based on discussions with City and ODOT officials, a WB-67 truck is the most common large vehicle that frequents businesses served by the Main Street corridor. Using this design vehicle, turning movement paths were added to the sketch layout using AutoTurn software as illustrated in Figure 8. As shown, this large design vehicle can reasonably maneuver through the roundabout. It should be noted that since this is just an illustrative sketch, some of the approaching roadway layouts would likely need to be adjusted to better meet some of the tighter turning movements. This can be accomplished in a future design phase.

From an oversized load perspective, planning projects typically include an assessment of oversized loads, particularly when they involve major interchange terminals. Based on feedback from ODOT, the OXBO_MEGA transport vehicle is the largest truck that has frequented this segment of I-84 in recent years.

To conceptually illustrate the circulation challenges associated with this design vehicle, a custom trailer was created in AutoTurn and applied to the sketch interchange layout shown in Figure 9. As shown, special care would need to be taken in future design stages to ensure a vehicle trailer and load of this magnitude could be accommodated through one of the roundabout treatments.

**Figure 9 – Overside Load Accommodation**



Although the turn exhibits illustrate special care would need to undertaken in a future design phase, it should be noted that Port of Morrow officials have established routes in place for all high, wide, and heavy loads that are generated through the port terminals. Exhibit 6 illustrates how the POM has historically and plans to continue to handle loads of this magnitude. As shown, all oversized loads could be oriented to the US 730 access via Lewis and Clark Drive depending upon the load and terminal. These routes do not rely upon the I-84/Main Street interchange due to internal bridge load constraints on multiple roadway facilities within POM.

**Exhibit 4 – High Wide and Heavy Travel Path Options for the Port of Morrow (Source: POM)**

## COORDINATION WITH 2009 IAMP

The 2009 IAMP remains a key planning document for addressing long-term transportation infrastructure improvements along the Main Street corridor. Through this reevaluation process, three changes are recommended:

- The N Main Street/Boardman Avenue intersection:
  - Signalize the intersection when warranted. Warrants will most likely be met if/when the N Main Street/N Front Street intersection is restricted to right-in/right-out movements (see N Main Street/I-84 Westbound Ramp Terminal improvements below) or from new development along the Boardman Avenue corridor.
  - Widen the east and west Boardman Avenue approaches to include separate left-turn and shared through/right-turn lanes. This widening will require coordination with adjacent properties to remove some head-in parking and modify the location of access driveways. There is also a strip of on-street parking along the north side of NW Boardman Avenue that will have to be removed.
- N Main Street/I-84 Westbound Ramp Terminal intersection:
  - Modify the long-term mitigation plan to include the potential for a single-lane roundabout at the intersection.
  - Modify the westbound offramp to meet the approach deflection angles needed with a roundabout.
  - Modify the N Main Street/N Front Street intersection to right-in/right-out access through the construction of a raised median. This median would need to be modified if/when a roundabout is installed at the I-84 westbound ramp terminal intersection.
- S Main Street/I-84 Eastbound Ramp Terminal intersection:
  - Construct a single-lane roundabout at the intersection.
  - Modify the eastbound offramp to better meet the unique geometric configuration of the roundabout.
  - Modify the S Main Street/S Front Street intersection to right-in/right-out access to meet the unique geometric configuration of the adjacent roundabout. This median would need to be modified if/when a roundabout is installed at the I-84 westbound ramp terminal intersection.

All other previously identified Local Connectivity Plan and multi-modal improvements in the 2009 IAMP are still valid. A complete list of combined projects is summarized in Table 7 below.

## Table 7 – Main Street Transportation Improvement Plan

| Project | Near/Medium-Term Improvement | Trigger(s) for Improvement | Planning Level Cost | Potential Funding Source |
|---|---|---|---|---|
| Local Circulation Improvements<br>1. Construct north-south collector street connecting SE Front Street to Oregon Trail Boulevard.<br>2. Construct westerly extension of Oregon Trail Boulevard (collector street) from S Main Street to Faler Road SW.<br>3. Construct north-south collector street connecting SW Front Street to the Oregon Trail Boulevard extension.<br>4. Construct north-south collector street connecting Oregon Trail Boulevard to Wilson Lane SE. Such a connection would also include east-west connections back to S Main Street at Kinkade Road and Willow Fork Drive. | | New private development | | - PDF |
| Widen S Main Street to full Arterial standards from just north of Oregon Trail Boulevard to Wilson Lane | | - Private development frontage improvements.<br>- When funding becomes available | $5M | - City funds<br>- PDF |
| Medium range actions from access management plan | | - Increase in crashes<br>- Recurring public complaint<br>- Property (re)development | N/A | - PDF |
| **Project** | **Long-Term Improvement** | **Trigger(s) for Improvement** | **Planning Level Cost** | **Potential Funding Source** |
| Signalize the N Main Street/Boardman Avenue intersection and widen the Boardman Avenue approaches to include separate left-turn and shared through/right-turn lanes. | | - LOS drops below standards, and<br>- When the intersection meets traffic signal warrants. | $750k | - City funds<br>- PDF |
| Construct a single lane roundabout at the N Main Street/I-84 Westbound Ramp Terminal | | - Increase in crashes<br>- V/C ratio drops below mobility target<br>- Vehicle queues on offramp regularly back up to I-84 mainline | $5M | - STIP |
| Construct a single lane roundabout at the S Main Street/I-84 Eastbound Ramp Terminal | | - Increase in crashes<br>- V/C ratio drops below mobility target<br>- Vehicle queues on offramp regularly back up to I-84 mainline | $5M | - STIP |
| Convert the N Front Street and S Front Street intersections at Main Street to right-in/right-out configurations through temporary median treatments or as part of the long-term roundabout treatments at the I-84 Ramp Terminal Intersections. | | - Increase in crashes<br>- Construction of I-84 Ramp Terminal Roundabouts | $50-$100k | - City funds<br>- PDF |
| Long range actions from access management plan | | - Increase in crashes<br>- Recurring public complaint<br>- Property (re)development | N/A | - PDF |

# Appendix A Traffic Count Worksheets

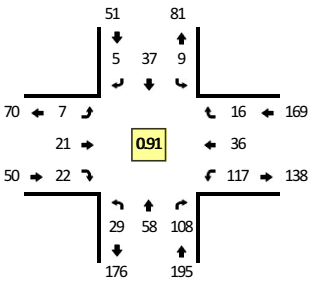
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Tot

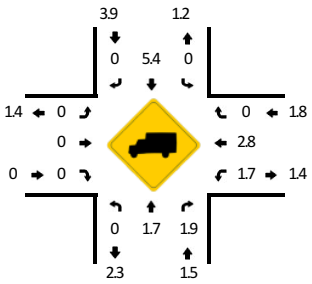
**LOCATION:** N Main St -- Columbia Ave NE
**CITY/STATE:** Boardman, OR

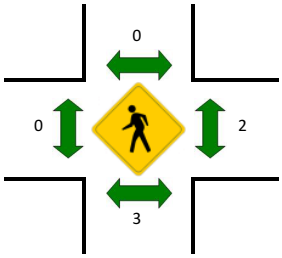
**QC JOB #:** 15762801
**DATE:** Thu, Mar 31 2022

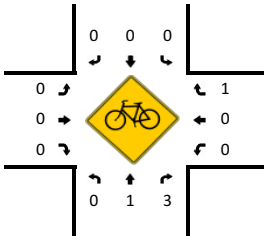
**Peak-Hour: 5:00 PM -- 6:00 PM**
**Peak 15-Min: 5:10 PM -- 5:25 PM**

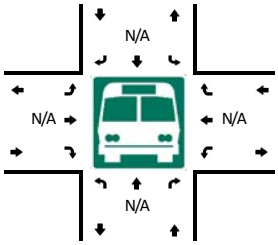


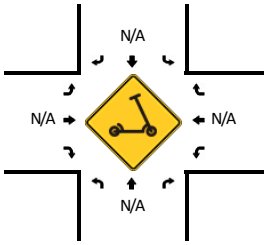





| 5-Min Count Period Beginning At | N Main St (Northbound) | | | | N Main St (Southbound) | | | | Columbia Ave NE (Eastbound) | | | | Columbia Ave NE (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 5 | 2 | 0 | 0 | 3 | 2 | 0 | 1 | 0 | 1 | 0 | 5 | 4 | 2 | 0 | 25 | |
| 3:05 PM | 1 | 1 | 4 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 15 | 1 | 1 | 0 | 27 | |
| 3:10 PM | 1 | 3 | 7 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 18 | 3 | 0 | 0 | 39 | |
| 3:15 PM | 2 | 0 | 12 | 0 | 0 | 4 | 0 | 0 | 3 | 0 | 3 | 0 | 8 | 3 | 0 | 0 | 35 | |
| 3:20 PM | 2 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 1 | 0 | 8 | 3 | 0 | 0 | 27 | |
| 3:25 PM | 1 | 2 | 9 | 0 | 1 | 5 | 2 | 0 | 0 | 2 | 0 | 0 | 6 | 2 | 0 | 0 | 30 | |
| 3:30 PM | 3 | 2 | 13 | 0 | 1 | 5 | 1 | 0 | 0 | 0 | 1 | 0 | 10 | 2 | 1 | 0 | 39 | |
| 3:35 PM | 5 | 4 | 8 | 0 | 1 | 3 | 0 | 0 | 0 | 4 | 1 | 0 | 17 | 3 | 0 | 0 | 46 | |
| 3:40 PM | 1 | 2 | 13 | 0 | 1 | 6 | 0 | 0 | 0 | 3 | 1 | 0 | 6 | 3 | 3 | 0 | 39 | |
| 3:45 PM | 0 | 1 | 7 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 2 | 0 | 9 | 2 | 0 | 0 | 28 | |
| 3:50 PM | 0 | 1 | 10 | 0 | 0 | 4 | 0 | 0 | 1 | 2 | 1 | 0 | 11 | 2 | 1 | 0 | 33 | |
| 3:55 PM | 0 | 1 | 9 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 11 | 5 | 0 | 0 | 33 | 401 |
| 4:00 PM | 0 | 3 | 7 | 0 | 1 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 7 | 1 | 1 | 0 | 26 | 402 |
| 4:05 PM | 0 | 2 | 8 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 5 | 0 | 17 | 1 | 1 | 0 | 38 | 413 |
| 4:10 PM | 2 | 1 | 7 | 0 | 1 | 4 | 0 | 0 | 1 | 0 | 2 | 0 | 18 | 2 | 3 | 0 | 41 | 415 |
| 4:15 PM | 3 | 5 | 9 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 8 | 5 | 0 | 0 | 34 | 414 |
| 4:20 PM | 1 | 1 | 10 | 0 | 0 | 1 | 0 | 0 | 1 | 4 | 0 | 0 | 7 | 4 | 0 | 0 | 29 | 416 |
| 4:25 PM | 2 | 4 | 11 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 13 | 3 | 0 | 0 | 37 | 423 |
| 4:30 PM | 1 | 6 | 9 | 0 | 1 | 2 | 0 | 0 | 0 | 4 | 2 | 0 | 13 | 1 | 3 | 0 | 42 | 426 |
| 4:35 PM | 4 | 5 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 2 | 0 | 5 | 2 | 0 | 0 | 35 | 415 |
| 4:40 PM | 2 | 3 | 10 | 0 | 0 | 5 | 1 | 0 | 0 | 1 | 2 | 0 | 8 | 5 | 3 | 0 | 40 | 416 |
| 4:45 PM | 2 | 2 | 9 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 1 | 2 | 0 | 27 | 415 |
| 4:50 PM | 0 | 8 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 5 | 3 | 1 | 0 | 34 | 416 |
| 4:55 PM | 2 | 4 | 5 | 0 | 1 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 8 | 3 | 0 | 0 | 28 | 411 |
| 5:00 PM | 3 | 5 | 4 | 0 | 0 | 5 | 2 | 0 | 1 | 0 | 1 | 0 | 13 | 1 | 1 | 0 | 36 | 421 |
| 5:05 PM | 4 | 1 | 7 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 12 | 5 | 1 | 0 | 35 | 418 |
| 5:10 PM | 2 | 4 | 8 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 1 | 0 | 13 | 6 | 1 | 0 | 43 | 420 |
| 5:15 PM | 2 | 6 | 14 | 0 | 1 | 6 | 0 | 0 | 0 | 3 | 1 | 0 | 7 | 1 | 2 | 0 | 43 | 429 |
| 5:20 PM | 2 | 7 | 10 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 12 | 1 | 2 | 0 | 42 | 442 |
| 5:25 PM | 0 | 8 | 9 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 1 | 0 | 7 | 3 | 0 | 0 | 35 | 440 |
| 5:30 PM | 3 | 4 | 10 | 0 | 1 | 2 | 1 | 0 | 0 | 3 | 3 | 0 | 6 | 1 | 0 | 0 | 34 | 432 |
| 5:35 PM | 2 | 7 | 11 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 14 | 1 | 2 | 0 | 41 | 438 |
| 5:40 PM | 3 | 7 | 8 | 0 | 2 | 2 | 1 | 0 | 2 | 2 | 2 | 0 | 6 | 4 | 1 | 0 | 40 | 438 |
| 5:45 PM | 2 | 2 | 4 | 0 | 1 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 5 | 4 | 3 | 0 | 30 | 441 |
| 5:50 PM | 2 | 3 | 11 | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 4 | 0 | 8 | 3 | 1 | 0 | 37 | 444 |
| 5:55 PM | 4 | 4 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 14 | 6 | 2 | 0 | 49 | 465 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 24 | 68 | 128 | 0 | 12 | 52 | 0 | 0 | 0 | 28 | 20 | 0 | 128 | 32 | 20 | 0 | 512 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 8 | 0 | | 0 | 0 | 0 | | 4 | 0 | 0 | | 12 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | 0 |
| Bicycles | 0 | 0 | 4 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |
| *Comments:* | | | | | | | | | | | | | | | | | |

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

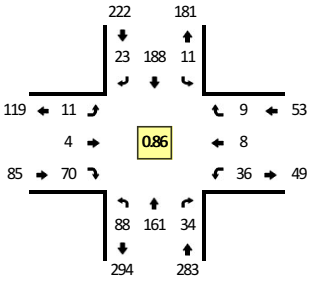
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Tot

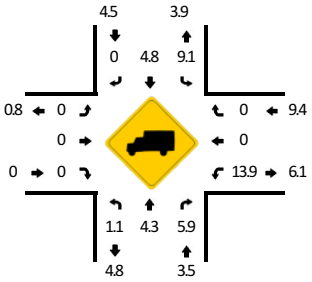
**LOCATION:** N Main St -- Boardman Ave NW
**CITY/STATE:** Boardman, OR

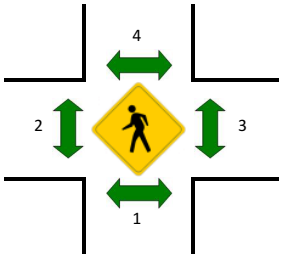
**QC JOB #:** 15762802
**DATE:** Thu, Mar 31 2022

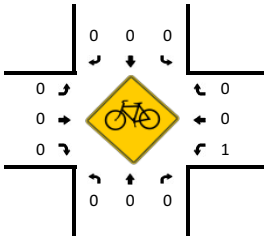
**Peak-Hour: 3:30 PM -- 4:30 PM**
**Peak 15-Min: 3:30 PM -- 3:45 PM**

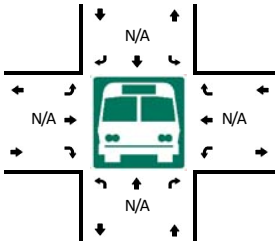


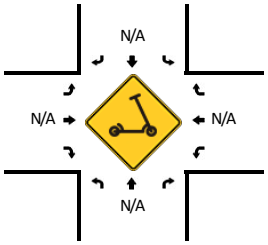





| 5-Min Count Period Beginning At | N Main St (Northbound) | | | | N Main St (Southbound) | | | | Boardman Ave NW (Eastbound) | | | | Boardman Ave NW (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 2 | 8 | 2 | 0 | 1 | 9 | 2 | 0 | 0 | 1 | 2 | 0 | 16 | 1 | 2 | 0 | 46 | |
| 3:05 PM | 6 | 11 | 5 | 0 | 1 | 15 | 1 | 0 | 1 | 0 | 6 | 0 | 15 | 3 | 0 | 0 | 64 | |
| 3:10 PM | 4 | 9 | 4 | 0 | 0 | 29 | 0 | 0 | 1 | 1 | 1 | 0 | 8 | 1 | 4 | 0 | 62 | |
| 3:15 PM | 3 | 6 | 2 | 0 | 0 | 18 | 1 | 0 | 1 | 0 | 8 | 0 | 12 | 0 | 2 | 0 | 53 | |
| 3:20 PM | 4 | 9 | 5 | 0 | 2 | 10 | 3 | 0 | 3 | 0 | 6 | 0 | 2 | 1 | 0 | 0 | 45 | |
| 3:25 PM | 3 | 15 | 4 | 0 | 1 | 7 | 1 | 0 | 1 | 0 | 6 | 0 | 2 | 1 | 3 | 0 | 44 | |
| 3:30 PM | 6 | 16 | 4 | 0 | 3 | 16 | 1 | 0 | 1 | 0 | 5 | 0 | 3 | 1 | 2 | 0 | 58 | |
| 3:35 PM | 6 | 18 | 2 | 0 | 0 | 19 | 4 | 0 | 1 | 0 | 5 | 0 | 6 | 2 | 0 | 0 | 63 | |
| 3:40 PM | 8 | 18 | 7 | 0 | 0 | 19 | 4 | 0 | 0 | 2 | 6 | 0 | 2 | 0 | 1 | 0 | 67 | |
| 3:45 PM | 5 | 9 | 0 | 0 | 0 | 16 | 2 | 0 | 2 | 0 | 6 | 0 | 7 | 0 | 0 | 0 | 47 | |
| 3:50 PM | 6 | 11 | 2 | 0 | 1 | 11 | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 39 | |
| 3:55 PM | 9 | 10 | 1 | 0 | 3 | 16 | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 2 | 1 | 0 | 49 | 637 |
| 4:00 PM | 10 | 9 | 0 | 0 | 0 | 11 | 1 | 0 | 1 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 41 | 632 |
| 4:05 PM | 8 | 13 | 3 | 0 | 2 | 20 | 0 | 0 | 1 | 0 | 10 | 0 | 1 | 1 | 1 | 0 | 60 | 628 |
| 4:10 PM | 10 | 13 | 1 | 0 | 1 | 23 | 5 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 61 | 627 |
| 4:15 PM | 9 | 11 | 6 | 0 | 1 | 15 | 0 | 0 | 2 | 1 | 8 | 0 | 3 | 0 | 2 | 0 | 58 | 632 |
| 4:20 PM | 3 | 13 | 1 | 0 | 0 | 12 | 0 | 0 | 1 | 1 | 9 | 0 | 3 | 0 | 1 | 0 | 44 | 631 |
| 4:25 PM | 8 | 20 | 7 | 0 | 0 | 10 | 2 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 0 | 0 | 56 | 643 |
| 4:30 PM | 10 | 16 | 6 | 0 | 1 | 13 | 2 | 0 | 0 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 56 | 641 |
| 4:35 PM | 9 | 21 | 4 | 0 | 2 | 5 | 1 | 0 | 3 | 1 | 7 | 0 | 2 | 0 | 1 | 0 | 56 | 634 |
| 4:40 PM | 6 | 11 | 5 | 0 | 0 | 17 | 1 | 0 | 3 | 0 | 6 | 0 | 4 | 0 | 1 | 0 | 54 | 621 |
| 4:45 PM | 8 | 12 | 7 | 0 | 1 | 9 | 2 | 0 | 1 | 1 | 5 | 0 | 3 | 0 | 0 | 0 | 49 | 623 |
| 4:50 PM | 6 | 17 | 2 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 6 | 0 | 2 | 0 | 2 | 0 | 46 | 630 |
| 4:55 PM | 5 | 12 | 3 | 0 | 1 | 9 | 2 | 0 | 1 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 41 | 622 |
| 5:00 PM | 7 | 10 | 0 | 0 | 0 | 18 | 0 | 0 | 2 | 0 | 12 | 0 | 5 | 0 | 1 | 0 | 55 | 636 |
| 5:05 PM | 3 | 10 | 5 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 1 | 0 | 44 | 620 |
| 5:10 PM | 9 | 17 | 2 | 0 | 0 | 17 | 3 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 53 | 612 |
| 5:15 PM | 11 | 20 | 0 | 0 | 2 | 7 | 2 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 47 | 601 |
| 5:20 PM | 5 | 15 | 4 | 0 | 2 | 17 | 3 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 2 | 0 | 53 | 610 |
| 5:25 PM | 4 | 13 | 5 | 0 | 3 | 9 | 0 | 0 | 3 | 2 | 2 | 0 | 3 | 3 | 2 | 0 | 49 | 603 |
| 5:30 PM | 11 | 19 | 4 | 0 | 2 | 9 | 3 | 0 | 0 | 1 | 3 | 0 | 3 | 1 | 0 | 0 | 56 | 603 |
| 5:35 PM | 9 | 21 | 5 | 0 | 2 | 16 | 1 | 0 | 2 | 0 | 5 | 0 | 4 | 0 | 2 | 0 | 67 | 614 |
| 5:40 PM | 6 | 13 | 3 | 0 | 0 | 7 | 1 | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 35 | 595 |
| 5:45 PM | 9 | 6 | 6 | 0 | 0 | 14 | 1 | 0 | 1 | 1 | 6 | 0 | 4 | 0 | 2 | 0 | 50 | 596 |
| 5:50 PM | 7 | 16 | 4 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 6 | 0 | 3 | 0 | 1 | 0 | 50 | 600 |
| 5:55 PM | 9 | 21 | 1 | 0 | 1 | 16 | 1 | 0 | 1 | 0 | 3 | 0 | 2 | 0 | 1 | 0 | 56 | 615 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 80 | 208 | 52 | 0 | 12 | 216 | 36 | 0 | 8 | 8 | 64 | 0 | 44 | 12 | 12 | 0 | 752 |
| Heavy Trucks | 4 | 12 | 4 | | 0 | 4 | 0 | | 0 | 0 | 0 | | 4 | 0 | 0 | | 28 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | 0 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 | 0 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

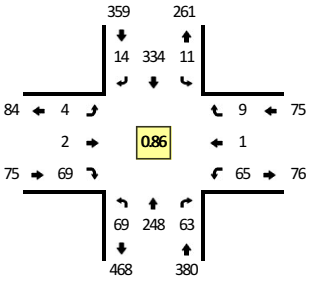
Type of peak hour being reported: Intersection Peak

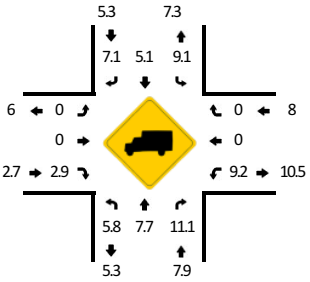
Method for determining peak hour: Tot

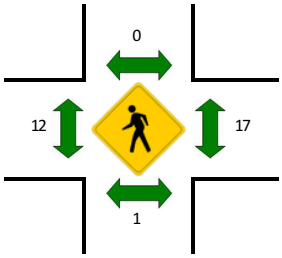
**LOCATION:** N Main St -- Front St NE
**CITY/STATE:** Boardman, OR

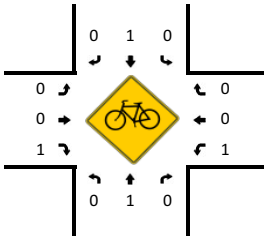
**QC JOB #:** 15762803
**DATE:** Thu, Mar 31 2022

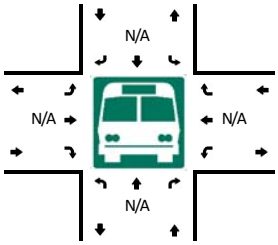
**Peak-Hour: 3:00 PM -- 4:00 PM**
**Peak 15-Min: 3:00 PM -- 3:15 PM**

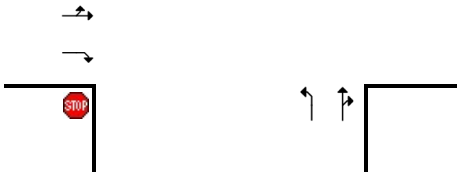


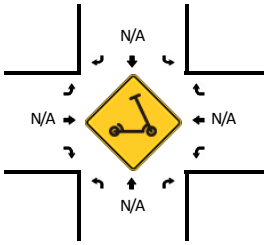






| 5-Min Count Period Beginning At | N Main St (Northbound) | | | | N Main St (Southbound) | | | | Front St NE (Eastbound) | | | | Front St NE (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 7 | 14 | 4 | 0 | 1 | 34 | 2 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 2 | 0 | 82 | |
| 3:05 PM | 6 | 23 | 4 | 0 | 1 | 41 | 4 | 0 | 0 | 1 | 9 | 0 | 9 | 0 | 1 | 0 | 99 | |
| 3:10 PM | 5 | 12 | 2 | 0 | 0 | 41 | 1 | 0 | 2 | 0 | 3 | 0 | 10 | 0 | 1 | 0 | 77 | |
| 3:15 PM | 7 | 13 | 3 | 0 | 4 | 30 | 2 | 0 | 0 | 0 | 9 | 0 | 5 | 0 | 0 | 0 | 73 | |
| 3:20 PM | 7 | 17 | 6 | 0 | 1 | 14 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 52 | |
| 3:25 PM | 4 | 28 | 2 | 0 | 0 | 28 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 67 | |
| 3:30 PM | 9 | 34 | 9 | 0 | 1 | 20 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 1 | 1 | 0 | 81 | |
| 3:35 PM | 5 | 26 | 4 | 0 | 1 | 33 | 2 | 0 | 0 | 1 | 7 | 0 | 3 | 0 | 0 | 0 | 82 | |
| 3:40 PM | 3 | 22 | 8 | 0 | 1 | 31 | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 76 | |
| 3:45 PM | 7 | 20 | 7 | 0 | 1 | 28 | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 0 | 2 | 0 | 74 | |
| 3:50 PM | 4 | 21 | 4 | 0 | 0 | 19 | 2 | 0 | 0 | 0 | 9 | 0 | 6 | 0 | 1 | 0 | 66 | |
| 3:55 PM | 5 | 18 | 10 | 0 | 0 | 15 | 0 | 0 | 1 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 60 | 889 |
| 4:00 PM | 3 | 16 | 3 | 0 | 3 | 21 | 0 | 0 | 1 | 0 | 4 | 0 | 7 | 0 | 2 | 0 | 60 | 867 |
| 4:05 PM | 0 | 18 | 6 | 0 | 1 | 34 | 0 | 0 | 1 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 69 | 837 |
| 4:10 PM | 3 | 29 | 8 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 0 | 0 | 0 | 76 | 836 |
| 4:15 PM | 3 | 20 | 4 | 0 | 0 | 30 | 0 | 0 | 1 | 1 | 8 | 0 | 6 | 1 | 0 | 0 | 74 | 837 |
| 4:20 PM | 7 | 24 | 3 | 0 | 1 | 24 | 0 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 70 | 855 |
| 4:25 PM | 6 | 34 | 7 | 0 | 0 | 23 | 0 | 0 | 0 | 1 | 7 | 0 | 2 | 0 | 1 | 0 | 81 | 869 |
| 4:30 PM | 10 | 33 | 6 | 0 | 0 | 18 | 2 | 0 | 2 | 0 | 6 | 0 | 3 | 1 | 0 | 0 | 81 | 869 |
| 4:35 PM | 8 | 24 | 10 | 0 | 1 | 20 | 1 | 0 | 1 | 0 | 6 | 0 | 6 | 1 | 1 | 0 | 79 | 866 |
| 4:40 PM | 3 | 23 | 6 | 0 | 2 | 25 | 0 | 0 | 0 | 0 | 8 | 0 | 4 | 0 | 1 | 0 | 72 | 862 |
| 4:45 PM | 5 | 33 | 4 | 0 | 2 | 18 | 1 | 0 | 0 | 1 | 8 | 0 | 5 | 0 | 0 | 0 | 77 | 865 |
| 4:50 PM | 3 | 21 | 9 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 11 | 0 | 7 | 0 | 1 | 0 | 69 | 868 |
| 4:55 PM | 3 | 22 | 5 | 0 | 1 | 21 | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 59 | 867 |
| 5:00 PM | 3 | 22 | 6 | 0 | 2 | 30 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 69 | 876 |
| 5:05 PM | 4 | 16 | 4 | 0 | 0 | 23 | 3 | 0 | 0 | 0 | 6 | 0 | 4 | 1 | 0 | 0 | 61 | 868 |
| 5:10 PM | 2 | 31 | 8 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 2 | 0 | 72 | 864 |
| 5:15 PM | 7 | 28 | 6 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 11 | 0 | 5 | 0 | 2 | 0 | 76 | 866 |
| 5:20 PM | 7 | 22 | 8 | 0 | 1 | 21 | 1 | 0 | 1 | 0 | 7 | 0 | 5 | 0 | 0 | 0 | 73 | 869 |
| 5:25 PM | 4 | 20 | 4 | 0 | 0 | 14 | 0 | 0 | 2 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 50 | 838 |
| 5:30 PM | 1 | 33 | 8 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 5 | 0 | 7 | 0 | 0 | 0 | 76 | 833 |
| 5:35 PM | 4 | 36 | 3 | 0 | 1 | 22 | 0 | 0 | 0 | 0 | 2 | 0 | 9 | 1 | 2 | 0 | 80 | 834 |
| 5:40 PM | 7 | 21 | 7 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 55 | 817 |
| 5:45 PM | 3 | 23 | 8 | 0 | 0 | 25 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 67 | 807 |
| 5:50 PM | 4 | 27 | 3 | 0 | 0 | 26 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 66 | 804 |
| 5:55 PM | 4 | 34 | 2 | 0 | 0 | 20 | 1 | 0 | 2 | 1 | 8 | 0 | 3 | 0 | 0 | 0 | 75 | 820 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 72 | 196 | 40 | 0 | 8 | 464 | 28 | 0 | 8 | 4 | 84 | 0 | 112 | 0 | 16 | 0 | 1032 |
| Heavy Trucks | 0 | 28 | 8 | | 0 | 20 | 4 | | 0 | 0 | 4 | | 12 | 0 | 0 | | 76 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 0 | | | | 32 | | | | 60 | | | 96 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 | 0 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

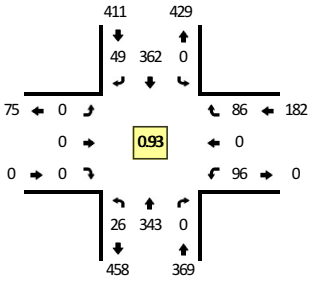
Type of peak hour being reported: Intersection Peak

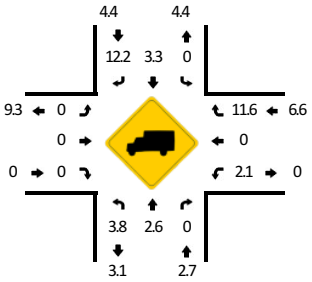
Method for determining peak hour: Tot

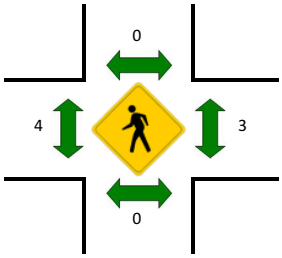
**LOCATION:** N Main St -- I-84 WB Ramp Terminal
**CITY/STATE:** Boardman, OR

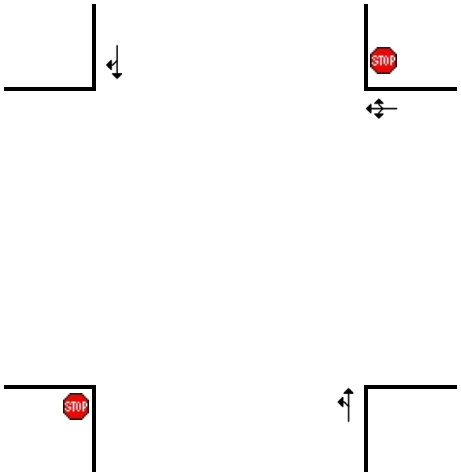
**QC JOB #:** 15762804
**DATE:** Thu, Mar 31 2022

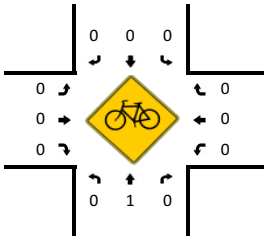
**Peak-Hour: 4:10 PM -- 5:10 PM**
**Peak 15-Min: 4:25 PM -- 4:40 PM**

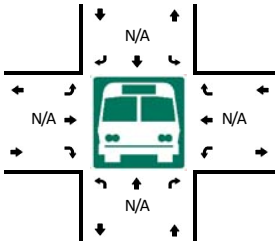


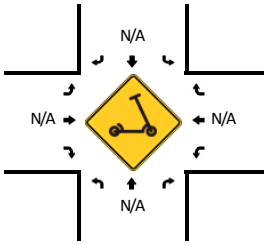




| 5-Min Count Period Beginning At | N Main St (Northbound) | | | | N Main St (Southbound) | | | | I-84 WB Ramp Terminal (Eastbound) | | | | I-84 WB Ramp Terminal (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 2 | 21 | 0 | 0 | 0 | 47 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 5 | 0 | 83 | |
| 3:05 PM | 2 | 22 | 0 | 0 | 0 | 53 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 8 | 0 | 92 | |
| 3:10 PM | 0 | 17 | 0 | 0 | 0 | 51 | 3 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 8 | 0 | 85 | |
| 3:15 PM | 1 | 17 | 0 | 0 | 0 | 47 | 3 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 5 | 0 | 82 | |
| 3:20 PM | 6 | 24 | 0 | 0 | 0 | 23 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 5 | 0 | 67 | |
| 3:25 PM | 0 | 31 | 0 | 0 | 0 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 4 | 0 | 71 | |
| 3:30 PM | 0 | 35 | 0 | 0 | 0 | 26 | 1 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 6 | 0 | 79 | |
| 3:35 PM | 2 | 27 | 0 | 0 | 0 | 35 | 4 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 11 | 0 | 87 | |
| 3:40 PM | 0 | 34 | 0 | 0 | 0 | 39 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 86 | |
| 3:45 PM | 1 | 20 | 0 | 0 | 0 | 39 | 3 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 13 | 0 | 83 | |
| 3:50 PM | 0 | 27 | 0 | 0 | 0 | 21 | 6 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 3 | 0 | 66 | |
| 3:55 PM | 0 | 26 | 0 | 0 | 0 | 26 | 10 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 4 | 0 | 74 | 955 |
| 4:00 PM | 1 | 21 | 0 | 0 | 0 | 26 | 3 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 6 | 0 | 65 | 937 |
| 4:05 PM | 2 | 19 | 0 | 0 | 0 | 32 | 3 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 7 | 0 | 72 | 917 |
| 4:10 PM | 4 | 32 | 0 | 0 | 0 | 36 | 5 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 4 | 0 | 87 | 919 |
| 4:15 PM | 3 | 20 | 0 | 0 | 0 | 45 | 3 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 9 | 0 | 87 | 924 |
| 4:20 PM | 1 | 23 | 0 | 0 | 0 | 27 | 5 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 72 | 929 |
| 4:25 PM | 2 | 42 | 0 | 0 | 0 | 28 | 4 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 6 | 0 | 89 | 947 |
| 4:30 PM | 2 | 38 | 0 | 0 | 0 | 23 | 7 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 4 | 0 | 82 | 950 |
| 4:35 PM | 3 | 39 | 0 | 0 | 0 | 23 | 3 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 13 | 0 | 89 | 952 |
| 4:40 PM | 2 | 20 | 0 | 0 | 0 | 31 | 7 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 11 | 0 | 84 | 950 |
| 4:45 PM | 0 | 32 | 0 | 0 | 0 | 29 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 9 | 0 | 76 | 943 |
| 4:50 PM | 2 | 31 | 0 | 0 | 0 | 33 | 4 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 4 | 0 | 82 | 959 |
| 4:55 PM | 2 | 23 | 0 | 0 | 0 | 24 | 1 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 6 | 0 | 66 | 951 |
| 5:00 PM | 2 | 22 | 0 | 0 | 0 | 35 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 0 | 74 | 960 |
| 5:05 PM | 3 | 21 | 0 | 0 | 0 | 28 | 3 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 6 | 0 | 74 | 962 |
| 5:10 PM | 0 | 29 | 0 | 0 | 0 | 31 | 1 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 5 | 0 | 76 | 951 |
| 5:15 PM | 1 | 35 | 0 | 0 | 0 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 10 | 0 | 78 | 942 |
| 5:20 PM | 2 | 31 | 0 | 0 | 0 | 29 | 5 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 5 | 0 | 82 | 952 |
| 5:25 PM | 0 | 25 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 3 | 0 | 63 | 926 |
| 5:30 PM | 1 | 38 | 0 | 0 | 0 | 27 | 2 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 4 | 0 | 81 | 925 |
| 5:35 PM | 2 | 34 | 0 | 0 | 0 | 32 | 4 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 9 | 0 | 93 | 929 |
| 5:40 PM | 2 | 28 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 8 | 0 | 72 | 917 |
| 5:45 PM | 1 | 26 | 0 | 0 | 0 | 31 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 5 | 0 | 72 | 913 |
| 5:50 PM | 0 | 31 | 0 | 0 | 0 | 28 | 2 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 5 | 0 | 81 | 912 |
| 5:55 PM | 1 | 36 | 0 | 0 | 0 | 28 | 3 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 6 | 0 | 81 | 927 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 28 | 476 | 0 | 0 | 0 | 296 | 56 | 0 | 0 | 0 | 0 | 0 | 92 | 0 | 92 | 0 | 1040 |
| Heavy Trucks | 0 | 8 | 0 | | 0 | 4 | 12 | | 0 | 0 | 0 | | 4 | 0 | 8 | | 36 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 4 | | | | 8 | | | 12 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

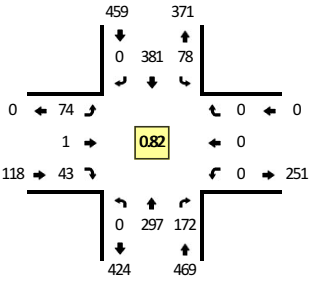
Type of peak hour being reported: Intersection Peak

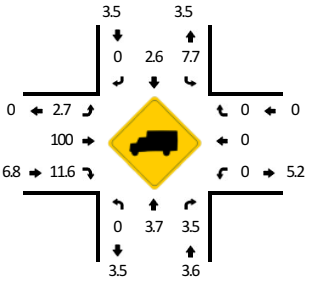
Method for determining peak hour: Tot

**LOCATION:** S Main St -- I-84 EB Ramp Terminal
**CITY/STATE:** Boardman, OR

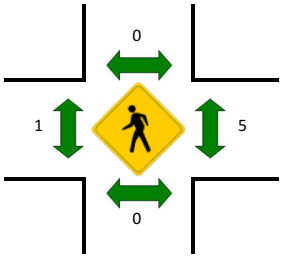
**QC JOB #:** 15762805
**DATE:** Thu, Mar 31 2022

**Peak-Hour: 4:10 PM -- 5:10 PM**
**Peak 15-Min: 4:25 PM -- 4:40 PM**

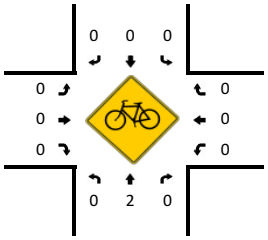


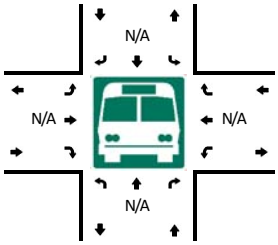




Quality Counts
DATA THAT DRIVES COMMUNITIES

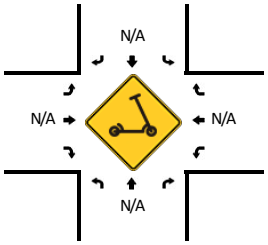











| 5-Min Count Period Beginning At | S Main St (Northbound) | | | | S Main St (Southbound) | | | | I-84 EB Ramp Terminal (Eastbound) | | | | I-84 EB Ramp Terminal (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 17 | 6 | 0 | 7 | 40 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 77 | |
| 3:05 PM | 0 | 19 | 6 | 0 | 12 | 45 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 88 | |
| 3:10 PM | 0 | 15 | 5 | 0 | 1 | 59 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | |
| 3:15 PM | 0 | 12 | 10 | 0 | 11 | 46 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 84 | |
| 3:20 PM | 0 | 26 | 11 | 0 | 3 | 28 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 72 | |
| 3:25 PM | 0 | 27 | 7 | 0 | 7 | 25 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70 | |
| 3:30 PM | 0 | 29 | 9 | 0 | 7 | 30 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 83 | |
| 3:35 PM | 0 | 28 | 7 | 0 | 10 | 29 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 80 | |
| 3:40 PM | 0 | 31 | 4 | 0 | 9 | 35 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 82 | |
| 3:45 PM | 0 | 19 | 6 | 0 | 9 | 38 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 75 | |
| 3:50 PM | 0 | 23 | 10 | 0 | 6 | 27 | 0 | 0 | 5 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 74 | |
| 3:55 PM | 0 | 26 | 7 | 0 | 3 | 32 | 0 | 0 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 77 | 944 |
| 4:00 PM | 0 | 21 | 18 | 0 | 5 | 26 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 75 | 942 |
| 4:05 PM | 0 | 18 | 8 | 0 | 5 | 32 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 67 | 921 |
| 4:10 PM | 0 | 26 | 8 | 0 | 8 | 39 | 0 | 0 | 8 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 92 | 931 |
| 4:15 PM | 0 | 21 | 13 | 0 | 12 | 36 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 91 | 938 |
| 4:20 PM | 0 | 16 | 8 | 0 | 5 | 32 | 0 | 0 | 4 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 69 | 935 |
| 4:25 PM | 0 | 38 | 40 | 0 | 7 | 25 | 0 | 0 | 7 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 121 | 986 |
| 4:30 PM | 0 | 29 | 29 | 0 | 3 | 33 | 0 | 0 | 11 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 108 | 1011 |
| 4:35 PM | 0 | 29 | 13 | 0 | 4 | 30 | 0 | 0 | 13 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 91 | 1022 |
| 4:40 PM | 0 | 21 | 14 | 0 | 6 | 33 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 78 | 1018 |
| 4:45 PM | 0 | 25 | 10 | 0 | 6 | 27 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 79 | 1022 |
| 4:50 PM | 0 | 33 | 17 | 0 | 7 | 33 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 97 | 1045 |
| 4:55 PM | 0 | 19 | 5 | 0 | 7 | 28 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 68 | 1036 |
| 5:00 PM | 0 | 18 | 8 | 0 | 5 | 34 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 75 | 1036 |
| 5:05 PM | 0 | 22 | 7 | 0 | 8 | 31 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 77 | 1046 |
| 5:10 PM | 0 | 27 | 8 | 0 | 8 | 38 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 84 | 1038 |
| 5:15 PM | 0 | 26 | 6 | 0 | 4 | 24 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 76 | 1023 |
| 5:20 PM | 0 | 27 | 4 | 0 | 7 | 32 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 84 | 1038 |
| 5:25 PM | 0 | 23 | 9 | 0 | 3 | 35 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 77 | 994 |
| 5:30 PM | 0 | 30 | 7 | 0 | 6 | 25 | 0 | 0 | 7 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 78 | 964 |
| 5:35 PM | 0 | 29 | 5 | 0 | 1 | 43 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 86 | 959 |
| 5:40 PM | 0 | 24 | 9 | 0 | 7 | 29 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 77 | 958 |
| 5:45 PM | 0 | 22 | 6 | 0 | 7 | 31 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 72 | 951 |
| 5:50 PM | 0 | 23 | 5 | 0 | 4 | 42 | 0 | 0 | 9 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 86 | 940 |
| 5:55 PM | 0 | 27 | 2 | 0 | 3 | 27 | 0 | 0 | 6 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 69 | 941 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 384 | 328 | 0 | 56 | 352 | 0 | 0 | 124 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 1280 |
| Heavy Trucks | 0 | 0 | 12 | | 4 | 16 | 0 | | 8 | 0 | 0 | | 0 | 0 | 0 | | 40 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 4 | | | | 4 | | | 8 |
| Bicycles | 0 | 4 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

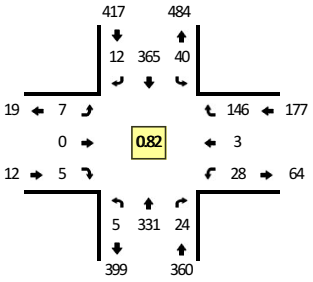
Type of peak hour being reported: Intersection Peak

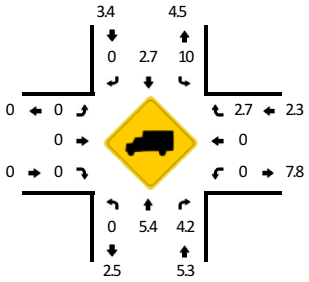
Method for determining peak hour: Tot

**LOCATION:** S Main St -- Front St SE
**CITY/STATE:** Boardman, OR

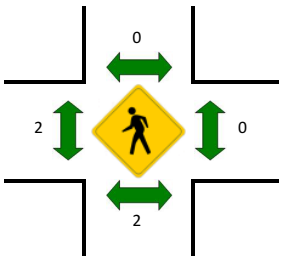
**QC JOB #:** 15762806
**DATE:** Thu, Mar 31 2022

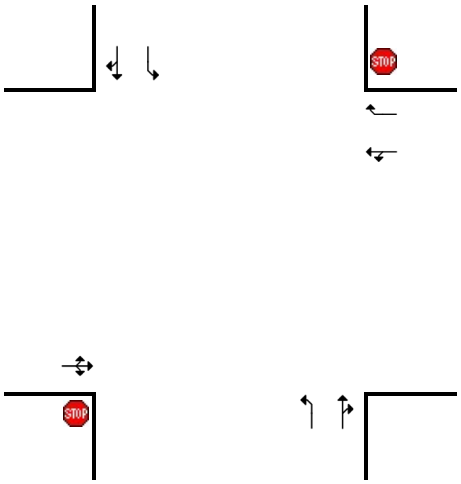
**Peak-Hour: 3:55 PM -- 4:55 PM**
**Peak 15-Min: 4:25 PM -- 4:40 PM**

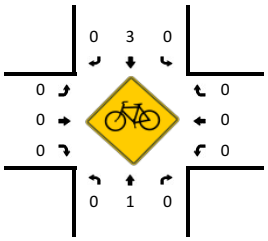


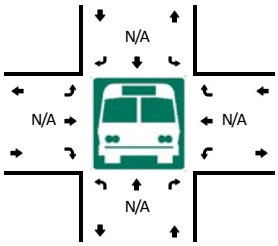




Quality Counts
DATA THAT DRIVES COMMUNITIES



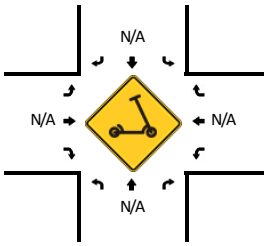










| 5-Min Count Period Beginning At | S Main St (Northbound) | | | | S Main St (Southbound) | | | | Front St SE (Eastbound) | | | | Front St SE (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 16 | 0 | 0 | 1 | 41 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 67 | |
| 3:05 PM | 0 | 23 | 0 | 0 | 5 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 70 | |
| 3:10 PM | 0 | 15 | 1 | 0 | 4 | 54 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 81 | |
| 3:15 PM | 0 | 22 | 1 | 0 | 10 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 73 | |
| 3:20 PM | 0 | 31 | 2 | 0 | 4 | 23 | 2 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 8 | 0 | 75 | |
| 3:25 PM | 1 | 27 | 2 | 0 | 3 | 22 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 61 | |
| 3:30 PM | 0 | 31 | 1 | 0 | 3 | 28 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 6 | 0 | 74 | |
| 3:35 PM | 0 | 33 | 2 | 0 | 3 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 72 | |
| 3:40 PM | 0 | 31 | 1 | 0 | 3 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 75 | |
| 3:45 PM | 1 | 23 | 1 | 0 | 0 | 40 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 70 | |
| 3:50 PM | 1 | 26 | 2 | 0 | 3 | 26 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 65 | |
| 3:55 PM | 1 | 26 | 3 | 0 | 8 | 29 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 77 | 860 |
| 4:00 PM | 2 | 20 | 1 | 0 | 4 | 24 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 18 | 0 | 74 | 867 |
| 4:05 PM | 0 | 18 | 1 | 0 | 2 | 31 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 7 | 0 | 63 | 860 |
| 4:10 PM | 0 | 26 | 3 | 0 | 1 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 80 | 859 |
| 4:15 PM | 0 | 28 | 1 | 0 | 3 | 36 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 74 | 860 |
| 4:20 PM | 0 | 25 | 3 | 1 | 1 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 67 | 852 |
| 4:25 PM | 0 | 41 | 0 | 0 | 3 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 36 | 0 | 113 | 904 |
| 4:30 PM | 1 | 28 | 5 | 0 | 3 | 31 | 1 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 30 | 0 | 104 | 934 |
| 4:35 PM | 0 | 28 | 2 | 0 | 4 | 28 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 11 | 0 | 77 | 939 |
| 4:40 PM | 0 | 28 | 1 | 0 | 5 | 29 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 7 | 0 | 75 | 939 |
| 4:45 PM | 0 | 32 | 3 | 0 | 2 | 29 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 4 | 0 | 75 | 944 |
| 4:50 PM | 0 | 31 | 1 | 0 | 4 | 27 | 4 | 0 | 1 | 0 | 2 | 0 | 4 | 0 | 13 | 0 | 87 | 966 |
| 4:55 PM | 0 | 24 | 1 | 0 | 1 | 30 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 62 | 951 |
| 5:00 PM | 0 | 23 | 2 | 0 | 6 | 32 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 69 | 946 |
| 5:05 PM | 0 | 23 | 0 | 0 | 4 | 31 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 63 | 946 |
| 5:10 PM | 0 | 32 | 2 | 0 | 4 | 30 | 5 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 5 | 0 | 82 | 948 |
| 5:15 PM | 1 | 29 | 0 | 0 | 6 | 26 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 4 | 0 | 70 | 944 |
| 5:20 PM | 0 | 28 | 3 | 0 | 5 | 33 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 74 | 951 |
| 5:25 PM | 0 | 27 | 3 | 0 | 4 | 33 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 74 | 912 |
| 5:30 PM | 0 | 33 | 5 | 0 | 2 | 26 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 73 | 881 |
| 5:35 PM | 0 | 29 | 1 | 0 | 6 | 38 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 81 | 885 |
| 5:40 PM | 0 | 28 | 1 | 0 | 5 | 25 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 4 | 0 | 68 | 878 |
| 5:45 PM | 1 | 23 | 1 | 0 | 2 | 29 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 62 | 865 |
| 5:50 PM | 1 | 24 | 0 | 0 | 10 | 34 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 76 | 854 |
| 5:55 PM | 0 | 27 | 3 | 0 | 4 | 28 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 69 | 861 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 4 | 388 | 28 | 0 | 40 | 344 | 4 | 0 | 4 | 0 | 4 | 0 | 44 | 8 | 308 | 0 | 1176 |
| Heavy Trucks | 0 | 8 | 0 | | 4 | 12 | 0 | | 0 | 0 | 0 | | 0 | 0 | 8 | | 32 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 0 | | | | 0 | | | | 0 | | | 4 |
| Bicycles | 0 | 4 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

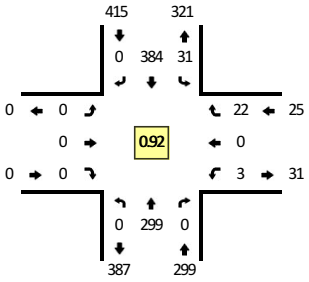
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Tot

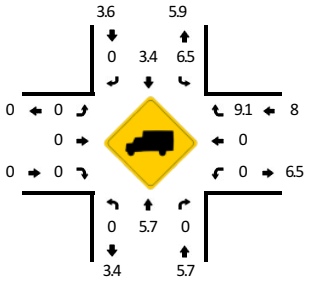
**LOCATION:** S Main St -- Oregon Trail Blvd
**CITY/STATE:** Boardman, OR

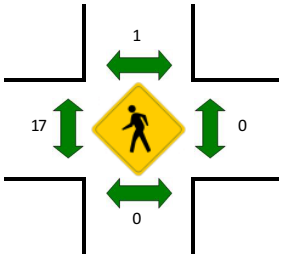
**QC JOB #:** 15762807
**DATE:** Thu, Mar 31 2022

**Peak-Hour: 3:00 PM -- 4:00 PM**
**Peak 15-Min: 3:05 PM -- 3:20 PM**

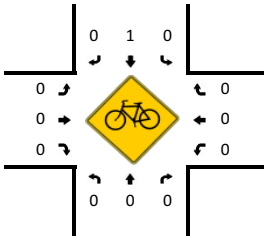


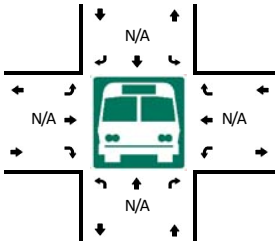

Quality Counts
DATA THAT DRIVES COMMUNITIES



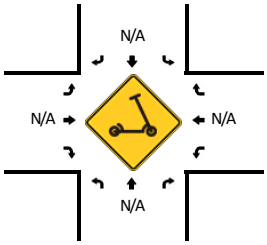












| 5-Min Count Period Beginning At | S Main St (Northbound) | | | | S Main St (Southbound) | | | | Oregon Trail Blvd (Eastbound) | | | | Oregon Trail Blvd (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 14 | 0 | 0 | 5 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 51 | |
| 3:05 PM | 0 | 21 | 0 | 0 | 3 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 68 | |
| 3:10 PM | 0 | 14 | 0 | 0 | 5 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 | |
| 3:15 PM | 0 | 23 | 0 | 0 | 3 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 60 | |
| 3:20 PM | 0 | 39 | 0 | 0 | 2 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 68 | |
| 3:25 PM | 0 | 29 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 51 | |
| 3:30 PM | 0 | 31 | 0 | 0 | 3 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 67 | |
| 3:35 PM | 0 | 31 | 0 | 0 | 2 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 66 | |
| 3:40 PM | 0 | 24 | 0 | 0 | 1 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 62 | |
| 3:45 PM | 0 | 21 | 0 | 0 | 3 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 60 | |
| 3:50 PM | 0 | 31 | 0 | 0 | 2 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | |
| 3:55 PM | 0 | 21 | 0 | 0 | 2 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 52 | 739 |
| 4:00 PM | 0 | 19 | 1 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 43 | 731 |
| 4:05 PM | 0 | 16 | 0 | 0 | 2 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 57 | 720 |
| 4:10 PM | 0 | 25 | 0 | 0 | 1 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 63 | 710 |
| 4:15 PM | 0 | 26 | 1 | 0 | 5 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 64 | 714 |
| 4:20 PM | 0 | 30 | 1 | 0 | 1 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 65 | 711 |
| 4:25 PM | 0 | 35 | 0 | 0 | 4 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 70 | 730 |
| 4:30 PM | 0 | 26 | 0 | 0 | 5 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 66 | 729 |
| 4:35 PM | 0 | 29 | 0 | 0 | 1 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 60 | 723 |
| 4:40 PM | 0 | 23 | 1 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 59 | 720 |
| 4:45 PM | 0 | 33 | 0 | 0 | 2 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 66 | 726 |
| 4:50 PM | 0 | 27 | 0 | 0 | 3 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 721 |
| 4:55 PM | 0 | 26 | 2 | 0 | 1 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 59 | 728 |
| 5:00 PM | 0 | 22 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 53 | 738 |
| 5:05 PM | 0 | 19 | 0 | 0 | 1 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 54 | 735 |
| 5:10 PM | 0 | 15 | 0 | 0 | 2 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 51 | 723 |
| 5:15 PM | 0 | 33 | 0 | 0 | 2 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 67 | 726 |
| 5:20 PM | 0 | 31 | 0 | 0 | 2 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 67 | 728 |
| 5:25 PM | 0 | 33 | 0 | 0 | 1 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 722 |
| 5:30 PM | 0 | 25 | 0 | 0 | 2 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 49 | 705 |
| 5:35 PM | 0 | 30 | 0 | 0 | 2 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 69 | 714 |
| 5:40 PM | 0 | 21 | 1 | 0 | 3 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 55 | 710 |
| 5:45 PM | 0 | 26 | 0 | 0 | 1 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 56 | 700 |
| 5:50 PM | 0 | 22 | 1 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 64 | 708 |
| 5:55 PM | 0 | 31 | 1 | 0 | 1 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 64 | 713 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 232 | 0 | 0 | 44 | 504 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 16 | 0 | 804 |
| Heavy Trucks | 0 | 28 | 0 | | 4 | 24 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 56 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 24 | | | | 0 | | | 24 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

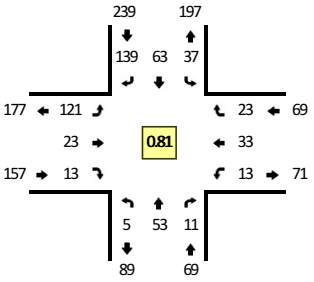
Type of peak hour being reported: Intersection Peak

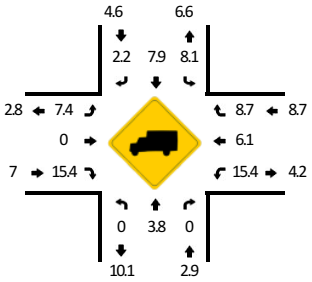
Method for determining peak hour: Tot

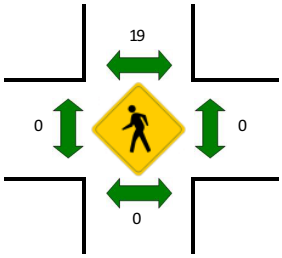
**LOCATION:** S Main St -- Wilson Ln SE
**CITY/STATE:** Boardman, OR

**QC JOB #:** 15762808
**DATE:** Thu, Mar 31 2022

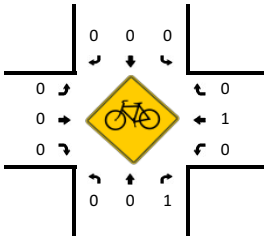
**Peak-Hour: 3:00 PM -- 4:00 PM**
**Peak 15-Min: 3:10 PM -- 3:25 PM**

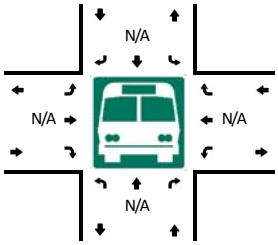


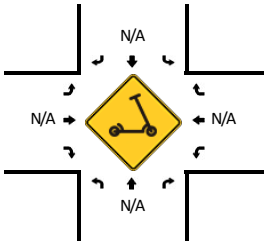












| 5-Min Count Period Beginning At | S Main St (Northbound) | | | | S Main St (Southbound) | | | | Wilson Ln SE (Eastbound) | | | | Wilson Ln SE (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 4 | 0 | 0 | 0 | 7 | 9 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 30 | |
| 3:05 PM | 0 | 3 | 0 | 0 | 3 | 5 | 20 | 0 | 6 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 43 | |
| 3:10 PM | 1 | 3 | 0 | 0 | 8 | 7 | 21 | 0 | 5 | 1 | 2 | 0 | 2 | 1 | 1 | 0 | 52 | |
| 3:15 PM | 1 | 8 | 1 | 0 | 3 | 7 | 21 | 0 | 9 | 0 | 0 | 0 | 1 | 6 | 2 | 0 | 59 | |
| 3:20 PM | 2 | 5 | 3 | 0 | 4 | 5 | 7 | 0 | 14 | 2 | 2 | 0 | 2 | 3 | 5 | 0 | 54 | |
| 3:25 PM | 1 | 3 | 0 | 0 | 2 | 3 | 11 | 0 | 18 | 4 | 1 | 0 | 3 | 4 | 0 | 0 | 50 | |
| 3:30 PM | 0 | 3 | 3 | 0 | 0 | 5 | 6 | 0 | 15 | 4 | 3 | 0 | 1 | 4 | 3 | 0 | 47 | |
| 3:35 PM | 0 | 9 | 3 | 0 | 2 | 6 | 8 | 0 | 20 | 5 | 3 | 0 | 0 | 4 | 1 | 0 | 61 | |
| 3:40 PM | 0 | 9 | 0 | 0 | 4 | 5 | 5 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 27 | |
| 3:45 PM | 0 | 2 | 0 | 0 | 3 | 10 | 11 | 0 | 9 | 2 | 0 | 0 | 1 | 0 | 2 | 0 | 40 | |
| 3:50 PM | 0 | 3 | 1 | 0 | 6 | 1 | 14 | 0 | 10 | 3 | 1 | 0 | 0 | 2 | 2 | 0 | 43 | |
| 3:55 PM | 0 | 1 | 0 | 0 | 2 | 2 | 6 | 0 | 8 | 2 | 0 | 0 | 0 | 6 | 1 | 0 | 28 | 534 |
| 4:00 PM | 1 | 4 | 0 | 0 | 3 | 2 | 3 | 0 | 5 | 2 | 0 | 0 | 1 | 1 | 3 | 0 | 25 | 529 |
| 4:05 PM | 0 | 5 | 0 | 0 | 3 | 5 | 9 | 0 | 7 | 5 | 1 | 0 | 1 | 2 | 1 | 0 | 39 | 525 |
| 4:10 PM | 0 | 3 | 1 | 0 | 1 | 6 | 6 | 0 | 7 | 3 | 0 | 0 | 1 | 3 | 1 | 0 | 32 | 505 |
| 4:15 PM | 0 | 1 | 0 | 0 | 1 | 7 | 14 | 0 | 7 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 37 | 483 |
| 4:20 PM | 0 | 3 | 0 | 0 | 2 | 6 | 9 | 0 | 10 | 1 | 0 | 0 | 0 | 5 | 4 | 0 | 40 | 469 |
| 4:25 PM | 0 | 6 | 1 | 0 | 1 | 7 | 11 | 0 | 12 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 42 | 461 |
| 4:30 PM | 0 | 3 | 0 | 0 | 3 | 4 | 8 | 0 | 12 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 33 | 447 |
| 4:35 PM | 0 | 4 | 0 | 0 | 2 | 4 | 11 | 0 | 8 | 1 | 0 | 0 | 2 | 5 | 3 | 0 | 40 | 426 |
| 4:40 PM | 0 | 6 | 1 | 0 | 1 | 6 | 12 | 0 | 7 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 38 | 437 |
| 4:45 PM | 1 | 8 | 0 | 0 | 2 | 7 | 12 | 0 | 12 | 3 | 1 | 0 | 1 | 4 | 1 | 0 | 52 | 449 |
| 4:50 PM | 0 | 4 | 0 | 0 | 1 | 2 | 5 | 0 | 6 | 5 | 0 | 0 | 0 | 4 | 3 | 0 | 30 | 436 |
| 4:55 PM | 0 | 4 | 0 | 0 | 1 | 7 | 12 | 0 | 12 | 3 | 0 | 0 | 0 | 1 | 2 | 0 | 42 | 450 |
| 5:00 PM | 0 | 6 | 1 | 0 | 3 | 7 | 8 | 0 | 8 | 2 | 0 | 0 | 0 | 2 | 3 | 0 | 40 | 465 |
| 5:05 PM | 0 | 5 | 0 | 0 | 3 | 7 | 5 | 0 | 2 | 1 | 1 | 0 | 0 | 4 | 0 | 0 | 28 | 454 |
| 5:10 PM | 1 | 6 | 0 | 0 | 2 | 6 | 9 | 0 | 10 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 37 | 459 |
| 5:15 PM | 0 | 3 | 0 | 0 | 3 | 6 | 6 | 0 | 7 | 2 | 0 | 0 | 1 | 6 | 3 | 0 | 37 | 459 |
| 5:20 PM | 0 | 3 | 0 | 0 | 2 | 7 | 10 | 0 | 10 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 39 | 458 |
| 5:25 PM | 0 | 6 | 0 | 0 | 9 | 6 | 9 | 0 | 6 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 41 | 457 |
| 5:30 PM | 0 | 6 | 0 | 0 | 2 | 3 | 7 | 0 | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 26 | 450 |
| 5:35 PM | 0 | 6 | 1 | 0 | 2 | 11 | 11 | 0 | 10 | 2 | 0 | 0 | 0 | 5 | 3 | 0 | 51 | 461 |
| 5:40 PM | 0 | 3 | 1 | 0 | 2 | 9 | 8 | 0 | 8 | 3 | 1 | 0 | 0 | 3 | 3 | 0 | 41 | 464 |
| 5:45 PM | 1 | 4 | 0 | 0 | 3 | 3 | 3 | 0 | 10 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 28 | 440 |
| 5:50 PM | 0 | 4 | 1 | 0 | 2 | 7 | 9 | 0 | 6 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 31 | 441 |
| 5:55 PM | 0 | 4 | 0 | 0 | 2 | 5 | 10 | 0 | 11 | 4 | 0 | 0 | 1 | 4 | 2 | 0 | 43 | 442 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 16 | 64 | 16 | 0 | 60 | 76 | 196 | 0 | 112 | 12 | 16 | 0 | 20 | 40 | 32 | 0 | 660 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 4 | 4 | | 16 | 0 | 4 | | 4 | 4 | 4 | | 40 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 8 | | | | 0 | | | | 0 | | | 8 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 4 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

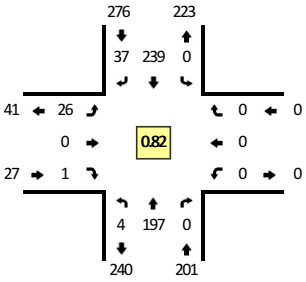
Type of peak hour being reported: Intersection Peak

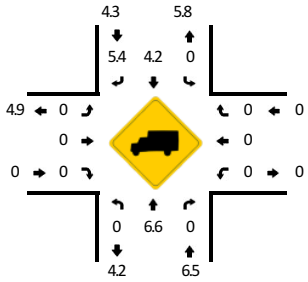
Method for determining peak hour: Tot

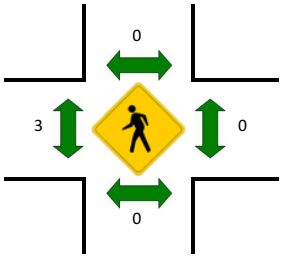
**LOCATION:** S Main St -- Willow Fork Dr SW
**CITY/STATE:** Boardman, OR

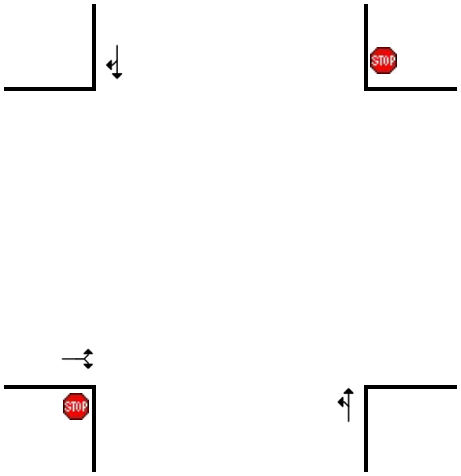
**QC JOB #:** 15762809
**DATE:** Thu, Mar 31 2022

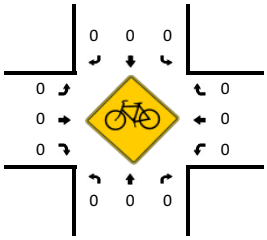
**Peak-Hour: 3:00 PM -- 4:00 PM**
**Peak 15-Min: 3:10 PM -- 3:25 PM**

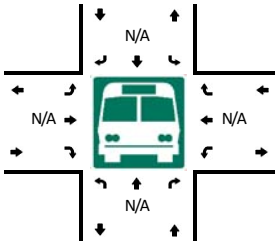


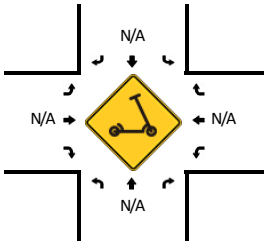




| 5-Min Count Period Beginning At | S Main St (Northbound) | | | | S Main St (Southbound) | | | | Willow Fork Dr SW (Eastbound) | | | | Willow Fork Dr SW (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 1 | 11 | 0 | 0 | 0 | 18 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | |
| 3:05 PM | 0 | 11 | 0 | 0 | 0 | 27 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | |
| 3:10 PM | 0 | 10 | 0 | 0 | 0 | 38 | 7 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 58 | |
| 3:15 PM | 0 | 18 | 0 | 0 | 0 | 27 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | |
| 3:20 PM | 1 | 23 | 0 | 0 | 0 | 16 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | |
| 3:25 PM | 0 | 22 | 0 | 0 | 0 | 15 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | |
| 3:30 PM | 1 | 19 | 0 | 0 | 0 | 14 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | |
| 3:35 PM | 1 | 30 | 0 | 0 | 0 | 14 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | |
| 3:40 PM | 0 | 12 | 0 | 0 | 0 | 13 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | |
| 3:45 PM | 0 | 13 | 0 | 0 | 0 | 27 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | |
| 3:50 PM | 0 | 14 | 0 | 0 | 0 | 18 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | |
| 3:55 PM | 0 | 14 | 0 | 0 | 0 | 12 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 504 |
| 4:00 PM | 1 | 13 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 493 |
| 4:05 PM | 0 | 10 | 0 | 0 | 0 | 16 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 478 |
| 4:10 PM | 0 | 13 | 0 | 0 | 0 | 13 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 452 |
| 4:15 PM | 0 | 11 | 0 | 0 | 0 | 23 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 442 |
| 4:20 PM | 1 | 17 | 0 | 0 | 0 | 17 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 436 |
| 4:25 PM | 0 | 19 | 0 | 0 | 0 | 17 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 438 |
| 4:30 PM | 0 | 15 | 0 | 0 | 0 | 20 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 440 |
| 4:35 PM | 0 | 15 | 0 | 0 | 0 | 13 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 421 |
| 4:40 PM | 0 | 13 | 0 | 0 | 0 | 23 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 431 |
| 4:45 PM | 0 | 20 | 0 | 0 | 0 | 16 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 424 |
| 4:50 PM | 0 | 13 | 0 | 0 | 0 | 11 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 414 |
| 4:55 PM | 0 | 18 | 0 | 0 | 0 | 17 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 421 |
| 5:00 PM | 1 | 16 | 0 | 0 | 0 | 18 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 437 |
| 5:05 PM | 0 | 7 | 0 | 0 | 0 | 13 | 2 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 25 | 435 |
| 5:10 PM | 0 | 17 | 0 | 0 | 0 | 17 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 442 |
| 5:15 PM | 0 | 14 | 0 | 0 | 0 | 15 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 438 |
| 5:20 PM | 0 | 18 | 0 | 0 | 0 | 20 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 441 |
| 5:25 PM | 0 | 12 | 0 | 0 | 0 | 23 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 39 | 439 |
| 5:30 PM | 0 | 11 | 0 | 0 | 0 | 12 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 427 |
| 5:35 PM | 0 | 19 | 0 | 0 | 0 | 21 | 1 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 45 | 438 |
| 5:40 PM | 1 | 14 | 0 | 0 | 0 | 20 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 438 |
| 5:45 PM | 0 | 16 | 0 | 0 | 0 | 10 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 29 | 428 |
| 5:50 PM | 0 | 10 | 0 | 0 | 0 | 17 | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 436 |
| 5:55 PM | 0 | 16 | 0 | 0 | 0 | 21 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 440 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 4 | 204 | 0 | 0 | 0 | 324 | 56 | 0 | 24 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 616 |
| Heavy Trucks | 0 | 20 | 0 | | 0 | 8 | 4 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 32 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 4 | | | | 0 | | | 4 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

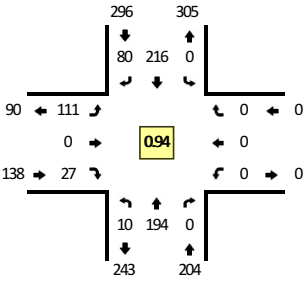
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Tot

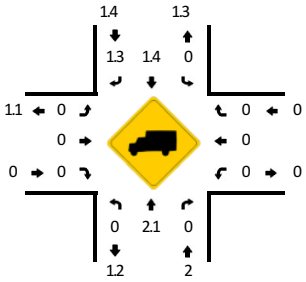
**LOCATION:** S Main St -- Kinkade Rd
**CITY/STATE:** Boardman, OR

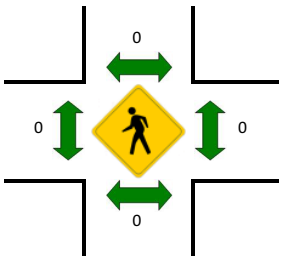
**QC JOB #:** 15762810
**DATE:** Thu, Mar 31 2022

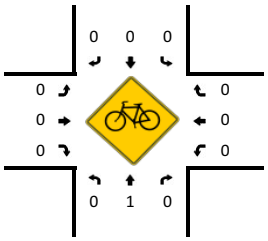
**Peak-Hour: 5:00 PM -- 6:00 PM**
**Peak 15-Min: 5:10 PM -- 5:25 PM**

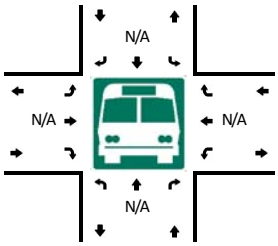


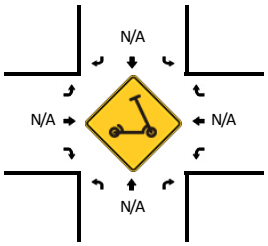





| 5-Min Count Period Beginning At | S Main St (Northbound) | | | | S Main St (Southbound) | | | | Kinkade Rd (Eastbound) | | | | Kinkade Rd (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 0 | 11 | 0 | 0 | 0 | 19 | 6 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | |
| 3:05 PM | 1 | 11 | 0 | 0 | 0 | 30 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 50 | |
| 3:10 PM | 0 | 11 | 0 | 0 | 0 | 43 | 7 | 0 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 68 | |
| 3:15 PM | 1 | 18 | 0 | 0 | 0 | 29 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | |
| 3:20 PM | 1 | 26 | 0 | 0 | 0 | 18 | 7 | 0 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 65 | |
| 3:25 PM | 2 | 22 | 0 | 0 | 0 | 14 | 3 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 48 | |
| 3:30 PM | 2 | 22 | 0 | 0 | 0 | 13 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | |
| 3:35 PM | 0 | 31 | 0 | 0 | 0 | 18 | 5 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 60 | |
| 3:40 PM | 0 | 15 | 0 | 0 | 0 | 15 | 11 | 0 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 48 | |
| 3:45 PM | 1 | 15 | 0 | 0 | 0 | 29 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | |
| 3:50 PM | 1 | 19 | 0 | 0 | 0 | 15 | 6 | 0 | 10 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 55 | |
| 3:55 PM | 2 | 11 | 0 | 0 | 0 | 13 | 3 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 37 | 631 |
| 4:00 PM | 0 | 11 | 0 | 0 | 0 | 10 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 622 |
| 4:05 PM | 0 | 13 | 0 | 0 | 0 | 14 | 10 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 42 | 614 |
| 4:10 PM | 1 | 13 | 0 | 0 | 0 | 18 | 12 | 0 | 9 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 55 | 601 |
| 4:15 PM | 1 | 13 | 0 | 0 | 0 | 22 | 7 | 0 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 52 | 596 |
| 4:20 PM | 1 | 21 | 0 | 0 | 0 | 20 | 7 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 589 |
| 4:25 PM | 0 | 24 | 0 | 0 | 0 | 21 | 3 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 55 | 596 |
| 4:30 PM | 0 | 18 | 0 | 0 | 0 | 22 | 6 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 56 | 601 |
| 4:35 PM | 0 | 18 | 0 | 0 | 0 | 11 | 8 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 588 |
| 4:40 PM | 0 | 16 | 0 | 0 | 0 | 22 | 7 | 0 | 6 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 54 | 594 |
| 4:45 PM | 1 | 21 | 0 | 0 | 0 | 17 | 2 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 51 | 593 |
| 4:50 PM | 1 | 16 | 0 | 0 | 0 | 13 | 7 | 0 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 46 | 584 |
| 4:55 PM | 2 | 16 | 0 | 0 | 0 | 19 | 4 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 48 | 595 |
| 5:00 PM | 1 | 19 | 0 | 0 | 0 | 17 | 6 | 0 | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 53 | 617 |
| 5:05 PM | 0 | 9 | 0 | 0 | 0 | 16 | 13 | 0 | 6 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 47 | 622 |
| 5:10 PM | 2 | 21 | 0 | 0 | 0 | 17 | 8 | 0 | 13 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 64 | 631 |
| 5:15 PM | 0 | 17 | 0 | 0 | 0 | 15 | 4 | 0 | 14 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 54 | 633 |
| 5:20 PM | 3 | 18 | 0 | 0 | 0 | 16 | 2 | 0 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 52 | 627 |
| 5:25 PM | 0 | 14 | 0 | 0 | 0 | 20 | 7 | 0 | 11 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 56 | 628 |
| 5:30 PM | 0 | 14 | 0 | 0 | 0 | 15 | 3 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 40 | 612 |
| 5:35 PM | 2 | 20 | 0 | 0 | 0 | 22 | 9 | 0 | 7 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 62 | 627 |
| 5:40 PM | 1 | 15 | 0 | 0 | 0 | 19 | 8 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 50 | 623 |
| 5:45 PM | 1 | 16 | 0 | 0 | 0 | 10 | 9 | 0 | 11 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 49 | 621 |
| 5:50 PM | 0 | 13 | 0 | 0 | 0 | 29 | 5 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 55 | 630 |
| 5:55 PM | 0 | 18 | 0 | 0 | 0 | 20 | 6 | 0 | 10 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 56 | 638 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 20 | 224 | 0 | 0 | 0 | 192 | 56 | 0 | 156 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 680 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 0 | 4 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | 0 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

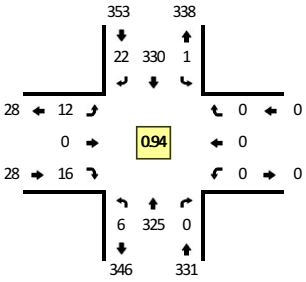
Type of peak hour being reported: Intersection Peak

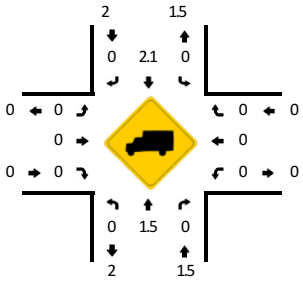
Method for determining peak hour: Tot

**LOCATION:** S Main St -- City Center Dr
**CITY/STATE:** Boardman, OR

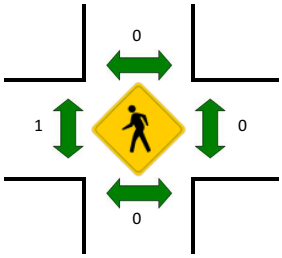
**QC JOB #:** 15762811
**DATE:** Thu, Mar 31 2022

**Peak-Hour: 4:20 PM -- 5:20 PM**
**Peak 15-Min: 4:20 PM -- 4:35 PM**

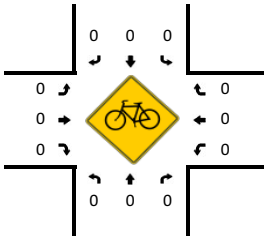


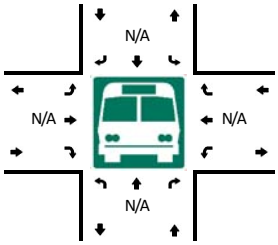




Quality Counts
DATA THAT DRIVES COMMUNITIES

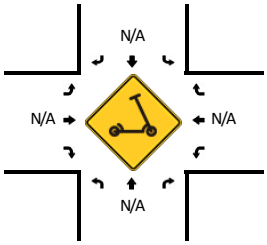











| 5-Min Count Period Beginning At | S Main St (Northbound) | | | | S Main St (Southbound) | | | | City Center Dr (Eastbound) | | | | City Center Dr (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 2 | 11 | 0 | 0 | 0 | 30 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | |
| 3:05 PM | 0 | 20 | 0 | 0 | 0 | 37 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 | |
| 3:10 PM | 1 | 13 | 0 | 0 | 0 | 52 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 69 | |
| 3:15 PM | 2 | 20 | 0 | 0 | 0 | 34 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | |
| 3:20 PM | 0 | 38 | 0 | 0 | 0 | 27 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66 | |
| 3:25 PM | 0 | 26 | 0 | 0 | 0 | 18 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 48 | |
| 3:30 PM | 0 | 31 | 0 | 0 | 0 | 27 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | |
| 3:35 PM | 0 | 29 | 0 | 0 | 0 | 28 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | |
| 3:40 PM | 1 | 20 | 0 | 0 | 0 | 28 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | |
| 3:45 PM | 2 | 18 | 0 | 0 | 0 | 33 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | |
| 3:50 PM | 0 | 30 | 0 | 0 | 0 | 25 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 | |
| 3:55 PM | 1 | 19 | 0 | 0 | 0 | 21 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 45 | 689 |
| 4:00 PM | 0 | 19 | 0 | 0 | 0 | 17 | 4 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 43 | 687 |
| 4:05 PM | 1 | 15 | 0 | 0 | 0 | 26 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | 679 |
| 4:10 PM | 2 | 21 | 0 | 0 | 0 | 34 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 672 |
| 4:15 PM | 1 | 23 | 0 | 0 | 0 | 31 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 60 | 670 |
| 4:20 PM | 1 | 30 | 0 | 0 | 0 | 25 | 2 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 64 | 668 |
| 4:25 PM | 0 | 32 | 0 | 0 | 0 | 28 | 2 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 67 | 687 |
| 4:30 PM | 1 | 22 | 0 | 0 | 0 | 32 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 58 | 682 |
| 4:35 PM | 0 | 31 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 677 |
| 4:40 PM | 0 | 23 | 0 | 0 | 0 | 34 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 60 | 681 |
| 4:45 PM | 0 | 31 | 0 | 0 | 0 | 26 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 685 |
| 4:50 PM | 0 | 27 | 0 | 0 | 0 | 20 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 49 | 675 |
| 4:55 PM | 2 | 26 | 0 | 0 | 0 | 26 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 | 689 |
| 5:00 PM | 2 | 21 | 0 | 0 | 0 | 25 | 4 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 57 | 703 |
| 5:05 PM | 0 | 18 | 0 | 0 | 0 | 31 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 52 | 704 |
| 5:10 PM | 0 | 34 | 0 | 0 | 0 | 29 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 67 | 709 |
| 5:15 PM | 0 | 30 | 0 | 0 | 0 | 29 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 712 |
| 5:20 PM | 1 | 27 | 0 | 0 | 0 | 30 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 711 |
| 5:25 PM | 0 | 30 | 0 | 0 | 0 | 27 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 704 |
| 5:30 PM | 1 | 24 | 0 | 0 | 0 | 21 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 693 |
| 5:35 PM | 1 | 26 | 0 | 0 | 0 | 32 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 700 |
| 5:40 PM | 0 | 19 | 0 | 0 | 0 | 31 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 53 | 693 |
| 5:45 PM | 0 | 26 | 0 | 0 | 0 | 22 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 683 |
| 5:50 PM | 1 | 22 | 0 | 0 | 0 | 39 | 3 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 68 | 702 |
| 5:55 PM | 1 | 28 | 0 | 0 | 0 | 27 | 1 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 61 | 704 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 8 | 336 | 0 | 0 | 0 | 340 | 16 | 0 | 24 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 756 |
| Heavy Trucks | 0 | 8 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 8 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | 0 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 4/6/2022 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

# Appendix B Existing Traffic Conditions

HCM 6th

Vistro File: H:\...\27246 - Vistro.vistro
Report File: H:\...\Exist Conditions - PM.pdf

Scenario 1 Exist_PM
9/23/2022

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Main St/Columbia Ave | Two-way stop | HCM 7th Edition | WB Left | 0.199 | 12.3 | B |
| 2 | Main St/Boardman Ave | Two-way stop | HCM 7th Edition | WB Left | 0.116 | 20.0 | C |
| 3 | Main St/Front St NE | Two-way stop | HCM 7th Edition | WB Left | 0.264 | 25.9 | D |
| 4 | Main St/I-84 WB Ramp Terminal | Two-way stop | HCM 7th Edition | WB Left | 0.430 | 22.0 | C |
| 5 | Main St/I-84 EB Ramp Terminal | Two-way stop | HCM 7th Edition | EB Thru | 0.008 | 60.8 | F |
| 6 | Main St/Front St SE | Two-way stop | HCM 7th Edition | EB Left | 0.038 | 25.1 | D |
| 7 | Main St/Oregon Trail Blvd | Two-way stop | HCM 7th Edition | WB Left | 0.012 | 15.7 | C |
| 8 | Main St/City Center Dr | Two-way stop | HCM 7th Edition | EB Left | 0.049 | 14.7 | B |
| 9 | Main St/Kinkade Rd | Two-way stop | HCM 7th Edition | EB Left | 0.196 | 13.9 | B |
| 10 | Main St/Willow Fork Dr | Two-way stop | HCM 7th Edition | EB Left | 0.050 | 11.7 | B |
| 11 | Main St/Wilson Ln | All-way stop | HCM 7th Edition | EB Left | 0.267 | 8.8 | A |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 1: Main St/Columbia Ave**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 12.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.199 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 300.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 19 | 44 | 112 | 7 | 22 | 4 | 3 | 22 | 17 | 116 | 31 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | 3.00 | 0.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 19 | 44 | 112 | 7 | 22 | 4 | 3 | 22 | 17 | 116 | 31 | 14 |
| Peak Hour Factor | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 5 | 13 | 32 | 2 | 6 | 1 | 1 | 6 | 5 | 33 | 9 | 4 |
| Total Analysis Volume [veh/h] | 22 | 50 | 127 | 8 | 25 | 5 | 3 | 25 | 19 | 132 | 35 | 16 |
| Pedestrian Volume [ped/h] | 7 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.04 | 0.02 | 0.20 | 0.05 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.30 | 0.00 | 0.00 | 7.57 | 0.00 | 0.00 | 10.72 | 11.05 | 8.87 | 12.33 | 12.20 | 10.72 |
| Movement LOS | A | A | A | A | A | A | B | B | A | B | B | B |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.20 | 0.20 | 0.20 | 1.08 | 1.08 | 1.08 |
| 95th-Percentile Queue Length [ft/ln] | 1.05 | 0.00 | 0.00 | 0.43 | 0.00 | 0.00 | 5.03 | 5.03 | 5.03 | 26.89 | 26.89 | 26.89 |
| d_A, Approach Delay [s/veh] | 0.81 | | | 1.59 | | | 10.14 | | | 12.16 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 6.26 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: Main St/Boardman Ave**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 20.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.116 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 92 | 168 | 45 | 10 | 151 | 17 | 14 | 6 | 78 | 28 | 5 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 9.00 | 10.00 | 4.00 | 6.00 | 0.00 | 0.00 | 0.00 | 11.00 | 0.00 | 12.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 92 | 168 | 45 | 10 | 151 | 17 | 14 | 6 | 78 | 28 | 5 | 8 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 48 | 13 | 3 | 43 | 5 | 4 | 2 | 22 | 8 | 1 | 2 |
| Total Analysis Volume [veh/h] | 106 | 193 | 52 | 11 | 174 | 20 | 16 | 7 | 90 | 32 | 6 | 9 |
| Pedestrian Volume [ped/h] | 2 | | | 8 | | | 2 | | | 7 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.08 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.05 | 0.02 | 0.11 | 0.12 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.81 | 0.00 | 0.00 | 7.88 | 0.00 | 0.00 | 16.82 | 16.60 | 10.35 | 19.96 | 17.10 | 11.55 |
| Movement LOS | A | A | A | A | A | A | C | C | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.25 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.62 | 0.62 | 0.62 | 0.50 | 0.50 | 0.50 |
| 95th-Percentile Queue Length [ft/ln] | 6.20 | 0.00 | 0.00 | 0.66 | 0.00 | 0.00 | 15.54 | 15.54 | 15.54 | 12.54 | 12.54 | 12.54 |
| d_A, Approach Delay [s/veh] | 2.36 | | | 0.42 | | | 11.66 | | | 17.98 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 4.30 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 3: Main St/Front St NE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.264 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 61 | 221 | 81 | 11 | 278 | 4 | 7 | 3 | 77 | 56 | 3 | 6 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 6.00 | 3.00 | 8.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 5.00 | 11.00 | 33.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 61 | 221 | 81 | 11 | 278 | 4 | 7 | 3 | 77 | 56 | 3 | 6 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 61 | 23 | 3 | 77 | 1 | 2 | 1 | 21 | 16 | 1 | 2 |
| Total Analysis Volume [veh/h] | 68 | 246 | 90 | 12 | 309 | 4 | 8 | 3 | 86 | 62 | 3 | 7 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 2 | | | 2 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.03 | 0.01 | 0.12 | 0.26 | 0.01 | 0.01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.12 | 0.00 | 0.00 | 7.96 | 0.00 | 0.00 | 17.79 | 17.72 | 10.69 | 25.87 | 23.53 | 15.63 |
| Movement LOS | A | A | A | A | A | A | C | C | B | D | C | C |
| 95th-Percentile Queue Length [veh/ln] | 0.18 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.12 | 0.12 | 0.41 | 1.14 | 1.14 | 1.14 |
| 95th-Percentile Queue Length [ft/ln] | 4.42 | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 | 2.92 | 2.92 | 10.14 | 28.39 | 28.39 | 28.39 |
| d_A, Approach Delay [s/veh] | 1.37 | | | 0.29 | | | 11.49 | | | 24.78 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 3.95 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 4: Main St/I-84 WB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 22.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.430 |

**Intersection Setup**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 252 | 0 | 0 | 363 | 48 | 0 | 0 | 0 | 122 | 0 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 4.00 | 3.00 | 2.00 | 2.00 | 3.00 | 17.00 | 2.00 | 2.00 | 2.00 | 4.00 | 0.00 | 10.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 24 | 252 | 0 | 0 | 363 | 48 | 0 | 0 | 0 | 122 | 0 | 111 |
| Peak Hour Factor | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 7 | 69 | 0 | 0 | 100 | 13 | 0 | 0 | 0 | 34 | 0 | 30 |
| Total Analysis Volume [veh/h] | 26 | 277 | 0 | 0 | 399 | 53 | 0 | 0 | 0 | 134 | 0 | 122 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 3 | | | 3 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | Yes |
| Storage Area [veh] | 0 | 0 | 0 | 1 |
| Two-Stage Gap Acceptance | | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.43 | 0.00 | 0.17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 21.99 | 21.85 | 15.30 |
| Movement LOS | A | A | | | A | A | | | | C | C | C |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.41 | 2.41 | 2.41 |
| 95th-Percentile Queue Length [ft/ln] | 1.10 | 1.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 60.27 | 60.27 | 60.27 |
| d_A, Approach Delay [s/veh] | 0.71 | | | 0.00 | | | 0.00 | | | 18.80 | | |
| Approach LOS | A | | | A | | | A | | | C | | |
| d_I, Intersection Delay [s/veh] | 4.97 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: Main St/I-84 EB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 60.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.008 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 188 | 183 | 75 | 383 | 0 | 88 | 1 | 49 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 4.00 | 2.00 | 9.00 | 3.00 | 2.00 | 3.00 | 100.00 | 13.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 188 | 183 | 75 | 383 | 0 | 88 | 1 | 49 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 58 | 56 | 23 | 118 | 0 | 27 | 0 | 15 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 232 | 226 | 93 | 473 | 0 | 109 | 1 | 60 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 2 | | | 5 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.57 | 0.01 | 0.11 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 8.51 | 0.00 | 0.00 | 49.74 | 60.85 | 37.38 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | A | A | A | A | | E | F | E | | | |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.16 | 0.16 | 0.00 | 4.43 | 4.43 | 4.43 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 4.08 | 4.08 | 0.00 | 110.72 | 110.72 | 110.72 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 1.40 | | | 45.44 | | | 0.00 | | |
| Approach LOS | A | | | A | | | E | | | A | | |
| d_I, Intersection Delay [s/veh] | 7.13 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Main St/Front St SE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.038 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 332 | 18 | 41 | 378 | 12 | 6 | 0 | 6 | 16 | 3 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 4.00 | 5.00 | 12.00 | 3.00 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 332 | 18 | 41 | 378 | 12 | 6 | 0 | 6 | 16 | 3 | 33 |
| Peak Hour Factor | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 102 | 6 | 13 | 117 | 4 | 2 | 0 | 2 | 5 | 1 | 10 |
| Total Analysis Volume [veh/h] | 5 | 410 | 22 | 51 | 467 | 15 | 7 | 0 | 7 | 20 | 4 | 41 |
| Pedestrian Volume [ped/h] | 3 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.04 | 0.00 | 0.01 | 0.10 | 0.02 | 0.07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.33 | 0.00 | 0.00 | 8.51 | 0.00 | 0.00 | 25.11 | 21.63 | 11.80 | 24.85 | 23.13 | 11.13 |
| Movement LOS | A | A | A | A | A | A | D | C | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.01 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 | 0.16 | 0.16 | 0.16 | 0.39 | 0.39 | 0.21 |
| 95th-Percentile Queue Length [ft/ln] | 0.35 | 0.00 | 0.00 | 3.73 | 0.00 | 0.00 | 3.91 | 3.91 | 3.91 | 9.63 | 9.63 | 5.22 |
| d_A, Approach Delay [s/veh] | 0.10 | | | 0.81 | | | 18.45 | | | 16.09 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 1.70 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Main St/Oregon Trail Blvd**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 15.7 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.012 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 315 | 6 | 26 | 351 | 4 | 26 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.00 | 17.00 | 4.00 | 1.00 | 0.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 315 | 6 | 26 | 351 | 4 | 26 |
| Peak Hour Factor | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 87 | 2 | 7 | 96 | 1 | 7 |
| Total Analysis Volume [veh/h] | 346 | 7 | 29 | 386 | 4 | 29 |
| Pedestrian Volume [ped/h] | 2 | | 2 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.04 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 8.05 | 0.00 | 15.69 | 10.50 |
| Movement LOS | A | A | A | A | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.05 | 0.05 | 0.17 | 0.17 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 1.23 | 1.23 | 4.21 | 4.21 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.56 | | 11.13 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.75 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: Main St/City Center Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 14.7 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.049 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 300 | 324 | 26 | 17 | 13 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 1.00 | 4.00 | 0.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 8 | 300 | 324 | 26 | 17 | 13 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 83 | 90 | 7 | 5 | 4 |
| Total Analysis Volume [veh/h] | 9 | 333 | 360 | 29 | 19 | 14 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 3 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.00 | 0.05 | 0.02 |
| d_M, Delay for Movement [s/veh] | 8.08 | 0.00 | 0.00 | 0.00 | 14.75 | 10.47 |
| Movement LOS | A | A | A | A | B | B |
| 95th-Percentile Queue Length [veh/ln] | 0.02 | 0.02 | 0.00 | 0.00 | 0.15 | 0.06 |
| 95th-Percentile Queue Length [ft/ln] | 0.38 | 0.38 | 0.00 | 0.00 | 3.85 | 1.60 |
| d_A, Approach Delay [s/veh] | 0.21 | | 0.00 | | 12.93 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.65 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: Main St/Kinkade Rd**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.196 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 200 | 209 | 78 | 88 | 13 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 14.00 | 3.00 | 1.00 | 0.00 | 1.00 | 8.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 7 | 200 | 209 | 78 | 88 | 13 |
| Peak Hour Factor | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 57 | 59 | 22 | 25 | 4 |
| Total Analysis Volume [veh/h] | 8 | 227 | 238 | 89 | 100 | 15 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.00 | 0.20 | 0.02 |
| d_M, Delay for Movement [s/veh] | 8.09 | 0.00 | 0.00 | 0.00 | 13.91 | 11.71 |
| Movement LOS | A | A | A | A | B | B |
| 95th-Percentile Queue Length [veh/ln] | 0.01 | 0.01 | 0.00 | 0.00 | 0.81 | 0.81 |
| 95th-Percentile Queue Length [ft/ln] | 0.33 | 0.33 | 0.00 | 0.00 | 20.37 | 20.37 |
| d_A, Approach Delay [s/veh] | 0.28 | | 0.00 | | 13.62 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 2.41 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: Main St/Willow Fork Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 11.7 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.050 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 177 | 196 | 24 | 24 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 5.00 | 3.00 | 0.00 | 4.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 177 | 196 | 24 | 24 | 0 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 51 | 56 | 7 | 7 | 0 |
| Total Analysis Volume [veh/h] | 2 | 203 | 225 | 28 | 28 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.72 | 0.00 | 0.00 | 0.00 | 11.70 | 9.80 |
| Movement LOS | A | A | A | A | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.16 | 0.16 |
| 95th-Percentile Queue Length [ft/ln] | 0.08 | 0.08 | 0.00 | 0.00 | 3.90 | 3.90 |
| d_A, Approach Delay [s/veh] | 0.08 | | 0.00 | | 11.70 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.71 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 11: Main St/Wilson Ln**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 8.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.267 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 51 | 3 | 21 | 63 | 112 | 105 | 31 | 3 | 7 | 29 | 23 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.00 | 0.00 | 0.00 | 6.00 | 1.00 | 2.00 | 3.00 | 0.00 | 14.00 | 3.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 51 | 3 | 21 | 63 | 112 | 105 | 31 | 3 | 7 | 29 | 23 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 15 | 1 | 6 | 18 | 32 | 30 | 9 | 1 | 2 | 8 | 7 |
| Total Analysis Volume [veh/h] | 2 | 59 | 3 | 24 | 72 | 129 | 121 | 36 | 3 | 8 | 33 | 26 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | |
|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 750 | 843 | 746 | 760 |
| Degree of Utilization, x | 0.09 | 0.27 | 0.21 | 0.09 |

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.28 | 1.08 | 0.81 | 0.29 |
| 95th-Percentile Queue Length [ft] | 6.98 | 26.93 | 20.27 | 7.22 |
| Approach Delay [s/veh] | 8.25 | 8.82 | 9.14 | 8.19 |
| Approach LOS | A | A | A | A |
| Intersection Delay [s/veh] | 8.77 | | | |
| Intersection LOS | A | | | |

# Appendix C Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE



Intersectional Crashes N. Main St & Boardman Ave in Boardman, OR.
January 1, 2016 through December 31, 2020

| COLLISION TYPE | FATAL CRASHES | NON-FATAL CRASHES | PROPERTY DAMAGE ONLY | TOTAL CRASHES | PEOPLE KILLED | PEOPLE INJURED | TRUCKS | DRY SURF | WET SURF | DAY | DARK | INTER-SECTION | INTER-SECTION RELATED | OFF-ROAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR: 2016 | | | | | | | | | | | | | | |
| TURNING MOVEMENTS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 2016 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| FINAL TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |

***Disclaimers:*** *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

*A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.*

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE



Intersectional Crashes N. Main St & Front St in Boardman, OR.
January 1, 2016 through December 31, 2020

| COLLISION TYPE | FATAL CRASHES | NON-FATAL CRASHES | PROPERTY DAMAGE ONLY | TOTAL CRASHES | PEOPLE KILLED | PEOPLE INJURED | TRUCKS | DRY SURF | WET SURF | DAY | DARK | INTER-SECTION | INTER-SECTION RELATED | OFF-ROAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR: 2020 | | | | | | | | | | | | | | |
| TURNING MOVEMENTS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 2020 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| FINAL TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |

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OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE



Intersectional Crashes N. Main St & Interstate 84, Columbia River Hwy (#002), WB Ramps in Boardman, OR.
January 1, 2016 through December 31, 2020

| COLLISION TYPE | FATAL CRASHES | NON-FATAL CRASHES | PROPERTY DAMAGE ONLY | TOTAL CRASHES | PEOPLE KILLED | PEOPLE INJURED | TRUCKS | DRY SURF | WET SURF | DAY | DARK | INTER-SECTION | INTER-SECTION RELATED | OFF-ROAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR: 2020 | | | | | | | | | | | | | | |
| REAR-END | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 2020 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| YEAR: 2019 | | | | | | | | | | | | | | |
| ANGLE | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| REAR-END | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| TURNING MOVEMENTS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 2019 TOTAL | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 2 | 1 | 2 | 1 | 3 | 0 | 0 |
| YEAR: 2018 | | | | | | | | | | | | | | |
| ANGLE | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 2018 TOTAL | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| YEAR: 2017 | | | | | | | | | | | | | | |
| TURNING MOVEMENTS | 0 | 3 | 0 | 3 | 0 | 4 | 0 | 2 | 1 | 2 | 1 | 3 | 0 | 0 |
| 2017 TOTAL | 0 | 3 | 0 | 3 | 0 | 4 | 0 | 2 | 1 | 2 | 1 | 3 | 0 | 0 |
| YEAR: 2016 | | | | | | | | | | | | | | |
| REAR-END | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 2016 TOTAL | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| FINAL TOTAL | 0 | 5 | 4 | 9 | 0 | 7 | 0 | 7 | 2 | 6 | 3 | 9 | 0 | 0 |

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*A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.*

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE



Intersectional Crashes S. Main St & Interstate 84, Columbia River Hwy (#002), EB Ramps in Boardman, OR.
January 1, 2016 through December 31, 2020

| COLLISION TYPE | FATAL CRASHES | NON-FATAL CRASHES | PROPERTY DAMAGE ONLY | TOTAL CRASHES | PEOPLE KILLED | PEOPLE INJURED | TRUCKS | DRY SURF | WET SURF | DAY | DARK | INTER-SECTION | INTER-SECTION RELATED | OFF-ROAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR: 2020 | | | | | | | | | | | | | | |
| ANGLE | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 2020 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| YEAR: 2017 | | | | | | | | | | | | | | |
| TURNING MOVEMENTS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 2017 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| YEAR: 2016 | | | | | | | | | | | | | | |
| TURNING MOVEMENTS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 2016 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| FINAL TOTAL | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 0 |

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*A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.*

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE



Intersectional Crashes S. Main St & Wilson Rd (Ln) in Boardman, OR.
January 1, 2016 through December 31, 2020

| COLLISION TYPE | FATAL CRASHES | NON-FATAL CRASHES | PROPERTY DAMAGE ONLY | TOTAL CRASHES | PEOPLE KILLED | PEOPLE INJURED | TRUCKS | DRY SURF | WET SURF | DAY | DARK | INTER-SECTION | INTER-SECTION RELATED | OFF-ROAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR: 2019 | | | | | | | | | | | | | | |
| ANGLE | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| TURNING MOVEMENTS | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 2019 TOTAL | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| YEAR: 2018 | | | | | | | | | | | | | | |
| ANGLE | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 2018 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| FINAL TOTAL | 0 | 1 | 2 | 3 | 0 | 1 | 0 | 2 | 1 | 1 | 2 | 3 | 0 | 0 |

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OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE



Crashes Main St Between Columbia Ave to Wilson Rd (Ln) in Boardman, OR. Excluding Intersectional Crashes on Road Segment.
January 1, 2016 through December 31, 2020

| COLLISION TYPE | FATAL CRASHES | NON-FATAL CRASHES | PROPERTY DAMAGE ONLY | TOTAL CRASHES | PEOPLE KILLED | PEOPLE INJURED | TRUCKS | DRY SURF | WET SURF | DAY | DARK | INTER-SECTION | INTER-SECTION RELATED | OFF-ROAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR: 2018 | | | | | | | | | | | | | | |
| SIDESWIPE - MEETING | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2018 TOTAL | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| YEAR: 2017 | | | | | | | | | | | | | | |
| REAR-END | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| TURNING MOVEMENTS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 2017 TOTAL | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| YEAR: 2016 | | | | | | | | | | | | | | |
| FIXED / OTHER OBJECT | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 2016 TOTAL | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| FINAL TOTAL | 0 | 2 | 2 | 4 | 0 | 2 | 0 | 2 | 2 | 1 | 3 | 0 | 1 | 1 |

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Crashes Main St Between Columbia Ave to Wilson Rd (Ln) in Boardman, OR. Excluding Intersectional Crashes on Road Segment.
January 1, 2016 through December 31, 2020

| SERIAL NO | DATE | TIME | DAY | *COUNTY OR CITY NAME | COMPNT | MLGTYP | CRASH LOCATION | COLL TYPE | EVENT | CAUSE | ERROR | SUR F | TOT VEH | VEHICLE TYP/OWN #1 | VEHICLE TYP/OWN #2 | --PEOPLE-- KILL | INJ 1 | INJ 2 | INJ 3 | SPEED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00071 | 09/09/2018 | 9P | SU | Boardman | CN | R | HY 002, COLUMBIA RIVER AT MP 164.16 | SS-M | | 05 | 080 | DRY | 2 | 011 | 011 | 0 | 1 | N | N | |

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CITY STREET LOCATIONS BY COUNTY - DRIVER BEHAVIOR FORMAT



Crashes Main St Between Columbia Ave to Wilson Rd (Ln) in Boardman, OR. Excluding Intersectional Crashes on Road Segment.
January 1, 2016 through December 31, 2020

MORROW COUNTY

| SERIAL NO | DATE | TIME | DAY | *COUNTY OR CITY NAME | CRASH LOCATION | COLL TYPE | EVENT | CAUSE | ERROR | SURF | TOT VEH | VEHICLE TYP/OWN #1 | VEHICLE TYP/OWN #2 | PEOPLE KILL | PEOPLE INJ | PEOPLE ALC | PEOPLE SPEED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00080 | 10/30/2016 | 7P | SU | Boardman | N MAIN ST 236 FT N OF BOARDMAN AVE | FIX | 054 | 08 | | WET | 1 | 010 | | 0 | 0 | N | N |
| 00014 | 01/09/2017 | 12P | MO | Boardman | S MAIN ST 230 FT S OF CITY CENTER DR | TURN | | 01,27 | | ICE | 2 | 010 | 030 | 0 | 0 | N | Y |
| 00013 | 01/09/2017 | 5P | MO | Boardman | S MAIN ST 40 FT N OF OREGON TRAIL BLVD | REAR | | 27,29 | 016,026 | DRY | 2 | 011 | 011 | 0 | 1 | N | N |

VEHICLE OWNERSHIP CODES

| Code | Short Description | Long Description |
|---|---|---|
| 0 | N/A | Not collected for PDO Crashes |
| 1 | PRVTE | Private |
| 2 | GOVMT | Government |
| 3 | PUBLC | Public |
| 4 | RENTL | Rental vehicle |
| 5 | STOLN | Stolen vehicle |
| 9 | UNKN | Unknown ownership |

VEHICLE TYPE CODES

| Code | Short Description | Long Description |
|---|---|---|
| 00 | PDO | Not collected for PDO Crashes |
| 01 | PSNGR CAR | Passenger car, pickup, light delivery, etc. |
| 02 | BOBTAIL | Truck tractor with no trailers (bobtail) |
| 03 | FARM TRCTR | Farm tractor or self-propelled farm equipment |
| 04 | SEMI TOW | Truck Tractor with trailer/mobile home in tow |
| 05 | TRUCK | Truck with non-detachable bed, panel, etc. |
| 06 | MOPED | Moped, minibike, seated motor scooter, motor bike |
| 07 | SCHL BUS | School bus (includes van) |
| 08 | OTH BUS | Other bus |
| 09 | MTRCYCLE | Motorcycle, dirt bike |
| 10 | OTHER | Other: forklift, backhoe, etc. |
| 11 | MOTRHOME | Motorhome |
| 12 | TROLLEY | Motorized Street Car/Trolley (no rails/wires) |
| 13 | ATV | ATV |
| 14 | MTRSCTR | Motorized scooter (standing) |
| 15 | SNOWMOBILE | Snowmobile |
| 99 | UNKNOWN | Unknown vehicle type |

CAUSE CODES

| Code | Short Description | Medium Description | Long Description | Code Termination Date |
|---|---|---|---|---|
| 00 | NO CODE | NO CODE APPLICABLE | No cause associated at this level | |
| 01 | TOO-FAST | TOO FAST FOR COND | Too fast for conditions (not exceed posted speed) | |
| 02 | NO-YIELD | FAILED YIELD ROW | Did not yield right-of-way | |
| 03 | PAS-STOP | PASSED STOP SIGN | Passed stop sign or red flasher | |
| 04 | DIS SIG | DISREGRD TRAF SIGNAL | Disregarded traffic signal | |
| 05 | LEFT-CTR | LEFT OF CTR/STRADDLE | Drove left of center on two-way road; straddling | |
| 06 | IMP-OVER | IMPROPER PASSING | Improper overtaking | |
| 07 | TOO-CLOS | FOLLOW TOO CLOSE | Followed too closely | |
| 08 | IMP-TURN | IMPROPER TURN | Made improper turn | |
| 09 | DRINKING | ALC OR DRUGS | Alcohol or Drug Involved | 12/31/2002 |
| 10 | OTHR-IMP | OTHER DRIVE ERR | Other improper driving | |
| 11 | MECH-DEF | MECH DEFECT | Mechanical defect | |
| 12 | OTHER | OTHER | Other (not improper driving) | |
| 13 | IMP LN C | IMP LANE CHANGE | Improper change of traffic lanes | |
| 14 | DIS TCD | DISRG OTHR TCD | Disregarded other traffic control device | |
| 15 | WRNG WAY | WRONG WAY / 1-WAY RD | Wrong way on one-way road; wrong side divided road | |
| 16 | FATIGUE | DRIVER FATIGUED | Driver drowsy/fatigued/sleepy | |
| 17 | ILLNESS | PHYSICAL ILLNESS | Physical illness | |
| 18 | IN RDWY | ILLEGALLY IN RDWY | Non-motorist illegally in roadway | |
| 19 | NT VISBL | NOT VISIBLE | Non-motorist not visible; non-reflective clothing | |
| 20 | IMP PKNG | IMPROPER PARKING | Vehicle improperly parked | |
| 21 | DEF STER | DEFECTIVE STEERING | Defective steering mechanism | |
| 22 | DEF BRKE | DEFECTIVE BRAKES | Inadequate or no brakes | |
| 24 | LOADSHFT | LOAD SHIFTED | Vehicle lost load or load shifted | |
| 25 | TIREFAIL | TIRE FAILURE | Tire Failure | |
| 26 | PHANTOM | PHANTOM VEHICLE | Phantom / Non-contact Vehicle | |
| 27 | INATTENT | INATTENTION | Inattention | |
| 28 | NM INATT | NON-MTRST INATTENT | Non-Motorist Inattention | |
| 29 | F AVOID | FAIL AVOID VEH AHEAD | Failed to avoid vehicle ahead | |
| 30 | SPEED | EXCED POSTED SPEED | Driving in excess of posted speed | |
| 31 | RACING | SPEED RACING | Speed Racing (per PAR) | |
| 32 | CARELESS | CARELESS DRIVING | Careless Driving (per PAR) | |
| 33 | RECKLESS | RECKLESS DRIVING | Reckless Driving (per PAR) | |
| 34 | AGGRESV | AGGRESSIVE DRIVING | Aggressive Driving (per PAR) | |
| 35 | RD RAGE | ROAD RAGE | Road Rage (per PAR) | |
| 40 | VIEW OBS | VIEW OBSCURED | View obscured | |
| 50 | USED MDN | IMP USE MEDIAN/SHLDR | Improper use of median or shoulder | |
| 51 | FAIL LN | F MAINT LANE | Failed to maintain lane | 12/31/2015 |
| 52 | OFF RD | RAN OFF RD | Ran off road | 12/31/2015 |

ERR CODES

| Code | Short Description | Medium Description | Long Description |
|---|---|---|---|
| 000 | NONE | NO ERROR | No error |
| 001 | WIDE TRN | WIDE TURN | Wide turn |
| 002 | CUT CORN | CUT CORNER | Cut corner on turn |
| 003 | FAIL TRN | F OBEY TRN | Failed to obey mandatory traffic turn signal, sign or lane markings |
| 004 | L IN TRF | LTRN FNT TRAF | Left turn in front of oncoming traffic |
| 005 | L PROHIB | LTRN PROHIB | Left turn where prohibited |
| 006 | FRM WRNG | T FRM WRNG LN | Turned from wrong lane |
| 007 | TO WRONG | T TO WRONG LN | Turned into wrong lane |
| 008 | ILLEG U | ILLEG U-TURN | U-turned illegally |
| 009 | IMP STOP | IMP STOP | Improperly stopped in traffic lane |
| 010 | IMP SIG | IMP/FAIL SIG | Improper signal or failure to signal |
| 011 | IMP BACK | IMP BACKING | Backing improperly (not parking) |
| 012 | IMP PARK | IMP PARKED | Improperly parked |
| 013 | UNPARK | IMP STRT PARK | Improper start leaving parked position |
| 014 | IMP STRT | IMP STRT STOP | Improper start from stopped position |
| 015 | IMP LGHT | IMP/NO LIGHTS | Improper or no lights (vehicle in traffic) |
| 016 | INATTENT | INATTENTION | Inattention (Failure to Dim Lights prior to 4/1/97) |
| 017 | UNSF VEH | DR UNSAFE VEH | Driving unsafe vehicle (no other error apparent) |
| 018 | OTH PARK | PRK MAN N/CLR | Entering/exiting parked position w/ insufficient clearance; other improper parking maneuver |
| 019 | DIS DRIV | DISRG DR SIG | Disregarded other driver's signal |
| 020 | DIS SGNL | DISRG TRF SIG | Disregarded traffic signal |
| 021 | RAN STOP | DISRG STP SGN | Disregarded stop sign or flashing red |
| 022 | DIS SIGN | DISRG WRN SGN | Disregarded warning sign, flares or flashing amber |
| 023 | DIS OFCR | DISRG POL/FLG | Disregarded police officer or flagman |
| 024 | DIS EMER | DISRG SIR/EMR | Disregarded siren or warning of emergency vehicle |
| 025 | DIS RR | DISRG RR SIG | Disregarded RR signal, RR sign, or RR flagman |
| 026 | REAR-END | F AVOID STP V | Failed to avoid stopped or parked vehicle ahead other than school bus |
| 027 | BIKE ROW | F/YLD ROW BIK | Did not have right-of-way over pedalcyclist |
| 028 | NO ROW | NO R-O-W | Did not have right-of-way |
| 029 | PED ROW | F/YLD ROW PED | Failed to yield right-of-way to pedestrian |
| 030 | PAS CURV | PASS ON CURVE | Passing on a curve |
| 031 | PAS WRNG | PASS WRNG SID | Passing on the wrong side |
| 032 | PAS TANG | PASS TANGENT | Passing on straight road under unsafe conditions |
| 033 | PAS X-WK | PASS STP4PED | Passed vehicle stopped at crosswalk for pedestrian |
| 034 | PAS INTR | PASS AT INTER | Passing at intersection |
| 035 | PAS HILL | PASS ON HILL | Passing on crest of hill |
| 036 | N/PAS ZN | PASS N/PASSNG | Passing in "No Passing" zone |
| 037 | PAS TRAF | PASS ONC TRAF | Passing in front of oncoming traffic |
| 038 | CUT-IN | CUTTING IN | Cutting in (two lanes - two way only) |
| 039 | WRNGSIDE | DR WRONG SIDE | Driving on wrong side of the road (2-way undivided roadways) |
| 040 | THRU MED | DR THRU MEDN | Driving through safety zone or over island |
| 041 | F/ST BUS | F/STP SCHLBUS | Failed to stop for school bus |
| 042 | F/SLO MV | F/SLO SLO VEH | Failed to decrease speed for slower moving vehicle |
| 043 | TOO CLOSE | FOLLW TO CLOS | Following too closely (must be on officer's report) |
| 044 | STRDL LN | STRD/DR WRNG | Straddling or driving on wrong lanes |
| 045 | IMP CHG | IMP LANE CHG | Improper change of traffic lanes |

| Code | Short Description | Medium Description | Long Description |
|---|---|---|---|
| 046 | WRNG WAY | WRNG WY/1 WAY | Wrong way on one-way roadway; wrong side divided road |
| 047 | BASCRULE | V BASIC RULE | Driving too fast for conditions (not exceeding posted speed) |
| 048 | OPN DOOR | OPN DOOR TRAF | Opened door into adjacent traffic lane |
| 049 | IMPEDING | IMPEDING TRAF | Impeding Traffic |
| 050 | SPEED | SPEED | Driving in excess of posted speed |
| 051 | RECKLESS | RECKLSS DRVNG | Reckless driving (per PAR) |
| 052 | CARELESS | CARELSS DRVNG | Careless driving (per PAR) |
| 053 | RACING | RACING | Speed Racing (per PAR) |
| 054 | X N/SGNL | X-INT NO SGNL | Crossing at intersection, no traffic signal present |
| 055 | X W/SGNL | X-INT W/ SGNL | Crossing at intersection, traffic signal present |
| 056 | DIAGONAL | X-INT DIAGNL | Crossing at intersection - diagonally |
| 057 | BTWN INT | X-BTWN INTER | Crossing between intersections |
| 059 | W/TRAF-S | W SHLD W/TRAF | Walking, running, riding, etc., on shoulder WITH traffic |
| 060 | A/TRAF-S | W SHLD A/TRAF | Walking, running, riding, etc., on shoulder FACING traffic |
| 061 | W/TRAF-P | W PAVE W/TRAF | Walking, running, riding, etc., on pavement WITH traffic |
| 062 | A/TRAF-P | W PAVE A/TRAF | Walking, running, riding, etc., on pavement FACING traffic |
| 063 | PLAYINRD | PLAY IN RDWY | Playing in street or road |
| 064 | PUSH MV | PUSH MV IN RD | Pushing or working on vehicle in road or on shoulder |
| 065 | WORK IN RD | WORK IN RD | Working in roadway or along shoulder |
| 070 | LAY ON RD | LYING IN RD | Standing or lying in roadway |
| 071 | NM IMP USE | N-M IMP USE | Improper use of traffic lane by non-motorist |
| 073 | ELUDING | ELUDING | Eluding / Attempt to elude |
| 079 | F NEG CURV | FAIL NEG CURV | Failed to negotiate a curve |
| 080 | FAIL LN | F MAINT LANE | Failed to maintain lane |
| 081 | OFF RD | RAN OFF RD | Ran off road |
| 082 | NO CLEAR | MISJUDGE CLR | Driver misjudged clearance |
| 083 | OVRSTEER | OVERSTEER | Over-correcting |
| 084 | NOT USED | NOT USED | Code not in use |
| 085 | OVRLOAD | OVERLOAD | Overloading or improper loading of vehicle with cargo or passengers |
| 097 | UNA DIS TC | UNA DISRG TCD | Unable to determine which driver disregarded traffic control device |

EVENT CODES

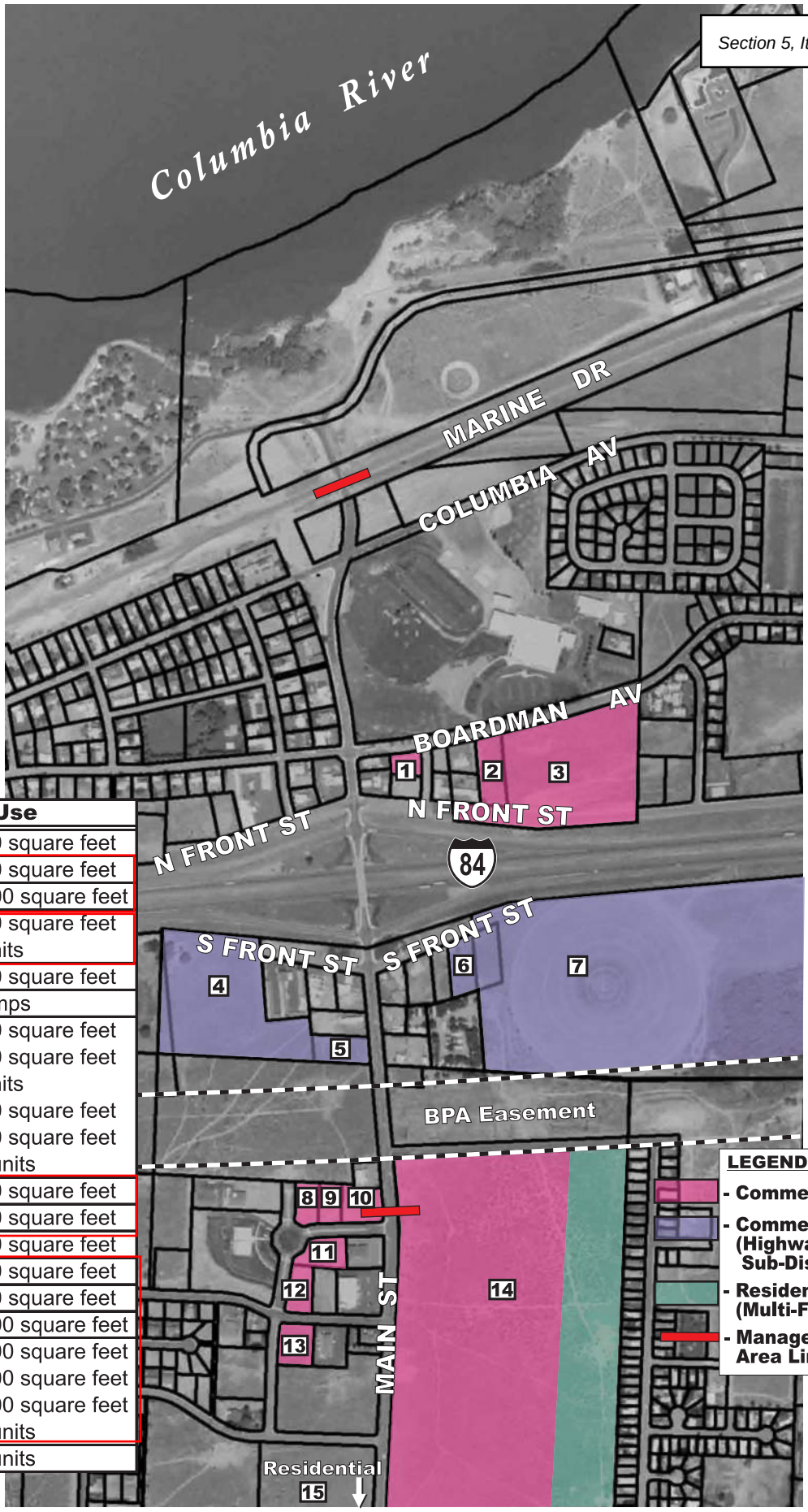
| Code | Short Description | Medium Description | Long Description |
|---|---|---|---|
| 001 | FEL/JUMP | FELL/JUMPED MV | Occupant fell, jumped or was ejected from moving vehicle |
| 002 | INTERFER | PSNGR INTERFERED | Passenger interfered with driver |
| 003 | BUG INTF | ANML INTERFERED | Animal or insect in vehicle interfered with driver |
| 004 | INDRCT PED | PED INDRCTLY INVLV | Pedestrian indirectly involved (not struck) |
| 005 | SUB-PED | SUBSEQUENT PED | "Sub-Ped": pedestrian injured subsequent to collision, etc. |
| 006 | INDRCT BIK | BIKE INDRCTLY INVLV | Pedalcyclist indirectly involved (not struck) |
| 007 | HITCHIKR | HITCHHIKER | Hitchhiker (soliciting a ride) |
| 008 | PSNGR TOW | PSNGR TOWED | Passenger or non-motorist being towed or pushed on conveyance |
| 009 | ON/OFF V | ON/OFF STOP VEH | Getting on/off stopped/parked vehicle (occupants only; must have physical contact w/ vehicle) |
| 010 | SUB OTRN | SUBSEQ OVERTURN | Overturned after first harmful event |
| 011 | MV PUSHD | VEH BEING PUSHED | Vehicle being pushed |
| 012 | MV TOWED | VEH TOWED/TOWING | Vehicle towed or had been towing another vehicle |
| 013 | FORCED | FORCED BY IMPACT | Vehicle forced by impact into another vehicle, pedalcyclist or pedestrian |
| 014 | SET MOTN | MV SET IN MOTION | Vehicle set in motion by non-driver (child released brakes, etc.) |
| 015 | RR ROW | RAILROAD ROW | At or on railroad right-of-way (not Light Rail) |
| 016 | LT RL ROW | LIGHT RAIL ROW | At or on Light-Rail right-of-way |
| 017 | RR HIT V | TRAIN HIT VEH | Train struck vehicle |
| 018 | V HIT RR | VEH HIT TRAIN | Vehicle struck train |
| 019 | HIT RR CAR | VEH HIT RR CAR | Vehicle struck railroad car on roadway |
| 020 | JACKNIFE | JACKKNIFE | Jackknife; trailer or towed vehicle struck towing vehicle |
| 021 | TRL OTRN | TRAILER O'TURN | Trailer or towed vehicle overturned |
| 022 | CN BROKE | TRLR CONN BROKE | Trailer connection broke |
| 023 | DETACH TRL | DETCHD TRLR STRKNG | Detached trailing object struck other vehicle, non-motorist, or object |
| 024 | V DOOR OPN | V DOOR OPN IN TRAF | Vehicle door opened into adjacent traffic lane |
| 025 | WHEELOFF | WHEEL CAME OFF | Wheel came off |
| 026 | HOOD UP | HOOD FLEW UP | Hood flew up |
| 028 | LOAD SHIFT | LOAD SHIFTED | Lost load, load moved or shifted |
| 029 | TIREFAIL | TIRE FAILURE | Tire failure |
| 030 | PET | PET | Pet: cat, dog and similar |
| 031 | LVSTOCK | LIVESTOCK | Stock: cow, calf, bull, steer, sheep, etc. |
| 032 | HORSE | HORSE | Horse, mule, or donkey |
| 033 | HRSE&RID | HORSE & RIDER | Horse and rider |
| 034 | GAME | GAME NO DEER/ELK | Wild animal, game (includes birds; not deer or elk) |
| 035 | DEER ELK | DEER OR ELK | Deer or elk, wapiti |
| 036 | ANML VEH | ANIMAL-DRAWN VEH | Animal-drawn vehicle |
| 037 | CULVERT | CULVERT/MANHOLE | Culvert, open low or high manhole |
| 038 | ATENUATN | IMPACT CUSHION | Impact attenuator |
| 039 | PK METER | PARKING METER | Parking meter |
| 040 | CURB | CURB | Curb (also narrow sidewalks on bridges) |
| 041 | JIGGLE | JIGGLE BAR N/MED | Jiggle bar or traffic snake for channelization |

| Code | Short Description | Medium Description | Long Description |
|---|---|---|---|
| 042 | GDRL END | GUARDRAIL END | Leading edge of guardrail |
| 043 | GARDRAIL | GUARDRAIL | Guard rail (not metal median barrier) |
| 044 | BARRIER | MEDIAN BARRIER | Median barrier (raised or metal) |
| 045 | WALL | WALL | Retaining wall or tunnel wall |
| 046 | BR RAIL | BRIDGE RAIL | Bridge railing or parapet (on bridge or approach) |
| 047 | BR ABUTMNT | BRIDGE ABUTMENT | Bridge abutment (included "approach end" thru 2013) |
| 048 | BR COLMN | BRIDGE COLUMN | Bridge pillar or column |
| 049 | BR GIRDR | BRIDGE GIRDER | Bridge girder (horizontal bridge structure overhead) |
| 050 | ISLAND | TRAFFIC ISLAND | Traffic raised island |
| 051 | GORE | GORE | Gore |
| 052 | POLE UNK | POLE-UNKNOWN | Pole – type unknown |
| 053 | POLE UTL | POLE-UTILITY | Pole – power or telephone |
| 054 | ST LIGHT | POLE-ST LIGHT | Pole – street light only |
| 055 | TRF SGNL | POLE-TRAF SIGNAL | Pole – traffic signal and ped signal only |
| 056 | SGN BRDG | POLE-SIGN BRIDGE | Pole – sign bridge |
| 057 | STOPSIGN | STOP/YIELD SIGN | Stop or yield sign |
| 058 | OTH SIGN | OTHER SIGN | Other sign, including street signs |
| 059 | HYDRANT | HYDRANT | Hydrant |
| 060 | MARKER | DELINEATOR | Delineator or marker (reflector posts) |
| 061 | MAILBOX | MAILBOX | Mailbox |
| 062 | TREE | TREE/STUMP | Tree, stump or shrubs |
| 063 | VEG OHED | VEGTN OVER RDWY | Tree branch or other vegetation overhead, etc. |
| 064 | WIRE/CBL | CABLE ACROSS RD | Wire or cable across or over the road |
| 065 | TEMP SGN | TEMP SIGN/BARR | Temporary sign or barricade in road, etc. |
| 066 | PERM SGN | PERM SIGN/BARR | Permanent sign or barricade in/off road |
| 067 | SLIDE | SLIDE/ROCKS | Slides, fallen or falling rocks |
| 068 | FRGN OBJ | FOREIGN OBJECT | Foreign obstruction/debris in road (not gravel) |
| 069 | EQP WORK | EQUIP WORKING | Equipment working in/off road |
| 070 | OTH EQP | OTHER EQUIPMENT | Other equipment in or off road (includes parked trailer, boat) |
| 071 | MAIN EQP | MAINTNCE EQUIP | Wrecker, street sweeper, snow plow or sanding equipment |
| 072 | OTHER WALL | OTHER WALL | Rock, brick or other solid wall |
| 073 | IRRGL PVMT | IRREGULAR PAVEMENT | Other bump (not speed bump), pothole or pavement irregularity (per PAR) |
| 074 | OVERHD OBJ | OTHER OVERHEAD OBJ | Other overhead object (highway sign, signal head, etc.); not bridge |
| 075 | CAVE IN | CAVE IN | Bridge or road cave in |
| 076 | HI WATER | HIGH WATER | High Water |
| 077 | SNO BANK | SNOW BANK | Snow Bank |
| 078 | LO-HI EDGE | LOW-HIGH PVMNT EDGE | Low or high shoulder at pavement edge |
| 079 | DITCH | CUT SLOPE/DITCH | Cut slope or ditch embankment |
| 080 | OBJ FRM MV | OBJ FRM OTHR VEH | Struck by rock or other object set in motion by other vehicle (incl. lost loads) |
| 081 | FLY-OBJ | OTHER MOVING OBJ | Struck by rock or other moving or flying object (not set in motion by vehicle) |
| 082 | VEH HID | VEH OBSCURE VIEW | Vehicle obscured view |
| 083 | VEG HID | VEG OBSCURE VIEW | Vegetation obscured view |
| 084 | BLDG HID | BLD OBSCURE VIEW | View obscured by fence, sign, phone booth, etc. |

| Code | Short Description | Medium Description | Long Description |
|---|---|---|---|
| 085 | WIND GUST | WIND GUST | Wind Gust |
| 086 | IMMERSED | IMMERSION | Vehicle immersed in body of water |
| 087 | FIRE/EXP | FIRE/EXPLOSION | Fire or explosion |
| 088 | FENC/BLD | FENCE/BUILDING | Fence or building, etc. |
| 089 | OTHR CRASH | REFER OTHR CRASH | Crash related to another separate crash |
| 090 | TO 1 SIDE | TWO WAY ONE SIDE | Two-way traffic on divided roadway all routed to one side |
| 091 | BUILDING | BUILDING | Building or other structure |
| 092 | PHANTOM | PHANTOM VEH | Other (phantom) non-contact vehicle |
| 093 | CELL PHONE | CELL PHONE PER PAR | Cell phone (on PAR or driver in use) |
| 094 | VIOL GDL | VIOL GRAD DR LIC | Teenage driver in violation of graduated license pgm |
| 095 | GUY WIRE | GUY WIRE | Guy wire |
| 096 | BERM | BERM | Berm (earthen or gravel mound) |
| 097 | GRAVEL | GRAVEL IN RDWY | Gravel in roadway |
| 098 | ABR EDGE | ABRUPT EDGE | Abrupt edge |
| 099 | CELL WTNSD | CELL PHONE WITNESSED | Cell phone use witnessed by other participant |
| 100 | UNK FIXD | UNK FIX OBJ | Fixed object, unknown type. |
| 101 | OTHER OBJ | OTHER OBJ NOT FIXED | Non-fixed object, other or unknown type |
| 102 | TEXTING | TEXTING | Texting |
| 103 | WZ WORKER | WZ WORKER | Work Zone Worker |
| 104 | ON VEHICLE | RIDE ON VEH EXTERIOR | Passenger riding on vehicle exterior |
| 105 | PEDAL PSGR | PSNGR ON PEDALCYCLE | Passenger riding on pedalcycle |
| 106 | MAN WHLCHR | NONMOTOR WHEELCHAIR | Pedestrian in non-motorized wheelchair |
| 107 | MTR WHLCHR | MOTORIZED WHEELCHAIR | Pedestrian in motorized wheelchair |
| 108 | OFFICER | POLICE OFFICER | Law Enforcement / Police Officer |
| 109 | SUB-BIKE | SUBSEQUENT BICYCLIST | "Sub-Bike": pedalcyclist injured subsequent to collision, etc. |
| 110 | N-MTR | NM STR VEH | Non-motorist struck vehicle |
| 111 | S CAR VS V | ST CAR STRUCK VEH | Street Car/Trolley (on rails or overhead wire system) struck vehicle |
| 112 | V VS S CAR | VEH STRUCK ST CAR | Vehicle struck Street Car/Trolley (on rails or overhead wire system) |
| 113 | S CAR ROW | STREET CAR ROW | At or on street car or trolley right-of-way |
| 114 | RR EQUIP | VEH STRUCK RR EQUIP | Vehicle struck railroad equipment (not train) on tracks |
| 115 | DSTRCT GPS | DISTRACT GPS DEVICE | Distracted by navigation system or GPS device |
| 116 | DSTRCT OTH | DISTRACT OTHR DEVICE | Distracted by other electronic device |
| 117 | RR GATE | RR DROP-ARM GATE | Rail crossing drop-arm gate |
| 118 | EXPNSN JNT | EXPANSION JOINT | Expansion joint |
| 119 | JERSEY BAR | JERSEY BARRIER | Jersey barrier |
| 120 | WIRE BAR | WIRE BARRIER | Wire or cable median barrier |
| 121 | FENCE | FENCE | Fence |
| 123 | OBJ IN VEH | LOOSE OBJ IN VEHICLE | Loose object in vehicle struck occupant |
| 124 | SLIPPERY | SLIPPERY SURFACE | Sliding or swerving due to wet, icy, slippery or loose surface (not gravel) |
| 125 | SHLDR | SHLDR GAVE | Shoulder gave way |
| 126 | BOULDER | ROCKS / BOULDER | Rock(s), boulder (not gravel; not rock slide) |
| 127 | LAND SLIDE | ROCK OR LAND SLIDE | Rock slide or land slide |
| 128 | CURVE INV | CURVE PRESENT | Curve present at crash location |

| Code | Short Description | Medium Description | Long Description |
|---|---|---|---|
| 129 | HILL INV | HILL PRESENT | Vertical grade / hill present at crash location |
| 130 | CURVE HID | CURVE OBSCURED VIEW | View obscured by curve |
| 131 | HILL HID | HILL OBSCURED VIEW | View obscured by vertical grade / hill |
| 132 | WINDOW HID | WINDOW VIEW OBSCURED | View obscured by vehicle window conditions |
| 133 | SPRAY HID | SPRAY OBSCURED VIEW | View obscured by water spray |
| 134 | TORRENTIAL | TORRENTIAL RAIN | Torrential Rain (exceptionally heavy rain) |
| 135 | RAIL OCC | RAIL/CABLE CAR OCC | Injured occupant of railway train, light rail, street car or cable car |

# Appendix D Land Use Projections




## Main Street

| Parcel# | Assumed Land Use | |
|---|---|---|
| 1 | Convenience Store | 2,000 square feet |
| 2 | Fast Food Restaurant | 3,000 square feet |
| 3 | Specialty Retail | 20,000 square feet |
| 4 | Restaurant<br>Motel | 6,000 square feet<br>65 units |
| 5 | Fast Food Restaurant | 4,000 square feet |
| 6 | Gas Station with Mart | 8 pumps |
| 7 | Fast Food Restaurant<br>Restaurant<br>Motel<br>Car Wash<br>Car Service Shop<br>Housing | 4,000 square feet<br>6,000 square feet<br>65 units<br>1,000 square feet<br>2,000 square feet<br>120 units |
| 8 | Office | 5,000 square feet |
| 9 | Office | 5,000 square feet |
| 10 | Bank | 4,000 square feet |
| 11 | Office | 5,000 square feet |
| 12 | Office | 5,000 square feet |
| 13 | Medical/Dental | 10,000 square feet |
| 14 | Specialty Retail<br>Drug Store<br>Hardware/Paint Store<br>Housing | 10,000 square feet<br>20,000 square feet<br>10,000 square feet<br>120 units |
| 15 | Housing | 100 units |

NO SCALE

DKS Associates
TRANSPORTATION SOLUTIONS

**City of Boardman Main Street IAMP**
April 2009

**Figure 4.1**

**MAIN STREET 20-Y FORECASTED DEVELOPM**

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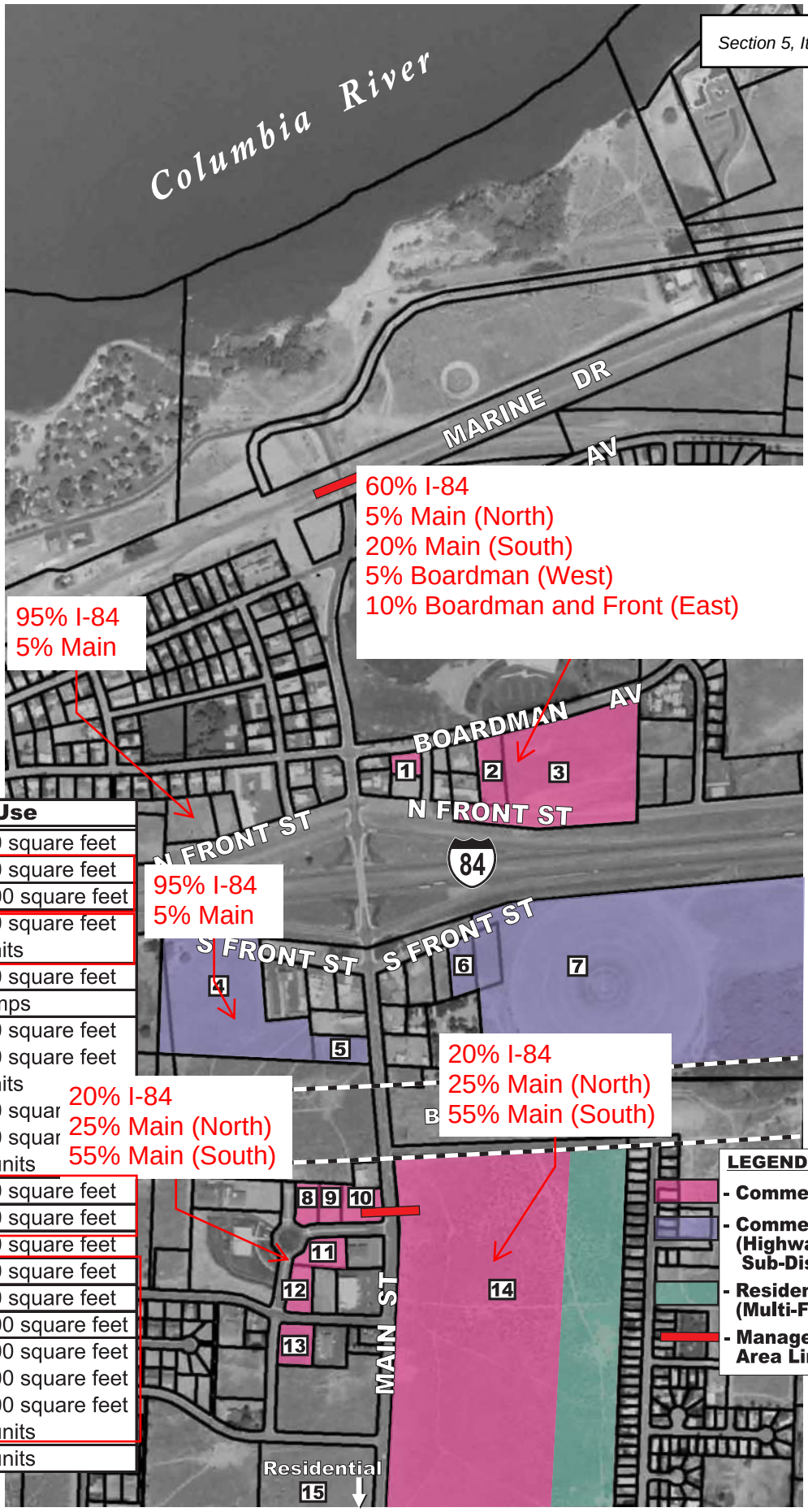


## Main Street

| Parcel# | Assumed Land Use | |
|---|---|---|
| 1 | Convenience Store | 2,000 square feet |
| 2 | Fast Food Restaurant | 3,000 square feet |
| 3 | Specialty Retail | 20,000 square feet |
| 4 | Restaurant<br>Motel | 6,000 square feet<br>65 units |
| 5 | Fast Food Restaurant | 4,000 square feet |
| 6 | Gas Station with Mart | 8 pumps |
| 7 | Fast Food Restaurant<br>Restaurant<br>Motel<br>Car Wash<br>Car Service Shop<br>Housing | 4,000 square feet<br>6,000 square feet<br>65 units<br>1,000 squar<br>2,000 squar<br>120 units |
| 8 | Office | 5,000 square feet |
| 9 | Office | 5,000 square feet |
| 10 | Bank | 4,000 square feet |
| 11 | Office | 5,000 square feet |
| 12 | Office | 5,000 square feet |
| 13 | Medical/Dental | 10,000 square feet |
| 14 | Specialty Retail<br>Drug Store<br>Hardware/Paint Store<br>Housing | 10,000 square feet<br>20,000 square feet<br>10,000 square feet<br>120 units |
| 15 | Housing | 100 units |

NO SCALE

DKS Associates
TRANSPORTATION SOLUTIONS

**City of Boardman Main Street IAMP**
April 2009

**Figure 4.1**

**MAIN STREET 20-Y FORECASTED DEVELOPM**

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City Zoning: Commercial - Hwy Sub District
2009 IAMP assumption: None
Proposed Land Use: Motel
Trip Generation: Motel

| CODE: 320 | Daily | AM | PM |
|---|---|---|---|
| Avg. N. Rooms | 109 | 108 | 98 |
| in | 182 | 14 | 21 |
| out | 183 | 24 | 18 |
| Total | 365 | 38 | 39 |



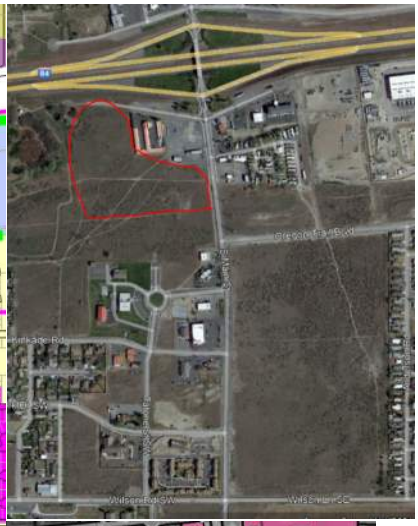
City Zoning: Commercial - Hwy Sub District
2009 IAMP assumption: Fast Food Resturant & Specialty Retail
Proposed Land Use: Fast Food Resturant & High Turn-Over Resturant

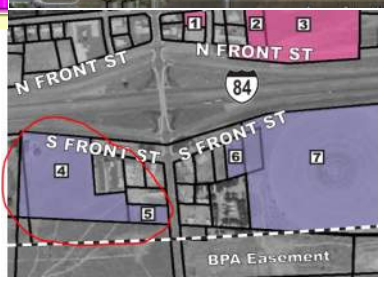
Trip Generation: High-Turnover Resturant

| CODE: 932 | Daily | AM | PM |
|---|---|---|---|
| Avg. S.F. | 5000 | 5000 | 6000 |
| in | 268 | 26 | 33 |
| out | 268 | 22 | 21 |
| Total | 536 | 48 | 54 |

Trip Generation: Fast-Food Resturant with Drive-Through Window

| CODE: 934 | Daily | AM | PM |
|---|---|---|---|
| Avg. S.F. | 3 | 4 | 3 |
| in | 701 | 91 | 51 |
| out | 701 | 87 | 48 |
| Total | 1402 | 178 | 99 |

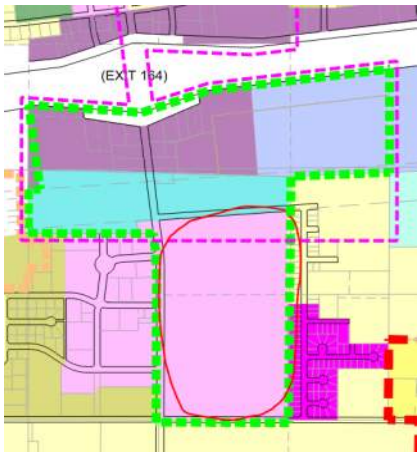



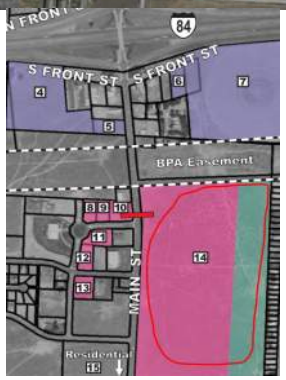



City Zoning: Commercial - Hwy Sub District
2009 IAMP assumption: Resturant & Motel
Proposed Land Use: Truck Stop

Trip Generation: Truck Stop

| CODE: 950 | Daily | AM | PM |
|---|---|---|---|
| Avg. N. Veh. Fuel. Pos. | 9 | 9 | 8 |
| in | 1008 | 62 | 65 |
| out | 1008 | 64 | 58 |
| Total | 2016 | 126 | 123 |




City Zoning: Commercial
2009 IAMP assumption: Specialty Retail, Drug Stor, Hardware Store, Housing
Proposed Land Use: Multi-Family Housing (Low Rise)

Trip Generation: Multi-Family Housing (Low Rise)

| CODE: 220 | Daily | AM | PM |
|---|---|---|---|
| Dwelling Units | 229 | 249 | 241 |
| in | 771 | 24 | 77 |
| out | 772 | 76 | 46 |
| Total | 1543 | 100 | 123 |

# Appendix E 2042 No-Build Operations Worksheets

HCM 6th

Vistro File: H:\...\27246 - Vistro.vistro
Report File: H:\...\Future Conditions - No Build.pdf

Scenario 2 Future
9/23/2022

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Main St/Columbia Ave | Two-way stop | HCM 7th Edition | WB Left | 0.397 | 17.4 | C |
| 2 | Main St/Boardman Ave | Two-way stop | HCM 7th Edition | WB Left | 0.508 | 49.3 | E |
| 3 | Main St/Front St NE | Two-way stop | HCM 7th Edition | WB Left | 1.173 | 214.8 | F |
| 4 | Main St/I-84 WB Ramp Terminal | Two-way stop | HCM 7th Edition | WB Left | 1.180 | 176.3 | F |
| 5 | Main St/I-84 EB Ramp Terminal | Two-way stop | HCM 7th Edition | EB Thru | 0.021 | 803.1 | F |
| 6 | Main St/Front St SE | Two-way stop | HCM 7th Edition | EB Left | 0.626 | 86.9 | F |
| 7 | Main St/Oregon Trail Blvd | Two-way stop | HCM 7th Edition | WB Left | 0.271 | 36.0 | E |
| 8 | Main St/City Center Dr | Two-way stop | HCM 7th Edition | EB Left | 0.207 | 28.4 | D |
| 9 | Main St/Kinkade Rd | Two-way stop | HCM 7th Edition | EB Left | 0.384 | 25.1 | D |
| 10 | Main St/Willow Fork Dr | Two-way stop | HCM 7th Edition | EB Left | 0.137 | 17.2 | C |
| 11 | Main St/Wilson Ln | All-way stop | HCM 7th Edition | SB Right | 0.420 | 10.3 | B |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 1: Main St/Columbia Ave**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.397 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 300.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 19 | 44 | 112 | 7 | 22 | 4 | 3 | 22 | 17 | 116 | 31 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | 3.00 | 0.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 15 | 11 | 83 | 0 | 6 | 0 | 0 | 0 | 19 | 71 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 55 | 195 | 7 | 28 | 4 | 3 | 22 | 36 | 187 | 31 | 14 |
| Peak Hour Factor | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 10 | 16 | 55 | 2 | 8 | 1 | 1 | 6 | 10 | 53 | 9 | 4 |
| Total Analysis Volume [veh/h] | 39 | 63 | 222 | 8 | 32 | 5 | 3 | 25 | 41 | 213 | 35 | 16 |
| Pedestrian Volume [ped/h] | 7 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.05 | 0.04 | 0.40 | 0.06 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.33 | 0.00 | 0.00 | 7.81 | 0.00 | 0.00 | 11.93 | 12.53 | 9.09 | 17.42 | 16.81 | 14.82 |
| Movement LOS | A | A | A | A | A | A | B | B | A | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.08 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.31 | 0.31 | 0.31 | 2.53 | 2.53 | 2.53 |
| 95th-Percentile Queue Length [ft/ln] | 1.90 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 7.82 | 7.82 | 7.82 | 63.35 | 63.35 | 63.35 |
| d_A, Approach Delay [s/veh] | 0.88 | | | 1.39 | | | 10.46 | | | 17.18 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 7.99 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: Main St/Boardman Ave**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 49.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.508 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 92 | 168 | 45 | 10 | 151 | 17 | 14 | 6 | 78 | 28 | 5 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 9.00 | 10.00 | 4.00 | 6.00 | 0.00 | 0.00 | 0.00 | 11.00 | 0.00 | 12.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 86 | 51 | 27 | 69 | 0 | 0 | 3 | 7 | 43 | 0 | 23 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 96 | 254 | 96 | 37 | 220 | 17 | 14 | 9 | 85 | 71 | 5 | 31 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 28 | 73 | 28 | 11 | 63 | 5 | 4 | 3 | 24 | 20 | 1 | 9 |
| Total Analysis Volume [veh/h] | 110 | 292 | 110 | 43 | 253 | 20 | 16 | 10 | 98 | 82 | 6 | 36 |
| Pedestrian Volume [ped/h] | 2 | | | 8 | | | 2 | | | 7 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.08 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.08 | 0.05 | 0.13 | 0.51 | 0.03 | 0.06 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.03 | 0.00 | 0.00 | 8.40 | 0.00 | 0.00 | 25.91 | 23.89 | 12.15 | 49.26 | 42.38 | 32.47 |
| Movement LOS | A | A | A | A | A | A | D | C | B | E | E | D |
| 95th-Percentile Queue Length [veh/ln] | 0.28 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 3.30 | 3.30 | 3.30 |
| 95th-Percentile Queue Length [ft/ln] | 6.94 | 0.00 | 0.00 | 3.05 | 0.00 | 0.00 | 25.00 | 25.00 | 25.00 | 82.44 | 82.44 | 82.44 |
| d_A, Approach Delay [s/veh] | 1.73 | | | 1.14 | | | 14.87 | | | 44.05 | | |
| Approach LOS | A | | | A | | | B | | | E | | |
| d_I, Intersection Delay [s/veh] | 7.95 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 3: Main St/Front St NE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 214.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.173 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 61 | 221 | 81 | 11 | 278 | 4 | 7 | 3 | 77 | 56 | 3 | 6 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 6.00 | 3.00 | 8.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 5.00 | 11.00 | 33.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 126 | 92 | 15 | 104 | 0 | 0 | 2 | 1 | 78 | 0 | 14 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 61 | 347 | 173 | 26 | 382 | 4 | 7 | 5 | 78 | 134 | 3 | 20 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 96 | 48 | 7 | 106 | 1 | 2 | 1 | 22 | 37 | 1 | 6 |
| Total Analysis Volume [veh/h] | 68 | 386 | 192 | 29 | 424 | 4 | 8 | 6 | 87 | 149 | 3 | 22 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 2 | | | 2 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.06 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.05 | 0.04 | 0.14 | 1.17 | 0.02 | 0.04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.47 | 0.00 | 0.00 | 8.70 | 0.00 | 0.00 | 29.60 | 28.36 | 11.76 | 214.75 | 207.92 | 192.95 |
| Movement LOS | A | A | A | A | A | A | D | D | B | F | F | F |
| 95th-Percentile Queue Length [veh/ln] | 0.20 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.28 | 0.28 | 0.49 | 10.37 | 10.37 | 10.37 |
| 95th-Percentile Queue Length [ft/ln] | 4.90 | 0.00 | 0.00 | 2.23 | 0.00 | 0.00 | 6.92 | 6.92 | 12.17 | 259.19 | 259.19 | 259.19 |
| d_A, Approach Delay [s/veh] | 0.89 | | | 0.55 | | | 14.16 | | | 211.88 | | |
| Approach LOS | A | | | A | | | B | | | F | | |
| d_I, Intersection Delay [s/veh] | 28.39 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 4: Main St/I-84 WB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 176.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.180 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | | | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 252 | 0 | 0 | 363 | 48 | 0 | 0 | 0 | 122 | 0 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 4.00 | 3.00 | 2.00 | 2.00 | 3.00 | 17.00 | 2.00 | 2.00 | 2.00 | 4.00 | 0.00 | 10.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 38 | 170 | 0 | 0 | 142 | 41 | 0 | 0 | 0 | 31 | 0 | 48 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 62 | 422 | 0 | 0 | 505 | 89 | 0 | 0 | 0 | 153 | 0 | 159 |
| Peak Hour Factor | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 116 | 0 | 0 | 139 | 24 | 0 | 0 | 0 | 42 | 0 | 44 |
| Total Analysis Volume [veh/h] | 68 | 464 | 0 | 0 | 555 | 98 | 0 | 0 | 0 | 168 | 0 | 175 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 3 | | | 3 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | Yes |
| Storage Area [veh] | 0 | 0 | 0 | 1 |
| Two-Stage Gap Acceptance | | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.07 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 1.18 | 0.00 | 0.30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 176.26 | 174.34 | 157.21 |
| Movement LOS | A | A | | | A | A | | | | F | F | F |
| 95th-Percentile Queue Length [veh/ln] | 0.12 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.81 | 15.81 | 15.81 |
| 95th-Percentile Queue Length [ft/ln] | 2.94 | 2.94 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 395.14 | 395.14 | 395.14 |
| d_A, Approach Delay [s/veh] | 1.15 | | | 0.00 | | | 0.00 | | | 166.54 | | |
| Approach LOS | A | | | A | | | A | | | F | | |
| d_I, Intersection Delay [s/veh] | 37.78 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: Main St/I-84 EB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 803.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.021 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 188 | 183 | 75 | 383 | 0 | 88 | 1 | 49 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 4.00 | 2.00 | 9.00 | 3.00 | 2.00 | 3.00 | 100.00 | 13.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 156 | 28 | 38 | 135 | 0 | 52 | 0 | 40 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 344 | 211 | 113 | 518 | 0 | 140 | 1 | 89 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 106 | 65 | 35 | 160 | 0 | 43 | 0 | 27 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 425 | 260 | 140 | 640 | 0 | 173 | 1 | 110 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 2 | | | 5 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.16 | 0.01 | 0.00 | 2.23 | 0.02 | 0.24 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 9.31 | 0.00 | 0.00 | 772.98 | 803.12 | 734.49 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | A | A | A | A | | F | F | F | | | |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.25 | 0.25 | 0.00 | 25.45 | 25.45 | 25.45 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 6.32 | 6.32 | 0.00 | 636.28 | 636.28 | 636.28 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 1.67 | | | 758.18 | | | 0.00 | | |
| Approach LOS | A | | | A | | | F | | | A | | |
| d_I, Intersection Delay [s/veh] | 123.86 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Main St/Front St SE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 86.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.626 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 332 | 18 | 41 | 378 | 12 | 6 | 0 | 6 | 16 | 3 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 4.00 | 5.00 | 12.00 | 3.00 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 140 | 0 | 0 | 147 | 28 | 44 | 0 | 11 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 472 | 18 | 41 | 525 | 40 | 50 | 0 | 17 | 16 | 3 | 33 |
| Peak Hour Factor | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 146 | 6 | 13 | 162 | 12 | 15 | 0 | 5 | 5 | 1 | 10 |
| Total Analysis Volume [veh/h] | 5 | 583 | 22 | 51 | 648 | 49 | 62 | 0 | 21 | 20 | 4 | 41 |
| Pedestrian Volume [ped/h] | 3 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.01 | 0.00 | 0.06 | 0.01 | 0.00 | 0.63 | 0.00 | 0.05 | 0.19 | 0.03 | 0.08 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.00 | 0.00 | 0.00 | 9.11 | 0.00 | 0.00 | 86.94 | 77.38 | 58.54 | 47.13 | 40.99 | 12.82 |
| Movement LOS | A | A | A | A | A | A | F | F | F | E | E | B |
| 95th-Percentile Queue Length [veh/ln] | 0.02 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 3.59 | 3.59 | 3.59 | 0.77 | 0.77 | 0.27 |
| 95th-Percentile Queue Length [ft/ln] | 0.42 | 0.00 | 0.00 | 4.36 | 0.00 | 0.00 | 89.86 | 89.86 | 89.86 | 19.29 | 19.29 | 6.65 |
| d_A, Approach Delay [s/veh] | 0.07 | | | 0.62 | | | 79.75 | | | 25.11 | | |
| Approach LOS | A | | | A | | | F | | | D | | |
| d_I, Intersection Delay [s/veh] | 5.82 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Main St/Oregon Trail Blvd**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 36.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.271 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 315 | 6 | 26 | 351 | 0 | 0 | 0 | 0 | 4 | 0 | 26 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 3.00 | 17.00 | 4.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 5 | 96 | 41 | 43 | 106 | 8 | 6 | 0 | 8 | 34 | 0 | 37 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 411 | 47 | 69 | 457 | 8 | 6 | 0 | 8 | 38 | 0 | 63 |
| Peak Hour Factor | 1.0000 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9100 | 1.0000 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 113 | 13 | 19 | 126 | 2 | 2 | 0 | 2 | 10 | 0 | 17 |
| Total Analysis Volume [veh/h] | 5 | 452 | 52 | 76 | 502 | 8 | 6 | 0 | 8 | 42 | 0 | 69 |
| Pedestrian Volume [ped/h] | 2 | | | 2 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.07 | 0.01 | 0.00 | 0.05 | 0.00 | 0.01 | 0.27 | 0.00 | 0.12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.42 | 0.00 | 0.00 | 8.52 | 0.00 | 0.00 | 33.47 | 26.95 | 12.37 | 36.02 | 33.12 | 18.89 |
| Movement LOS | A | A | A | A | A | A | D | D | B | E | D | C |
| 95th-Percentile Queue Length [veh/ln] | 0.01 | 0.01 | 0.01 | 0.13 | 0.13 | 0.13 | 0.19 | 0.19 | 0.19 | 1.76 | 1.76 | 1.76 |
| 95th-Percentile Queue Length [ft/ln] | 0.21 | 0.21 | 0.21 | 3.32 | 3.32 | 3.32 | 4.75 | 4.75 | 4.75 | 44.06 | 44.06 | 44.06 |
| d_A, Approach Delay [s/veh] | 0.08 | | | 1.10 | | | 21.41 | | | 25.37 | | |
| Approach LOS | A | | | A | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 3.12 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: Main St/City Center Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 28.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.207 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 300 | 0 | 0 | 324 | 26 | 17 | 0 | 13 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 2.00 | 2.00 | 1.00 | 4.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 109 | 4 | 21 | 121 | 6 | 19 | 0 | 6 | 4 | 0 | 15 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 409 | 4 | 21 | 445 | 32 | 36 | 0 | 19 | 4 | 0 | 15 |
| Peak Hour Factor | 0.9000 | 0.9000 | 1.0000 | 1.0000 | 0.9000 | 0.9000 | 0.9000 | 1.0000 | 0.9000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 114 | 1 | 5 | 124 | 9 | 10 | 0 | 5 | 1 | 0 | 4 |
| Total Analysis Volume [veh/h] | 13 | 454 | 4 | 21 | 494 | 36 | 40 | 0 | 21 | 4 | 0 | 15 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 3 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.21 | 0.00 | 0.04 | 0.02 | 0.00 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.47 | 0.00 | 0.00 | 8.29 | 0.00 | 0.00 | 28.38 | 26.19 | 11.65 | 24.37 | 22.19 | 11.37 |
| Movement LOS | A | A | A | A | A | A | D | D | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.02 | 0.02 | 0.02 | 0.04 | 0.04 | 0.04 | 0.75 | 0.75 | 0.12 | 0.14 | 0.14 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.55 | 0.55 | 0.55 | 0.90 | 0.90 | 0.90 | 18.80 | 18.80 | 2.91 | 3.60 | 3.60 | 3.60 |
| d_A, Approach Delay [s/veh] | 0.23 | | | 0.32 | | | 22.62 | | | 14.11 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.75 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: Main St/Kinkade Rd**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.384 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 200 | 0 | 0 | 209 | 78 | 88 | 0 | 13 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 14.00 | 3.00 | 2.00 | 2.00 | 1.00 | 0.00 | 1.00 | 2.00 | 8.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 86 | 4 | 12 | 101 | 18 | 11 | 0 | 9 | 3 | 0 | 20 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 9 | 286 | 4 | 12 | 310 | 96 | 99 | 0 | 22 | 3 | 0 | 20 |
| Peak Hour Factor | 0.8800 | 0.8800 | 1.0000 | 1.0000 | 0.8800 | 0.8800 | 0.8800 | 1.0000 | 0.8800 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 81 | 1 | 3 | 88 | 27 | 28 | 0 | 6 | 1 | 0 | 5 |
| Total Analysis Volume [veh/h] | 10 | 325 | 4 | 12 | 352 | 109 | 113 | 0 | 25 | 3 | 0 | 20 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.38 | 0.00 | 0.04 | 0.01 | 0.00 | 0.03 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.47 | 0.00 | 0.00 | 7.94 | 0.00 | 0.00 | 25.14 | 24.19 | 18.59 | 17.73 | 17.35 | 10.28 |
| Movement LOS | A | A | A | A | A | A | D | C | C | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 2.03 | 2.03 | 2.03 | 0.12 | 0.12 | 0.12 |
| 95th-Percentile Queue Length [ft/ln] | 0.42 | 0.42 | 0.42 | 0.53 | 0.53 | 0.53 | 50.78 | 50.78 | 50.78 | 2.99 | 2.99 | 2.99 |
| d_A, Approach Delay [s/veh] | 0.25 | | | 0.20 | | | 23.95 | | | 11.25 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 3.85 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: Main St/Willow Fork Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.137 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 177 | 0 | 0 | 196 | 24 | 24 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 5.00 | 2.00 | 2.00 | 3.00 | 0.00 | 4.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 10 | 63 | 4 | 18 | 79 | 15 | 17 | 0 | 5 | 8 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 240 | 4 | 18 | 275 | 39 | 41 | 0 | 5 | 8 | 0 | 12 |
| Peak Hour Factor | 0.8700 | 0.8700 | 1.0000 | 1.0000 | 0.8700 | 0.8700 | 0.8700 | 1.0000 | 0.8700 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 69 | 1 | 5 | 79 | 11 | 12 | 0 | 1 | 2 | 0 | 3 |
| Total Analysis Volume [veh/h] | 14 | 276 | 4 | 18 | 316 | 45 | 47 | 0 | 6 | 8 | 0 | 12 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.14 | 0.00 | 0.01 | 0.02 | 0.00 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.99 | 0.00 | 0.00 | 7.83 | 0.00 | 0.00 | 17.21 | 16.68 | 11.77 | 15.60 | 15.55 | 10.01 |
| Movement LOS | A | A | A | A | A | A | C | C | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.51 | 0.51 | 0.51 | 0.12 | 0.12 | 0.12 |
| 95th-Percentile Queue Length [ft/ln] | 0.59 | 0.59 | 0.59 | 0.78 | 0.78 | 0.78 | 12.65 | 12.65 | 12.65 | 3.01 | 3.01 | 3.01 |
| d_A, Approach Delay [s/veh] | 0.38 | | | 0.37 | | | 16.59 | | | 12.25 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.85 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 11: Main St/Wilson Ln**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.420 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 51 | 3 | 21 | 63 | 112 | 105 | 31 | 3 | 7 | 29 | 23 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.00 | 0.00 | 0.00 | 6.00 | 1.00 | 2.00 | 3.00 | 0.00 | 14.00 | 3.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 5 | 0 | 23 | 16 | 53 | 57 | 0 | 0 | 0 | 0 | 14 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 56 | 3 | 44 | 79 | 165 | 162 | 31 | 3 | 7 | 29 | 37 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 16 | 1 | 13 | 23 | 47 | 47 | 9 | 1 | 2 | 8 | 11 |
| Total Analysis Volume [veh/h] | 2 | 64 | 3 | 51 | 91 | 190 | 186 | 36 | 3 | 8 | 33 | 43 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | |
|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 687 | 792 | 694 | 703 |
| Degree of Utilization, x | 0.10 | 0.42 | 0.32 | 0.12 |

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.33 | 2.09 | 1.41 | 0.40 |
| 95th-Percentile Queue Length [ft] | 8.33 | 52.32 | 35.18 | 10.12 |
| Approach Delay [s/veh] | 8.82 | 10.80 | 10.66 | 8.81 |
| Approach LOS | A | B | B | A |
| Intersection Delay [s/veh] | 10.33 | | | |
| Intersection LOS | B | | | |

# Oregon Department of Transportation

## Transportation Development Branch

### Transportation Planning Analysis Unit

## Preliminary Traffic Signal Warrant Analysis[1]

| | | | |
|---|---|---|---|
| **Major Street:** | Main Street | **Minor Street:** | Boardman Ave |
| **Project:** | Boardman Main Street | **City/County:** | Boardman, Oregon |
| **Year:** | 2042 | **Alternative:** | Signal |

## Preliminary Signal Warrant Volumes

| Number of Approach lanes | | ADT on major street approaching from both directions | | ADT on minor street, highest approaching volume | |
|---|---|---|---|---|---|
| Major Street | Minor Street | Percent of standard warrants 100 | 70 | 100 | 70 |
| **Case A: Minimum Vehicular Traffic** | | | | | |
| 1 | 1 | 8850 | 6200 | 2650 | 1850 |
| 2 or more | 1 | 10600 | 7400 | 2650 | 1850 |
| 2 or more | 2 or more | 10600 | 7400 | 3550 | 2500 |
| 1 | 2 or more | 8850 | 6200 | 3550 | 2500 |
| **Case B: Interruption of Continuous Traffic** | | | | | |
| 1 | 1 | 13300 | 9300 | 1350 | 950 |
| 2 or more | 1 | 15900 | 11100 | 1350 | 950 |
| 2 or more | 2 or more | 15900 | 11100 | 1750 | 1250 |
| 1 | 2 or more | 13300 | 9300 | 1750 | 1250 |
| | 100 percent of standard warrants | | | | |
| **X** | 70 percent of standard warrants[2] | | | | |

## Preliminary Signal Warrant Calculation

| | Street | Number of Lanes | Warrant Volumes | Approach Volumes | Warrant Met |
|---|---|---|---|---|---|
| Case A | Major | 1 | 6200 | 7200 | Y |
| | Minor | 2 or more | 2500 | 2520 | |
| Case B | Major | 1 | 9300 | 7200 | N |
| | Minor | 2 or more | 1250 | 2520 | |

Analyst and Date: Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Analysis Procedures

# Appendix F Circulation Alternative #1 Traffic Conditions

**Intersection Level Of Service Report**
**Intersection 1: Main St/Columbia Ave**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.397 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 300.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 19 | 44 | 112 | 7 | 22 | 4 | 3 | 22 | 17 | 116 | 31 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | 3.00 | 0.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 15 | 11 | 83 | 0 | 6 | 0 | 0 | 0 | 19 | 71 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 55 | 195 | 7 | 28 | 4 | 3 | 22 | 36 | 187 | 31 | 14 |
| Peak Hour Factor | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 10 | 16 | 55 | 2 | 8 | 1 | 1 | 6 | 10 | 53 | 9 | 4 |
| Total Analysis Volume [veh/h] | 39 | 63 | 222 | 8 | 32 | 5 | 3 | 25 | 41 | 213 | 35 | 16 |
| Pedestrian Volume [ped/h] | 7 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.05 | 0.04 | 0.40 | 0.06 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.33 | 0.00 | 0.00 | 7.81 | 0.00 | 0.00 | 11.93 | 12.53 | 9.09 | 17.42 | 16.81 | 14.82 |
| Movement LOS | A | A | A | A | A | A | B | B | A | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.08 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.31 | 0.31 | 0.31 | 2.53 | 2.53 | 2.53 |
| 95th-Percentile Queue Length [ft/ln] | 1.90 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 7.82 | 7.82 | 7.82 | 63.35 | 63.35 | 63.35 |
| d_A, Approach Delay [s/veh] | 0.88 | | | 1.39 | | | 10.46 | | | 17.18 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 7.99 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: Main St/Boardman Ave**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.581 |

**Intersection Setup**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 153 | 161 | 45 | 21 | 151 | 17 | 21 | 9 | 78 | 84 | 8 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 9.00 | 10.00 | 4.00 | 6.00 | 0.00 | 0.00 | 0.00 | 11.00 | 0.00 | 12.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 86 | 51 | 37 | 58 | 0 | 0 | 9 | 3 | 121 | 0 | 23 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 157 | 247 | 96 | 58 | 209 | 17 | 21 | 18 | 81 | 205 | 8 | 31 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 45 | 71 | 28 | 17 | 60 | 5 | 6 | 5 | 23 | 59 | 2 | 9 |
| Total Analysis Volume [veh/h] | 180 | 284 | 110 | 67 | 240 | 20 | 24 | 21 | 93 | 236 | 9 | 36 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 1 - Coordination Group |
| Cycle Length [s] | 60 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 15 | 29 | 0 | 9 | 23 | 0 | 0 | 22 | 0 | 0 | 22 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 19 | 12 | 19 | 11 | 14 | 14 | 14 | 14 |
| g / C, Green / Cycle | 0.46 | 0.30 | 0.46 | 0.26 | 0.34 | 0.34 | 0.34 | 0.34 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.24 | 0.06 | 0.16 | 0.02 | 0.07 | 0.20 | 0.03 |
| s, saturation flow rate [veh/h] | 1316 | 1641 | 1077 | 1672 | 1383 | 1530 | 1186 | 1534 |
| c, Capacity [veh/h] | 720 | 496 | 553 | 435 | 551 | 517 | 457 | 519 |
| d1, Uniform Delay [s] | 6.96 | 13.11 | 7.13 | 13.27 | 11.05 | 9.68 | 14.86 | 9.23 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.18 | 2.93 | 0.10 | 1.32 | 0.03 | 0.21 | 0.90 | 0.07 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.25 | 0.79 | 0.12 | 0.60 | 0.04 | 0.22 | 0.52 | 0.09 |
| d, Delay for Lane Group [s/veh] | 7.14 | 16.04 | 7.22 | 14.59 | 11.08 | 9.89 | 15.76 | 9.30 |
| Lane Group LOS | A | B | A | B | B | A | B | A |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.68 | 3.03 | 0.24 | 1.87 | 0.14 | 0.60 | 1.81 | 0.22 |
| 50th-Percentile Queue Length [ft/ln] | 17.09 | 75.78 | 5.99 | 46.67 | 3.40 | 14.97 | 45.30 | 5.60 |
| 95th-Percentile Queue Length [veh/ln] | 1.23 | 5.46 | 0.43 | 3.36 | 0.25 | 1.08 | 3.26 | 0.40 |
| 95th-Percentile Queue Length [ft/ln] | 30.76 | 136.40 | 10.79 | 84.00 | 6.13 | 26.94 | 81.54 | 10.08 |

**Movement, Approach, & Intersection Results**

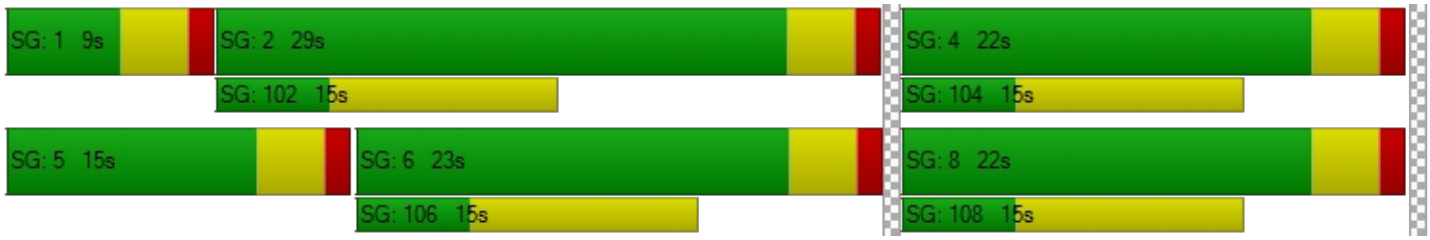
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.14 | 16.04 | 16.04 | 7.22 | 14.59 | 14.59 | 11.08 | 9.89 | 9.89 | 15.76 | 9.30 | 9.30 |
| Movement LOS | A | B | B | A | B | B | B | A | A | B | A | A |
| d_A, Approach Delay [s/veh] | 13.25 | | | 13.08 | | | 10.10 | | | 14.73 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 13.19 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.581 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | 9.0 | 9.0 | 9.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 12.45 | 12.45 | 12.45 | 12.45 |
| l_p,int, Pedestrian LOS Score for Intersectio | 2.606 | 2.151 | 2.090 | 2.088 |
| Crosswalk LOS | B | B | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1222 | 929 | 880 | 880 |
| d_b, Bicycle Delay [s] | 3.10 | 5.87 | 6.42 | 6.42 |
| l_b,int, Bicycle LOS Score for Intersection | 2.507 | 2.099 | 1.787 | 2.023 |
| Bicycle LOS | B | B | A | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Main St/Front St NE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.5 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.171 |

**Intersection Setup**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 282 | 81 | 0 | 334 | 4 | 0 | 0 | 77 | 0 | 0 | 6 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 8.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 5.00 | 0.00 | 33.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 126 | 92 | 0 | 182 | 0 | 0 | 0 | 1 | 0 | 0 | 14 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 408 | 173 | 0 | 516 | 4 | 0 | 0 | 78 | 0 | 0 | 20 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 113 | 48 | 0 | 143 | 1 | 0 | 0 | 22 | 0 | 0 | 6 |
| Total Analysis Volume [veh/h] | 0 | 453 | 192 | 0 | 573 | 4 | 0 | 0 | 87 | 0 | 0 | 22 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 2 | | | 2 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.51 | 0.00 | 0.00 | 12.47 |
| Movement LOS | | A | A | | A | A | | | B | | | B |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.00 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.26 | 0.00 | 0.00 | 3.41 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 0.00 | | | 13.51 | | | 12.47 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.09 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 4: Main St/I-84 WB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 11.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.850 |

**Intersection Setup**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 252 | 0 | 0 | 363 | 48 | 0 | 0 | 0 | 122 | 0 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 4.00 | 3.00 | 2.00 | 2.00 | 3.00 | 17.00 | 2.00 | 2.00 | 2.00 | 4.00 | 0.00 | 10.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 38 | 170 | 0 | 0 | 142 | 41 | 0 | 0 | 0 | 31 | 0 | 48 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 62 | 422 | 0 | 0 | 505 | 89 | 0 | 0 | 0 | 153 | 0 | 159 |
| Peak Hour Factor | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 116 | 0 | 0 | 139 | 24 | 0 | 0 | 0 | 42 | 0 | 44 |
| Total Analysis Volume [veh/h] | 68 | 464 | 0 | 0 | 555 | 98 | 0 | 0 | 0 | 168 | 0 | 175 |
| Presence of On-Street Parking | No | | No | No | | No | | | | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 1 | | | 1 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 1 - Coordination Group |
| Cycle Length [s] | 60 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 29.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 10 | 30 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 9 | 41 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 19 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | | | | No | |
| Maximum Recall | | No | | | No | | | | | | No | |
| Pedestrian Recall | | No | | | No | | | | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | | C |
|---|---|---|---|---|
| C, Cycle Length [s] | 40 | 40 | | 40 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 |
| g_i, Effective Green Time [s] | 21 | 21 | | 11 |
| g / C, Green / Cycle | 0.53 | 0.53 | | 0.27 |
| (v / s)_i Volume / Saturation Flow Rate | 0.46 | 0.39 | | 0.22 |
| s, saturation flow rate [veh/h] | 1151 | 1658 | | 1570 |
| c, Capacity [veh/h] | 709 | 876 | | 429 |
| d1, Uniform Delay [s] | 7.35 | 7.39 | | 13.60 |
| k, delay calibration | 0.17 | 0.11 | | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 |
| d2, Incremental Delay [s] | 2.56 | 1.29 | | 3.49 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 |

**Lane Group Results**

| | | | | |
|---|---|---|---|---|
| X, volume / capacity | 0.75 | 0.75 | | 0.80 |
| d, Delay for Lane Group [s/veh] | 9.91 | 8.68 | | 17.09 |
| Lane Group LOS | A | A | | B |
| Critical Lane Group | Yes | No | | Yes |
| 50th-Percentile Queue Length [veh/ln] | 2.33 | 2.86 | | 2.70 |
| 50th-Percentile Queue Length [ft/ln] | 58.26 | 71.47 | | 67.59 |
| 95th-Percentile Queue Length [veh/ln] | 4.19 | 5.15 | | 4.87 |
| 95th-Percentile Queue Length [ft/ln] | 104.86 | 128.64 | | 121.66 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.91 | 9.91 | 0.00 | 0.00 | 8.68 | 8.68 | 0.00 | 0.00 | 0.00 | 17.09 | 17.09 | 17.09 |
| Movement LOS | A | A | | | A | A | | | | B | B | B |
| d_A, Approach Delay [s/veh] | 9.91 | | | 8.68 | | | 0.00 | | | 17.09 | | |
| Approach LOS | A | | | A | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 11.00 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.850 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | 9.0 | 9.0 | 9.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 12.03 | 12.03 | 12.03 | 12.03 |
| l_p,int, Pedestrian LOS Score for Intersectio | 2.284 | 2.302 | 1.639 | 1.839 |
| Crosswalk LOS | B | B | A | A |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1848 | 1848 | 0 | 749 |
| d_b, Bicycle Delay [s] | 0.12 | 0.12 | 20.02 | 7.83 |
| l_b,int, Bicycle LOS Score for Intersection | 2.437 | 2.637 | 4.132 | 2.126 |
| Bicycle LOS | B | B | D | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 5: Main St/I-84 EB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 59.6 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.228 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 188 | 183 | 75 | 383 | 0 | 88 | 1 | 49 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 4.00 | 2.00 | 9.00 | 3.00 | 2.00 | 3.00 | 7.00 | 13.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 156 | 28 | 38 | 135 | 0 | 52 | 0 | 40 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 344 | 211 | 113 | 518 | 0 | 140 | 1 | 89 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 106 | 65 | 35 | 160 | 0 | 43 | 0 | 27 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 425 | 260 | 140 | 640 | 0 | 173 | 1 | 110 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 2 | | | 1 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 1 - Coordination Group |
| Cycle Length [s] | 60 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 1.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 0 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 0 | 41 | 0 | 0 | 41 | 0 | 0 | 19 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | | |
| Maximum Recall | | No | | | No | | | No | | | | |
| Pedestrian Recall | | No | | | No | | | No | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | |
|---|---|---|---|---|
| C, Cycle Length [s] | 49 | 49 | 49 | |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | |
| g_i, Effective Green Time [s] | 30 | 30 | 11 | |
| g / C, Green / Cycle | 0.61 | 0.61 | 0.23 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.44 | 0.84 | 0.19 | |
| s, saturation flow rate [veh/h] | 1574 | 929 | 1505 | |
| c, Capacity [veh/h] | 955 | 649 | 349 | |
| d1, Uniform Delay [s] | 6.78 | 12.52 | 18.00 | |
| k, delay calibration | 0.24 | 0.50 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 2.29 | 105.01 | 4.65 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

| | | | | |
|---|---|---|---|---|
| X, volume / capacity | 0.72 | 1.20 | 0.81 | |
| d, Delay for Lane Group [s/veh] | 9.06 | 117.53 | 22.65 | |
| Lane Group LOS | A | F | C | |
| Critical Lane Group | No | Yes | Yes | |
| 50th-Percentile Queue Length [veh/ln] | 3.63 | 22.78 | 3.14 | |
| 50th-Percentile Queue Length [ft/ln] | 90.87 | 569.61 | 78.40 | |
| 95th-Percentile Queue Length [veh/ln] | 6.54 | 34.95 | 5.64 | |
| 95th-Percentile Queue Length [ft/ln] | 163.56 | 873.67 | 141.11 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 9.06 | 9.06 | 117.53 | 117.53 | 0.00 | 22.65 | 22.65 | 22.65 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | A | A | F | F | | C | C | C | | | |
| d_A, Approach Delay [s/veh] | | 9.06 | | | 117.53 | | | 22.65 | | | 0.00 | |
| Approach LOS | | A | | | F | | | C | | | A | |
| d_I, Intersection Delay [s/veh] | 59.64 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 1.228 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | 9.0 | 9.0 | 9.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 16.51 | 16.51 | 16.51 | 16.51 |
| l_p,int, Pedestrian LOS Score for Intersectio | 2.384 | 2.356 | 1.823 | 1.983 |
| Crosswalk LOS | B | B | A | A |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1499 | 1499 | 608 | 0 |
| d_b, Bicycle Delay [s] | 1.55 | 1.55 | 11.96 | 24.69 |
| l_b,int, Bicycle LOS Score for Intersection | 2.690 | 2.847 | 2.028 | 4.132 |
| Bicycle LOS | B | C | B | D |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 6: Main St/Front St SE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.049 |

**Intersection Setup**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 338 | 18 | 0 | 419 | 12 | 0 | 0 | 6 | 0 | 0 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 4.00 | 5.00 | 0.00 | 3.00 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 184 | 0 | 0 | 147 | 28 | 0 | 0 | 11 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 522 | 18 | 0 | 566 | 40 | 0 | 0 | 17 | 0 | 0 | 33 |
| Peak Hour Factor | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 161 | 6 | 0 | 175 | 12 | 0 | 0 | 5 | 0 | 0 | 10 |
| Total Analysis Volume [veh/h] | 0 | 644 | 22 | 0 | 699 | 49 | 0 | 0 | 21 | 0 | 0 | 41 |
| Pedestrian Volume [ped/h] | 3 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.92 | 0.00 | 0.00 | 13.54 |
| Movement LOS | | A | A | | A | A | | | B | | | B |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.16 | 0.00 | 0.00 | 0.29 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.89 | 0.00 | 0.00 | 7.25 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 0.00 | | | 13.92 | | | 13.54 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 0.57 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Main St/Oregon Trail Blvd**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 6.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.529 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 315 | 6 | 67 | 335 | 0 | 6 | 0 | 0 | 20 | 3 | 26 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 3.00 | 17.00 | 4.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 5 | 98 | 41 | 43 | 106 | 8 | 50 | 0 | 8 | 34 | 0 | 37 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 9 | 413 | 47 | 110 | 441 | 8 | 56 | 0 | 8 | 54 | 3 | 63 |
| Peak Hour Factor | 1.0000 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9100 | 1.0000 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 113 | 13 | 30 | 121 | 2 | 14 | 0 | 2 | 15 | 1 | 17 |
| Total Analysis Volume [veh/h] | 9 | 454 | 52 | 121 | 485 | 8 | 56 | 0 | 8 | 59 | 3 | 69 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 3 | | | 3 | | | 0 | | | 2 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 41 | 0 | 0 | 41 | 0 | 0 | 19 | 0 | 0 | 19 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| l1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| l2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | C | C |
|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 30 | 30 | 30 | 30 | 30 | 30 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 16 | 16 | 16 | 16 | 7 | 7 |
| g / C, Green / Cycle | 0.51 | 0.51 | 0.51 | 0.51 | 0.22 | 0.22 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.30 | 0.14 | 0.28 | 0.04 | 0.09 |
| s, saturation flow rate [veh/h] | 904 | 1674 | 879 | 1730 | 1531 | 1500 |
| c, Capacity [veh/h] | 471 | 862 | 449 | 892 | 562 | 504 |
| d1, Uniform Delay [s] | 8.43 | 5.13 | 10.13 | 5.00 | 9.58 | 10.06 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.02 | 0.64 | 0.32 | 0.54 | 0.09 | 0.27 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.02 | 0.59 | 0.27 | 0.55 | 0.11 | 0.26 |
| d, Delay for Lane Group [s/veh] | 8.45 | 5.76 | 10.45 | 5.54 | 9.67 | 10.33 |
| Lane Group LOS | A | A | B | A | A | B |
| Critical Lane Group | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.03 | 1.03 | 0.53 | 0.96 | 0.26 | 0.56 |
| 50th-Percentile Queue Length [ft/ln] | 0.82 | 25.69 | 13.32 | 24.12 | 6.47 | 14.10 |
| 95th-Percentile Queue Length [veh/ln] | 0.06 | 1.85 | 0.96 | 1.74 | 0.47 | 1.01 |
| 95th-Percentile Queue Length [ft/ln] | 1.47 | 46.25 | 23.98 | 43.42 | 11.64 | 25.37 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.45 | 5.76 | 5.76 | 10.45 | 5.54 | 5.54 | 9.67 | 9.67 | 9.67 | 10.33 | 10.33 | 10.33 |
| Movement LOS | A | A | A | B | A | A | A | A | A | B | B | B |
| d_A, Approach Delay [s/veh] | 5.81 | | | 6.51 | | | 9.67 | | | 10.33 | | |
| Approach LOS | A | | | A | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 6.77 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.529 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | 9.0 | 9.0 | 9.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 7.51 | 7.51 | 7.51 | 7.51 |
| l_p,int, Pedestrian LOS Score for Intersectio | 2.309 | 2.346 | 1.707 | 1.973 |
| Crosswalk LOS | B | B | A | A |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 2439 | 2439 | 989 | 989 |
| d_b, Bicycle Delay [s] | 0.73 | 0.73 | 3.88 | 3.88 |
| l_b,int, Bicycle LOS Score for Intersection | 2.409 | 2.573 | 1.665 | 1.776 |
| Bicycle LOS | B | B | A | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 8: Main St/City Center Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 28.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.210 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 300 | 0 | 1 | 324 | 26 | 17 | 0 | 13 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 2.00 | 2.00 | 1.00 | 4.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 109 | 4 | 21 | 121 | 6 | 20 | 0 | 6 | 4 | 0 | 15 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 409 | 4 | 22 | 445 | 32 | 37 | 0 | 19 | 4 | 0 | 15 |
| Peak Hour Factor | 0.9000 | 0.9000 | 1.0000 | 1.0000 | 0.9000 | 0.9000 | 0.9000 | 1.0000 | 0.9000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 114 | 1 | 6 | 124 | 9 | 10 | 0 | 5 | 1 | 0 | 4 |
| Total Analysis Volume [veh/h] | 13 | 454 | 4 | 22 | 494 | 36 | 41 | 0 | 21 | 4 | 0 | 15 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 3 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.21 | 0.00 | 0.04 | 0.02 | 0.00 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.50 | 0.00 | 0.00 | 8.33 | 0.00 | 0.00 | 28.28 | 26.10 | 11.65 | 24.21 | 22.04 | 11.37 |
| Movement LOS | A | A | A | A | A | A | D | D | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.77 | 0.77 | 0.12 | 0.14 | 0.14 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.95 | 0.00 | 0.00 | 1.53 | 0.00 | 0.00 | 19.18 | 19.18 | 2.91 | 3.58 | 3.58 | 3.58 |
| d_A, Approach Delay [s/veh] | 0.23 | | | 0.33 | | | 22.65 | | | 14.07 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.78 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: Main St/Kinkade Rd**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.382 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 200 | 0 | 0 | 209 | 78 | 88 | 0 | 13 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 14.00 | 3.00 | 2.00 | 2.00 | 1.00 | 0.00 | 1.00 | 2.00 | 8.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 86 | 4 | 12 | 101 | 18 | 11 | 0 | 9 | 3 | 0 | 20 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 9 | 286 | 4 | 12 | 310 | 96 | 99 | 0 | 22 | 3 | 0 | 20 |
| Peak Hour Factor | 0.8800 | 0.8800 | 1.0000 | 1.0000 | 0.8800 | 0.8800 | 0.8800 | 1.0000 | 0.8800 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 81 | 1 | 3 | 88 | 27 | 28 | 0 | 6 | 1 | 0 | 5 |
| Total Analysis Volume [veh/h] | 10 | 325 | 4 | 12 | 352 | 109 | 113 | 0 | 25 | 3 | 0 | 20 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.38 | 0.00 | 0.04 | 0.01 | 0.00 | 0.03 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.50 | 0.00 | 0.00 | 7.95 | 0.00 | 0.00 | 24.96 | 24.01 | 18.48 | 17.65 | 17.28 | 10.28 |
| Movement LOS | A | A | A | A | A | A | C | C | C | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.03 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 2.02 | 2.02 | 2.02 | 0.12 | 0.12 | 0.12 |
| 95th-Percentile Queue Length [ft/ln] | 0.73 | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 | 50.39 | 50.39 | 50.39 | 2.99 | 2.99 | 2.99 |
| d_A, Approach Delay [s/veh] | 0.25 | | | 0.20 | | | 23.79 | | | 11.24 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 3.82 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: Main St/Willow Fork Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.137 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 177 | 0 | 0 | 196 | 24 | 24 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 5.00 | 2.00 | 2.00 | 3.00 | 0.00 | 4.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 10 | 63 | 4 | 18 | 79 | 15 | 17 | 0 | 5 | 8 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 240 | 4 | 18 | 275 | 39 | 41 | 0 | 5 | 8 | 0 | 12 |
| Peak Hour Factor | 0.8700 | 0.8700 | 1.0000 | 1.0000 | 0.8700 | 0.8700 | 0.8700 | 1.0000 | 0.8700 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 69 | 1 | 5 | 79 | 11 | 12 | 0 | 1 | 2 | 0 | 3 |
| Total Analysis Volume [veh/h] | 14 | 276 | 4 | 18 | 316 | 45 | 47 | 0 | 6 | 8 | 0 | 12 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.14 | 0.00 | 0.01 | 0.02 | 0.00 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.01 | 0.00 | 0.00 | 7.85 | 0.00 | 0.00 | 17.13 | 16.60 | 11.75 | 15.54 | 15.48 | 10.01 |
| Movement LOS | A | A | A | A | A | A | C | C | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.12 | 0.12 | 0.12 |
| 95th-Percentile Queue Length [ft/ln] | 0.88 | 0.00 | 0.00 | 1.07 | 0.00 | 0.00 | 12.57 | 12.57 | 12.57 | 3.00 | 3.00 | 3.00 |
| d_A, Approach Delay [s/veh] | 0.38 | | | 0.37 | | | 16.52 | | | 12.22 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.84 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 11: Main St/Wilson Ln**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.391 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 51 | 3 | 21 | 63 | 112 | 105 | 31 | 3 | 7 | 29 | 23 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.00 | 0.00 | 0.00 | 6.00 | 1.00 | 2.00 | 3.00 | 0.00 | 14.00 | 3.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 5 | 0 | 23 | 16 | 53 | 57 | 0 | 0 | 0 | 0 | 14 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 56 | 3 | 44 | 79 | 165 | 162 | 31 | 3 | 7 | 29 | 37 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 16 | 1 | 13 | 23 | 47 | 47 | 9 | 1 | 2 | 8 | 11 |
| Total Analysis Volume [veh/h] | 2 | 64 | 3 | 51 | 91 | 190 | 186 | 36 | 3 | 8 | 33 | 43 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 577 | 621 | 606 | 719 | 692 | 700 |
| Degree of Utilization, x | 0.00 | 0.11 | 0.08 | 0.39 | 0.33 | 0.12 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.01 | 0.36 | 0.27 | 1.86 | 1.41 | 0.41 |
| 95th-Percentile Queue Length [ft] | 0.26 | 9.03 | 6.87 | 46.48 | 35.34 | 10.18 |
| Approach Delay [s/veh] | 9.20 | | 10.61 | | 10.70 | 8.85 |
| Approach LOS | A | | B | | B | A |
| Intersection Delay [s/veh] | 10.29 | | | | | |
| Intersection LOS | B | | | | | |

# Appendix G Circulation Alternative #2 Traffic Conditions

**Intersection Level Of Service Report**
**Intersection 1: Main St/Columbia Ave**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.397 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 300.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 19 | 44 | 112 | 7 | 22 | 4 | 3 | 22 | 17 | 116 | 31 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | 3.00 | 0.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 15 | 11 | 83 | 0 | 6 | 0 | 0 | 0 | 19 | 71 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 55 | 195 | 7 | 28 | 4 | 3 | 22 | 36 | 187 | 31 | 14 |
| Peak Hour Factor | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 10 | 16 | 55 | 2 | 8 | 1 | 1 | 6 | 10 | 53 | 9 | 4 |
| Total Analysis Volume [veh/h] | 39 | 63 | 222 | 8 | 32 | 5 | 3 | 25 | 41 | 213 | 35 | 16 |
| Pedestrian Volume [ped/h] | 7 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.05 | 0.04 | 0.40 | 0.06 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.33 | 0.00 | 0.00 | 7.81 | 0.00 | 0.00 | 11.93 | 12.53 | 9.09 | 17.42 | 16.81 | 14.82 |
| Movement LOS | A | A | A | A | A | A | B | B | A | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.08 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.31 | 0.31 | 0.31 | 2.53 | 2.53 | 2.53 |
| 95th-Percentile Queue Length [ft/ln] | 1.90 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 7.82 | 7.82 | 7.82 | 63.35 | 63.35 | 63.35 |
| d_A, Approach Delay [s/veh] | 0.88 | | | 1.39 | | | 10.46 | | | 17.18 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 7.99 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: Main St/Boardman Ave**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.581 |

**Intersection Setup**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 153 | 161 | 45 | 21 | 151 | 17 | 21 | 9 | 78 | 84 | 8 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 9.00 | 10.00 | 4.00 | 6.00 | 0.00 | 0.00 | 0.00 | 11.00 | 0.00 | 12.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 86 | 51 | 37 | 58 | 0 | 0 | 9 | 3 | 121 | 0 | 23 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 157 | 247 | 96 | 58 | 209 | 17 | 21 | 18 | 81 | 205 | 8 | 31 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 45 | 71 | 28 | 17 | 60 | 5 | 6 | 5 | 23 | 59 | 2 | 9 |
| Total Analysis Volume [veh/h] | 180 | 284 | 110 | 67 | 240 | 20 | 24 | 21 | 93 | 236 | 9 | 36 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 1 - Coordination Group |
| Cycle Length [s] | 60 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 15 | 29 | 0 | 9 | 23 | 0 | 0 | 22 | 0 | 0 | 22 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 19 | 12 | 19 | 11 | 14 | 14 | 14 | 14 |
| g / C, Green / Cycle | 0.46 | 0.30 | 0.46 | 0.26 | 0.34 | 0.34 | 0.34 | 0.34 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.24 | 0.06 | 0.16 | 0.02 | 0.07 | 0.20 | 0.03 |
| s, saturation flow rate [veh/h] | 1316 | 1641 | 1077 | 1672 | 1383 | 1530 | 1186 | 1534 |
| c, Capacity [veh/h] | 720 | 496 | 553 | 435 | 551 | 517 | 457 | 519 |
| d1, Uniform Delay [s] | 6.96 | 13.11 | 7.13 | 13.27 | 11.05 | 9.68 | 14.86 | 9.23 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.18 | 2.93 | 0.10 | 1.32 | 0.03 | 0.21 | 0.90 | 0.07 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.25 | 0.79 | 0.12 | 0.60 | 0.04 | 0.22 | 0.52 | 0.09 |
| d, Delay for Lane Group [s/veh] | 7.14 | 16.04 | 7.22 | 14.59 | 11.08 | 9.89 | 15.76 | 9.30 |
| Lane Group LOS | A | B | A | B | B | A | B | A |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.68 | 3.03 | 0.24 | 1.87 | 0.14 | 0.60 | 1.81 | 0.22 |
| 50th-Percentile Queue Length [ft/ln] | 17.09 | 75.78 | 5.99 | 46.67 | 3.40 | 14.97 | 45.30 | 5.60 |
| 95th-Percentile Queue Length [veh/ln] | 1.23 | 5.46 | 0.43 | 3.36 | 0.25 | 1.08 | 3.26 | 0.40 |
| 95th-Percentile Queue Length [ft/ln] | 30.76 | 136.40 | 10.79 | 84.00 | 6.13 | 26.94 | 81.54 | 10.08 |

**Movement, Approach, & Intersection Results**

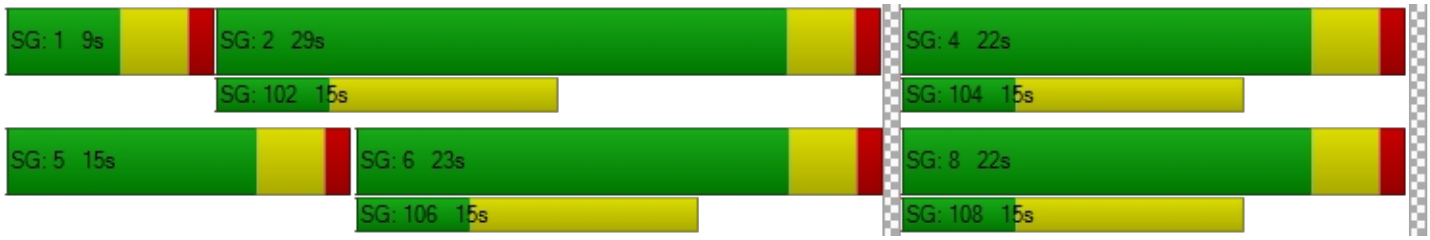
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.14 | 16.04 | 16.04 | 7.22 | 14.59 | 14.59 | 11.08 | 9.89 | 9.89 | 15.76 | 9.30 | 9.30 |
| Movement LOS | A | B | B | A | B | B | B | A | A | B | A | A |
| d_A, Approach Delay [s/veh] | 13.25 | | | 13.08 | | | 10.10 | | | 14.73 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 13.19 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.581 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | 9.0 | 9.0 | 9.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 12.45 | 12.45 | 12.45 | 12.45 |
| l_p,int, Pedestrian LOS Score for Intersectio | 2.606 | 2.151 | 2.090 | 2.088 |
| Crosswalk LOS | B | B | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1222 | 929 | 880 | 880 |
| d_b, Bicycle Delay [s] | 3.10 | 5.87 | 6.42 | 6.42 |
| l_b,int, Bicycle LOS Score for Intersection | 2.507 | 2.099 | 1.787 | 2.023 |
| Bicycle LOS | B | B | A | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Main St/Front St NE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.5 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.171 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 282 | 81 | 0 | 334 | 4 | 0 | 0 | 77 | 0 | 0 | 6 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 8.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 5.00 | 0.00 | 33.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 126 | 92 | 0 | 182 | 0 | 0 | 0 | 1 | 0 | 0 | 14 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 408 | 173 | 0 | 516 | 4 | 0 | 0 | 78 | 0 | 0 | 20 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 113 | 48 | 0 | 143 | 1 | 0 | 0 | 22 | 0 | 0 | 6 |
| Total Analysis Volume [veh/h] | 0 | 453 | 192 | 0 | 573 | 4 | 0 | 0 | 87 | 0 | 0 | 22 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 2 | | | 2 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.51 | 0.00 | 0.00 | 12.47 |
| Movement LOS | | A | A | | A | A | | | B | | | B |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.00 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.26 | 0.00 | 0.00 | 3.41 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 0.00 | | | 13.51 | | | 12.47 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.09 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 4: Main St/I-84 WB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Roundabout | Delay (sec / veh): | 10.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 252 | 0 | 0 | 363 | 48 | 0 | 0 | 0 | 122 | 0 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 4.00 | 3.00 | 2.00 | 2.00 | 3.00 | 17.00 | 2.00 | 2.00 | 2.00 | 4.00 | 0.00 | 10.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 38 | 170 | 0 | 0 | 142 | 41 | 0 | 0 | 0 | 31 | 0 | 48 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 62 | 422 | 0 | 0 | 505 | 89 | 0 | 0 | 0 | 153 | 0 | 159 |
| Peak Hour Factor | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 1.0000 | 0.9100 | 0.9100 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 116 | 0 | 0 | 139 | 24 | 0 | 0 | 0 | 42 | 0 | 44 |
| Total Analysis Volume [veh/h] | 68 | 464 | 0 | 0 | 555 | 98 | 0 | 0 | 0 | 168 | 0 | 175 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Conflicting Circulating Lanes | 1 | | | 1 | | | 1 | | | 1 | | |
| Circulating Flow Rate [veh/h] | 0 | | | 245 | | | 746 | | | 549 | | |
| Exiting Flow Rate [veh/h] | 746 | | | 670 | | | 185 | | | 0 | | |
| Demand Flow Rate [veh/h] | 62 | 422 | 0 | 0 | 505 | 89 | 0 | 0 | 0 | 153 | 0 | 159 |
| Adjusted Demand Flow Rate [veh/h] | 68 | 464 | 0 | 0 | 555 | 98 | 0 | 0 | 0 | 168 | 0 | 175 |

**Lanes**

| | | | | |
|---|---|---|---|---|
| Overwrite Calculated Critical Headway | No | No | | No |
| User-Defined Critical Headway [s] | 4.00 | 4.00 | | 4.00 |
| Overwrite Calculated Follow-Up Time | No | No | | No |
| User-Defined Follow-Up Time [s] | 3.00 | 3.00 | | 3.00 |
| A (intercept) | 1380.00 | 1380.00 | | 1380.00 |
| B (coefficient) | 0.00102 | 0.00102 | | 0.00102 |
| HV Adjustment Factor | 0.97 | 0.95 | | 0.93 |
| Entry Flow Rate [veh/h] | 549 | 685 | | 367 |
| Capacity of Entry and Bypass Lanes [veh/h] | 1380 | 1075 | | 789 |
| Pedestrian Impedance | 1.00 | 1.00 | | 1.00 |
| Capacity per Entry Lane [veh/h] | 1339 | 1025 | | 738 |
| X, volume / capacity | 0.40 | 0.64 | | 0.47 |

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| Lane LOS | A | B | | B |
| 95th-Percentile Queue Length [veh] | 1.94 | 4.78 | | 2.49 |
| 95th-Percentile Queue Length [ft] | 48.56 | 119.56 | | 62.13 |
| Approach Delay [s/veh] | 6.44 | 12.66 | 0.00 | 11.39 |
| Approach LOS | A | B | A | B |
| Intersection Delay [s/veh] | 10.21 | | | |
| Intersection LOS | B | | | |

**Intersection Level Of Service Report**
**Intersection 5: Main St/I-84 EB Ramp Terminal**

| | | | |
|---|---|---|---|
| Control Type: | Roundabout | Delay (sec / veh): | 13.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 188 | 183 | 75 | 383 | 0 | 88 | 1 | 49 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 4.00 | 2.00 | 9.00 | 3.00 | 2.00 | 3.00 | 7.00 | 13.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 156 | 28 | 38 | 135 | 0 | 52 | 0 | 40 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 344 | 211 | 113 | 518 | 0 | 140 | 1 | 89 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 0.8100 | 0.8100 | 0.8100 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 106 | 65 | 35 | 160 | 0 | 43 | 0 | 27 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 425 | 260 | 140 | 640 | 0 | 173 | 1 | 110 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Conflicting Circulating Lanes | 1 | | | 1 | | | 1 | | | 1 | | |
| Circulating Flow Rate [veh/h] | 332 | | | 0 | | | 812 | | | 620 | | |
| Exiting Flow Rate [veh/h] | 784 | | | 620 | | | 0 | | | 419 | | |
| Demand Flow Rate [veh/h] | 0 | 344 | 211 | 113 | 518 | 0 | 140 | 1 | 89 | 0 | 0 | 0 |
| Adjusted Demand Flow Rate [veh/h] | 0 | 425 | 260 | 140 | 640 | 0 | 173 | 1 | 110 | 0 | 0 | 0 |

**Lanes**

| | | | | |
|---|---|---|---|---|
| Overwrite Calculated Critical Headway | No | No | No | |
| User-Defined Critical Headway [s] | 4.00 | 4.00 | 4.00 | |
| Overwrite Calculated Follow-Up Time | No | No | No | |
| User-Defined Follow-Up Time [s] | 3.00 | 3.00 | 3.00 | |
| A (intercept) | 1380.00 | 1380.00 | 1380.00 | |
| B (coefficient) | 0.00102 | 0.00102 | 0.00102 | |
| HV Adjustment Factor | 0.97 | 0.96 | 0.94 | |
| Entry Flow Rate [veh/h] | 708 | 812 | 303 | |
| Capacity of Entry and Bypass Lanes [veh/h] | 984 | 1380 | 603 | |
| Pedestrian Impedance | 1.00 | 1.00 | 1.00 | |
| Capacity per Entry Lane [veh/h] | 953 | 1327 | 566 | |
| X, volume / capacity | 0.72 | 0.59 | 0.50 | |

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| Lane LOS | C | A | C | |
| 95th-Percentile Queue Length [veh] | 6.43 | 4.04 | 2.81 | |
| 95th-Percentile Queue Length [ft] | 160.85 | 101.05 | 70.14 | |
| Approach Delay [s/veh] | 16.39 | 9.45 | 15.14 | 0.00 |
| Approach LOS | C | A | C | A |
| Intersection Delay [s/veh] | 13.09 | | | |
| Intersection LOS | B | | | |

**Intersection Level Of Service Report**
**Intersection 6: Main St/Front St SE**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.049 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 338 | 18 | 0 | 419 | 12 | 0 | 0 | 6 | 0 | 0 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 4.00 | 5.00 | 0.00 | 3.00 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 184 | 0 | 0 | 147 | 28 | 0 | 0 | 11 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 522 | 18 | 0 | 566 | 40 | 0 | 0 | 17 | 0 | 0 | 33 |
| Peak Hour Factor | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 161 | 6 | 0 | 175 | 12 | 0 | 0 | 5 | 0 | 0 | 10 |
| Total Analysis Volume [veh/h] | 0 | 644 | 22 | 0 | 699 | 49 | 0 | 0 | 21 | 0 | 0 | 41 |
| Pedestrian Volume [ped/h] | 3 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.92 | 0.00 | 0.00 | 13.54 |
| Movement LOS | | A | A | | A | A | | | B | | | B |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.16 | 0.00 | 0.00 | 0.29 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.89 | 0.00 | 0.00 | 7.25 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 0.00 | | | 13.92 | | | 13.54 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 0.57 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Main St/Oregon Trail Blvd**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 26.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.848 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 315 | 6 | 67 | 335 | 0 | 6 | 0 | 0 | 20 | 3 | 26 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 3.00 | 17.00 | 4.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 5 | 98 | 41 | 43 | 106 | 8 | 50 | 0 | 8 | 34 | 0 | 37 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 9 | 413 | 47 | 110 | 441 | 8 | 56 | 0 | 8 | 54 | 3 | 63 |
| Peak Hour Factor | 1.0000 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9100 | 1.0000 | 0.9100 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 113 | 13 | 30 | 121 | 2 | 14 | 0 | 2 | 15 | 1 | 17 |
| Total Analysis Volume [veh/h] | 9 | 454 | 52 | 121 | 485 | 8 | 56 | 0 | 8 | 59 | 3 | 69 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 548 | 596 | 557 | 610 | 492 | 538 |
| Degree of Utilization, x | 0.02 | 0.85 | 0.22 | 0.81 | 0.13 | 0.24 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.05 | 9.22 | 0.82 | 8.12 | 0.44 | 0.95 |
| 95th-Percentile Queue Length [ft] | 1.25 | 230.62 | 20.53 | 203.10 | 11.12 | 23.72 |
| Approach Delay [s/veh] | 33.02 | | 25.24 | | 11.41 | 11.84 |
| Approach LOS | D | | D | | B | B |
| Intersection Delay [s/veh] | 26.28 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: Main St/City Center Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 28.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.210 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 300 | 0 | 1 | 324 | 26 | 17 | 0 | 13 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 2.00 | 2.00 | 1.00 | 4.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 109 | 4 | 21 | 121 | 6 | 20 | 0 | 6 | 4 | 0 | 15 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 409 | 4 | 22 | 445 | 32 | 37 | 0 | 19 | 4 | 0 | 15 |
| Peak Hour Factor | 0.9000 | 0.9000 | 1.0000 | 1.0000 | 0.9000 | 0.9000 | 0.9000 | 1.0000 | 0.9000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 114 | 1 | 6 | 124 | 9 | 10 | 0 | 5 | 1 | 0 | 4 |
| Total Analysis Volume [veh/h] | 13 | 454 | 4 | 22 | 494 | 36 | 41 | 0 | 21 | 4 | 0 | 15 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 3 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.21 | 0.00 | 0.04 | 0.02 | 0.00 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.50 | 0.00 | 0.00 | 8.33 | 0.00 | 0.00 | 28.28 | 26.10 | 11.65 | 24.21 | 22.04 | 11.37 |
| Movement LOS | A | A | A | A | A | A | D | D | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.77 | 0.77 | 0.12 | 0.14 | 0.14 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.95 | 0.00 | 0.00 | 1.53 | 0.00 | 0.00 | 19.18 | 19.18 | 2.91 | 3.58 | 3.58 | 3.58 |
| d_A, Approach Delay [s/veh] | 0.23 | | | 0.33 | | | 22.65 | | | 14.07 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.78 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: Main St/Kinkade Rd**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.382 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 200 | 0 | 0 | 209 | 78 | 88 | 0 | 13 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 14.00 | 3.00 | 2.00 | 2.00 | 1.00 | 0.00 | 1.00 | 2.00 | 8.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 86 | 4 | 12 | 101 | 18 | 11 | 0 | 9 | 3 | 0 | 20 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 9 | 286 | 4 | 12 | 310 | 96 | 99 | 0 | 22 | 3 | 0 | 20 |
| Peak Hour Factor | 0.8800 | 0.8800 | 1.0000 | 1.0000 | 0.8800 | 0.8800 | 0.8800 | 1.0000 | 0.8800 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 81 | 1 | 3 | 88 | 27 | 28 | 0 | 6 | 1 | 0 | 5 |
| Total Analysis Volume [veh/h] | 10 | 325 | 4 | 12 | 352 | 109 | 113 | 0 | 25 | 3 | 0 | 20 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.38 | 0.00 | 0.04 | 0.01 | 0.00 | 0.03 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.50 | 0.00 | 0.00 | 7.95 | 0.00 | 0.00 | 24.96 | 24.01 | 18.48 | 17.65 | 17.28 | 10.28 |
| Movement LOS | A | A | A | A | A | A | C | C | C | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.03 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 2.02 | 2.02 | 2.02 | 0.12 | 0.12 | 0.12 |
| 95th-Percentile Queue Length [ft/ln] | 0.73 | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 | 50.39 | 50.39 | 50.39 | 2.99 | 2.99 | 2.99 |
| d_A, Approach Delay [s/veh] | 0.25 | | | 0.20 | | | 23.79 | | | 11.24 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 3.82 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: Main St/Willow Fork Dr**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.137 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 177 | 0 | 0 | 196 | 24 | 24 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 5.00 | 2.00 | 2.00 | 3.00 | 0.00 | 4.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 10 | 63 | 4 | 18 | 79 | 15 | 17 | 0 | 5 | 8 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 240 | 4 | 18 | 275 | 39 | 41 | 0 | 5 | 8 | 0 | 12 |
| Peak Hour Factor | 0.8700 | 0.8700 | 1.0000 | 1.0000 | 0.8700 | 0.8700 | 0.8700 | 1.0000 | 0.8700 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 69 | 1 | 5 | 79 | 11 | 12 | 0 | 1 | 2 | 0 | 3 |
| Total Analysis Volume [veh/h] | 14 | 276 | 4 | 18 | 316 | 45 | 47 | 0 | 6 | 8 | 0 | 12 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.14 | 0.00 | 0.01 | 0.02 | 0.00 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.01 | 0.00 | 0.00 | 7.85 | 0.00 | 0.00 | 17.13 | 16.60 | 11.75 | 15.54 | 15.48 | 10.01 |
| Movement LOS | A | A | A | A | A | A | C | C | B | C | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.12 | 0.12 | 0.12 |
| 95th-Percentile Queue Length [ft/ln] | 0.88 | 0.00 | 0.00 | 1.07 | 0.00 | 0.00 | 12.57 | 12.57 | 12.57 | 3.00 | 3.00 | 3.00 |
| d_A, Approach Delay [s/veh] | 0.38 | | | 0.37 | | | 16.52 | | | 12.22 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.84 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 11: Main St/Wilson Ln**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.391 |

**Intersection Setup**

| Name | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 51 | 3 | 21 | 63 | 112 | 105 | 31 | 3 | 7 | 29 | 23 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.00 | 0.00 | 0.00 | 6.00 | 1.00 | 2.00 | 3.00 | 0.00 | 14.00 | 3.00 | 17.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 5 | 0 | 23 | 16 | 53 | 57 | 0 | 0 | 0 | 0 | 14 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 56 | 3 | 44 | 79 | 165 | 162 | 31 | 3 | 7 | 29 | 37 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 16 | 1 | 13 | 23 | 47 | 47 | 9 | 1 | 2 | 8 | 11 |
| Total Analysis Volume [veh/h] | 2 | 64 | 3 | 51 | 91 | 190 | 186 | 36 | 3 | 8 | 33 | 43 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 577 | 621 | 606 | 719 | 692 | 700 |
| Degree of Utilization, x | 0.00 | 0.11 | 0.08 | 0.39 | 0.33 | 0.12 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.01 | 0.36 | 0.27 | 1.86 | 1.41 | 0.41 |
| 95th-Percentile Queue Length [ft] | 0.26 | 9.03 | 6.87 | 46.48 | 35.34 | 10.18 |
| Approach Delay [s/veh] | 9.20 | | 10.61 | | 10.70 | 8.85 |
| Approach LOS | A | | B | | B | A |
| Intersection Delay [s/veh] | 10.29 | | | | | |
| Intersection LOS | B | | | | | |

Final Report for

# Boardman Main Street Interchange Area Management Plan

Prepared by

DKS Associates
TRANSPORTATION SOLUTIONS

Winterbrook Planning

April 2009

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# Chapter 1. Executive Summary

The Main Street interchange with Interstate 84 in the City of Boardman is a vital link for regional travel and it provides a connection between the two sides of the community. The Interchange Area Management Plan (IAMP) was initiated to develop a shared plan between the City and the State to make sure that all travelers can use the interchange safely and efficiently as the city continues to grow. The elements of the IAMP lay out the tools needed to make this happen. The City portion of the plan includes specific circulation plans and roadway standards to guide development review and approval and the ODOT portion of the plan includes a list of improvement projects to be done at the interchange. No changes to the current circulation patterns or street conditions will be done until traffic growth reaches specific thresholds identified in the plan.

## Goals and Objectives

The main goal of the IAMP is to provide for safe and efficient travel around the interchange. The IAMP report describes the overall study process, identifies expected safety and traffic congestion issues associated with growth, and lays out the responsibilities for the City and ODOT to maintain good traffic operations, while providing for the needs of the property owners who rely on the interchange for local access.

The IAMP objectives include:

- A thorough analysis of the issues for the interchange.
- Identification of the opportunities to improve access and circulation for all modes of transportation.
- Utilization of public involvement and technical methods to develop and refine improvement options.
- Prioritization of improvement projects.

The IAMP was developed in partnership with affected property owners in the interchange area, the City of Boardman, the Oregon Department of Transportation (ODOT), and other stakeholders, including interchange users. The public-at-large and any interested local business operations within the study area were notified of public meetings related to this project, and they were provided opportunities to participate outside of the formal project committee process.

## Relevant Plans and Standards

Any roadway improvements on or near state facilities must comply with statewide standards and plans to be funded for construction. Projects that fall short of these standards typically are not advanced to the Statewide Transportation Improvement Program, because they represent higher safety risks and provide less carrying capacity than other standard designs.

One of the fundamental standards measures how congested traffic is during the busiest hours of the day, within the design life of the project. For most cases, new improvements are planned for at least 20 years of useful operation to maximize the investment in the facility. More congestion creates more delays, which can impact freight mobility and general traffic safety. For ODOT facilities, the standard is 85

percent of capacity at the Main Street / I-84 interchange. The city has its own standard, which allows slightly less congestion (80 percent), and it is referred to as Level of Service "C".

Access spacing is the other important standard to be considered, in terms of how it affects traffic safety and mobility. Greater distance between successive cross-streets or driveways allows more reaction time for drivers, reduces conflicts between trucks, cars, pedestrians and bicycles, and gives more vehicle stacking space for turns off of the main roadway. In general, a good access management plan provides a safer and more efficient circulation system. ODOT has specific access standards near interchanges. These standards cannot always be met in communities, and they are balanced against the existing access patterns to identify available options for local access that are closer to preferred standards.

A summary of the background plan review is included in the Appendix.

## Existing Land Use and Transportation Issues

### Geographic Boundaries

The IAMP study area is divided into two parts: the first is the influence area, which is the land area that generally will affect travel patterns related to the interchange, and the second is the management area, which are the land uses and circulation systems immediately adjacent to interchange. Figure 1.1 shows the study area boundaries.

For the Main Street IAMP, the influence area includes the entire city of Boardman as future development within the city will be considered in assessing the long-range needs and solutions within the interchange. The management area is more narrowly focused on the land uses that have more immediate impacts on roadway access, operations and safety of the interchange.

The management area limits generally extend one-quarter mile north and one-quarter mile south of I-84 along Main Street. North of I-84, most of the property is fully developed along the Main Street frontage area. In this developed portion of the city, the management area was limited to just one block either side of Main Street. This roadway was recently reconstructed (2005) through a Transportation Enhancement Grant, and it is not expected that any changes to existing access patterns would be made along North Main Street. There are several large parcels south of Boardman Avenue and east of Main Street that have commercial zoning and are vacant today. The management area includes those vacant lands.

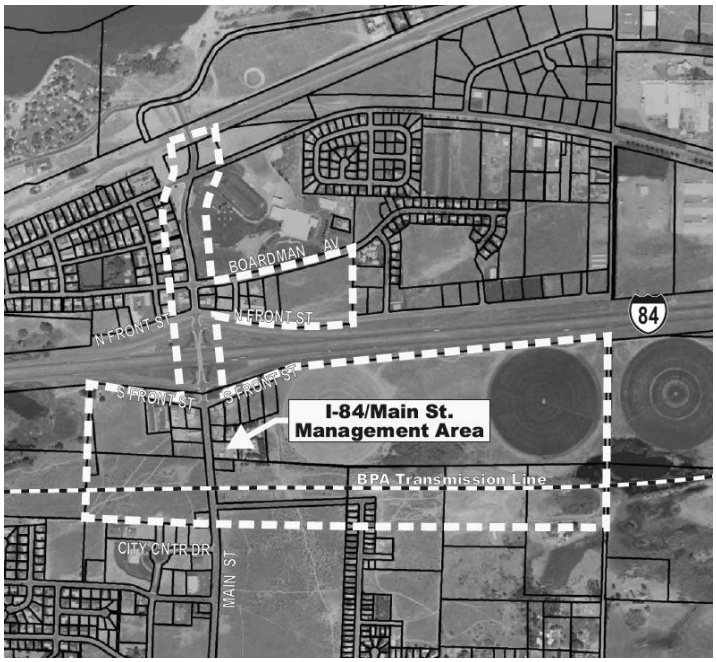


**Figure 1.1: Management Area**

South of I-84 there is much more opportunity for development of vacant lands or re-development of underutilized commercial land. The boundary of the management area includes all the developable area, extending just south of Oregon Trail Boulevard.

### Local Access and Circulation

A total of 28 approaches to Main Street were identified within the management area (see Figure 3.4). Eleven of those are on South Main Street, from Front Street to just past Oregon Trail Boulevard. According to a strict interpretation of the standard, 4 would be allowed on South Main Street within the management area. It is not expected that full compliance can be achieved, given the built environment and prevailing development pattern, which limits alternative circulation options for these properties. Changes to access will only be initiated if the property develops (or re-develops) and there is a reasonable alternate access available. Refer to Figure 3.4 for more details.

A key element of the IAMP is to the long-range preservation of operational efficiency and safety of the interchange is the management of access to Main Street. Because access points introduce a number of potential vehicular conflicts on a roadway and are frequently the causes of slowing or stopping vehicles, they can significantly degrade the flow of traffic and reduce the efficiency of the transportation system. However, reducing the overall number of access points and providing greater separation between them can minimize the impacts of these conflicts.

An access management plan should be implemented to help work towards better compliance for accesses onto Main Street and to provide a basis for decision-making during the development review. Implementation of the access management plan is intended to occur over a long period of time because some affected properties maintain infrastructure (e.g. buildings and internal roadways) that was established based on prior approvals of access locations to the subject roadways and some elements of the plan depend on the presence of new public streets that can not be constructed until funds are made available. Therefore, the improvements in this plan have been prioritized and categorized into short-range, medium-range, and long-range actions, and a set of performance measures have been identified as 'triggers' for implementing changes to existing circulation and access patterns.

Refer to Chapter 4, for more details about the constraints, issues and challenges in addressing each of these areas. Other issues identified through the IAMP included proper roadway design guidelines for truck traffic, enhancement of non-motorized vehicle connections, and notations about existing right-of-way constraints.

### Existing Safety and Operations

Reported vehicle crashes over the last five years showed no locations with significant trends relating to accident location or type. The two most prevalent types of reported crashes were angle crashes and rear end crashes. The crash rate at all of the intersections examined did not exceed 0.26 crashes per million entering vehicles. It does not appear that the roadways within the study area are experiencing an above average rate of crashes, and no countermeasures for crash reduction are needed.

Traffic data for 2006 were evaluated to determine how well the existing road intersections and segments perform compared to state and local standards. All of the state and city intersections within the study area operate within the acceptable performance range. The highest traffic volumes and longest delays were observed at the Main Street interchange. Refer to Table 3.2 for more details.

## Future Forecasts and Needs Analysis

City growth projections for 2026 were based on the current land use zoning (from the existing Comprehensive Plan), expected residential construction rates, and input from the city staff and short-term developments. By 2026, the city population is estimated to grow by at least 1,800 persons, to just over 5,000 population. Non-residential growth in the retail and industrial sectors was assumed to be significantly higher than recent construction trends, to develop a conservatively high estimate for planning purposes. The change in auto and truck traffic associated with the forecasted growth was

determined to be nearly 11,700 additional daily trips throughout the city. The future traffic volumes on all study area roadways were identified.

Traffic volumes at the Main Street interchange are expected to more than double the level observed today. The peak hour traffic volumes will grow from about 600 vehicles per hour to about 1,300 vehicles per hour by 2026. This is a very substantial change. North of I-84, where the city is largely developed, the growth is much lower, about 50% above today's volumes. The expected volumes and percent change over current conditions is summarized in Table 1.1 below.

**Table 1.1: Traffic Volume Growth at Main Street Interchanges (PM Peak Hour Two-Way Total)**

| Location | 2006 | 2026 | Percent Growth |
|---|---|---|---|
| Main Street north of I-84 | 635 | 975 | 54% |
| Main Street south of I-84 | 640 | 1395 | 118% |

By 2026, one intersection is expected to exceed the performance standards during peak hours:

- Main Street at I-84 Westbound Ramp

Side street approaches at four other Main Street intersections showed heavy delays during peak hours at:

- Main Street at Boardman Avenue;
- Main Street at Front Street (North);
- Main Street at I-84 Eastbound Ramps;
- Main Street at Front Street (South).

A series of different solutions were evaluated, and discussed by staff and stakeholders. The final solution was incorporated into the IAMP, and other alternatives that were set aside for various reasons are summarized in the appendix to this report.

Development that is not consistent with the current zoning (and generates over 10% more PM peak hour traffic than the current zoning) will need to complete a traffic study and amend this IAMP.

## Interchange Area Management Plan

The full IAMP plan is presented in Chapter 5 of this report. A summary follows.

### Local Connectivity Plan

Incremental improvements can be made to the local street connections near the freeway, as additional land is developed, with the long-term goal of improved street connectivity, improved bicycle/pedestrian network and limited direct access to Main Street.

The future deficiencies analysis in Chapter 4 highlighted several areas where local connectivity was in need of improvement, including:

- Improving east-west connectivity;
- Improving north-south connectivity;
- Filling gaps in pedestrian and bicycle system;
- Providing access to lands surrounding the Main Street interchanges; and
- Reducing access points to Main Street to the north and south of the interchange.

In response to these needs, a local connectivity plan and access management plan were developed that builds on existing and planned streets in IAMP area. These plans not only improve overall connectivity throughout the City, but also provide the ability to consolidate approaches to Main Street, while maintaining accessibility to individual properties in the corridors. Refer to Figure 1.2 and Figure 5.1 for details.

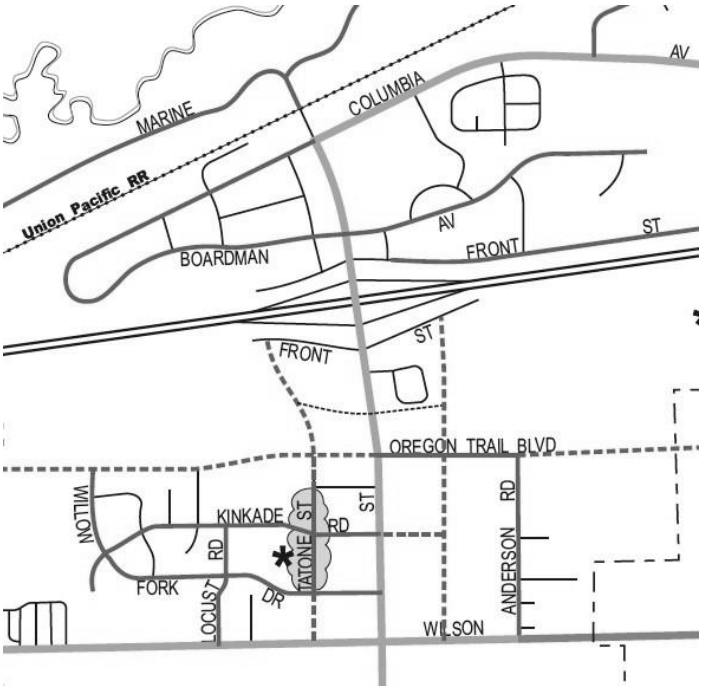


**Figure 1.2: Main Street Area Plan**

## Access Management Plan

A key element of the IAMP related to the long-range preservation of operational efficiency and safety of the interchange is the management of access to the interchange crossroads. Because access points introduce a number of potential vehicular conflicts on a roadway and are frequently the causes of slowing or stopping vehicles, they can significantly degrade the flow of traffic and reduce the efficiency of the transportation system. However, reducing the overall number of access points and providing greater separation between them can minimize the impacts of these conflicts.

Implementation of the access management plan is intended to occur over a long period of time because some affected properties maintain infrastructure (e.g. buildings and internal roadways) that was established based on prior approvals of access locations to the subject roadways and some elements of the plan depend on the presence of new public streets that cannot be constructed until funds are made available. Therefore, the improvements in this plan have been prioritized and categorized into short-range, medium-range, and long-range actions, where the short-range actions are to be executed at this time and the medium and long-range actions are to be executed as needed funds become available or as opportunities arise during property redevelopment.

The goals of this access management plan are listed below:

1. Restrict all access from abutting properties to the interchange and interchange ramps.
2. Improve access spacing and safety factors within the interchange
3. In attempting to meet access management spacing standards, exceptions may be allowed to take advantage of existing property boundaries and existing or planned public streets, and to accommodate environmental constraints (i.e. BPA Easement).
4. Replace private approaches with public streets, where feasible, to provide consolidated access to multiple properties.
5. Ensure all properties impacted by the project are provided reasonable access to the transportation system.
6. Develop cross access easement agreements as properties (re)develop.
7. Align approaches on opposite sides of roadways where feasible to reduce turning conflicts.

8. Short-range actions shall accommodate existing development needs.

Using the goals, an action plan for each approach to Main Street was developed, as shown in Table 5.1 and Figure 5.2 in Chapter 5.

## Interchange Improvements

The preferred Main Street Interchange improvements expand the existing diamond interchange. The project phasing would follow these steps:

- The freeway off-ramps would be widened to provide for separate turning lanes on the approaches to Main Street,
- Traffic signals would be installed at the off-ramp intersections with Main Street once traffic volumes grew enough to meet ODOT standards for traffic signal controls,
- The Main Street overpass would be expanded to accommodate a center left turn lane, bike lanes and wider sidewalks.

## Improvement Cost Estimates

The improvement alternatives have been prioritized into short, medium, and long-range actions, as shown in Table 1.2, to provide guidance for future implementation and funding. The timing for implementing these actions assumes average growth over the next 20 years.

It should be recognized that the prioritization of projects is not intended to imply that short range projects must be implemented before the long range projects. Should opportunities arise, through private land development or other means, to construct specific projects earlier than the estimated time frame provided by this list, those resources should be utilized.

Planning-level cost estimates for all improvement alternatives were calculated to aid in the identification of needed funding. Cost estimates, shown in Table 1.2, included the fundamental elements of roadway construction projects, such as the roadway structure, bridge structures, curb and sidewalk, earthwork, retaining walls, pavement removal, and traffic signals. Right of Way costs are not included in the cost estimates. All costs are in 2007 dollars and do not reflect the added cost of inflation.

One way to provide funding for future projects (i.e. local street network and South Main Street), is for the City to establish a System Development Charge (SDC) or Local Improvement District (LID) program. These types of programs are set up to collect funds from developments and/or land owners and are based on the amount of traffic generated.

**Table 1.2: IAMP Improvements**

| Short-Range Improvements (0 to 5 years) | Triggers | Estimated Cost | Potential Funding Source |
|---|---|---|---|
| • No specific short-range actions identified. Mid-range actions triggered earlier than 5 years. | - Increase in crashes<br>- Property (re)development | NA | • City<br>• Property owners |
| **Medium-Range Improvements (5 to 10 years)** | | | |
| • Reconstruct South Main Street. | - Money becomes available<br>- Property (re)development | $3 Million | • ODOT<br>• City |
| • Medium-range actions from access management plan. | - Increase in crashes | NA | • City |

| Short-Range Improvements (0 to 5 years) | Triggers | Estimated Cost | Potential Funding Source |
|---|---|---|---|
| | - Recurring public complaint<br>- Property (re)development | | • Property owners |
| • Construct additional approach lane on I-84 ramp terminals | - Increase in crashes<br>- LOS drops below standards<br>- Turn lanes warranted | $150,000 | • FHWA<br>• ODOT<br>• City |
| **Long-Range Improvements (10 to 20 years)** | | | |
| • Construct new public streets according to adopted Local Connectivity Plan. | - Property (re)development | $10 to 12 million | • City<br>• Property owners |
| • Install traffic signal at Main Street & I-84 Westbound Ramp | - Traffic signal warrants met | $300,000 | • ODOT<br>• City |
| • Reconstruct Main Street Bridge over I-84 – including wider sidewalk, bike lanes and turn lanes. | - Turn lanes warranted<br>- Money becomes available<br>- ODOT Bridge program – structural deficiency<br>- Increase in bike/ped crashes | $10 to 15 million | • FHWA<br>• ODOT<br>• City |
| • Long-range actions from access management plan. | - Increase in crashes<br>- Recurring public complaints<br>- Property (re)development | NA | • City<br>• Property Owners |

Note: Medium and long-range improvements could be constructed sooner than anticipated as opportunities arise through private property development or other means.

Table 1.3 shows the general size of development that is projected to happen in the next 20 years, assuming a constant growth rate. The magnitude of development (and associated trips) shown in the table is meant to serve as a guide as to when the short, medium and long range improvements may be needed. If growth rates are substantially faster or slower than anticipated, the implementation of the actions should be reevaluated, as appropriate.

**Table 1.3: Basis for Project Priorities**

| Description of Land Development within South Main Street Corridor | Short Range 0 to 5 Years | Medium Range 5 to 10 Years | Long Range 10 to 20 Years | Total |
|---|---|---|---|---|
| Residential Units | 85 | 85 | 170 | 340 residential units |
| Non-Residential Gross Building Area in Square Feet | 65,000 | 65,000 | 130,000 | 260,000 square feet gross building area |
| Peak Hour trips net new peak hour trips above 2006 traffic counts | 250 | 250 | 500 | 1000 new peak hour trip ends |

# Chapter 2. Plan Goals, Objectives, and Evaluation Criteria

This chapter describes and presents the goals and objectives for the plan, as well as evaluation criteria to measure the effectiveness of strategies. A policy framework was identified based on reviews and summary of the applicable state and local plans, policies, regulations, and design standards (see Appendix for details). This policy framework was used to develop the project goals, objectives and evaluation criteria that are presented in the following sections.

## Goals & Objectives

### Project Goal

The primary goal of this project is to develop an IAMP for the interchange of I-84 at Main Street (Exit 164), to keep it operating safely and efficiently as the community grows. The IAMP describes the overall study process, identifies potential safety and traffic congestion issues and alternative solutions, and lays out the implementation steps.

The IAMP will be developed in partnership with affected property owners in the interchange area, the City of Boardman and the Oregon Department of Transportation (ODOT), and other stakeholders, including interchange users.

### Objectives and Evaluation Criteria

The Project Goals have been met if the following objectives are achieved. A bulleted list of evaluation criteria follows each objective.

1. The IAMP shall include a thorough analysis of the issues for the interchange.
    - Identify and address existing and foreseeable issues related to land use, mobility, accessibility, and safety within the analysis area of the planned interchange.
    - Meet the minimum level of service / mobility standards and other requirements identified in state transportation plans, such as the Oregon Transportation Plan, 1999 Oregon Highway Plan (OHP), and Oregon Freight Plan.
    - Include an inventory map summarizing the existing conditions within the Interchange Study Area.
2. The IAMP shall identify and assess the needs and opportunities to improve access and circulation for all modes of transportation.
    - Describe the roadway network, right-of-way, access control and land parcels in the Interchange Study Area. It also evaluates local street access, circulation, connectivity, and the potential effect of local land use designations on the interchange.
    - Identify development patterns which reduce the reliance on the interchanges while increasing efficiency of the use of land within the urban growth boundary.

- Implement the OHP's Policy 3C criteria, which requires the planning and management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways.
- Include policies and implementing measures that preserve the functionality of the interchange areas.

3. The preparation of the IAMP shall utilize public involvement and technical methods to develop and refine improvement options.
    - Involve affect property owners in the interchange area, the City of Boardman, the Oregon Department of Transportation (ODOT), and other stakeholders, including interchange users.
    - Incorporate input and guidance from the Project Management Team (PMT).
    - Reflect, to the extent possible, the input of local property owners, interchange users, and other stakeholders, as gathered through public comments.
4. The IAMP shall prioritize improvement projects.
    - Identify and prioritize the transportation improvements, land use, and access management plans needed to maintain acceptable traffic operations in the Interchange Study Area.
    - Include short, medium and long-range actions to improve and maintain roadway operations and safety in the Interchange Study Area. These actions may include local street network improvements, driveways consolidations, shared roadways, access management, traffic control devices, and / or local land use actions.
    - Include a Transportation Improvements Map showing the opportunities to improve operations and safety within the City of Boardman and specifically in the Interchange Study Area.
5. The IAMP shall be forwarded through the adoption process.
    - A draft version shall be reviewed by the Boardman planning Commission, as well as the Boardman City Council. A final draft of the IAMP shall be adopted by the City Council.
    - Identify likely funding sources and requirements for the construction of the infrastructure and facility improvements as new development is approved.
    - Identify partnerships for the cooperative management of future projects and establishes a process for coordinated review of land use decisions affecting transportation facilities.

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# Chapter 3. Existing Land Use and Transportation Conditions

This chapter provides an inventory and evaluation of transportation facilities within the IAMP study area, which can be used to identify areas needing improvement and can act as a baseline for assessment of future conditions. This includes identification and description of existing land uses, area streets, traffic controls, pedestrian facilities, freight routes and property access, as well as an analysis of the crash history, access management deficiencies, and intersection capacity.

## Study Area Land Uses

Interstate 84 runs east and west through the City of Boardman and divides the town into roughly one third to the north and two-thirds to the south. The two roadways that cross Interstate 84 (I-84) and connect the north and south parts of town are Main Street and Laurel Avenue. The main east-west roads in Boardman are Marine Drive, Columbia Avenue and Wilson Road. Currently, the predominant employment centers are located north of I-84 and the residential is generally south of I-84, which creates the need for regular trips across the freeway.

The IAMP focuses on the land uses and circulation patterns that affect operations and safety at the Main Street interchange. The IAMP study area is divided into two parts: the first is the *influence area*, which considers the current and planned land development patterns that will affect travel patterns related to the interchange, and the second is the *management area*, which are the adjoining land uses and circulation systems within the immediate area of the interchange. The influence area includes the entire city of Boardman as future development within the City will be considered in assessing the long-range needs and solutions at the interchange. The management area is more focused on the land uses in close proximity, as defined by ODOT standards and guidelines. The selected geographic boundaries for the IAMP study area is discussed below and shown in Figure 3.1.

Management area limits generally extend one-quarter mile north and one-quarter mile south of I-84 along Main Street. North of I-84, most of the property is fully developed along the Main Street frontage area. In this developed portion of the city, the management area was limited to just one block either side of Main Street. This roadway was recently reconstructed (2005) through a Transportation Enhancement Grant, and it is not expected that any changes to existing access patterns would be made along North Main Street.

There are several large parcels south of Boardman Avenue and east of Main Street that have commercial zoning and are vacant today. The management area includes those vacant lands.

South of I-84 there is much more opportunity for development of vacant lands or re-development of underutilized commercial land. The boundary of the management area includes all the developable area, extending just south of Oregon Trail Boulevard.

## Study Area Street Network

The roadways within the study area have designated functional classifications, which identify how they are to be used, and the appropriate standards for operations and design. These roadways are listed below in Tables 3.1. The I-84 mainline and freeway ramps are federally owned and operated by ODOT, while the rest of the roadways are owned and operated by the City of Boardman.


**City of Boardman Main Street IAMP**
April 2009

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**Figure 3.1**

**STUDY AREA**

**Table 3.1: Study Area Roadways for Main Street IAMP**

| ODOT Jurisdiction | | |
|---|---|---|
| **Roadway** | **Limits** | **Functional Classification** |
| I-84 | Main Street Interchange | Interstate highway on National Highway System and Freight Route |
| **City of Boardman Jurisdiction** | | |
| **Roadway** | **Limits** | **Functional Classification** |
| Main Street | Wilson Road – Marine Drive | Arterial |
| Boardman Avenue | W 1st Street – E 1st Street | Minor collector |
| NW Front Street | W 1st Street – E 1st Street | Minor collector |
| SW Front Street | Entire length | Local street |

With these roadways identified as the primary means of circulation through the area, key intersections along these routes were selected for capacity analysis. Through a field inventory, the existing lane configurations and traffic controls at each intersection were documented and are displayed in Figure 3.2. There are no signalized intersections within the study area. Main Street has a three lane cross-section, including a continuous left turn lane, from I-84 to Columbia Avenue. All other roadways are currently two lanes.

## Operational Analysis

### Traffic Volumes

Traffic data was collected at five intersections within the City on September 19, 2006.

16-hour intersection turn movement counts were collected at the two interstate ramp intersections:

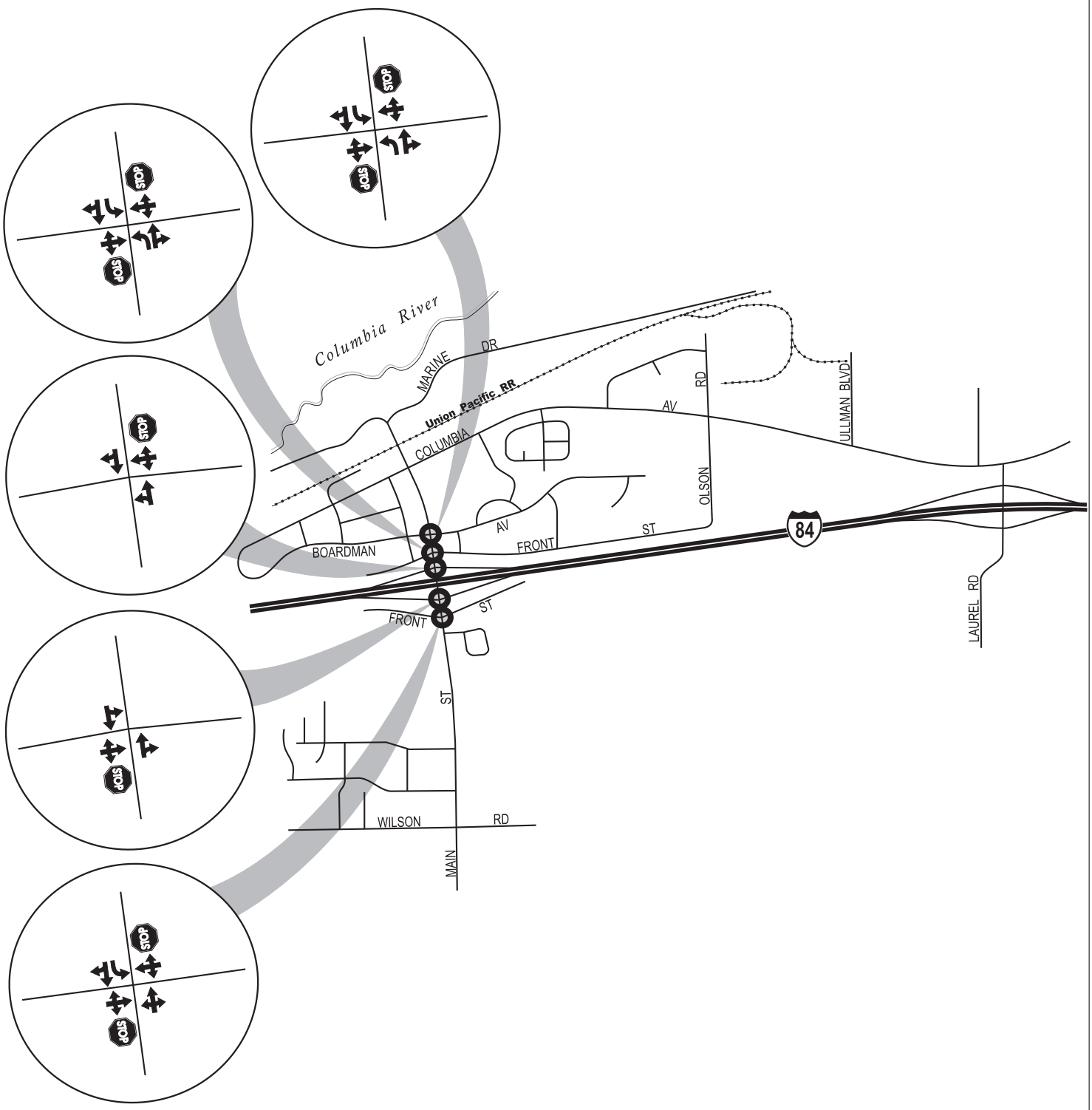
- I-84 EB Ramp at Main Street
- I-84 WB Ramp at Main Street

PM Peak Hour turning movement counts were collected at three additional intersections within the City:

- Main Street at Boardman Avenue
- Main Street at Front Street (north)
- Main Street at Front Street (south)

The PM Peak traffic counts were collected from 4:00 to 6:00 PM. Based on an evaluation of the count data, the evening peak hour for the operational analysis was determined to be from 4:05 to 5:05 PM for study intersections along Main Street.

The existing peak hour volumes were adjusted using the ODOT seasonal trend table. There are no automatic traffic recorders with similar characteristics nearby, therefore the seasonal trend method was used to develop design hour volumes. The Interstate trend was used to determine the seasonal factor. The adjusted PM Peak hour volume data is shown in Figure 3.3.




**LEGEND**

- Study Intersection
- Lane Configuration
- Stop Sign

**City of Boardman Main Street IAMP**
April 2009

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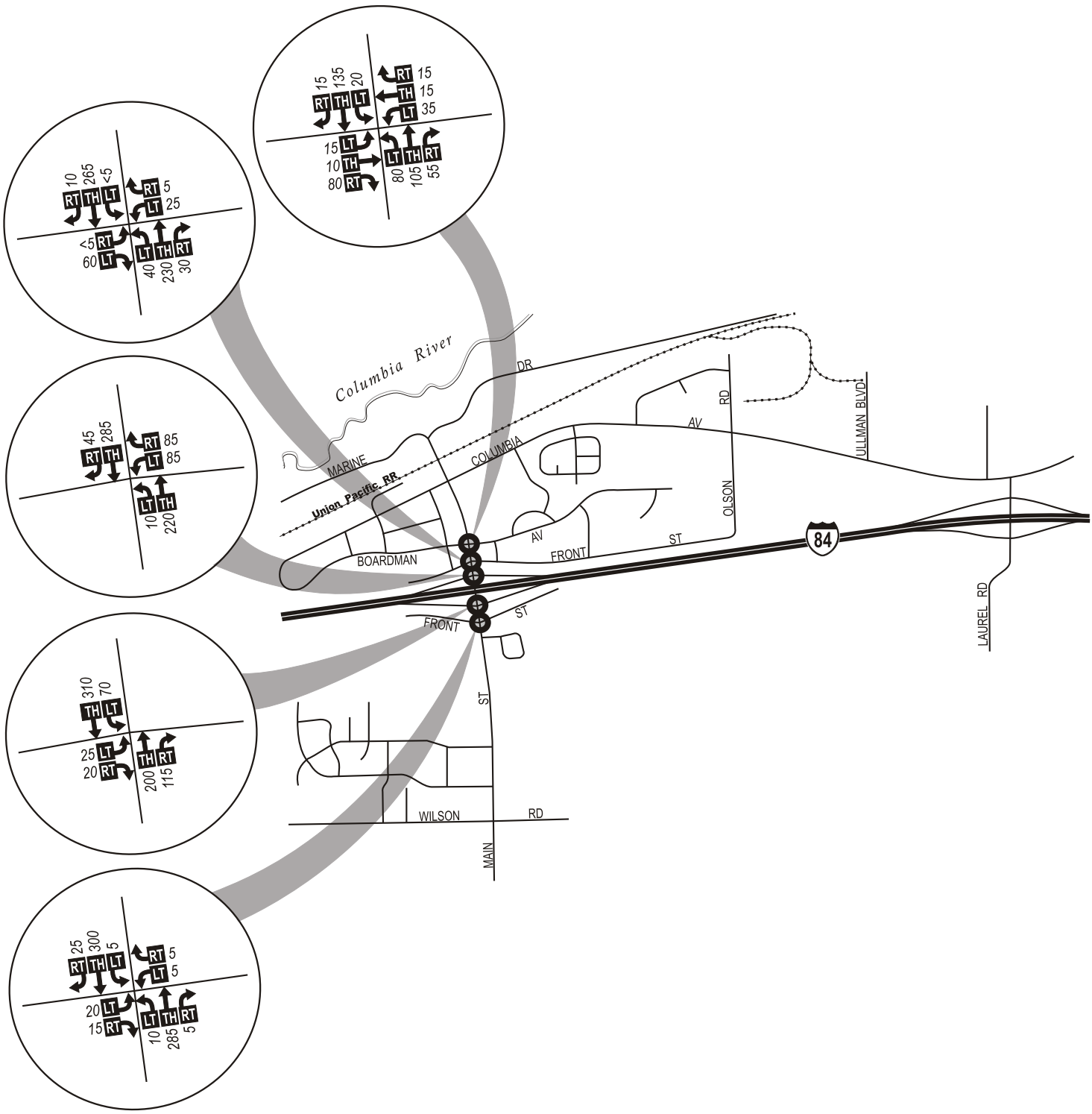
**Figure 3.2**

**EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVIC**




**LEGEND**

- Study Intersection
- *PM* - Peak Hour Traffic Volumes
  - *PM Peak* - 4:05-5:05 pm
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

**City of Boardman Main Street IAMP**
January 2009

NO SCALE

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**Figure 3.3**

# 2006 EXISTING WEEKDAY PM PEAK HOURS TRAFFIC VOLUM

## Study Area Roadway Performance

Study intersections within the IAMP area were analyzed using *Highway Capacity Manual*[1] methodologies for unsignalized intersections for comparison with the applicable jurisdiction's adopted performance standards. I-84 is designated as an Interstate highway, while Main Street is classified as an arterial and is under the jurisdiction of the city of Boardman. Performance standards for the freeway interchange ramp terminals have been adopted by ODOT in the *1999 Oregon Highway Plan*[2] (*OHP*). The maximum volume to capacity (V/C) ratio of ramp terminals of interchange ramps shall be 0.85.

All non-state roadways within the study area are under the jurisdiction of the City of Boardman. The City has adopted standards for performance of City streets requiring operation of LOS "C" or better during the peak hour of the average weekday.

Level of Service (LOS) categories are similar to report card ratings for traffic performance. Intersections are typically the controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. LOS A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. LOS D and E are progressively worse peak hour operating conditions and F conditions represent where demand exceeds the capacity of an intersection. Most urban communities set LOS D as the minimum acceptable level of service for peak hour operation and plan for LOS C or better for all other times of the day. The *Highway Capacity Manual* provides LOS calculation methodology for both intersections and arterials.

The traffic volume data shown in Figure 3.3 was used in the analysis. The percentage of heavy vehicles at each intersection was obtained from the traffic counts and used in the analysis. From this analysis, intersection LOS and volume to capacity ratios were obtained.

Table 3.2 shows the existing operational analysis for the unsignalized intersections within the Main Street IAMP study area. The results shown represent the critical movement at each intersection (usually a stop-controlled movement, such as a side-street left turn or crossing movement), along with the average intersection delay and LOS. As can be seen from this table, none of the intersections fail to operate within acceptable standards.

**Table 3.2: Weekday PM Peak Hour Intersection Level of Service Main Street IAMP Area**

| Intersection | Critical Movement | | | Average Intersection | | Performance Standard | Met ? |
|---|---|---|---|---|---|---|---|
| | Direction | LOS | Volume / Capacity | Delay (sec) | LOS | | |
| I-84 EB Ramp / Main Street | EB | B | 0.07 | 1.7 | A | V/C < 0.85 | Yes |
| I-84 WB Ramp / Main Street | WB | B | 0.18 | 3.3 | A | V/C < 0.85 | Yes |
| Main Street / Boardman Avenue | WB | B | 0.10 | 5.0 | A | LOS > C | Yes |
| Main Street / Front Street (North) | WB | C | 0.09 | 2.4 | A | LOS > C | Yes |
| Main Street / Front Street (South) | EB | B | 0.06 | 1.1 | A | LOS > C | Yes |

## Heavy Vehicles

The percentage of heavy truck vehicles observed at local intersections was a little higher than average. For the purposes of this analysis, a heavy truck is defined as having more than 3 axles. The heavy vehicle traffic is due to the proximity of the industrial land north of I-84 to the interchange, and access to commercial services along an interstate freight route. The actual number of heavy vehicles entering the

[1] *Highway Capacity Manual*, Transportation Research Board, Washington, D.C., 2000.
[2] *1999 Oregon Highway Plan*, Oregon Department of Transportation, 1999.

intersections was not above average, but since the total number of entering vehicles at these intersections is relatively low, it is understandable why the percentage of heavy vehicles is higher than average.

Table 3.3 shows the PM Peak hour heavy vehicle percentages at the Main Street IAMP study area intersections.

**Table 3.3: Weekday PM Peak Hour Volumes Within Main Street IAMP Study Area**

| Intersection | Total Vehicles | Heavy Vehicle | Heavy Vehicle % |
|---|---|---|---|
| I-84 EB Ramp/Main Street | | | |
| Northbound | 286 | 16 | 5.6% |
| Southbound | 351 | 16 | 4.6% |
| Eastbound | 45 | 13 | 28.9% |
| I-84 WB Ramp/Main Street | | | |
| Northbound | 213 | 14 | 6.6% |
| Southbound | 299 | 24 | 8.0% |
| Westbound | 159 | 24 | 15.1% |
| Main Street/Boardman Ave | | | |
| North/Southbound | 379 | 29 | 7.6% |
| East/Westbound | 162 | 7 | 4.3% |
| Main Street/Front Street (north) | | | |
| North/Southbound | 540 | 36 | 6.6% |
| East/Westbound | 87 | 15 | 17.2% |
| Main Street/Front Street (south) | | | |
| North/Southbound | 579 | 36 | 6.2% |
| East/Westbound | 38 | 1 | 2.6% |

It is noted that the heavy vehicle percentages were considered in the operational analysis for each of the study area intersections. Due to the length and weight of heavy vehicles, the start up time is much slower that passenger cars. This slow start up time, in addition to the length of the vehicle can create long queues. The heavy vehicles must also wait for a larger gap in the traffic before pulling out, which can add to the delay at the intersection.

The effect of large trucks was included in the foregoing capacity analysis. It was found that all of the study intersections currently operate within acceptable standards even taking into account the high percentage of heavy vehicles.

Heavy vehicles have much larger turning radii than passenger cars and the intersection geometrics along the freight routes must take this into account.

## Crash Analysis

The last five years (2001 – 2005) of available crash data for the entire City of Boardman was obtained from the ODOT Crash Analysis and Reporting Unit. The crashes within the Main Street interchange study area were analyzed and are listed in Table 3.4.

**Table 3.4: Study Intersection Collision Data by Type**

| Intersection | Backing | Pedestrian/ Bicycle | Angle | Rear-End | Turning Movement | Fixed Object | Total | | Fatality | Injury | Property Damage | Accident Rate* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-84 EB Ramp/Main Street | - | - | - | - | - | - | - | | - | - | - | 0.0 |
| I-84 WB Ramp/Main Street | - | - | 1 | 1 | 1 | - | **3** | | - | - | 3 | 0.24 |
| Main Street/Boardman Ave | - | - | 1 | - | - | 1 | **2** | | - | 2 | - | 0.20 |
| Main Street/Front Street (north) | - | 1 | - | - | - | 1 | **2** | | - | 1 | 1 | 0.17 |
| Main Street/Front Street (south) | 1 | - | 2 | - | - | - | **3** | | - | 1 | 2 | 0.26 |
| Main Street/Columbia Avenue | - | - | 1 | 2 | - | - | **3** | | - | - | 3 | 0.53 |
| **Total Collisions** | **1** | **1** | **5** | **3** | **1** | **2** | **13** | | **0** | **4** | **9** | |

Source: ODOT – Transportation Data Section – Crash Analysis and Reporting Unit, Continuous System Crash Listing, City of Boardman, 2000-2004.

*Accident Rate is measured in Accidents per Million Vehicles Entering intersection per year.

Through an examination of individual crashes over the last five years, it was noted that there were not any significant trends relating to accident location or type. The two most prevalent types of reported crashes were angle crashes and rear end crashes.

Normally, the crash analysis is supplemented by reviewing ODOT's Safety Priority Index System (SPIS) listing for locations in the study areas ranked among the state's top 10% of hazardous locations. The SPIS is a method developed by ODOT for identifying hazardous locations on state highways. None of the intersections within the study area are identified on the ODOT SPIS list

Based on this information, it does not appear that the roadways within the study areas are experiencing an above average rate of crashes. Therefore, no countermeasures for crash reduction are needed.

## Local Access and Circulation

An inventory of the existing access points along Main Street was compiled for the management area. Access to Main Street is in the form of private driveways, public easements, and public roadways.

Oregon's Access Management Rule is used to control the issuing of permits for access to state highways, state highway rights of way and other properties under the State's jurisdiction. Access within the influence area of existing or proposed state highway interchanges is regulated by standards in OAR 734-051. These standards do not retroactively apply to interchanges existing prior to adoption of the 1999 Oregon Highway Plan, except or until any redevelopment, change of use, or highway construction, reconstruction or modernization project affecting these existing interchanges occurs.

Figure 3.4 shows the location of the access points in the Main Street IAMP management study area. Main Street north of I-84 was recently reconstructed, which consolidated some access, but there are still a number of driveways and three public roadways that are within the interchange management area. Main Street south of I-84 has very little access control. There are three properties that have no clear curb cuts, which allow vehicles to access the property all along the frontage. This leads to conflicts between entering and exiting vehicles and is dangerous for pedestrians. The close spacing of North Front Street and South Front Street to the I-84 Ramp intersections creates conflict points between vehicles on the ramps and vehicles wanting to access local businesses. The BPA power line crosses South Main Street

just north of Oregon Trail. Access to the power line must be maintained for operational and maintenance purposes.

### Issues to be Addressed

- Reduce number of conflict points on Main Street. The close spacing of North Front Street and South Front Street create conflict points between turning vehicles and pedestrians. Alternate access should be investigated.
- The access to the properties directly south of I-84 along Main Street needs to be demarcated and evaluated.
- Ensure the adequacy of the roadway network in terms of function, capacity, level of service and safety.
- Serve the existing, proposed and future land uses with an efficient and safe transportation network.
- Design and construct the transportation system to enhance safety and mobility for all modes.

Some of these issues can be addressed through small incremental projects prior to major reconstruction.

## Pedestrians/Bicycles

To assess the adequacy of pedestrian and bicycle facilities in Boardman, an inventory of sidewalks, designated bike lanes, shoulder bikeways, identified shared roadways and off- street trails along the city streets was conducted. The location of existing activity centers such as parks, schools, City Hall and the city library were identified to determine possible pedestrian/bicycle trip generators. The high school is located north of I-84 while the elementary school, library and City Hall are all located south of I-84. The existing pedestrian network includes sidewalks along many of the local roads and a multi-use path along Wilson Road. However, there are very limited locations to cross I-84.

The City has applied for Transportation Enhancement Funding in the past to provide pedestrian and bicycle facilities on South Main Street. This section of Main Street currently has a multi-use path for pedestrians and bicycles. The previously proposed project would have provided sidewalk and bike lanes to improve the north-south connectivity for pedestrians and cyclists. The City may continue to pursue state funding in the future to help rebuild this section of roadway.

Figure 3.5 shows existing pedestrian facility inventory within the study area as well as the location of major activity centers. Sidewalk connectivity is adequate in the residential areas and near most schools. It is desirable to provide at least one continuous sidewalk connection between activity centers and arterial and collector roadways to provide safe and attractive non-motorized travel options. There are locations where sidewalk coverage could be more complete and provide greater connectivity throughout the city.

There is a multi-use path for bicycles along the north side of Wilson Road and bike lanes along North Main Street. Along the other roadways, bicyclists must share the travel lane with motor vehicles or use the shoulder if available. In many cases, this is not a desirable option for bicyclists due to narrow widths or uneven pavement conditions. Adequate bicycle facility connections should be provided to allow for safe travel between neighborhoods and activity centers.

The identified pedestrian and bicycle issues are summarized below.


**LEGEND**

0 - Access Location & Number

- No Access Control

000 - Tax Lot ID#

SCALE: 1"=400' (Approx.)

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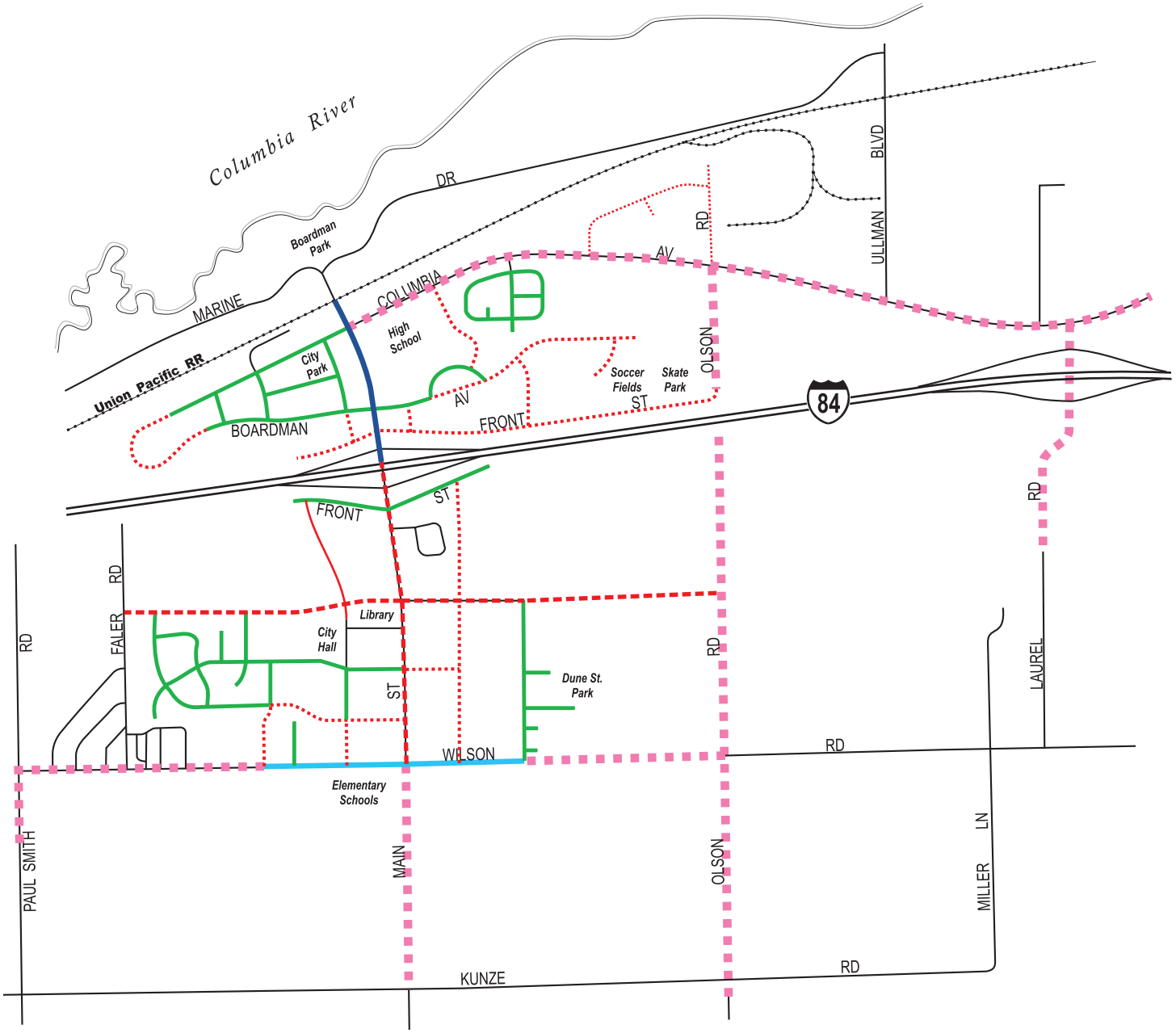
**City of Boardman Main Street IAMP**
April 2009

**Figure 3.4**

**MAIN STREET IAMP**
**EXISTING ACCESS POINTS**




**LEGEND**

- Existing Sidewalk
- Existing Sidewalks & Bike Lanes
- Existing Multi-Use Path
- Future Sidewalk
- Future Sidewalks & Bike Lanes
- Future Multi-Use Path

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NO SCALE

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**Figure 3.5**

## EXISTING PEDESTRIAN AND BICYCLE NETWORK

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### Issues to be Addressed

Deficiencies in the existing pedestrian facility network include:

- Sidewalks throughout the City should be ADA compliant and meet ODOT grant requirements.
- Continuity and quality of sidewalks on Main Street on the bridge over I-84. The narrow sidewalk width creates an uncomfortable pedestrian environment, particularly with the heavy vehicles that travel along the roadway.
- Several potential enhancements that should be considered are additional street lighting, curb extensions to reduce crossing distance and median treatments to provide pedestrians a "safe haven" at a mid-block crossing.
- There is no connection between Olson Road on the north and south sides of I-84. Pedestrians cannot cross I-84 at this location.

Deficiencies in the existing bicycle facility network include:

- There are no bike lanes on the Main Street overpass. This creates a potentially unsafe environment, particularly with the heavy vehicles within the interchange area.
- There is no connection between Olson Road on the north and south sides of I-84. Bicyclists cannot cross I-84 at this location.

## Freight

A large portion of the land north of I-84 in Boardman is zoned for Industrial. The freight transport serving this area consists of truck, rail and barge. These modes all converge in the Port of Morrow which is located north of I-84 near the Laurel Lane Interchange. Local truck traffic uses the Main Street interchange.

The Port of Morrow has six terminals on the Columbia River and is a large generator of freight in the area in addition to being a large employer. Other freight generators in the area include the food processing facilities located in the industrial area. Freight routes in the area include: Laurel Lane (at I-84), Columbia Avenue (aka Boardman-Irrigon Road), and Ullman Boulevard. Main Street is not a state-designated as a freight route.

Based on the traffic volumes collected, the percentage of heavy vehicles are higher than average. The actual number of heavy vehicles entering the intersections was not above average, but since the total number of entering vehicles at these intersections is relatively low, it is understandable why the percentage of heavy vehicles is higher than average. The volume of heavy vehicles at each study intersection during the peak hours are shown in Table 3.3.

### Issues to be Addressed

- Any road/intersection designs within the influence area shall take into account the heavy volume of trucks.

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# Chapter 4. Future Travel Forecasts and Needs Analysis

This chapter provides an evaluation of how the City of Boardman may grow as vacant lands are developed, and assesses how transportation facilities will perform as that growth occurs. Future year traffic conditions were evaluated to determine where access, capacity and multi-modal improvements would be needed to best serve existing and future residents and businesses in the city. In some cases, a range of solutions is possible for a given problem.

## Land Inventory and Analysis

Land use forecasting and the associated travel activity that occurs with growth is a key factor in developing a functional transportation system. The amount of land that is planned to be developed, the type of land uses and how the land uses are mixed together has a direct relationship to the expected demands on the transportation system. Understanding the amount and type of land use is critical to taking actions to maintain or enhance the operation of the transportation system. Projected land uses were developed within the City's Urban Growth Boundary for the forecast year (2026). The following sections summarize the forecasted growth that will influence travel within Boardman. A detailed description of the land use forecasting is included in the Appendix.

### Population and Employment Forecasts

Based on the Morrow County Transportation System Plan[3], the population in the City of Boardman is projected to grow at a rate of 2.5% per year. The Office of Economic Analysis (OEA) determined the historical growth rate for the 2000-2025 period. The current population of the City of Boardman is 3,175. Based on the projected growth, the City of Boardman can expect a population of 5,031 in the year 2026.

**Table 4.1: Boardman Population Projections**

| Year | City of Boardman Population |
|---|---|
| 2006 | 3,175 |
| 2026 | 5,031 |

The 1997 Land Needs and Supply report[4] states that Boardman had ample land within the Urban Growth Boundary to meet the commercial and housing needs for the next 20 years and beyond, given the population projections for the study. Most of the future employment growth is expected to occur at the Port of Morrow, which is in the northeast corner of the city and extends beyond into unincorporated portions of the county. Additional employment growth will occur along the South Main corridor due to available lands for commercial and office development. Most of the future residential growth is expected to occur south of I-84.

[3] Morrow County 2005 Transportation System Plan, July 23, 2005
[4] Land Needs and Supply – Boardman Urban Growth Boundary, Draft Report, July 17, 1997

The following section summarizes the forecasted growth that will influence future travel within the Main Street IAMP study area. Future development was based on the current land use zoning, expected growth by the forecast year and is consistent with the City's current Comprehensive Plan. Input from the City of Boardman staff to include local expertise and knowledge of known developments was also taken into account. Future development that is not consistent with the current land use zoning (and creates more than 10% more PM peak hour traffic than the current zoning) will need to conduct a traffic study and amend this IAMP.

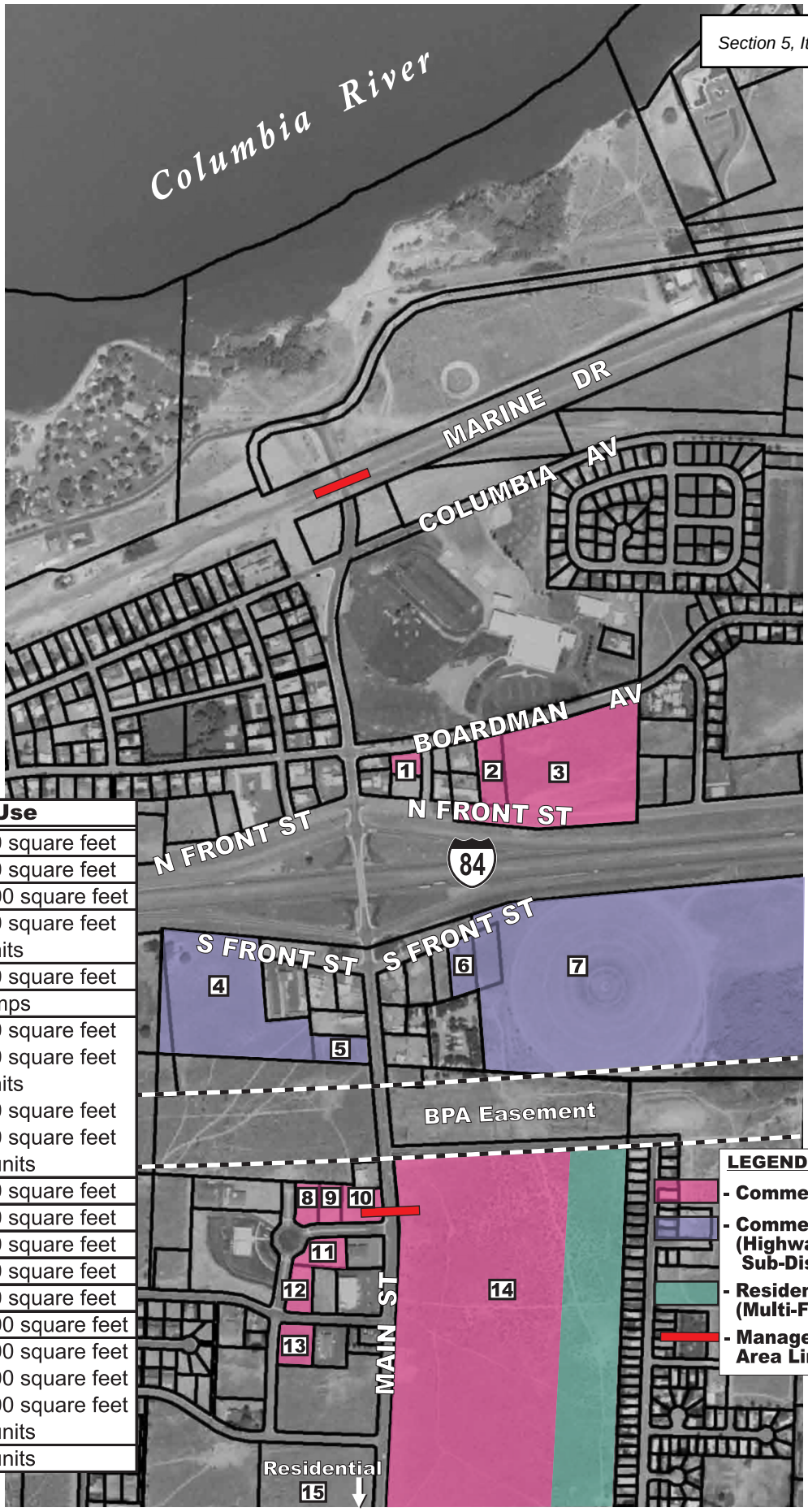
## Future Year Forecasts

An analysis was performed of 2026 future travel demand, deficiencies and needs for the transportation system within the Main Street IAMP. The analysis is based upon the transportation system inventory, analysis of existing conditions and forecasts of future demand based on land use projections for 2026. The project scope specifies that a Level 2 Cumulative Analysis be used for traffic volume forecasting. The cumulative analysis was used to forecast the future volumes in the Main Street study area interchange. The cumulative traffic volumes were calculated by adding the trips generated by the assumed development to the existing traffic counts, which were collected in September, 2006 (and factored for seasonal fluctuation).

The trip generation process translates land use quantities (number of households, building square footage or employees) into vehicle trip ends (number of vehicles entering or leaving a particular development area) using established trip generation rates based on the Institute of Transportation Engineers (ITE) Trip Generation Manual[5]. Table 4.2 provides a listing of the weekday PM peak hour trip rates used in this analysis. The resulting traffic volume projections form the basis for identifying potential roadway deficiencies and for evaluating alternative circulation improvements.

The following section summarizes the forecasted growth that will influence future travel within the Main Street IAMP study area. Figures 4.1 shows the parcels that are expected to develop by the year 2026 in the Main Street IAMP study area. Future development was based on the current land use zoning, expected growth by the forecast year and is consistent with the City's current Comprehensive Plan.

[5] *Trip Generation Manual*, 7th Edition, Institute of Transportation Engineers, 2003.




## Main Street

| Parcel# | Assumed Land Use | |
|---|---|---|
| 1 | Convenience Store | 2,000 square feet |
| 2 | Fast Food Restaurant | 3,000 square feet |
| 3 | Specialty Retail | 20,000 square feet |
| 4 | Restaurant<br>Motel | 6,000 square feet<br>65 units |
| 5 | Fast Food Restaurant | 4,000 square feet |
| 6 | Gas Station with Mart | 8 pumps |
| 7 | Fast Food Restaurant<br>Restaurant<br>Motel<br>Car Wash<br>Car Service Shop<br>Housing | 4,000 square feet<br>6,000 square feet<br>65 units<br>1,000 square feet<br>2,000 square feet<br>120 units |
| 8 | Office | 5,000 square feet |
| 9 | Office | 5,000 square feet |
| 10 | Bank | 4,000 square feet |
| 11 | Office | 5,000 square feet |
| 12 | Office | 5,000 square feet |
| 13 | Medical/Dental | 10,000 square feet |
| 14 | Specialty Retail<br>Drug Store<br>Hardware/Paint Store<br>Housing | 10,000 square feet<br>20,000 square feet<br>10,000 square feet<br>120 units |
| 15 | Housing | 100 units |

NO SCALE

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**Figure 4.1**

**MAIN STREET 20-Y FORECASTED DEVELOPM**

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**Table 4.2: PM Peak Hour Trip Generation Rates**

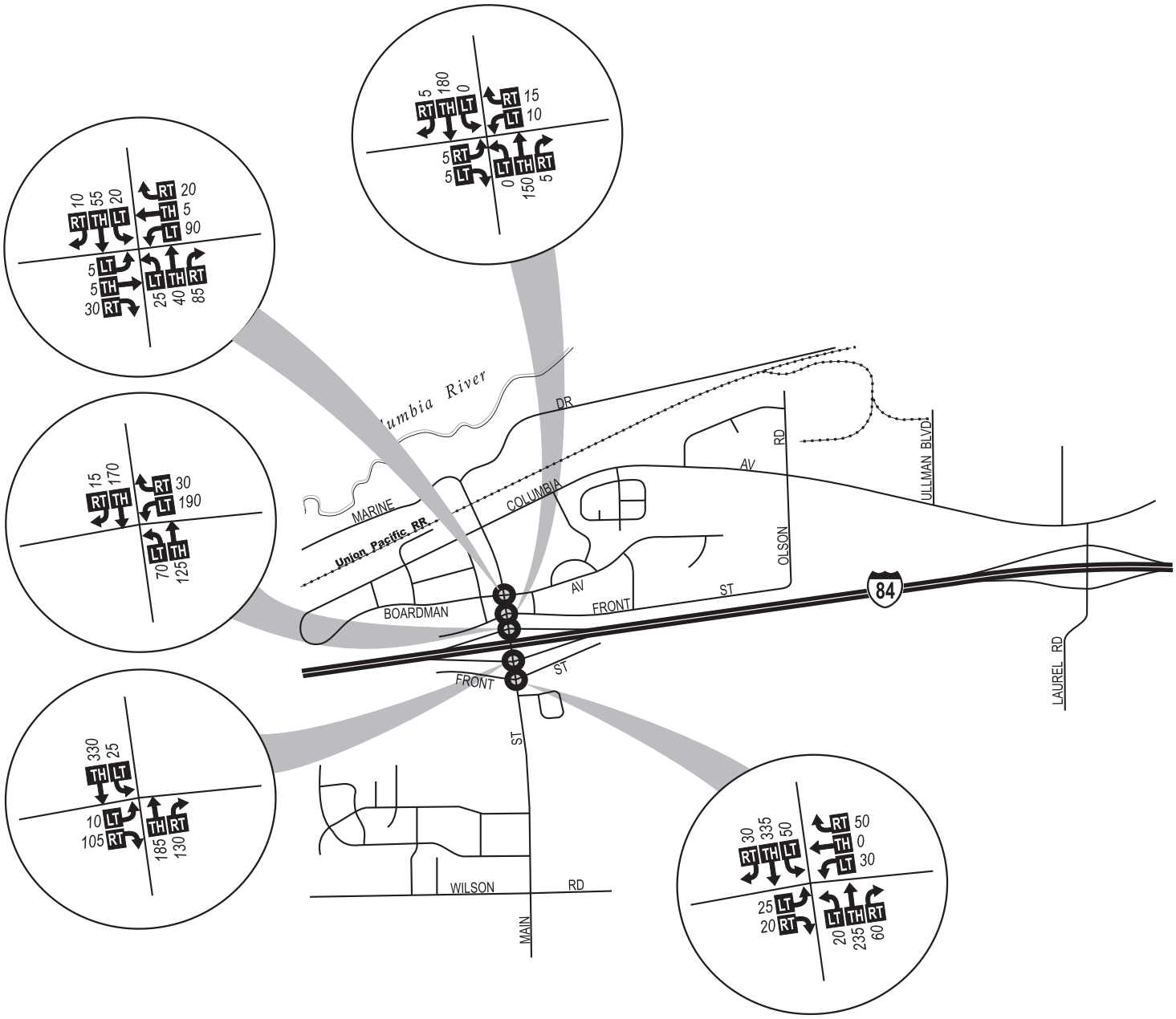
| Land Use Description | ITE Code | Land Use Unit | Vehicle Trips Per Land Use Unit | Assumed Size of Land Use |
|---|---|---|---|---|
| Single Family Detached Housing | 210 | Dwelling Unit | 1.01 | 220 |
| Housing - Condos | 230 | Dwelling Unit | 0.52 | 120 |
| Motel | 320 | Room | 0.58 | 130 |
| Single Tenant Office | 715 | 1,000 s.f. building area | 1.73 | 20 |
| Medical/Dental Office | 720 | 1,000 s.f. building area | 5.18 | 10 |
| Specialty Retail (Lumber store) | 812 | 1,000 s.f. building area | 4.49 | 10 |
| Free Standing Discount Store | 815 | 1,000 s.f. building area | 5.06 | 20 |
| Hardware/Paint Store | 816 | 1,000 s.f. building area | 4.84 | 10 |
| Convenience Mart | 851 | 1,000 s.f. building area | 52.41 | 2 |
| Drug Store | 881 | 1,000 s.f. building area | 8.62 | 20 |
| Bank Drive In | 912 | 1,000 s.f. building area | 45.74 | 4 |
| Sit-Down High Turn Over Restaurant | 932 | 1,000 s.f. building area | 10.92 | 12 |
| Fast Food with Drive In | 934 | 1,000 s.f. building area | 34.64 | 11 |
| Auto Care Center | 942 | 1,000 s.f. building area | 3.38 | 2 |
| Gas Station with Mart | 945 | Fuel Service Position | 13.38 | 8 |
| Self Service Car Wash | 947 | 1,000 s.f. building area | 5.54 | 3 |

Based on the assumed land uses for the 20-year forecasted development scenario, it is estimated that there will be an additional 11,700 new trips per day added to the system. During the PM peak hour, it is estimated that there will be an additional 1,100 trips generated by the future development, while an additional 1,000 new trips will be generated in the AM Peak hour. Tables A1 and A1a in the Appendix list each of the land uses and the estimated trips generated by them.

Many of the new trips generated by the future development will be shared by different land uses, so a reduction factor was applied to take this into account. Based on data in the ITE Trip Generation Manual, 5th Edition, a reduction rate of: 60% was applied to the Convenience Store land use, 43% was applied to the Fast Food land use, 35% was applied to the Retail land use and 27% was applied to the Gas Station land use.

Trips from the new development were assigned to specific travel routes in the network, and resulting trip volumes were accumulated on links of the network until all trips are assigned. The trips related to the commercial and industrial development near the interchanges were distributed toward the freeway ramps, using similar turning movement percentages as the current counts. The residential, office, and commercial development on South Main Street has more of the trips distributed locally. It is expected that as more retail and other services are built along South Main Street, that a larger share of shopping trips will be made locally, rather than traveling to nearby cities for services and goods. This dynamic will work towards reducing the use of the Main Street interchange. The projected PM peak hour traffic volumes due to the 20-year forecasted development scenario are shown in Figure 4.2. The cumulative PM Peak hour volume data for the Main Street IAMP study area is shown in Figure 4.3.

A detailed description of the land use forecasting, including key distribution assumptions is included in the Appendix.




**LEGEND**

- Study Intersection
- *00* - PM Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

**City of Boardman Main Street IAMP**
April 2009

**Figure 4.2**

NO SCALE

**PM PEAK TRIPS GENERATED BY 20-YEAR FORECASTED DEVELOPME**

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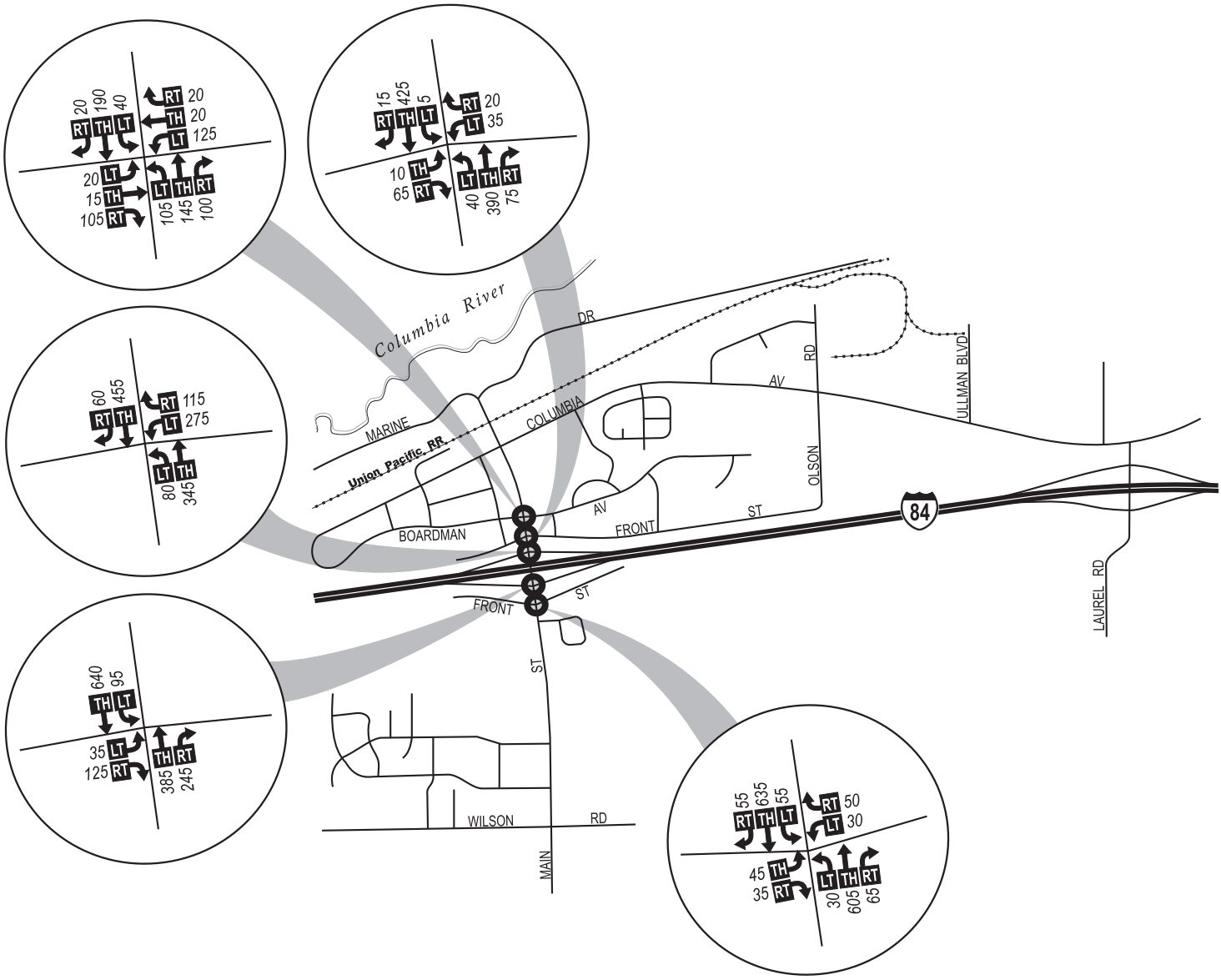


**LEGEND**

- Study Intersection
- 00 - PM Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

**City of Boardman Main Street IAMP**
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**Figure 4.3**

## 2026 PM PEAK HOUR TRAFFIC VOLUMES

### Boardman Speedway

One future land use that was not included in the trip generation was the Boardman Speedway, since as of this writing; a decision has not been made regarding this development. The main access for the speedway is planned to be off of Tower Road, which is about five miles to the west of the Main Street interchange in Boardman. Construction of a speedway will have an impact on the way the City develops and the rate at which it does. If the speedway development were to be built, further studies would need to be prepared by others to quantify all the potential impacts (transportation, environmental, economic, etc.).

### Volume Comparisons to Past Studies

The Transportation System Plan[6] documents the 20 year forecasted traffic volumes in Boardman. The TSP volumes were forecasted for the year 2020 and were developed by applying a 2.9 percent annual growth rate to existing volumes. The IAMP forecasts are based on trip generation and distribution from actual land use zoning. In order to compare plans, the 2020 TSP volumes were factored up to arrive at 2026 volumes. Table 4.3 shows the comparison between the volumes forecasted by the TSP[5] and this IAMP.

**Table 4.3: PM Peak Hour Volume Comparison between TSP and IAMP (2026)**

| Location | Two-way PM Peak Hour Volume | | Volume Difference |
|---|---|---|---|
| | TSP | IAMP | |
| Main Street North of I-84 | 1070 | 975 | -95 |
| Main Street on I-84 Overpass | 1070 | 1100 | 30 |
| Main Street South of I-84 | 1140 | 1400 | 260 |

The biggest difference is on Main Street south of I-84. This is reasonable, since most of the development is assumed to take place on Main Street between I-84 and Wilson Road. The TSP assumed a growth rate that is applied to all movements equally, whereas the IAMP used the actual land use type and location in the analysis.

The Main Street Development Plan[7] documents the year 2020 forecasted traffic volumes in the City of Boardman under two scenarios. The first scenario uses a 1.0 percent growth rate per year and also adds in volumes that are expected to be generated by three residential developments. The second scenario uses a 1.0 percent growth rate and adds in the residential development from Scenario 1 plus the new traffic that would be expected from the New Downtown Plan, which includes retail, office and more residential development. Table 4.4 shows the comparison between the volumes forecasted by the Downtown Plan[7] and this IAMP.

**Table 4.4: PM Peak Hour Volume Comparison between Downtown Plan and IAMP**

| Location | Two-way PM Peak Hour Volume | | Volume Difference |
|---|---|---|---|
| | Downtown Plan | IAMP | |
| Main Street North of I-84 | 1080 | 975 | -105 |
| Main Street on I-84 Overpass | 1420 | 1100 | -320 |
| Main Street South of I-84 | 1830 | 1400 | -430 |

[6] Transportation System Plan, City of Boardman, Oregon 1999
[7] City of Boardman Main Street "Downtown" Development Plan, 2000-2001

The forecasted volumes for the Downtown Plan were about 30% higher than the IAMP forecasted volumes. The Downtown Plan assumed a growth rate in addition to actual development when forecasting the volumes, whereas the IAMP used only the land use type and location in the analysis and assumed that the growth rate would be included in the trip generation rates.

### South Main Street Development Alternative

One of the concurrent planning issues that affects the South Main portion of the study area is a pending rezone for approximately 30 acres at the east end of South Front Street. It is understood that the proposed rezone would change the background residential zoning to allow for more commercial uses. Based on input from the City, it was assumed that approximately half of the 30 acres would be developed as residential (120 residents) with the remaining land developed as commercial. It is estimated that the net change in traffic generation associated with the rezone would be minimal, approximately 400 trips per day or 20 trips in the peak hour. Therefore, we have included this rezone action in the assumptions for future growth, which will be conservatively high, compared to existing zoning provisions.

## Future 2026 Operations

Study intersections were analyzed using *Highway Capacity Manual*[8] methodologies for unsignalized intersections for comparison with the applicable jurisdiction's adopted performance standards. Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of *level of service* (LOS) has been developed to subjectively describe traffic performance. LOS can be measured at intersections and along key roadway segments.

### Intersection Operations

The traffic volume data shown in Figure 4.3 was used in the analysis, using *Highway Capacity Manual*[8] methodologies for unsignalized intersections for comparison with the applicable jurisdiction's adopted performance standards.

I-84 is designated as an Interstate highway, while Main Street is classified as an arterial and is under the jurisdiction of the city of Boardman. Performance standards for the freeway interchange ramp terminals have been adopted by ODOT in the *1999 Oregon Highway Plan*[9] (*OHP*). The maximum volume to capacity (V/C) ratio of ramp terminals of interchange ramps shall be 0.85. All non-state roadways within the study area are under the jurisdiction of the City of Boardman. The City has adopted standards for performance of City streets requiring operation of LOS "C" or better during the peak hour of the average weekday.

Table 4.5 shows the cumulative (year 2026) operational analysis for the unsignalized intersections within the Main Street IAMP study area (with substandard in bold). The results shown represent the critical movement at each intersection (usually a stop-controlled movement, such as a side-street left turn or crossing movement), along with the average intersection delay and LOS.

[8] *Highway Capacity Manual*, Transportation Research Board, Washington, D.C., 2000.
[9] *1999 Oregon Highway Plan*, Oregon Department of Transportation, 1999.

**Table 4.5: Cumulative (2026) Weekday PM Peak Hour Intersection Level of Service**

| Intersection | Critical Movement | | | Average Intersection | | Performance Standard | Met? |
|---|---|---|---|---|---|---|---|
| | Direction | LOS | Volume / Capacity | Delay (sec) | LOS | | |
| I-84 EB Ramp / Main Street | EB | E | 0.32 | 4.6 | A | V/C < 0.85 | Yes |
| I-84 WB Ramp / Main Street | WB | F | **1.17** | **65.9** | **F** | **V/C < 0.85** | **No** |
| Main Street / Boardman Avenue | WB | F | 0.66 | 14.0 | B | LOS > C | Yes |
| Main Street / Front Street (North) | WB | D | 0.27 | 3.1 | A | LOS > C | Yes |
| Main Street / Front Street (South) | EB | F | 0.77 | 10.5 | B | LOS > C | Yes |

Assuming 20 year forecasted development of the assumed land uses, the following intersection is expected to exceed the performance standard of V/C < 0.85 in the PM peak hour:

- Main Street & I-84 Westbound Ramp

There following three intersections have side street movements that will operate with LOS E or F:

- Main Street & Boardman Avenue
- Main Street & I-84 Eastbound Ramp
- Main Street & Front Street (South)

The intersections will continue to operate within the City of Boardman LOS performance standards for average intersection LOS, but may have increased delay for the side street approaches.

## Future 2026 Deficiencies

System deficiencies and/or safety issues that were identified from the Future Conditions Analysis are listed below:

- Main Street & I-84 Westbound Ramp is expected to exceed the City standard LOS in the PM peak hour.

The following three intersections have side street movements that will operate with LOS E or F:

- Main Street & Boardman Avenue
- Main Street & I-84 Eastbound Ramp
- Main Street & Front Street (South)

## Access/Intersection Spacing

The long term goal is to reduce or minimize the number of access points along South Main Street. As vacant land is developed and street connectivity is completed, the access points should be evaluated. Reasonable alternate access must be in place before any access is removed. North Main Street was recently reconstructed, and all of the land is developed that fronts this roadway. If any of the properties redevelops, the access points onto North Main Street should be re-evaluated.

The number of access points should be reduced and/or combined on South Main Street. By reducing and combining access points, the number of conflict points is reduced, which improves the safety and operation of the roadway. This should be done as property develops and will be based on mutually agreed upon access changes and/or the addition of alternate access.

Left turn lanes should be provided on Main Street at the major access points to provide safe left turning access.

## Pedestrian/Bicycle Network

The pedestrian network should be addressed in parallel to the street network improvements. In general, curb and sidewalk similar to North Main Street will improve the safety of pedestrians along South Main Street. Pedestrian access across Main Street is also important. Pedestrian crossings should be accommodated at the major access points (I-84 ramps, Oregon Trail Boulevard, City Center Boulevard, Kinkade Road and Wilson Road). This would include sidewalk with ADA pedestrian ramps on the corners and possibly supplemental signing and/or painted crosswalks. A "mid-block" pedestrian crossing could be accommodated on the north side of the BPA easement. The mid-block crossing could incorporate a center pedestrian refuge island, once South Main Street is reconstructed to the arterial standard. A wider sidewalk and separate bike lanes on the Main Street bridge across I-84 will provide a safer facility for the pedestrians and bicyclists.

## Sensitivity Analysis

The future distribution patterns have an impact on the forecasted turning movement volumes at study area intersections. If more traffic than forecasted uses the I-84 interchange ramps to go east or west on I-84 (instead of local trips), the intersection operations at the ramp intersections will degrade before the forecast year. If ten percent more of the forecasted traffic were to go through the I-84 ramp intersections, the intersection of Main Street & I-84 Eastbound ramp would not meet the City LOS standards.

In the forecast year, the minor street volumes at the intersection of Main Street & I-84 Eastbound Ramp are expected to be approximately 90% of the volumes needed to meet the Peak Hour traffic signal warrant. If more traffic than forecasted uses this intersection or if more traffic turns left from the Eastbound ramp onto Main Street, the Peak Hour warrant will be met at this intersection.

## Major Constraints

The following section identifies transportation, environmental, socio-economic, multi-modal and right of way constraints and/or issues associated with the transportation deficiencies for the Main Street IAMP area.

- The Bonneville Power Administration (BPA) has a major electrical transmission line that cuts across the city. The BPA easement is 395 feet wide and is about one quarter mile south and parallel to I-84. Any new roadways within the BPA easement would need to comply with regulations set forth by BPA.
- Interstate 84 runs east and west through the City and divides the town into roughly one third to the north and two-thirds to the south. The two roadways that cross I-84 and connect the north and south parts of town are Main Street and Laurel Avenue. Additional roadways that would connect the north and south parts of town would need to cross (over or under) I-84.
- There are identified wetland areas within the City of Boardman. Most of the wetland areas are located where new roadways are not anticipated in the future. However, there are two areas in the vicinity of future roadways and will need to be mitigated if new roadway construction impacts them. One area is approximately 30 acres and located south of I-84 and about a quarter mile west of Main Street. A second area is approximately 10 acres and is south of I-84 and about a third mile east of Main Street.
- A mobile home park is currently located on the west side of South Main Street between South Front Street and the BPA easement. A new roadway that would provide east-west connectivity and access to businesses along Front Street would have an impact on the south part of this

property. The impact may result in the relocation of some of the mobile homes or a redesign of the layout of the mobile home park.

- New roadways that strengthen north-south and east-west connectivity would provide access to businesses and homes, thus having a positive socio-economic impact.
- New roadway connections or road widening projects will require the purchase of right of way.
- There are no identified sources of funding for any of the transportation improvements.

# Chapter 5. Interchange Area Management Plan

Alternatives for providing adequate operation of the interchange and the surrounding transportation system were developed and evaluated. This chapter summarizes the alternatives considered, including cost estimates, and provides prioritization for the implementation of these alternatives through short, medium, and long-range actions.

## Transportation Alternatives

In Chapter 4, a future deficiencies analysis identified one study area intersection that was projected to fail to meet adopted mobility standards, which for the interchange ramp intersections is a v/c ratio of 0.85. The mobility standard for the City of Boardman intersections is a Level of Service "C".

Assuming 20 year forecasted development of the assumed land uses, the following intersection is expected to exceed the performance standard of V/C < 0.85 in the PM peak hour:

- Main Street & I-84 Westbound Ramp

The following three intersections have side street movements that will operate with LOS E or F:

- Main Street & Boardman Avenue
- Main Street & I-84 Eastbound Ramp
- Main Street & Front Street (South)

The three intersections listed above will continue to operate within the City of Boardman LOS performance standards for average intersection delay and LOS, but may have increased delay for the side street approaches.

Transportation alternatives are aimed at improving capacity and safety through measures such as traffic controls, turn lanes, enhanced street connectivity, and system management techniques.

The planned Main Street improvements are shown in the two graphics below. Most of the improvements will be developed over time as the land develops. Incremental improvements can be made as land is developed with the long-term goal of improved street connectivity, improved bicycle/pedestrian network and limited direct access to Main Street. The project phasing would follow these steps:

1) Develop the local street network east and west of Main Street.
2) Limit access at Main Street/North Front Street and Main Street/South Front Street,
3) Widen the freeway off-ramps to provide for separate turning lanes on the approaches to Main Street,
4) Install a traffic signal at Main Street and I-84 WB Ramp once traffic volumes grew enough to meet ODOT standards for traffic signal controls,
5) Reconstruct and expand the Main Street overpass to accommodate a center left turn lane, bicycle lanes and wider sidewalks.

As traffic volumes on Main Street double over current levels (by year 2026), incremental steps will be required to ensure that the existing interchange configuration performs adequately for autos and trucks, and provides safe facilities for bicycles and pedestrians. The short/mid-term solution is to limit access at the intersections of Main Street with North Front Street and South Front Street to right turn only. The ultimate improvement alternative would expand the current freeway interchange by widening the two off-

ramps and the bridge, and constructing a traffic signal at the ramp westbound terminal. Figure 5.1a shows the short/mid range improvements at the interchange and Figure 5.1b shows the long range improvements at the intersection.

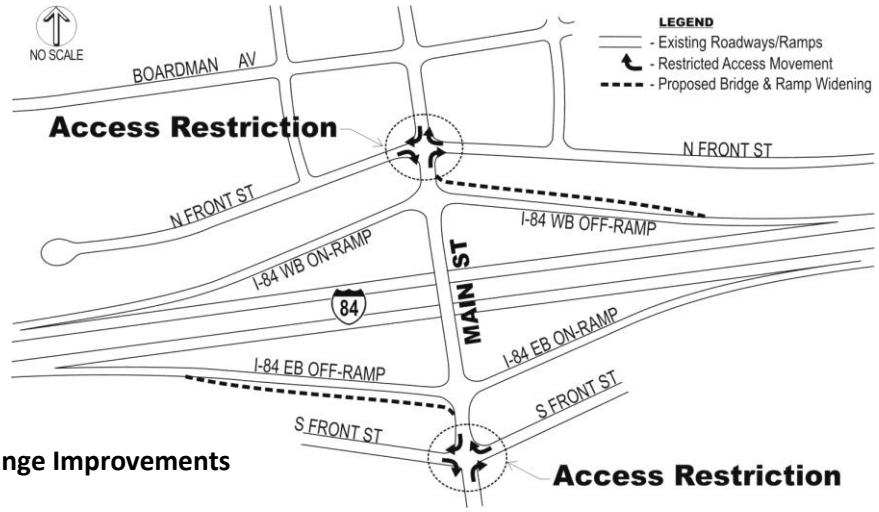



**Figure 5.1a**
**Short/Mid-Range Improvements**

The introduction of a traffic signal and the traffic growth on Main Street will substantially increase conflicts at the existing Main Street intersection with North Front Street, which is about 150 feet away from the ramp terminal. For example, it will be much more common during peak hours for queues of vehicles on Main Street to temporarily block the North Front Street intersection and nearby driveways from businesses. By 2026, the vehicle queues on Main Street approaching the off-ramp traffic signal will be 10 to 13 vehicles, and will frequently block the North Front Street intersections. Typically, one vehicle accounts for 25 feet of queue space, so the queues would extend up to 250 to 325 feet during the busy hours of the day. Queues will be longer if commercial trucks are included. Boardman Avenue is approximately 400 feet north of the freeway, and it would not typically be affected by these queues, except under unusual peak conditions.

The intersection at South Front Street will not be affected by queues created by the traffic signal at the westbound ramp, but the close proximity to the eastbound ramp will continue to create conflicts and confusion between all the turning vehicles.

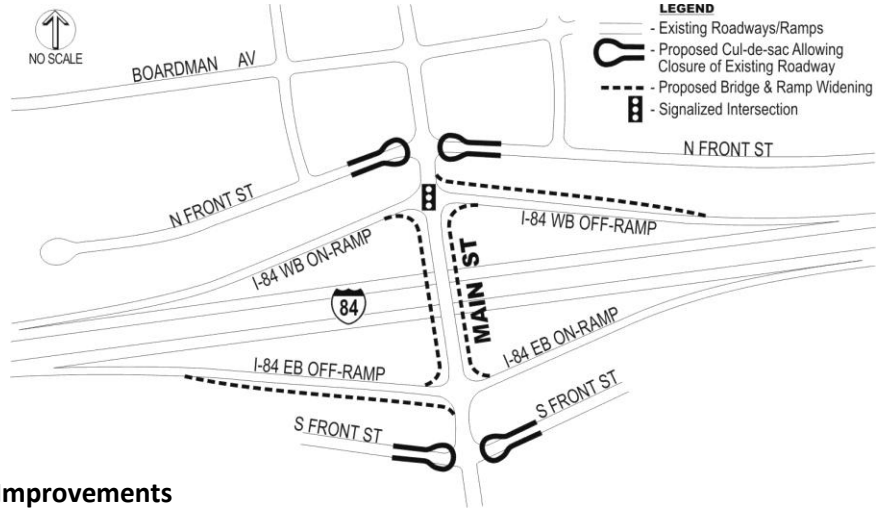



**Figure 5.1b**
**Long-Range Improvements**

To reduce the conflicts and potential safety concerns, the full-access intersections at North and South Front Street will gradually need to be more restricted, which may include limiting to right-turn movements only or full closure. North Front Street businesses currently have alternative access onto Boardman Avenue, however businesses along South Front Street do not have access to Main Street other than via South Front Street. The local street network must be in place to provide alternate access to businesses that rely on North and South Front Streets. As development occurs, portions of the network should be constructed or right of way should be set aside for future construction. It is expected that with the low turning volumes at Front Street on either side of the highway, that right-turn access could be retained for the foreseeable future.

The long term component of this alternative would be the widening of the existing bridge to match up to current standards for sidewalks and bike lanes, and provide a center left turn lane area for left-turning vehicles. The widening of the bridge would eliminate the existing sight distance issue for vehicles on the off-ramps looking across the bridge.

## Timing of Improvements

It is important to establish thresholds for limiting the North and South Front Street access at Main Street so that decisions can be made through the land use review process, and as various traffic issues arise or the community reports significant conflicts. These thresholds can be tied to traffic volume levels, reported crashes, or recurring conflicts that are observed at these intersections. It is assumed that growth will happen at a constant rate over the next 20 years. If growth happens at a faster rate, then the improvements may need to be completed sooner than estimated. Conversely, if development happens at a slower rate than assumed, the improvements will be delayed until the need arises. Proposed development that is not consistent with the current land use zoning (and creates more than 10% more PM peak hour traffic) will need to amend the IAMP.

Below is a description of when the improvements would be expected to be needed.

### Main Street & I-84 Westbound Ramp

Because projected minor street volumes are relatively low, the timing of the need for this signal is uncertain and will depend on the actual pattern of development in the area of the interchange. As development occurs, the City should monitor the traffic volumes at the I-84 Ramp intersection to determine if the volumes would warrant a traffic signal.

Assuming a constant rate of development over the next 20 years, the operation of the intersection, with stop control for the side street, is expected to fall below the performance standards in approximately 15 years. Reconstructing the intersection to include a separate left turn and right turn lane for the westbound approach will improve the operation of the intersection and reduce the westbound queuing. Preliminary traffic signal warrants for the PM peak hour may be met in approximately 10 years. This does not automatically mean a traffic signal should be installed, but the intersection operation should be monitored by the City.

### Main Street & I-84 Eastbound Ramp

This intersection does not currently meet the preliminary traffic signal warrants in the forecast year, but a small amount of development beyond what was forecasted would likely increase the volume sufficiently to warrant a signal. In the forecast year, the minor street volumes at the intersection of Main Street & I-84 Eastbound Ramp are expected to be approximately 90% of the volumes needed to meet the Peak Hour traffic signal warrant.

Reconstructing the intersection to include a separate left turn and right turn lane for the eastbound approach will improve the operation of the intersection and reduce the eastbound queuing.

### Main Street & Front Avenue (North and South)

The traffic volumes at the intersections of Main Street & Front Avenue North and Main Street & Front Avenue South should be monitored as development occurs to determine if certain turning movements should be prohibited. Access restrictions can include limiting the turning movements to right turns only or eliminating all turning movements. Access restrictions can only be implemented if alternate access is provides to properties along North and South Front Street. If access restrictions were implemented at North Front Street, Boardman Avenue can be used as alternate access to the properties along Front Street North. There is currently no alternate access for the properties along Front Street South, therefore additional access must be in place before restricting access to Front Street South from Main Street. As development occurs along Main Street south of I-84, portions of the local network should be constructed or right of way set aside for future construction.

Triggers for access changes at Front Street North and Front Street South include:

- Side street level of service drops below LOS E (15-20 years from now)
- Traffic signal installed at the I-84 westbound ramp (10-15 years from now)
- Increase in crashes
- Bridge improvement project constructed (15-20 years from now)
- Recurring public complaints about conflicts and safety at these locations

### Main Street & Boardman Avenue

In the forecast year, the side-street LOS at the intersection of Main Street & Boardman Avenue is expected to exceed the City standard. The minor street volumes at this intersection are expected to be approximately 85% of the volumes needed to meet the Peak Hour traffic signal warrant. During the school dismissal, this intersection also experiences a brief period of high delay on the side street. One near term mitigation measure would be to direct some of the high school traffic onto Columbia Avenue, so as to spread out the dismissal traffic. This would reduce the number of vehicles turning left from Boardman Avenue onto Main Street.

### Main Street Overpass Bridge

From a capacity standpoint, the bridge is able to accommodate the forecasted vehicular traffic. However, the overpass bridge is currently too narrow to incorporate northbound and southbound left turn lanes at the ramp intersections, the sidewalks are very narrow and there are no bike lanes on the bridge. In order to accommodate the turn lanes, bike lanes and wider sidewalks, the bridge should be widened (which would in turn improve the sight distance for drivers on the exit ramp approaches).

## Local Connectivity Plan

The future deficiencies analysis in Chapter 4 highlighted several areas where local connectivity was in need of improvement, including:

- East-west connectivity;
- North-south connectivity;
- Access to lands surrounding the Main Street interchange; and
- Access points to Main Street to the north and south of the interchange.

In response to these needs, a local connectivity plan was developed that builds on existing and planned streets in the IAMP area. This plan not only improves overall connectivity throughout the City, but

provides the ability to consolidate approaches to Main Street, while maintaining accessibility to individual properties in the corridors. Figure 5.2 displays the planned local connectivity plan, with key elements described below. The lines shown in the figures represent planned connections and the general location for the placement of the connection. In each case, the specific alignments and design will be better determined as part of development review.

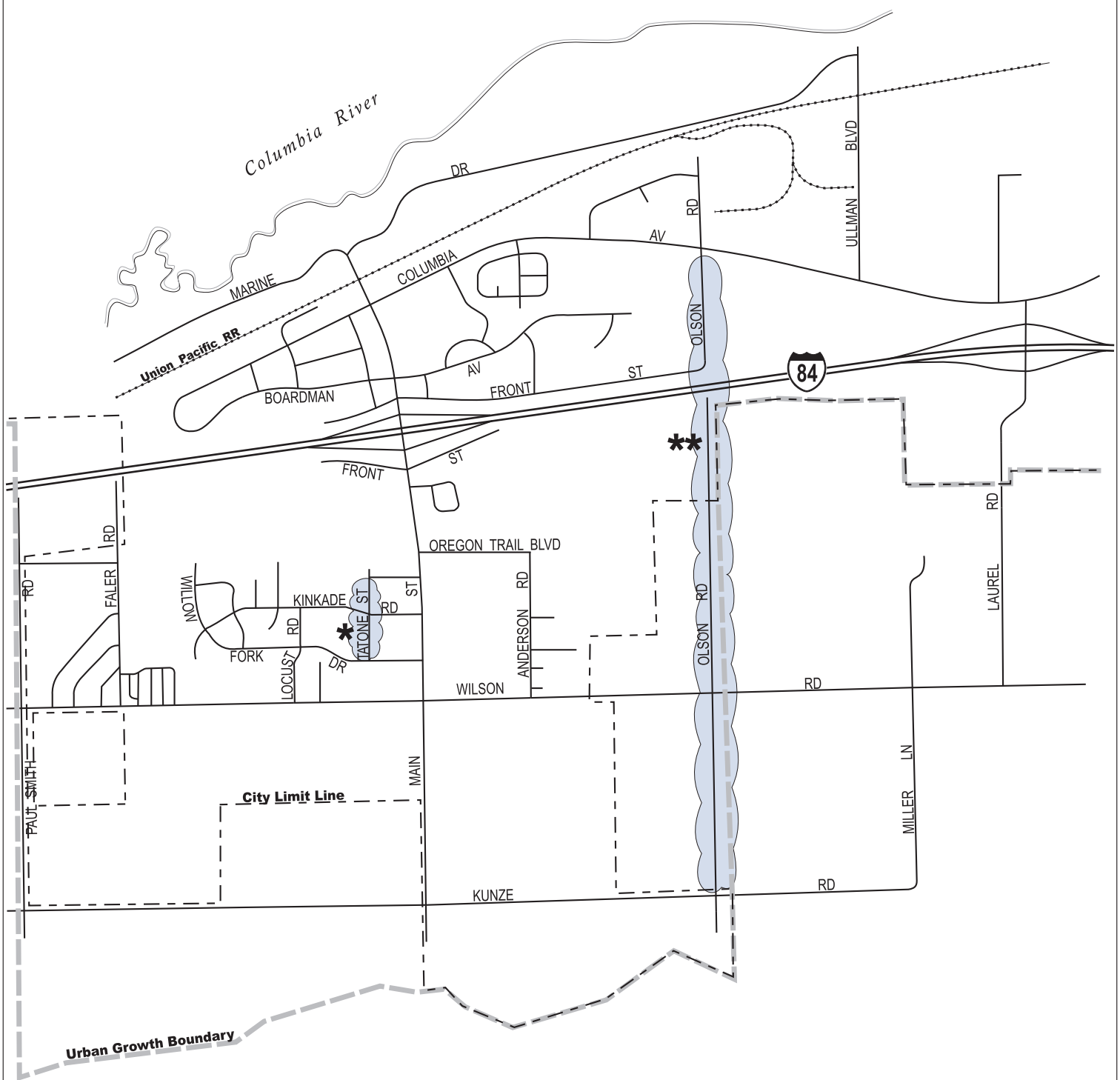
There are several potential opportunities to improve the north-south and east-west connectivity within the City, which will make drivers less dependent on Main Street for every trip around town. Currently, the north-south connectivity is limited to Main Street and Laurel Lane due mainly to the constraints of I-84, the Union Pacific Railroad right of way and the Bonneville Power Administration's right of way. The east-west connectivity is limited to Wilson Lane, I-84 and Columbia Avenue.

North-south connectivity can be strengthened by creating a network of streets that parallel Main Street which provide access to future development. These new roadways provide access for local trips and can be constructed as development occurs. Some examples of street extensions that would strengthen north-south connectivity are:

- Extend Tatone Street from City Center Boulevard to Front Street and from Willow Fork Road to Wilson Lane.
- Construct a new north-south roadway at a minimum of 600 feet east of Main Street, intersecting Oregon Trail Boulevard.

East-west connectivity can be strengthened by creating a network of streets that parallel I-84 and Wilson Lane that provide access to future development. These new roadways provide access for local trips and can be constructed as development occurs. Some examples of street extensions that would strengthen east-west connectivity are:

- Extend Kinkade Road east from Main Street when land east of Main Street develops.
- Extend Oregon Trail to the east to connect to Olson Road and west to connect to Smith Road, with intersections at Faler Road, Willow Fork Drive, Blalock Street and City Center Drive.
- Construct new connections parallel to Front Street near to or within the Bonneville Power Administration easement to better access properties in that area.
- The system improvements that enhance the north-south and east-west street connectivity will be required to be constructed by developers as vacant land is developed. The city can also choose to construct the transportation facilities prior to development as a way to encourage development in certain areas of the City. As the street connectivity is improved, drivers will be less dependent on using Main Street for local trips south of I-84.
- The city should require any future development of land east and west of South Main Street be done with the future local street network taken into account. This includes sighting of buildings on the property so that access to the future local street network will not require major reconstruction. If feasible, portions of the local street network should be constructed at time of land development. At minimum, right of way for the future local street network needs to be set aside as land is developed.
- Cross-easement access between properties should be developed in order to reduce the reliance of direct access onto Main Street. The easements will allow driveways to be consolidated or removed. They will also help to provide access to the future local street network. The cross easement access agreements should be developed as property east and west of Main Street (re)develops.




*- Tatone Street currently designated as Local. Re-designate Tatone Street as a Collector.

**- Olson Road currently designated as an Arterial. Re-designate Olson Road as a Collector inside City and as Major Collector or County segment if Olson Road overpass is not built.

**LEGEND**

- Existing Arterial
- Existing Collector
- Planned Collector
- Existing Local
- Planned Local
- Major Collector (County)

**City of Boardman Main Street IAMP**
April 2009

NO SCALE

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TRANSPORTATION SOLUTIONS

**Figure 5.2**

# ROADWAY NETWORK AND CLASSIFICATION PLAN

250

### South Main Street

South Main Street between I-84 and Wilson Road is currently a two-lane roadway with a separated multi-use path on the west side. This section of roadway should be reconstructed to the current Arterial street standards, which would include turn lanes, bike lanes and sidewalks. Constructing turn lanes at appropriate locations along South Main Street will reduce the conflict between the left turning and through traffic. Bike lanes and sidewalks along South Main Street will increase the safety and mobility of pedestrians using Main Street. An illustration of South Main Street improvements is shown in Figure 5.3.

### Olson Road

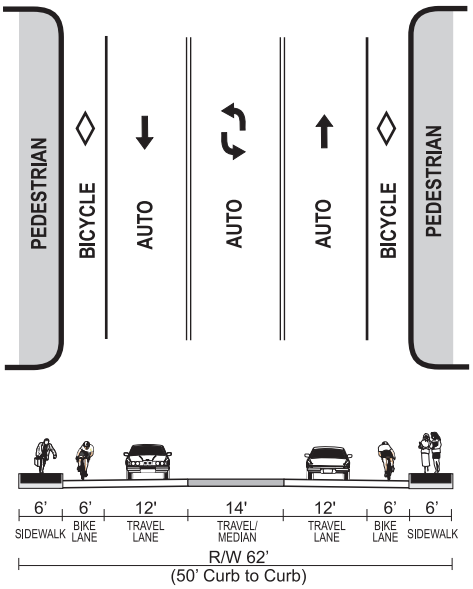
The City's 1999 Transportation System Plan envisions a new I-84 crossing at Olson Road. This new freeway overcrossing would not provide access to/from Interstate 84, but it would provide an alternate north-south circulation route between employment and school uses on the north side of the highway with residential neighborhoods on the south side. If this facility were constructed, the foregoing traffic volume estimates for Main Street would be reduced by the amount that uses the new facility. If one-third of the traffic forecasted on North Main Street chose this new route, the 2026 volumes on Main Street would be the same as they are today. Based on the length of this alternative route, and proximity of land uses nearby, it is roughly estimated that the volume that would use Olson Road to cross I-84 would range from 15% to 25% of the North Main Street forecasted volume, or about 150 to 250 vehicles during peak hours.

Ideally, both freeway overcrossings would be constructed, given adequate funding was available. However, with the limited state and local transportation resources available, it is more likely either Main Street would be widened or a new Olson Road overcrossing would be constructed. The estimated cost for these two improvements are similar, but the utility of the Main Street overpass appears to be significantly higher, since it is close to existing and planned future commercial development. The Olson Road overcrossing adjoins industrial and farmlands, and would require a very substantial upgrade of the roadway south of the highway, currently a gravel road, to be fully functional. Therefore, it appears that the preferred investment for I-84 overcrossings would be the Main Street Bridge.

## Pedestrian/Bicycle Network

The pedestrian network should be addressed in parallel to the street network improvements. In general, curb and sidewalk similar to North Main Street will improve the safety of pedestrians along South Main Street. Pedestrian access across Main Street is also important. Pedestrian crossings shall be accommodated at the major access points (I-84 ramps, Oregon Trail Boulevard, City Center Boulevard, Kinkade Road and Wilson Road). This would include sidewalk with ADA pedestrian ramps on the corners and possibly supplemental signing and/or painted crosswalks. A "mid-block" pedestrian crossing could be accommodated on the north side of the BPA easement. The mid-block crossing could incorporate a center pedestrian refuge island, once South Main Street is reconstructed to the arterial standard.

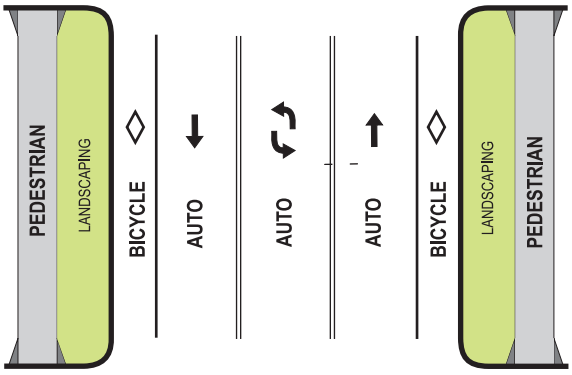
## Typical 62 foot cross-section

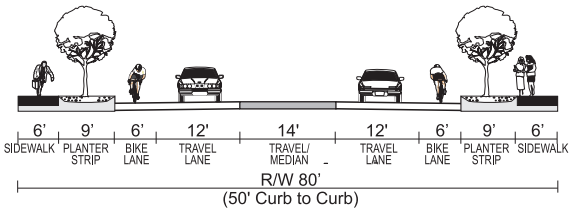


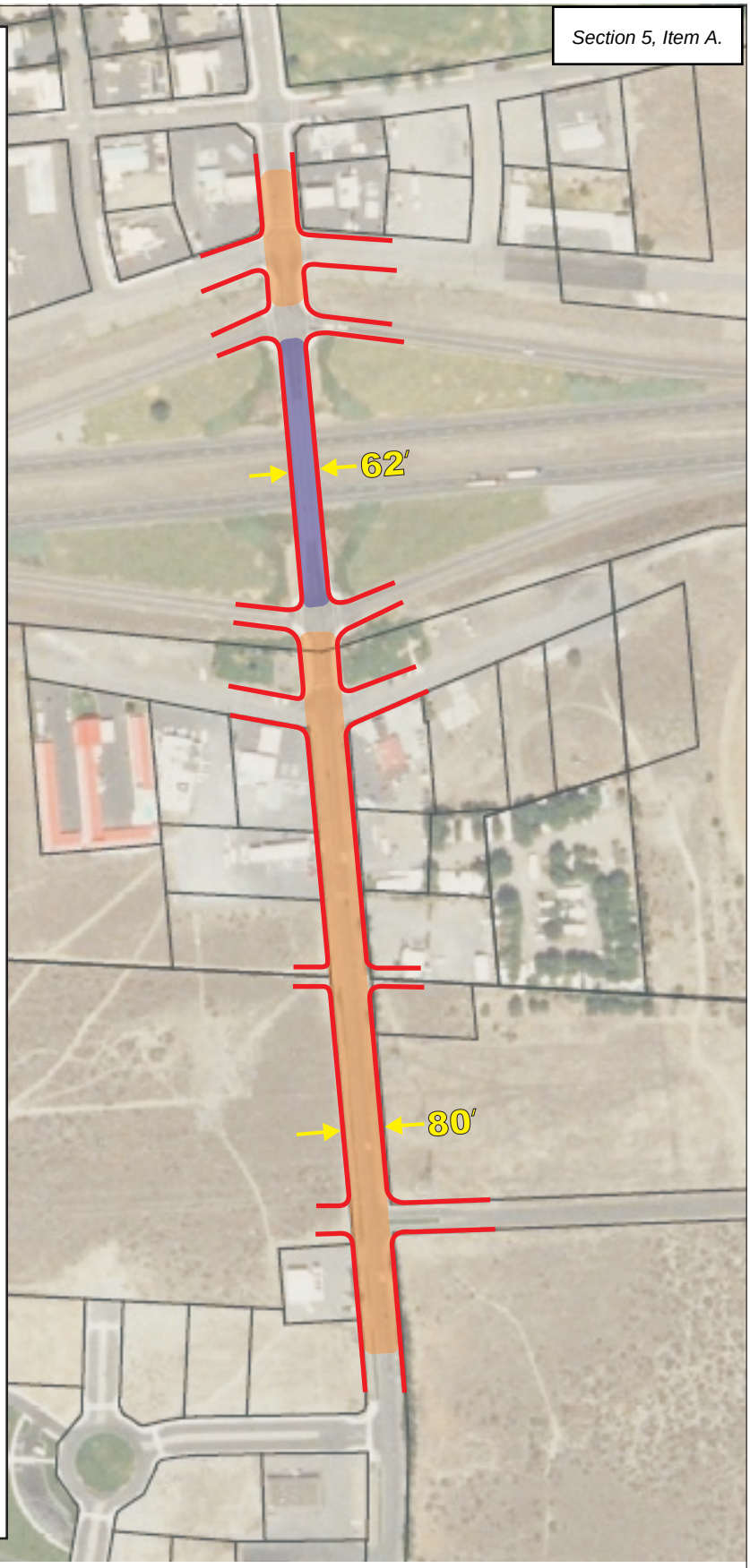




## Typical 80 foot cross-section




**LEGEND**

- 80' Cross-section
- 62' Cross-section

**City of Boardman IAMP**
April 2009

NO SCALE

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**Figure 5.3**

**SOUTH MAIN STREET IMPROVEMENTS**

The Ped/Bike network improvements include:

- A wider sidewalk and separate bike lanes on the Main Street bridge across I-84. This would require the bridge to be widened.
- Extend the multi-use path along Wilson Road from Faler Road to Paul Smith Road.
- Provide pedestrian facilities from Wilson Road to Desert Spring Estates development.
- Provide pedestrian facilities from residential development near Faler Road to Willow Fork Drive.

Gaps in the bicycle network shall be addressed with any new roadway connectivity and new development or done as an interim measure prior to roadway connections. Bicycle lanes should be provided on all arterial roadways.

## Access Management Plan

A key element of the IAMP related to the long-range preservation of operational efficiency and safety of the interchange is the management of access to the interchange crossroads (Main Street). Because access points introduce a number of potential vehicular conflicts on a roadway and are frequently the causes of slowing or stopping vehicles, they can significantly degrade the flow of traffic and reduce the efficiency of the transportation system. However, by reducing the overall number of access points and providing greater separation between them, the impacts of these conflicts can be minimized.

It should be noted that the actions were based on current property configurations and ownerships. Should property boundaries change in the future through consolidation or other land use action, the access management plan may be modified through agreement by the City of Boardman and ODOT, where such modifications would move in the direction of the adopted access management spacing standards in this plan. Modifications to the access management plan will need to be addressed in an amendment to this IAMP. Additional access points shall not be allowed where they would result from future land partitions or subdivisions. The actions listed in this plan shall not prevent the reconstruction of approaches as necessary to meet City or ODOT standard design.

Implementation of the access management plan will occur over a long time since some affected properties maintain infrastructure (e.g. buildings and internal roadways) that was established based on prior approvals of access locations to the subject roadways and some elements of the plan depend on the presence of new public streets that cannot be constructed until funds are made available. The improvements in this plan have been prioritized and categorized into short-range, medium-range, and long-range actions. The short-range actions are to be executed at this time and the medium and long-range actions are to be executed as needed funds become available or as opportunities arise during property redevelopment.

The goals of this access management plan are listed below.

1. Restrict all access from abutting properties to the interchange and interchange ramps.
2. Improve access spacing and safety factors within the interchange area.
3. In attempting to meet access management spacing standards, exceptions may be allowed to take advantage of existing property boundaries and existing or planned public streets, and to accommodate environmental constraints (i.e. BPA Easement).
4. Replace private approaches with public streets, where feasible, to provide consolidated access to multiple properties.

5. Ensure all properties impacted by the project are provided reasonable access to the transportation system.
6. Develop cross easement access agreements as properties (re)develop.
7. Align approaches on opposite sides of roadways where feasible to reduce turning conflicts.
8. Short-range actions shall accommodate existing development needs.

Using the goals, an action plan for each approach to Main Street was developed, as shown below in Table 5.1. Short-range actions shall accommodate existing development needs. There are no short-range actions identified since all of the actions are based on property (re)development to trigger changes to the access. The medium-range actions are intended to be completed within 5 to 10 years, while the long-range actions are to be implemented over the 20-year planning period as funding becomes available. Modifications to access can occur earlier if opportunities arise through property development or funding for the local street network becomes available. The medium-range action plan is illustrated in Figure 5.4, while, the long-range action plan has also been illustrated in Figures 5.4 and 5.5 to aid in the interpretation of the actions in Table 5.1. The city should require any future development of land east and west of South Main Street be done with the future local street network taken into account. This includes sighting of building on property so that access to the future local street network will not require major reconstruction. If feasible, portions of the local street network should be constructed at time of land development. At minimum, right of way for the future local street network needs to be set aside as land is developed.

Cross-easement access between properties should be developed that reduce the reliance of direct access onto Main Street. The easements will allow driveways to be consolidated or removed. They will also help to provide access to the future local street network. The cross easement access agreements should be developed as property east and west of Main Street (re)develops.

**Table 5.1: Main Street Access Actions**

| Approach # | Medium-Range Action (5-10 years) | Long-Range Action (10-20 years) |
|---|---|---|
| 1 | (Columbia Ave) No action. | No action. |
| 2 | (Columbia Ave) No action. | No action. |
| 3 | No action. | Upon property redevelopment, approach to be combined with Approach 4 and 5, with shared access. |
| 4 | No action. | Upon property redevelopment, approach to be combined with Approach 5, with shared access. |
| 5 | No action. | Upon property redevelopment, approach to be combined with Approach 4, with shared access. |
| 6 | No action. | Upon property redevelopment, approach to be combined with Approach 7 or closed. Future access to be taken at Approach 5. |
| 7 | No action. | Upon property redevelopment, approach to be combined with Approach 6 or 8, with shared access. |
| 8 | No action. | Upon property redevelopment, approach to be combined with Approach 7, with shared access. |
| 9 | (Boardman Ave) No action. | No action. |
| 10 | (Boardman Ave) No action. | No action. |
| 11 | No action. | Upon property redevelopment, approach to be closed. Future access to be taken from Boardman Avenue and/or Front Street. |
| 12 | No action. | Upon property redevelopment, approach to be closed. Future access to be taken from Front Street or shared with Lot 4500 to access Boardman Avenue. |
| 13 | (North Front St) Restrict turning movements to only allow | Close approach and use Boardman Ave. (and 1st St. E.) as alternate |

| Approach # | Medium-Range Action (5-10 years) | Long-Range Action (10-20 years) |
|---|---|---|
| | right turn access | access. |
| 14 | (North Front St) Restrict turning movements to only allow right turn access. | Close approach and use Boardman Ave. (and 1st St. E.) as alternate access. |
| 15 | (I-84 Westbound Ramp) No action. | No action. |
| 16 | (I-84 Westbound Ramp) No action. | No action. |
| 17 | (I-84 Eastbound Ramp) No action. | No action. |
| 18 | (I-84 Eastbound Ramp) No action. | No action. |
| 19 | (South Front St) Restrict turning movements to only allow right turn access. | Close approach at such time as reasonable access becomes available (e.g. through construction of public roads and establishment of cross-access easements). This will affect Lots 1000, 1200, 1300 – approach will not be closed until reasonable access becomes available. |
| 20 | (South Front St) Restrict turning movements to only allow right turn access | Close approach at such time as reasonable access becomes available (e.g. through construction of public roads and establishment of cross-access easements). This will affect Lots 400, 500, 600, 700 – approach will not be closed until reasonable access becomes available. |
| 21 | Currently, there is no curb or gutter along the Main Street frontage of Lot 1300. Upon property redevelopment, the access along Lot 1300 shall be defined at a single point by constructing a driveway or using curb to define access. | Close approach at such time as reasonable access becomes available (e.g. through construction of public roads and establishment of cross-access easements). |
| 22 | Currently, there is no curb or gutter along the Main Street frontage of Lot 700. Upon property redevelopment, the access along Lot 700 shall be defined at a single point by constructing a driveway or using curb to define access. | Close approach at such time as reasonable access becomes available (e.g. through construction of public roads and establishment of cross-access easements). Approach will not be closed until reasonable access becomes available. |
| 23 | No action. | Close approach at such time as reasonable access becomes available (e.g. through construction of public roads and establishment of cross-access easements). Approach will not be closed until reasonable access becomes available. |
| 24 | No action. | Close approach at such time as reasonable access becomes available (e.g. through construction of public roads and establishment of cross-access easements). Approach will not be closed until reasonable access becomes available. |
| 25 | No action. | Close approach at such time as reasonable access becomes available (e.g. through construction of public roads and establishment of cross-access easements). Approach will not be closed until reasonable access becomes available. |
| 26 | (Oregon Trail Blvd) No action. | No action. |
| 27 | No action. | Close approach upon property redevelopment. Future access to be taken from Approach 28 or future Oregon Trail Boulevard. |
| 28 | No action. | Approach may remain upon property redevelopment. New approach may be relocated to future Oregon Trail Boulevard. |

Notes: Refer to Figure 5.2 for location of state highway approaches cited in the above table.

## Policies, Rules, & Ordinances

As land develops, redevelops or changes use within the interchange area, compliance will be required with the access management and circulation plans conceived through this study. As part of the adoption of the IAMP, the City of Boardman development codes are being amended to reflect the standards and plans. In brief, the code amendments implement:

- Access spacing requirements
- Local Street connectivity
- Access Management Plan
- Cross-easement accesses

In addition, the Transportation System Plan will be amended to adopt the Local Street Network and the Access Management Plan

## Cost Estimates

Planning-level cost estimates for all improvement alternatives were calculated to aid in the identification of needed funding. Cost estimates included the fundamental elements of roadway construction projects, such as the roadway structure, bridge structures, curb and sidewalk, earthwork, retaining walls, pavement removal, and traffic signals. The estimated costs are shown below in Table 5.2 and Table 5.3. All costs are in 2007 dollars and do not reflect the added cost of inflation. The potential funding sources are indicated (State, City or Private), but they do not assure the availability or approval of such improvements.

In order to provide funding for future projects (i.e. local street network and South Main Street), the City should establish a System Development Charge (SDC) or Local Improvement District (LID) program. These types of programs are set up to collect funds from developments and/or land owners and are based on the amount of traffic generated.

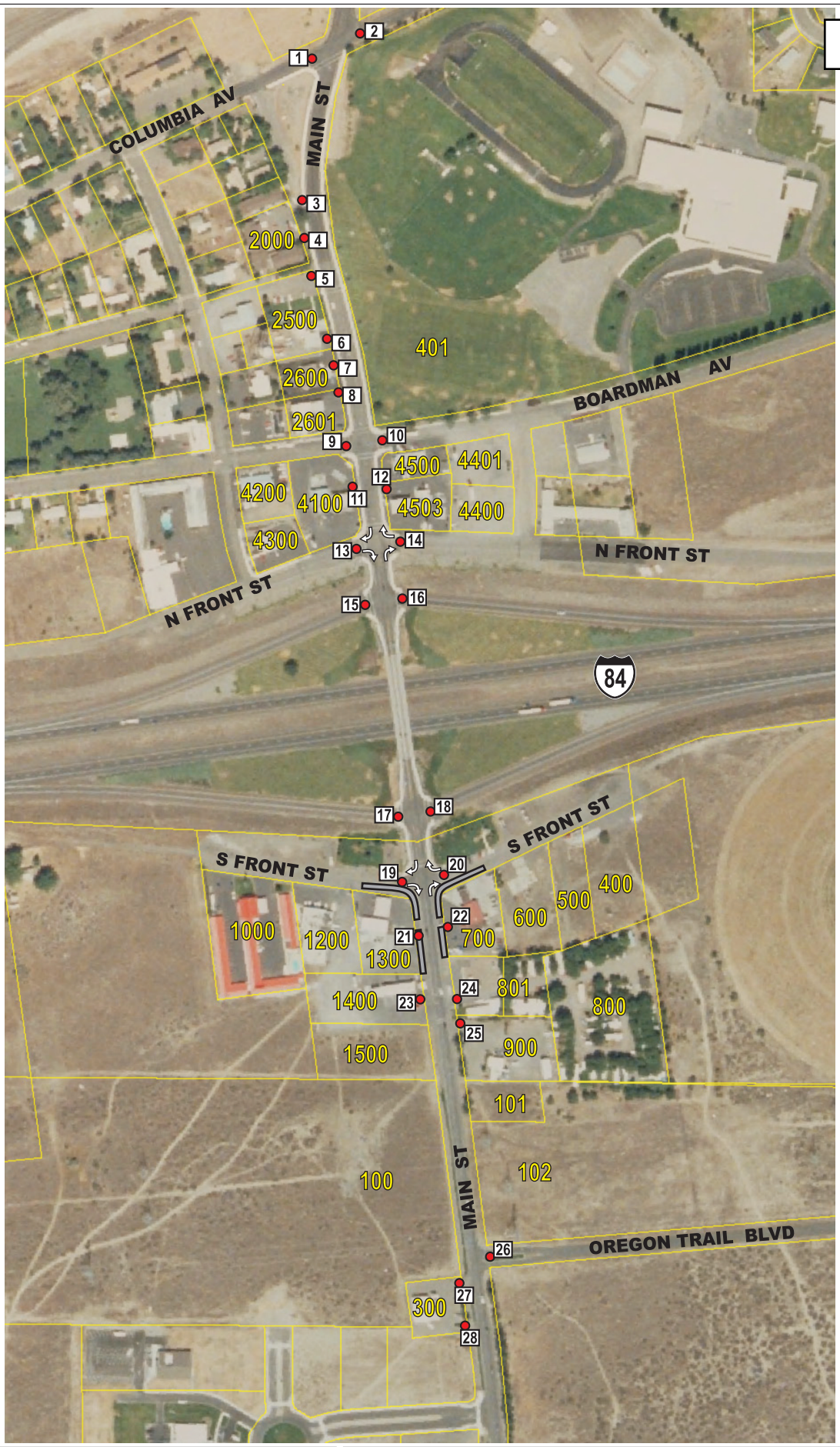
**Table 5.2: Cost Estimates for Main Street IAMP Improvements**

| Alternative | Potential Funding Source | Estimated Cost |
|---|---|---|
| Main Street Bridge at I-84 | | |
| Additional approach lane on exit ramp | ODOT/ City | $150,000 |
| Traffic Signal at I-84 Westbound Ramp | ODOT / City | $300,000 |
| Reconstruct overpass | ODOT / City | $10-15 million |
| Reconstruct South Main Street* | City / ODOT | $3 million |

* Does not include Right of Way acquisition.

**Table 5.3: Cost Estimates for Local Street Network**

| Improvements (not including right-of-way) | Potential Funding Source | Estimated Cost |
|---|---|---|
| Oregon Trail (east) | City / Private | $2 Million |
| Oregon Trail (west) | City / Private | $3.3 Million |
| Tatone St (north) | City / Private | $1.3 Million |
| Tatone St (south) | City / Private | $500,000 |
| North/South Collector (east of Main Street) | City / Private | $3 Million |
| Expanded Pedestrian & Bicycle Network* | City / Private | $750,000 |




**LEGEND**

0 - Access Location & Number

000 - Tax Lot ID#

- Medium Range Limited Access

- Medium Range Future Curb

**City of Boardman Main Street IAMP**
April 2009

NO SCALE

**Figure 5.4**

**MAIN STREET IAMP MEDIUM RA ACCESS MANAGEM**

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**LEGEND**

0 - Access Location & Number

000 - Tax Lot ID#

- Long Range Future Access

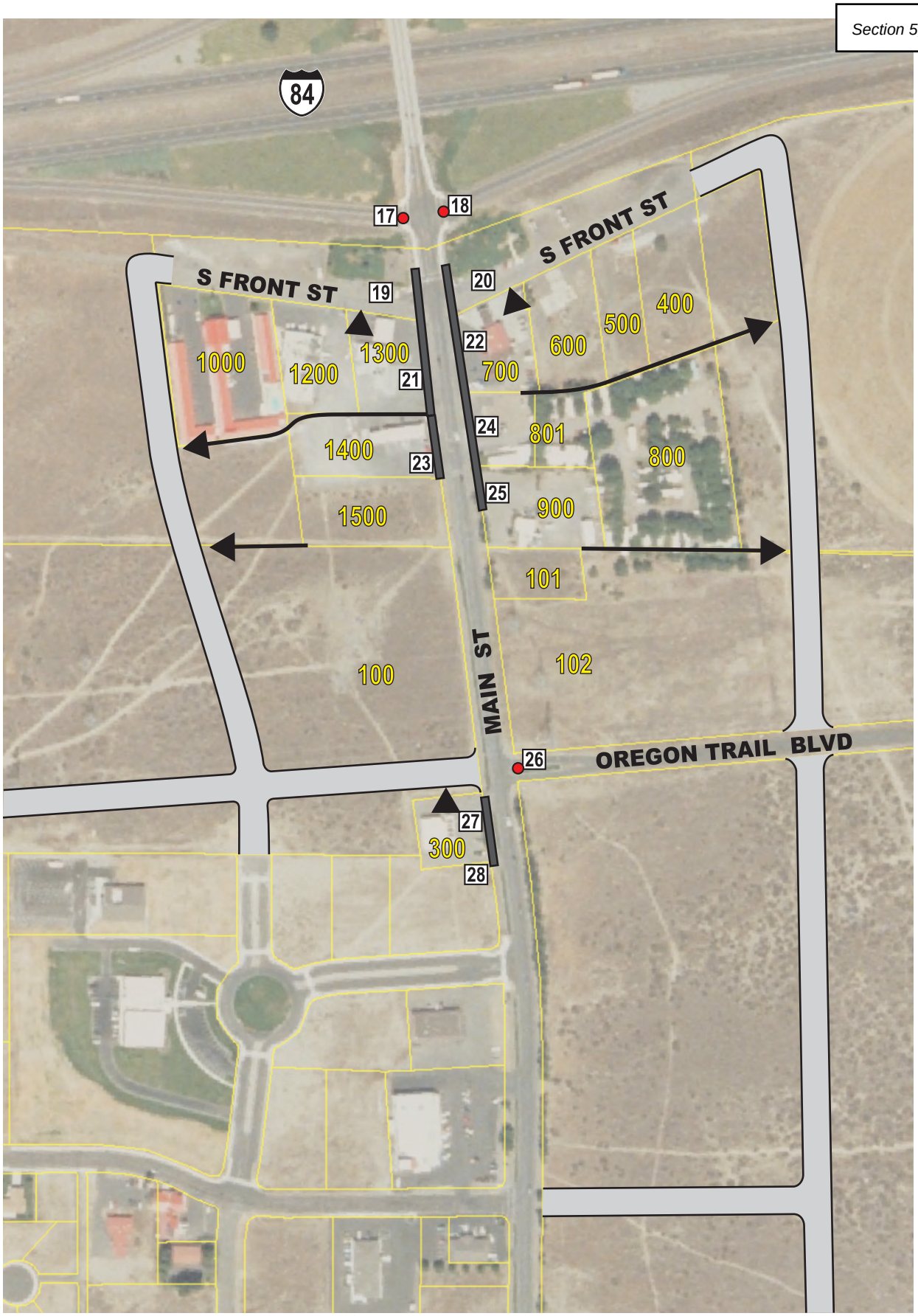
- Long Range Future Curb

NO SCALE

**City of Boardman Main Street IAMP**
April 2009

**Figure 5.5**

**MAIN STREET LONG RANGE ACCESS MANAGEMENT PLAN NOR**




**LEGEND**

0 - Access Location & Number

000 - Tax Lot ID#

- Long Range Future Access
- Long Range Future Curb
- Future Roadway Network

NO SCALE

**City of Boardman Main Street IAMP**
April 2009

**Figure 5.6**

**MAIN STREET LONG RANGE ACCESS MANAGEMENT PLAN SOU**

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# Alternative Evaluation and Prioritization

## Alternative Evaluation

Using the objectives for the Main Street IAMP outlined in Chapter 2, alternatives were evaluated to ensure the goals established at the outset of the project were met. The objectives used included criteria related to public involvement, addressing local issues, provision of transportation improvement alternatives, conformity with statewide plans and policies, and inclusion of policies and implementing measures to preserve the functionality of the interchange.

## Prioritization of Improvements

The improvement alternatives have been prioritized into short, medium, and long-range actions, as shown in Table 5.3 to provide guidance for future implementation and funding. Short-range actions represent immediate needs and should be implemented within a 5 year period. There were no short-range actions identified. If medium-range actions are triggered within 5 years, they can be considered short-range improvements. Medium-range actions represent improvements that are not required immediately, but should be given priority over improvements identified as long-range actions. Assuming all improvements are planned for construction within a 20-year period, medium-range actions should be considered for implementation within 5 to 10 years. Long-range actions typically represent improvements of lower priority or requiring higher levels of funding. These improvements should be planned for construction within 10 to 20 years.

It should be recognized that this prioritization of projects is not intended to imply that projects of higher priority must be implemented before projects of lower priority. Should opportunities arise, through private land development or other means, to construct specific projects earlier than the estimated time frame provided by this list, those resources should be utilized.

**Table 5.3: Transportation Improvement Prioritization**

| Short-Range Improvements (0 to 5 years) | Triggers | Estimated Cost | Potential Funding Source |
|---|---|---|---|
| • No Specific short-range actions identified. Medium-range improvements if triggered earlier than 5 years. | - Increase in crashes<br>- Property (re)development | NA | • City<br>• Property owners |
| **Medium-Range Improvements (5 to 10 years)** | | | |
| • Reconstruct South Main Street. | - Money becomes available<br>- Property (re)development | $3,000,000 | • ODOT<br>• City |
| • Medium-range actions from access management plan. | - Increase in crashes<br>- Recurring public complaint<br>- Property (re)development | NA | • City<br>• Property owners |
| • Construct additional approach lane on I-84 ramp terminals | - Increase in crashes<br>- LOS drops below standards<br>- Turn lanes warranted | $150,000 | • FHWY<br>• ODOT<br>• City |
| **Long-Range Improvements (10 to 20 years)** | | | |

| | | | |
|---|---|---|---|
| • Construct new public streets according to adopted Local Connectivity Plan. | - Property (re)development | $10 to 12 million | • City<br>• Property owners |
| • Install traffic signal at Main Street & I-84 Westbound Ramp | - Traffic signal warrants met | $300,000 | • ODOT<br>• City |
| • Reconstruct Main Street Bridge over I-84 – including wider sidewalk, bike lanes and turn lanes. | - Turn lanes warranted<br>- Money becomes available<br>- ODOT Bridge program – structural deficiency<br>- Increase in bike/ped crashes | $10 to 15 million | • FHWA<br>• ODOT<br>• City |
| • Long-range actions from access management plan. | - Increase in crashes<br>- Recurring public complaints<br>- Property (re)development | NA | • City<br>• Property Owners |
| Note: Medium and long-range improvements could be constructed sooner than anticipated as opportunities arise through private property development or other means. | | | |

DKS Associates
TRANSPORTATION SOLUTIONS

# Project Participants

## Project Management Team

| | |
|---|---|
| Cheryl Jarvis-Smith | ODOT Region 5 |
| Teresa Penninger | ODOT Region 5 |
| Barry Beyeler | City of Boardman |
| Dave Winters | City of Boardman |
| Carl Springer, PE | DKS Project Manager |

## Project Staff

| | |
|---|---|
| Carl Springer, PE | DKS Project Manager |
| Pamela O'Brien, PE | DKS Senior Engineer |
| Tom Armstrong | Winterbrook Planning |

# Project Sponsor

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Transportation Equity Act for the 21st Century (TEA-21), local government, and the State of Oregon funds. The contents of this document do not necessarily reflect views or policies of the State of Oregon.

**HATTENHAUER DISTRIBUTING CO.**

**PO Box 1397, 201 West 1st Street, The Dalles, OR 97058**

**Ph. (541) 296-3515 Fax (541) 296-0040**

April 10, 2024

VIA E-MAIL (mclanec@cityofboardman.com)

Carla McLane
Planning Official
City of Boardman
200 City Center Circle
PO Box 229
Boardman, OR 97818

RE: OPPOSITION TO PROPOSED MEDIAN BARRIER CUTTING OFF NORTH-BOUND TRAFFIC ALONG N MAIN STREET FROM ACCESSING OUR PLACE OF BUSINESS

Dear Carla:

As you know, since the early 1980s, my family has owned and operated the gas station and convenience store located at 100 Main St. N. in Boardman. We recently learned the City intends to make roadway changes that will negatively impact the current use of our business location, as we serve the motoring public in regards to both domestic and transient traffic. Traffic using I-84 exit 164 is our main customer base for fuel sales and ancillary convenience store sales. I believe the motoring public appreciates us being there for their needs, including re-fueling, cold drinks, hot food, and available restrooms. The proposed changes to the roadway will drastically deter, if not eliminate, any I-84 traffic from the ability to reach our location. For that reason, we strongly encourage the City to explore other options than what is currently being considered.

Currently, our business has several access points from traffic from I-84 exit 164: an approximately 100' open driveway on Front St; an approximately 40' curbed driveway on Main St.; and an approximately 140' open driveway on Boardman Ave. With the proposed road changes, the first two access points will be eliminated and the third severely hampered by forcing a left turn across a double yellow line and two lanes of traffic. While we are not traffic or civil engineers, we do have a good sense of business, built up over 60 years and 3 generations of knowledge. We feel the City's proposed traffic changes will be detrimental to our business and the many people that count on us.

In addition to the above, we currently have commercial truck fuel business and off-s short-term parking on our property as well. If the City's proposed traffic changes are implemented, this facet of our business will likely be eliminated as well.

Our Boardman operation currently has 23 employees, all of whom are residents of Boardman. With the anticipated decline of our business resulting from these traffic changes, many of these positions could be eliminated.

Our company currently has a fuel contract and supply agreement with Sinclair Oil Corp. In that contract are specific minimum annual gallonage requirements for the Boardman location. Any shortfall on annual gallons can trigger a shortfall penalty. A major disruption to traffic patterns accessing our place of business could definitely have a drastic impact on these gallon requirements. This amount could be significant and in the 10's of thousands of dollars.

As you may know, our Boardman facility recently underwent site improvements, which amounted to just shy of an $1,000,000 investment in the community. Additionally, we had hoped to remodel and expand the existing convenience store to better serve the community and the motoring public that travels along I-84. If these traffic changes are implemented, we will need to rethink such future investments in Boardman. If it is your desire to push us out of business I would like to negotiate the dollar amount I feel would be just compensation.

Considering the above, in order to facilitate a productive conversation that preserves our current business operations, yet still allows the City to modernize the traffic pattern in the area, we propose the City preserve a 40' access driveway from N Main St. to our property. Our property has approximately 200' of frontage along N. Main St., so I believe this can be accomplished. As I previously mentioned in our phone call, my dislike for the changes along Boardman Ave., it was stated that west Boardman Ave. is not a busy or a growing part of town and traffic is light and expected to be so in the future. So I find this contrary to your position that there will be a stacking issue for northbound trafic queuing in the left turn lane at the proposed stop light at the intersection of Boardman Ave. and N Main St.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Alex Hattenhauer
CEO

**PLANNING COMMISSION**
**PRELIMINARY FINDINGS OF FACT**
**RVW24-000020**
**TYPE III DECISION PROCESS**

**REQUEST:** To approve development of a hotel.

---

| | |
|---|---|
| **APPLICANT:** | Van Voorhies<br>Appellation Engineering and Consulting, LLC<br>46 Meadowlark Lane<br>Touchet, Washington 99360 |
| **OWNER:** | Joe Kumar<br>U.S. Investors LLC<br>1906 South Dawest Street<br>Kennewick, Washington 99336 |
| **PROPERTY DESCRIPTION:** | Tax Lots 100 and 200 of Assessor's Map 4N 25E 09CC. |
| **GENERAL LOCATION:** | North of Interstate 84, west of Main Street, along NW Front Avenue. |
| **ZONING OF THE TRACT:** | Tourist Commercial Subdistrict. |
| **EXISTING DEVELOPMENT:** | Predominately bare property |
| **PROPOSED USE:** | Hotel |

**I.** **BACKGROUND:** The site is currently undeveloped, with the exception of underground utilities and a small shed along the west property line. For this request there has been a preapplication meeting with the Planning Official and a Site Team meeting was held on May 2, 2024 with area utility and public service providers.

**II.** **APPROVAL CRITERIA:** The application has been filed under the City of Boardman Development Code Chapter 4.1 Types of Applications and Review Procedures as a Type III Decision Process based on the requirements of Chapter 4.2 Development Review and Site Design Review. Applicable criteria include 4.2.600 Approval Criteria which requires evaluation under the applicable provisions for commercial development in Chapter 2, provisions in Chapter 3 Design Standards, and others chapters or sections as deemed appropriate. The applicable criteria are included below in **bold** type with responses in standard type.

**Chapter 4.2 Development Review and Site Design Review**
**Section 4.2.600 Approval Criteria**
**The review authority shall make written findings with respect to all of the following criteria when approving, approving with conditions, or denying an application:**

1. **The application is complete, as determined in accordance with Chapter 4.1 - Types of Applications and Section 4.2.500, above.**

The applicant has submitted a Trip Generation Letter completed by PBS (see attached). Based on review by David Boyd, ODOT Region 5 Access Management Engineer, we have gained a better understanding of the determination by the applicant that further traffic study is not needed. There are identified in the ITE manual at least five different types of hotels with corresponding traffic impacts. The hotel type that

was used was a business hotel which has a lower trip generation index. If the choice had been for a different type of hotel at the same number of rooms the outcome of the analysis may have been different. The five different types of hotels that can be analyzed are: Hotel, All Suites Hotel, Business Hotel, Motel, and Resort Hotel. It is important to note that either a hotel or motel at 64 rooms would require a full traffic analysis be completed.

To ensure that the development will continue to comply with the Trip Generation Letter that was supplied and not exceed the average daily trips that would trigger a Traffic Impact Analysis staff are recommending and listing as a Condition of Approval that a trip cap be placed on the development of the proposed hotel to be consistent with the supplied Trip Generation Letter. Should the applicant modify the operations of the hotel and average daily trips exceed those identified a Traffic Impact Analysis and associated improvements to the transportation system may be required.

2. **The application complies with the all of the applicable provisions of the underlying Land Use District (Chapter 2), including: building and yard setbacks, lot area and dimensions, density and floor area, lot coverage, building height, building orientation, architecture, and other special standards as may be required for certain land uses;**

The Tourist Commercial Subdistricts purpose is to accommodate development of commercial facilities catering to the traveling public at the Interstate 84 interchange. The development of a hotel would be consistent with this purpose.

Other Chapter 2 provisions concerning setbacks, lot coverage, building height, orientation, architecture and other standards that may be evaluated can be met based on the preliminary site plan that has been submitted. Since there are still aspects that the preliminary site plan cannot provide it is recommended and listed as a Condition of Approval that the applicant apply for Development Review prior to moving to building review to assure that all of the Chapter 2 provisions are met.

3. **The applicant shall be required to upgrade any existing development that does not comply with the applicable land use district standards, in conformance with Chapter 5.2, Non-Conforming Uses and Development;**

The subject property is predominately bare. There are no issues related to non-conforming uses and development to be resolved. This criterion is deemed to be not applicable.

4. **The application complies with the Design Standards contained in Chapter 3. All of the following standards shall be met:**

**Chapter 3.1 - Access and Circulation**

**3.1.100 Purpose. The purpose of this chapter is to help insure that developments provide safe and efficient access and circulation, for pedestrians and vehicles. Section 3.1.200 provides standards for vehicular access and circulation. Section 3.1.300 provides standards for pedestrian access and circulation. Standards for transportation improvements are provided in Chapter 3.4.100.**

**Section 3.1.200 Vehicular Access and Circulation**

**…**

**C. Access Permit Required**

1. **City Street Permits. Permits for access to City streets shall be subject to review and approval by the City Manager or his/her designee based on the standards contained in this Chapter, and the provisions of Chapter 3.4.100 - Transportation Standards. An access permit may be in the form of a letter to the applicant, or it may be attached to a land use decision notice as a condition of approval.**

The applicant has identified two access points along Northwest Front Street. Access permits will be required before development for each access. This is listed as a Condition of Approval.

**…**

**D. Traffic Study Requirements. The City or other agency with access jurisdiction may require a traffic study prepared by a qualified professional to determine access, circulation and other transportation requirements. (See also, Section 3.4.100 - Transportation Standards, and Chapter 4.10.)**

The applicant has submitted a Trip Generation Letter completed by PBS (see attached). Based on review by David Boyd, ODOT Region 5 Access Management Engineer, we have gained a better understanding of the determination by the applicant that further traffic study is not needed. There are identified in the ITE manual at least five different types of hotels with corresponding traffic impacts. The hotel type that was used was a business hotel which has a lower trip generation index. If the choice had been for a different type of hotel at the same number of rooms the outcome of the analysis may have been different. The five different types of hotels that can be analyzed are: Hotel, All Suites Hotel, Business Hotel, Motel, and Resort Hotel. It is important to note that either a hotel or motel at 64 rooms would require a full traffic analysis be completed.

To ensure that the development will continue to comply with the Trip Generation Letter that was supplied and not exceed the average daily trips that would trigger a Traffic Impact Analysis staff are recommending and listing as a Condition of Approval that a trip cap be placed on the development of the proposed hotel to be consistent with the supplied Trip Generation Letter. Should the applicant modify the operations of the hotel and average daily trips exceed those identified a Traffic Impact Analysis and associated improvements to the transportation system may be required.

**…**

**F. Access Options. When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods. These methods are "options" to the developer/subdivider, unless one method is specifically required by Chapter 2 (i.e., under "Special Standards for Certain Uses"). A minimum of 10 feet per lane is required.**

The preliminary site plan identifies at least two access points along northwest Front Street. Both accesses will require an Access Permit. This is listed as a Condition of Approval.

**G. Access Spacing. Driveway accesses shall be separated from other driveways and street intersections in accordance with the following standards and procedures:**

1. **Local Streets. The minimum feet of separation on local streets (as measured from the sides of the driveway/street) shall be determined based on the policies and standards contained in Table 3.1.200 G except as provided in subsection 3, below.**

Per Table 3.1.200 G of City of Boardman Development Code, Minimum Intersection Spacing Standards for a Neighborhood Collector is 200 feet with private drives established at 50 feet. This standard will need to be met at the time of Development.

**…**

**K. Driveway Openings. Driveway openings [or curb cuts] shall be the minimum width necessary to provide the required number of vehicle travel lanes (10 feet for each travel lane). The following standards (i.e., as measured where the front property line meets the sidewalk or right-of-way) are**

**required to provide adequate site access, minimize surface water runoff, and avoid conflicts between vehicles and pedestrians:**

**…**

**7. Loading area design. The design of driveways and on-site maneuvering and loading areas for commercial and industrial developments shall consider the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation.**

Loading areas are not outlined in the narrative, but should be configured for deliveries without impacting the parking plan.

…

**L. Fire Access and Parking Area Turn-around. A fire equipment access drive shall be provided for any portion of an exterior wall of the first story of a building that is located more than 150 feet from an existing public street or approved fire equipment access drive. Parking areas shall provide adequate aisles or turn-around areas for service and delivery vehicles so that all vehicles may enter the street in a forward manner. For requirements related to cul-de-sacs or dead-end streets, please refer to Section 3.4.100.M.**

During the Site Team Meeting held on May 2, 2024, Fire Marshall, Marty Broadbent shared about the minimum required 26-foot access area needed around the building for Fire Department Access. The applicant shall calculate and submit fire access plan information for review by the Fire Marshall prior to final approval of the Development Review permit. This is listed as a Condition of Approval.

**…**

**N. Vision Clearance. No signs, structures or vegetation in excess of three feet in height shall be placed in "vision clearance areas", as shown in Figure 3.1.200N. This standard applies to the following types of roadways: streets, driveways, alleyways and railways. The minimum vision clearance area may be increased by the City Manager or his/her designee upon finding that more sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). An exception to this standard may be granted by the City Manager or his/her designee to allow utility structures (such as electrical transformers) for necessary services. This exception does not include the installation of utility poles.**

The applicant shall submit plans for and obtain proper permits for signs, structures, or landscaping showing all vision clearance areas free and clear. This is listed as a Condition of Approval.

**…**

**3.1.300 Pedestrian Access and Circulation**

**A. Pedestrian Access and Circulation. To ensure safe, direct and convenient pedestrian circulation, all developments, except single family detached housing (i.e., on individual lots), shall provide a continuous pedestrian and/or multi-use pathway system. (Pathways only provide for pedestrian circulation. Multi-use pathways accommodate pedestrians and bicycles.) The system of pathways shall be designed based on the standards in subsections 1-3, below:**

**1. Continuous Pathways. The pathway system shall extend throughout the development site, and connect to all future phases of development, adjacent trails, public parks and open space areas whenever possible. The developer may also be required to connect or stub pathway(s) to adjacent streets and private property, in accordance with the provisions of Section 3.1.200 - Vehicular Access and Circulation, and Chapter 3.4. 100 - Transportation Standards.**

**2. Safe, Direct, and Convenient Pathways. Pathways within developments shall provide safe, reasonably direct and convenient connections between primary building entrances and all adjacent streets, based on the following definitions:**

**a. Reasonably direct. A route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.**

**b. Safe and convenient. Bicycle and pedestrian routes that are reasonably free from hazards and provide a reasonably direct route of travel between destinations.**

**c. Commercial and Industrial Primary Entrance. For commercial, industrial, mixed use, public, and institutional buildings, the "primary entrance" is the main public entrance to the building. In the case where no public entrance exists, street connections shall be provided to the main employee entrance.**

**d. Residential Entrance. For residential buildings the "primary entrance" is the front door (i.e., facing the street). For multifamily buildings in which each unit does not have its own exterior entrance, the "primary entrance" may be a lobby, courtyard or breezeway which serves as a common entrance for more than one dwelling.**

**3. Connections Within Development. For all developments subject to Site Design Review, pathways shall connect all building entrances to one another. In addition, pathways shall connect all parking areas, storage areas, recreational facilities and common areas (as applicable), and adjacent developments to the site, as applicable.**

The Preliminary Site Plan does not indicate location of pedestrian access and circulation within the development. A Final Site Plan shall be submitted before development showing a system of pathways designed to meet the City of Boardman Development Code and all requirements of the Americans with Disabilities Act. This is listed as a Condition of Approval.

**Chapter 3.2 Landscaping, Street Trees, Fences and Walls**

**3.2.200 New Landscaping**

**A. Applicability. This Section shall apply to all developments requiring Site Design Review, and other developments with required landscaping.**

**B. Landscaping Plan Required. A landscape plan is required. All landscape plans shall conform to the requirements in Chapter 4.2, Section 500.B (Landscape Plans).**

**C. Landscape Area Standards. The minimum percentage of required landscaping equals:**

**…**

**2. Commercial District. 10 percent of the site.**

The applicant has submitted a Preliminary Site Plan showing landscaping. The applicant shall submit a Final Landscaping Plan prior to issuance of the Development Review Permit which shall meet City of Boardman Development Code requirements for design, installation, and maintenance. This is listed as a Condition of Approval.

**…**

**Chapter 3.3 Vehicle and Bicycle Parking**

**3.3.300 Vehicle Parking Standards**

**…**

**A. Minimum Required Off-street Parking Spaces**

**…**

**2. Commercial Uses**

**Hotels and motels. One space for each guest room, plus one space for the manager.**
**Restaurants, bars, ice cream parlors and similar uses. One space per four seats or one space per 100-sq. ft. of gross leasable floor area, whichever is less.**

**…**

**B. Parking Location and Shared Parking**

**1. Location. Vehicle parking is allowed only on approved parking shoulders (streets), within garages, carports and other structures, or on driveways or parking lots that have been developed in conformance with this code. Specific locations for parking are indicated in Chapter 2 for some land uses (e.g., the requirement that parking be located to side or rear of**

**buildings, with access from alleys, for some uses). (See also, Section 3.1 - Access and Circulation).**

2. **Off-site parking. Except for single family, two-family, and three-family dwellings, the vehicle parking spaces required by this Chapter may be located on another parcel of land, provided the parcel is within ¼ mile of the use it serves. The distance from the parking area to the use shall be measured from the nearest parking space to a building entrance, following a sidewalk or other pedestrian route. The right to use the off-site parking must be evidenced by a recorded deed, lease, easement, or similar written instrument.**
3. **Mixed uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street automobile parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (i.e., the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly.**
4. **Shared parking. Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlap (e.g., uses primarily of a daytime versus nighttime nature), and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument establishing the joint use.**
5. **Availability of facilities. Owners of off-street parking facilities may post a sign indicating that all parking on the site is available only for residents, customers and/or employees, as applicable. Signs shall conform to the standards of Chapter 3.6.**

**C. Maximum Number of Parking Spaces. The number of parking spaces provided by any particular use in ground surface parking lots shall not exceed the required minimum number of spaces provided by this Section by more than 10%. Spaces provided on-street, or within the building footprint of structures, such as in rooftop parking, or under-structure parking, or in multi-level parking above or below surface lots, shall not apply towards the maximum number of allowable spaces. Parking spaces provided through "shared parking" also do not apply toward the maximum number.**

**D. Parking Stall Size and Design Standards. All off-street parking stalls shall be improved to conform to City standards for surfacing, stormwater management and striping, and have a net area of not less than 180 square feet exclusive of access drives or aisles, and shall be of usual shape and condition. If determined on a gross area basis, 280 square feet shall be allowed per vehicles. (Disabled person parking shall be provided in conformance with Section F)**

**E. Disabled Person Parking Spaces. The following parking shall be provided for disabled persons, in conformance with the Americans with Disabilities Act and State Law. Disabled parking is included in the minimum number of required parking spaces in Section A.**

The applicant has submitted a preliminary site plan that shows 75 parking spaces. Disabled person parking spaces are not outlined in the narrative, but will need to be addressed before development. A final parking plan shall be submitted as part of the Development Review Permit that meets the above requirements. This is listed as a Condition of Approval.

…

**3.3.400 Bicycle Parking Requirements**

**A. Number of Bicycle Parking Spaces. The following additional standards apply to specific types of development:**

**…**

5. **Multiple Uses. For buildings with multiple uses (such as a commercial or mixed use center), bicycle parking standards shall be calculated by using the total number of motor vehicle**

**parking spaces required for the entire development. A minimum of one bicycle parking space for every 10 motor vehicle parking spaces is required.**

The hotel will be required to have at least 8 bicycle parking spaces. Applicant shall comply with all bicycle parking requirements. This is listed as a Condition of Approval.

**…**

**Chapter 3.4 Public Facilities Standards**

**3.4.000 Purpose and Applicability**

**A. Purpose. The purpose of this chapter is to provide planning and design standards for public and private transportation facilities and utilities. Streets are the most common public spaces, touching virtually every parcel of land. Therefore, one of the primary purposes of this Chapter is to provide standards for attractive and safe streets that can accommodate vehicle traffic from planned growth, and provide a range of transportation options, including options for driving, walking and bicycling. This Chapter is also intended to implement the City's Transportation System Plan. Important cross-reference to other standards: The City requires that streets provide direct and convenient access, including regular intersections. Chapter 3.1 - Access and Circulation, provides standards for intersections and blocks, and requires pedestrian access ways to break up long blocks.**

**B. Applicability. Unless otherwise provided, the standard specifications for construction, reconstruction or repair of transportation facilities, utilities and other public improvements within the City shall occur in accordance with the standards of this Chapter. No development may occur unless the public facilities related to development comply with the public facility requirements established in this Chapter.**

**C. Standard Specifications. The City Manager or his/her designee shall establish standard construction specifications consistent with the design standards of this Chapter and application of engineering principles. They are incorporated in this code by reference.**

**D Conditions of Development Approval. No development may occur unless required public facilities are in place or guaranteed, in conformance with the provisions of this Code. Improvements required as a condition of development approval, when not voluntarily accepted by the applicant, shall be roughly proportional to the impact of development. Findings in the development approval shall indicate how the required improvements are roughly proportional to the impact.**

Water and wastewater connections were discussed during the Site Team meeting. Connection locations have been identified off Northwest Front Street for water and in the back northwest corner of the property for sewer. All installations shall comply with the Boardman Development Code and Public Works Standards. This is listed as a Condition of Approval.

**3.4.100 Transportation Standards**

**A. Development Standards. No development shall occur unless the development has frontage or approved access to a public street, in conformance with the provisions of Chapter 3.1 - Access and Circulation, and the following standards are met:**

1. **Streets within or adjacent to a development shall be improved in accordance with the Transportation System Plan and the provisions of this Chapter.**
2. **Development of new streets, and additional street width or improvements planned as a portion of an existing street, shall be improved in accordance with this Section, and public streets shall be dedicated to the applicable city, county or state jurisdiction;**
3. **New streets and drives connected to a collector or arterial street shall be paved; and**
4. **The City may accept a future improvement guarantee [e.g., the property owner agrees not to remonstrate (object) against the formation of a local improvement district in the future which the City may require as a deed restriction] in lieu of street improvements if one or more of the following conditions exist:**

a. **A partial improvement may create a potential safety hazard to motorists or pedestrians;**
b. **Due to the developed condition of adjacent properties it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide increased street safety or capacity, or improved pedestrian circulation;**
c. **The improvement would be in conflict with an adopted capital improvement plan; or**
d. **The improvement is associated with an approved land partition on property zoned residential and the proposed land partition does not create any new streets.**

**…**

**C. Creation of Rights-of-Way for Streets and Related Purposes. Streets shall be created through the approval and recording of a final subdivision or partition plat; except the City may approve the creation of a street by acceptance of a deed, provided that the street is deemed essential by the City Council for the purpose of implementing the Transportation System Plan, and the deeded right-of-way conforms to the standards of this Code. All deeds of dedication shall be in a form prescribed by the City Manager or his/her designee and shall name "the public," as grantee.**

**…**

**E. Street Location, Width and Grade. Except as noted below, the location, width and grade of all streets shall conform to the Transportation System Plan, and an approved street plan or subdivision plat. Street location, width and grade shall be determined in relation to existing and planned streets, topographic conditions, public convenience and safety, and in appropriate relation to the proposed use of the land to be served by such streets.**

**…**

Right-of-Way on Northwest Front Street is noted on site plan. Potential right-of-way was discussed at the Site Team meeting with final determinations to be made prior to issuance of the Development Review Permit. Development of frontage along Northwest Front Street needs to be done to the standards outlined in the Boardman Development Code and the Public Works Standards. This is listed as a Condition of Approval.

…

**3.4.300 Sanitary Sewer and Water Service Improvements**

**A. Sewers and Water Mains Required. Sanitary sewers and water mains shall be installed to serve each new development and to connect developments to existing mains in accordance with the City's construction specifications and the applicable Comprehensive Plan policies.**

**B. Sewer and Water Plan approval. Development permits for sewer and water improvements shall not be issued until the City Manager or his/her designee has approved all sanitary sewer and water plans in conformance with City standards.**

**…**

Water and wastewater connections can be achieved. All installations shall conform to this section. This is listed as a Condition of Approval.

**3.4.400 Storm Drainage**

**A. General Provisions. The City shall issue a development permit only where adequate provisions for storm water and flood water runoff have been made in conformance with Chapter 3.5 - Surface Water Management.**

**…**

Storm water shall be maintained on site and in conformance with Chapter 3.5 Stormwater Management. This is listed as a Condition of Approval.

**3.4.500 Utilities**

**A. Underground Utilities. All utility lines including, but not limited to, those required for electric, communication, lighting and cable television services and related facilities, shall be placed**

**underground, except for surface mounted transformers, surface mounted connection boxes and meter cabinets which may be placed above ground, temporary utility service facilities during construction, and high capacity electric lines operating at 50,000 volts or above.**

**…**

All installed utilities shall comply with this standard and others found in the Boardman Development Code or Municipal Code related to utilities. This is listed as a Condition of Approval.

…

**3.4.600 Easements**

**Easements for sewers, storm drainage and water quality facilities, water mains, electric lines or other public utilities shall be dedicated on a final plat, or provided for in the deed restrictions. See also, Chapter 4.2 – Site Design Review, and Chapter 4.3 – Land Divisions. The developer or applicant shall make arrangements with the City, the applicable district and each utility franchise for the provision and dedication of utility easements necessary to provide full services to the development. The City's standard width for public main line utility easements shall be 10 feet unless otherwise specified by the utility company, applicable district, or City Manager or his/her designee.**

Easements shall be accomplished as required by this standard for the development. This is listed as a Condition of Approval.

…

**3.4.700 Construction Plan Approval and Assurances**

**No public improvements, including sanitary sewers, storm sewers, streets, sidewalks, curbs, lighting, parks, or other requirements shall be undertaken except after the plans have been approved by the City, permit fee paid, and permit issued. The permit fee is required to defray the cost and expenses incurred by the City for construction and other services in connection with the improvement. The permit fee shall be set by City Council. The City may require the developer or subdivider to provide bonding or other performance guarantees to ensure completion of required public improvements.**

Review of the Construction Plan shall be done by City Engineer prior to construction. This is listed as a Condition of Approval.

…

**3.4.800 Installation**

- **A. Conformance Required. Improvements installed by the developer either as a requirement of these regulations or at his/her own option, shall conform to the requirements of this chapter, approved construction plans, and to improvement standards and specifications adopted by the City.**
- **B. Adopted Installation Standards. The Standard Specifications for Public Works Construction, Oregon Chapter A.P.W.A. shall be a part of the City's adopted installation standard(s); other standards may also be required upon recommendation of the City Engineer.**
- **C. Commencement. Work shall not begin until the City has been notified in advance.**
- **D. Resumption. If work is discontinued for more than one month, it shall not be resumed until the City is notified, and the City approves resumption.**
- **E. City Inspection. Improvements shall be constructed under the inspection and to the satisfaction of the City. The City may require minor changes in typical sections and details if unusual conditions arising during construction warrant such changes in the public interest. Modifications requested by the developer shall be subject to land use review under Chapter 4.6 - Modifications to Approved Plans and Conditions of Approval. Any monuments that are disturbed before all improvements are completed by the subdivider shall be replaced prior to final acceptance of the improvements.**
- **F. Engineer's Certification and As-Built Plans. A registered engineer shall provide written certification in a form required by the City that all improvements, workmanship and materials are in accord with current and standard engineering and construction practices, conform to approved plans and**

**conditions of approval, and are of high grade, prior to City acceptance of the public improvements, or any portion thereof, for operation and maintenance. The developer's engineer shall also provide 10 set(s) of "as-built" plans, in conformance with the City Manager or his/her designee's specifications, for permanent filing with the City.**

All infrastructure proposed for the development will need to meet these requirements. This is listed as a Condition of Approval.

**Chapter 3.5 Stormwater Management**

**A. Purpose. The purpose of this chapter is to provide planning and design standards for stormwater management within the City. The primary intent of this chapter is to provide standards for effective and cost efficient stormwater management. Stormwater management is accomplished through a combination of design standards reflecting a more accurate representation of natural climatic, hydraulic and geologic conditions. Included in this chapter are stormwater detention criteria for development, grading and drainage plan requirements, landscaping criteria, street, curb and sidewalk designs. These are designed to keep all precipitation from each lot contained upon that lot. Important cross reference to other standards: The following code chapters are to be cross referenced to assess impacts of the provisions of this chapter; Chapter 3.1, Chapter 3.2, Chapter 3.3, Chapter 3.4, Chapter 3.6, Chapter 4.1, Chapter 4.2 and Chapter 5.1.**

**B. Applicability. Where storm sewer infrastructure is currently available or unless otherwise provided, the standard specifications for construction or reconstruction of stormwater management facilities, utilities and other public improvements within the City shall occur in accordance with the standards of this chapter. This chapter applies to development on or within public properties and rights-of-way and privately owned properties**.

…

Stormwater Management is applicable to this property. All stormwater shall be maintained on-site and shall comply with the design and installation standards outlined in City of Boardman Development Code.

**Chapter 3.6 Other Standards**

**…**

**3.6.500 Signs**

**…**

**B. Sign classifications**

**1. Permanent signs. Signs placed for a period of 31 days or longer within one calendar year shall be classified as permanent; shall advertise or provide direction to the premises of the identified business located within the City of Boardman; shall be subject to a permanent sign permit; and shall conform to this and other City of Boardman ordinances.**

**a. On-premises signs shall be permitted within the regulations of this ordinance, with any exceptions subject to the requirements set forth within this ordinance for requesting variances or, where conditional use is specified, the provisions for such as set forth in the zoning ordinance.**

**…**

**C. Permits Required.**

**The following permits are required for all new signs, for all signs being altered due to change in ownership, business name or business type and for all signs being altered structurally.**

**1) Structural Building Codes Permit**

**2) Electrical Building Codes Permit (if lighted)**

**3) Sign Permit for Planning of Planning Review and Approval**

The applicant has acknowledged that a Monument Sign will likely be purchased and installed by the servicing Hotel Chain. A Sign Permit will be required and can be applied for at the time of Development Review. This is listed as a Condition of Approval.

**Chapter 4 Applications and Review Procedures**

**5. Conditions required as part of a Land Division (Chapter 4.3), Conditional Use Permit (Chapter 4.4), Master Planned Development (Chapter 4.5), or other approval shall be met.**

There are no other land use approvals that are currently under consideration.

**6. Exceptions to criteria 4.a-f, above, may be granted only when approved as a Variance (Chapter 5.1)**

At this point no Variances have been deemed necessary.

**III. PROPERTY OWNERS NOTIFIED:** April 23, 2024
List of landowners notified is retained as part of the file.

**IV. PUBLISHED NOTICE:** April 23, 2024
East Oregonian

**V. AGENCIES NOTIFIED:** April 24, 2024.
Mike Lees, City Engineer; Marty Broadbent, Boardman Fire Protection District; Loren Dieter, Interim Chief of Police; Rolf Prog, City of Boardman Public Work Director; Wendy Neal, Windwave; Monte Ellis, UEC; Justin Samp, UEC; Richard Lani, ODOT; Teresa Penninger, ODOT; David Boyd, ODOT; Cheryl Jarvis-Smith, ODOT; Lana Eckman, USPS; Joe Franell, EOT; George Shimer, Boardman Parks and Rec

**VI. SITE TEAM MEETING:** May 2, 2024
Boardman City Hall

**VII. PLANNING OFFICIAL RECOMMENDATION:** The Planning Official recommends approval of this request with the following CONDITIONS OF APPROVAL.

1. A trip cap is placed on the development of the proposed hotel to be consistent with the supplied Trip Generation Letter. Should the applicant modify the operations of the hotel and average daily trips exceed those identified a Traffic Impact Analysis and associated improvements to the transportation system may be required.
2. Access permits will be required before development for each access.
3. The applicant shall calculate and submit fire access plan information for review by the Fire Marshall prior to final approval of the Development Review permit.
4. The applicant shall submit plans for and obtain proper permits for signs, structures, and landscaping.
5. A Final Site Plan shall be submitted before development showing a system of pathways designed to meet the City of Boardman Development Code and all requirements of the Americans with Disabilities Act.
6. A final parking plan shall be submitted as part of the Development Review Permit that meets the City of Boardman Development Code and Public Works Standards.
7. Applicant shall comply with all bicycle parking requirements.
8. All water and wastewater installations shall comply with the City of Boardman Development Code and Public Works Standards.

9. Development of frontage along Northwest Front Street needs to be done to the standards outlined in the Boardman Development Code and the Public Works Standards.
10. Storm water shall be maintained on site and in conformance with Chapter 3.5 Stormwater Management.
11. Easements shall be accomplished as required by the City of Boardman Development code for this development.
12. Review of the Construction Plan shall be done by City Engineer prior to construction. This is listed as a Condition of Approval.
13. All infrastructure proposed for the development will need to meet the City of Boardman Development Code and Public Works Standards.
14. A Sign Permit will be required and can be applied for at the time of Development Review.

_____

Zack Barresse, Chair Date

ATTACHMENTS:
Vicinity Map
Preliminary Site Plan
Trip Generation Letter

# Vicinity Map




4/15/2024, 4:53:21 PM

CityLimits

Taxlots

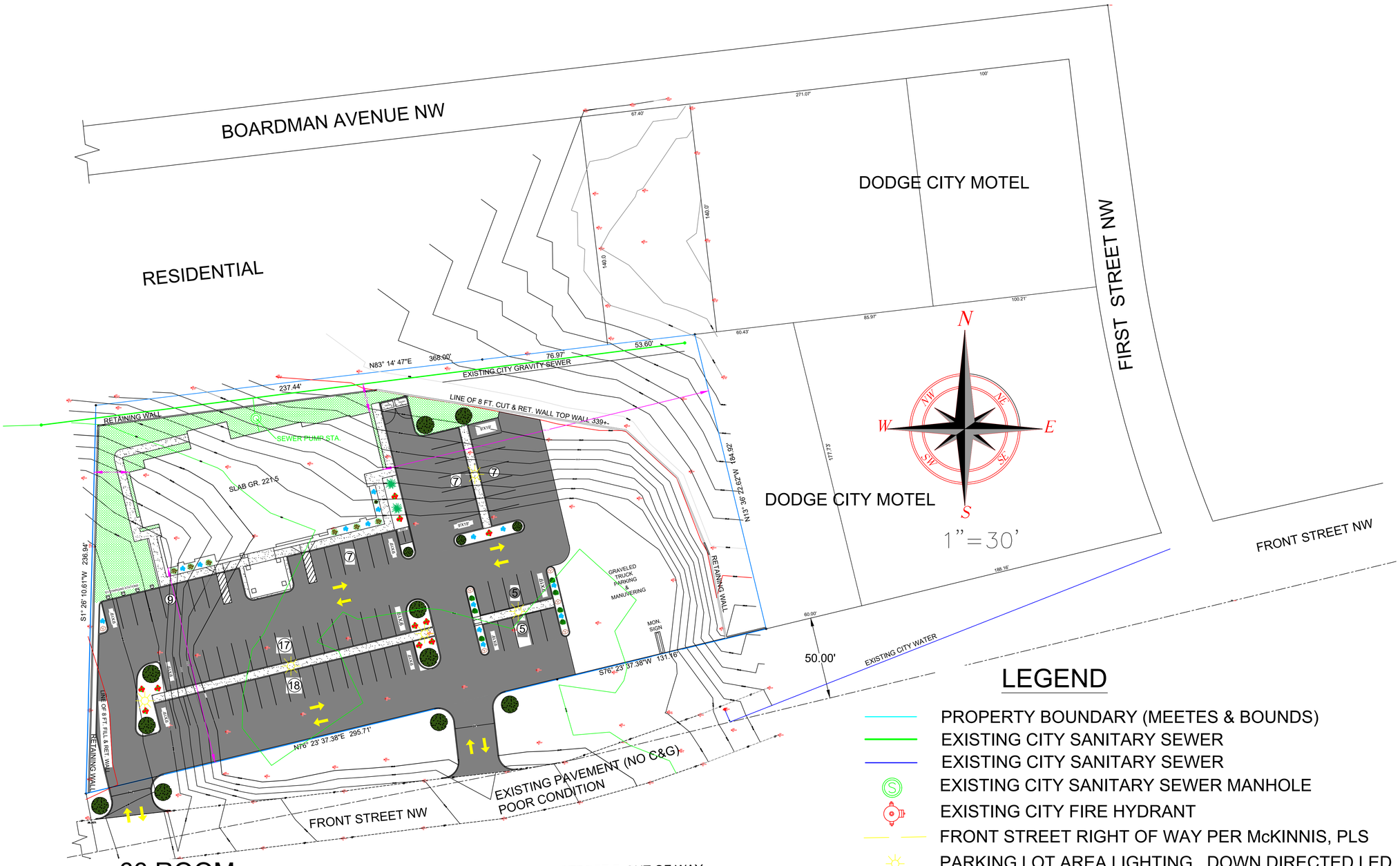
1:2,257

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.08 km

Maxar, Microsoft, Esri Community Maps Contributors, WSU Facilities Services GIS, Oregon State Parks, State of Oregon GEO, WA State P

ArcGIS Web AppB




66 ROOM
3-STORY HOTEl
MY PLACE HOTEL

75 PARKING SPACES
TOPO BY RON McKINNIS, PLS
1.9 ACRE PARCEL
4N25E09CC TL 100 & 200

FRONT STREET RIGHT OF WAY
NEEDS TO BE DEFINED.
PAVEMENT CONDITION IS POOR
NO CURB, GUTTER AND SIDELWALK

## LEGEND

- PROPERTY BOUNDARY (MEETES & BOUNDS)
- EXISTING CITY SANITARY SEWER
- EXISTING CITY SANITARY SEWER
- EXISTING CITY SANITARY SEWER MANHOLE
- EXISTING CITY FIRE HYDRANT
- FRONT STREET RIGHT OF WAY PER McKINNIS, PLS
- PARKING LOT AREA LIGHTING. DOWN DIRECTED LED
- LAWN
- PAVEMENT

STORM WATER TO BE INFILTRATED ON SITE

# PRELIMINARY SITE PLAN

SCALE 1"=30'

DRAWN BY: VV
REVIEWED BY: VV
DATE: 4-12-24
PROJ: 22-54
REV. SITE

RAY VAN VOORHIES, JR
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 2/25/2026

JOE KUMAR
US INVESTORS, LLC
100 FIRST STREET
BOARDMAN, OR. 97818 253-229-951

46 MEADOWLARK LANE
TOUCHET, WA 99360
(509) 200-6538

C-1

February 7, 2024

Joe Kumar
US Investors, LLC
PO Box 1299
Boardman, Oregon 97818

Via email: joekumar05@gmail.com

Regarding: Trip Generation Letter
Boardman Hotel
Tax Lot 04N25E09CC00100
Boardman, Oregon 97818
PBS Project 78208.000

Dear Mr. Kumar:

This trip generation letter supports the proposed Boardman Hotel Project (Project) in Boardman, Oregon.

## PROJECT DESCRIPTION

The Project proposes a 64-room hotel on tax lot 04N25E09CC00100 next to the Village restaurant in Boardman, Oregon. The vicinity map can be found on Figure 1 and the site plan on Figure 2, both of which are attached to this letter.

## TRIP GENERATION

The number of trips generated for the Project is based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 11th edition (September 2021) land use code 312 (Business Hotel). The trip generation results are summarized in Table 1 and the calculation details are attached. The site trips are calculated for the average weekday and the PM peak hour between 4:00 and 6:00 PM.

**Table 1. ITE Trip Generation – Boardman Hotel**

| **Land Use (ITE Code)** | Business Hotel (312) |
|---|---|
| **Independent Variable** | Rooms |
| **Size** | 64 |
| **Average Daily Trips (ADT)** | 337 |
| **Peak Hour Trips** | **PM Peak Hour** |
| **In** | 14 |
| **Out** | 11 |
| **Total Trips** | 25 |

The Project is anticipated to generate 337 vehicle trips during a typical weekday and 25 during the PM peak hour.



1325 SE TECH CENTER DR, STE 140, VANCOUVER, WA 98683 ▪ 360.695.3488 MAIN ▪ 866.727.0140 FAX ▪ PBSUSA.COM

## TRIP DISTRIBUTION

The proposed trip distribution of primary trips is based on a review of the land uses within the study area and on engineering judgement. The proposed primary trip distribution pattern is as follows:

- 55% to and from Interstate 84 (I-84) east of N Main Street
- 25% to and from I-84 west of N Main Street
- 15% to and from local streets north of N Main Street / Front Street NW
- 5% to and from local streets south of S Main Street / I-84 eastbound ramps

The distribution pattern above represents an external distribution of the primary trips entering and exiting the study area. The proposed trip distribution and assignment of the project's new trips in the PM peak hour are shown in the attached Figure 3.

## CONCLUSION

The Project does not require a Traffic Impact Analysis (TIA) in accordance with criteria in the City of Boardman Development Code (Development Code) Chapter 4.10 – Section 4.10.200 to determine whether mitigation is needed to minimize impacts to transportation facilities. The estimated ADT of 337 generated from the Project doesn't exceed the 500 or more ADT threshold for a TIA in the Development Code. PBS recommends the City of Boardman and Oregon Department of Transportation review this assessment and decide if further study is required.

## CLOSING

Please feel free to contact me at 360.213.0418 or pj.mckelvey@pbsusa.com with any questions or comments.

Sincerely,

2024.02.07
14:41:38-08'00'

Pierce-Jon McKelvey, PE, PTOE
Project Traffic Engineer

Attachment(s): Figure 1 – Vicinity Map
Figure 2 – Site Plan
Figure 3 – Trip Distribution
Trip Generation Calculations

MT:PJM:tl

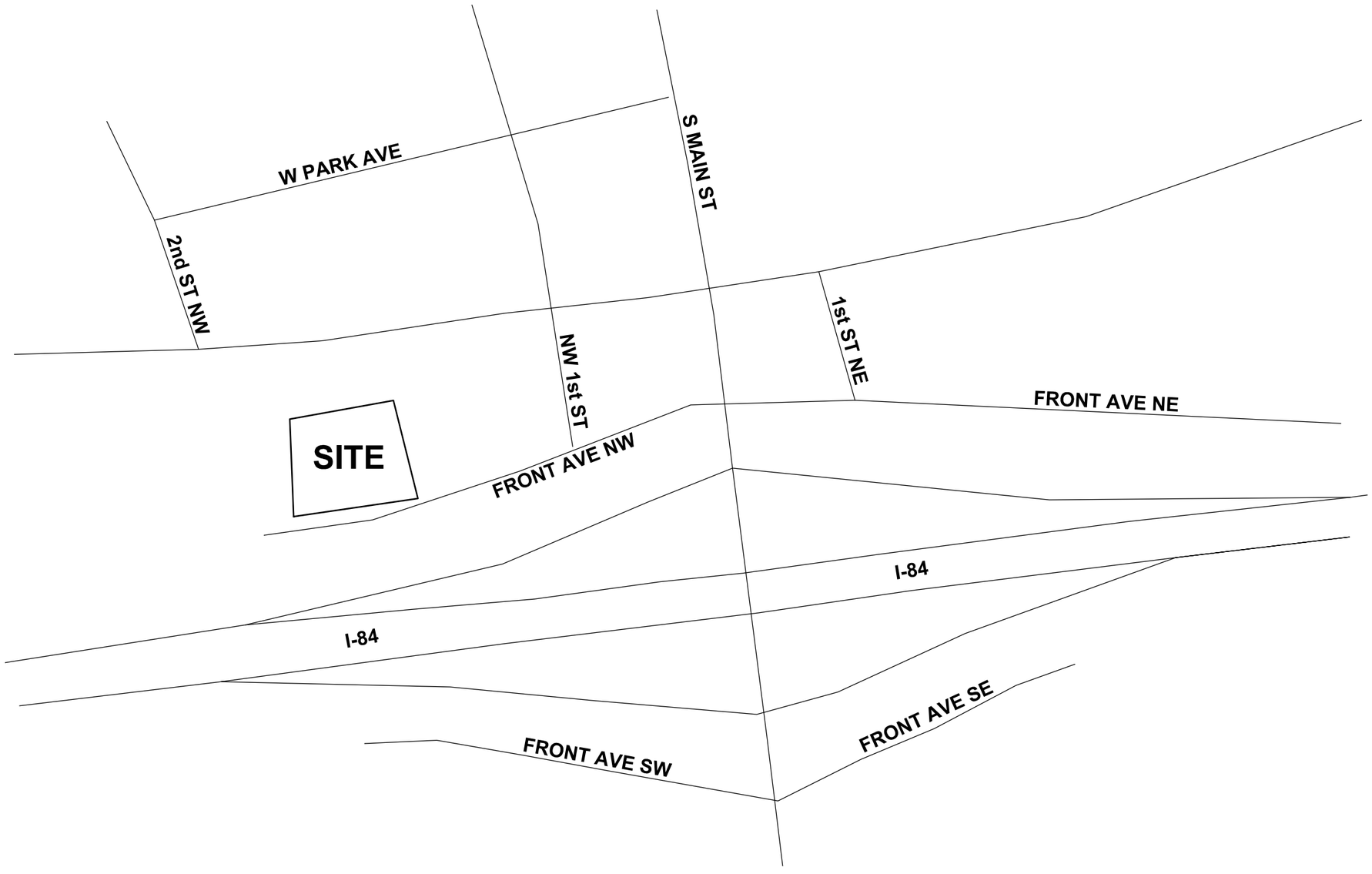
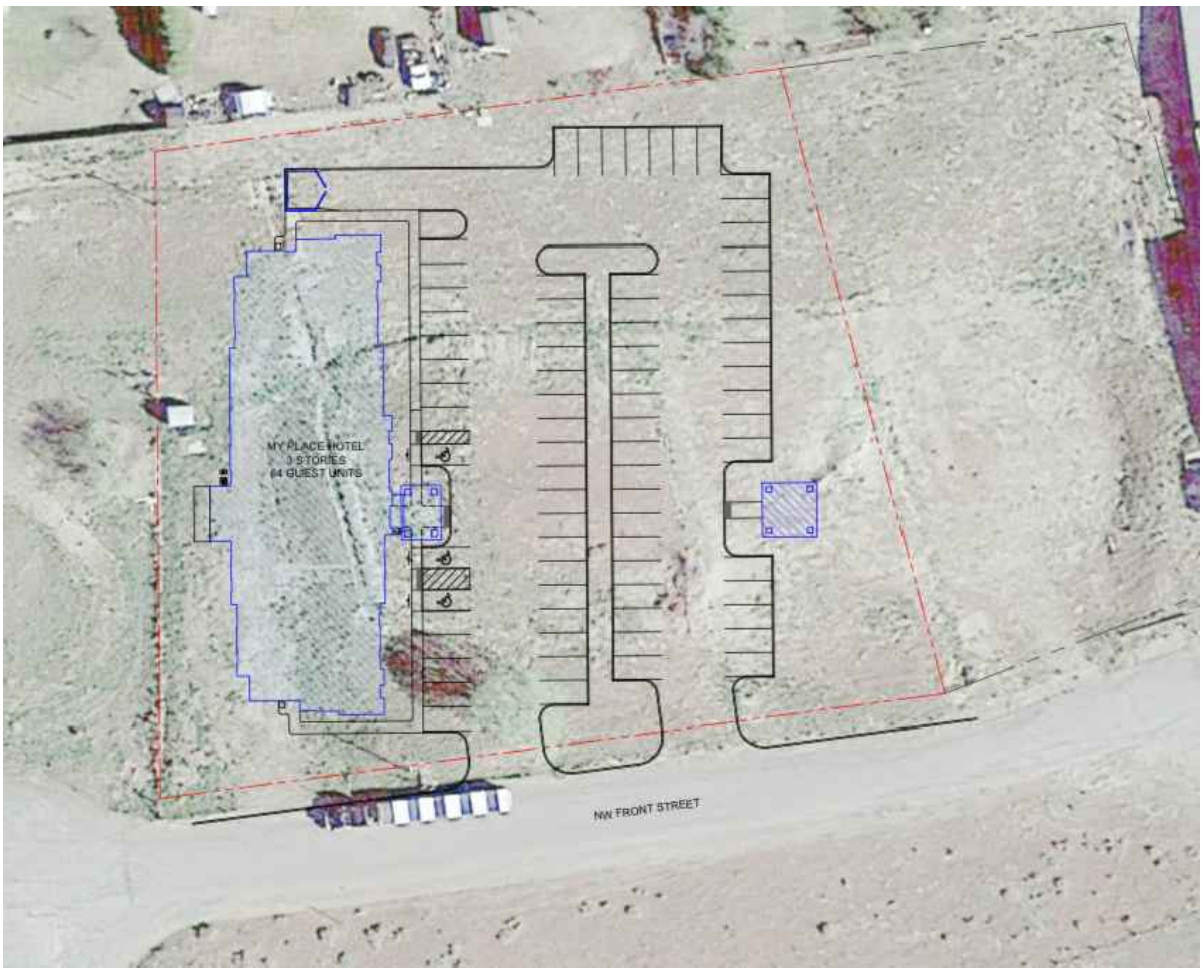



FIGURE 1

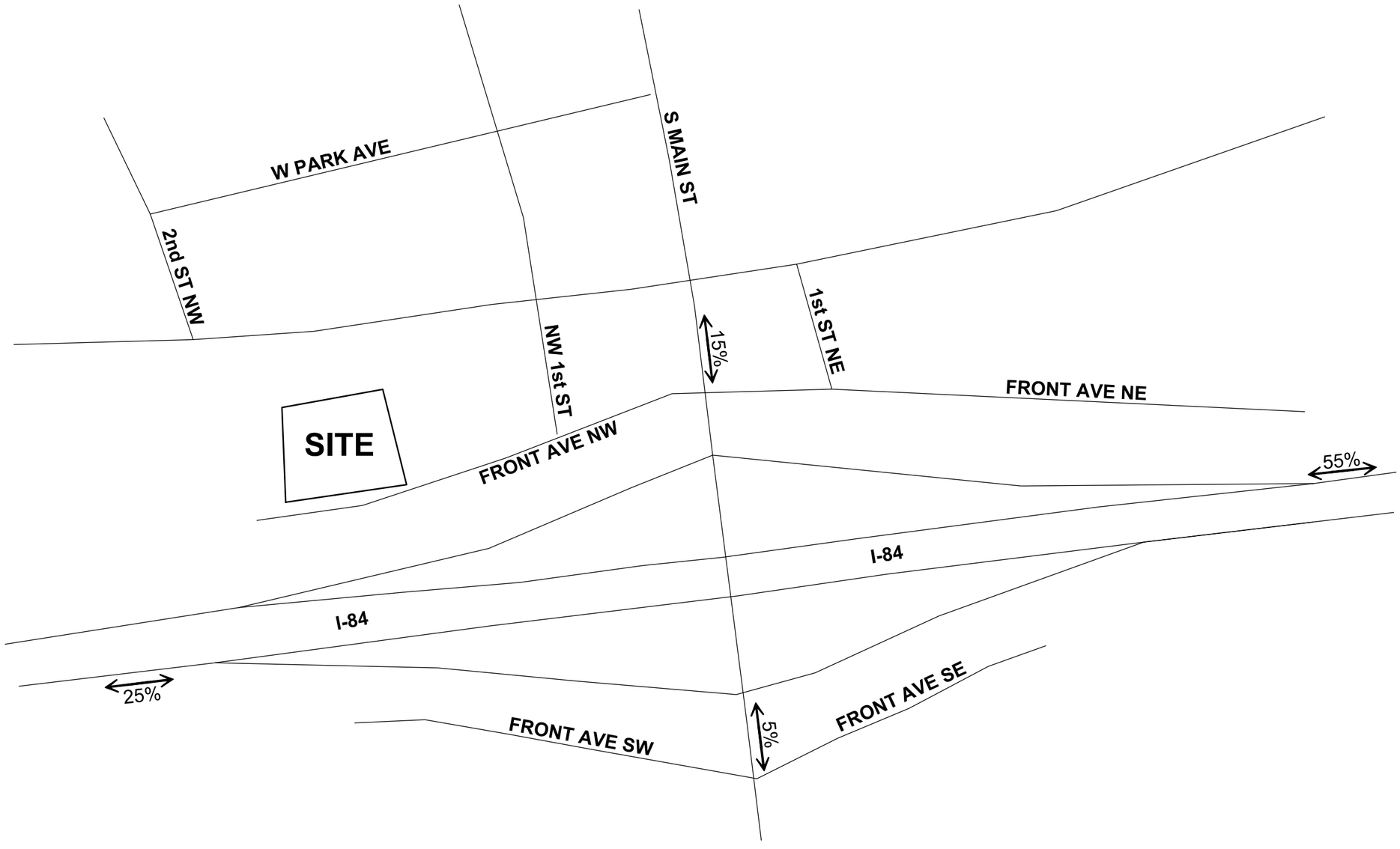
# Vicinity Map
## Boardman Hotel




NTS

FIGURE 2

# Site Plan
## Boardman Hotel




NTS

FIGURE 3

# Trip Distribution

## Boardman Hotel

**PLANNING COMMISSION**
**PRELIMINARY FINDINGS OF FACT**
**RVW24-000023**
**TYPE III DECISION PROCESS**

**REQUEST:** To approve development of a flex building.

---

| | |
|---|---|
| **APPLICANT:** | Angie Sullivan<br>LandWise, LLC<br>210 West Main Street<br>Echo, Oregon 97826 |
| **OWNER:** | Joseph Taylor<br>Double T Farming<br>Post Office Box 529<br>Boardman, Oregon 97818 |
| **PROPERTY DESCRIPTION:** | Tax Lot 300 of Assessor's Map 4N 25E 11C. |
| **GENERAL LOCATION:** | South of Interstate 84, east of Laurel Lane, along Yates Lane. |
| **ZONING OF THE TRACT:** | Commercial Service Center Subdistrict. |
| **EXISTING DEVELOPMENT:** | Predominately bare property |
| **PROPOSED USE:** | Flex Building |

**I.** **BACKGROUND:** The site is currently undeveloped, bare property. For this request there has been a preapplication meeting with the Planning Official and a Site Team meeting was held on May 2, 2024 with area utility and public service providers.

**II.** **APPROVAL CRITERIA:** The application has been filed under the City of Boardman Development Code Chapter 4.1 Types of Applications and Review Procedures as a Type III Decision Process based on the requirements of Chapter 4.2 Development Review and Site Design Review. Applicable criteria include 4.2.600 Approval Criteria which requires evaluation under the applicable provisions for Commercial Service Center Subdistrict development in Chapter 2.2.200, provisions in Chapter 3 Design Standards, and others chapters or sections as deemed appropriate. The applicable criteria are included below in **bold** type with responses in standard type.

**Chapter 4.2 Development Review and Site Design Review**
**Section 4.2.600 Approval Criteria**
**The review authority shall make written findings with respect to all of the following criteria when approving, approving with conditions, or denying an application:**

1. **The application is complete, as determined in accordance with Chapter 4.1 - Types of Applications and Section 4.2.500, above.**

The applicant has submitted a complete application addressing the necessary information to deem this application complete. Included was a narrative, a preliminary site plan, and a map of the existing conditions.

2. **The application complies with the all of the applicable provisions of the underlying Land Use District (Chapter 2), including: building and yard setbacks, lot area and dimensions, density and floor area, lot coverage, building height, building orientation, architecture, and other special standards as may be required for certain land uses;**

The Service Center Sub District is designed to accommodate heavy commercial uses and light industrial uses along portions of the I-84 corridor. The development of a Flex Building would be consistent with this purpose.

Other Chapter 2 provisions concerning setbacks, lot coverage, building height, orientation, architecture and other standards that may be evaluated can be met based on the preliminary site plan that has been submitted. Since there are still aspects that the preliminary site plan cannot provide it is recommended and listed as a Condition of Approval that the applicant apply for Development Review prior to moving to building review to assure that all of the Chapter 2 provisions can be met.

3. **The applicant shall be required to upgrade any existing development that does not comply with the applicable land use district standards, in conformance with Chapter 5.2, Non-Conforming Uses and Development;**

The subject property is predominately bare. There are no issues related to non-conforming uses and development to be resolved. This criterion is deemed to be not applicable.

4. **The application complies with the Design Standards contained in Chapter 3. All of the following standards shall be met:**

**Chapter 3.1 - Access and Circulation**

**3.1.100 Purpose. The purpose of this chapter is to help insure that developments provide safe and efficient access and circulation, for pedestrians and vehicles. Section 3.1.200 provides standards for vehicular access and circulation. Section 3.1.300 provides standards for pedestrian access and circulation. Standards for transportation improvements are provided in Chapter 3.4.100.**

**Section 3.1.200 Vehicular Access and Circulation**

**…**

**C. Access Permit Required**

1. **City Street Permits. Permits for access to City streets shall be subject to review and approval by the City Manager or his/her designee based on the standards contained in this Chapter, and the provisions of Chapter 3.4.100 - Transportation Standards. An access permit may be in the form of a letter to the applicant, or it may be attached to a land use decision notice as a condition of approval.**

The applicant has identified one access point along Yates Lane. An Access Permit will be required before development. This is listed as a Condition of Approval.

**…**

**D. Traffic Study Requirements. The City or other agency with access jurisdiction may require a traffic study prepared by a qualified professional to determine access, circulation and other transportation requirements. (See also, Section 3.4.100 - Transportation Standards, and Chapter 4.10.)**

Due to the location and the expected low traffic count, a Traffic Impact Analysis is not needed for this development.

**…**

**F. Access Options. When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods. These methods are "options" to the developer/subdivider, unless one method is specifically required by Chapter 2 (i.e., under "Special Standards for Certain Uses"). A minimum of 10 feet per lane is required.**

The preliminary site plan identifies one access point along Yates Lane. The proposed access will require an Access Permit. This is listed as a Condition of Approval.

**…**

**N. Vision Clearance. No signs, structures or vegetation in excess of three feet in height shall be placed in "vision clearance areas", as shown in Figure 3.1.200N. This standard applies to the following types of roadways: streets, driveways, alleyways and railways. The minimum vision clearance area may be increased by the City Manager or his/her designee upon finding that more sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). An exception to this standard may be granted by the City Manager or his/her designee to allow utility structures (such as electrical transformers) for necessary services. This exception does not include the installation of utility poles.**

The applicant shall submit plans for and obtain proper permits for structures and landscaping showing all vision clearance areas free and clear. The submitted narrative shows that renters will be responsible for installing signs, as well as obtaining all needed permits. This is listed as a Condition of Approval.

**…**

**3.1.300 Pedestrian Access and Circulation**

**A. Pedestrian Access and Circulation. To ensure safe, direct and convenient pedestrian circulation, all developments, except single family detached housing (i.e., on individual lots), shall provide a continuous pedestrian and/or multi-use pathway system. (Pathways only provide for pedestrian circulation. Multi-use pathways accommodate pedestrians and bicycles.) The system of pathways shall be designed based on the standards in subsections 1-3, below:**

1. **Continuous Pathways. The pathway system shall extend throughout the development site, and connect to all future phases of development, adjacent trails, public parks and open space areas whenever possible. The developer may also be required to connect or stub pathway(s) to adjacent streets and private property, in accordance with the provisions of Section 3.1.200 - Vehicular Access and Circulation, and Chapter 3.4. 100 - Transportation Standards.**
2. **Safe, Direct, and Convenient Pathways. Pathways within developments shall provide safe, reasonably direct and convenient connections between primary building entrances and all adjacent streets, based on the following definitions:**
   a. **Reasonably direct. A route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.**
   b. **Safe and convenient. Bicycle and pedestrian routes that are reasonably free from hazards and provide a reasonably direct route of travel between destinations.**
   c. **Commercial and Industrial Primary Entrance. For commercial, industrial, mixed use, public, and institutional buildings, the "primary entrance" is the main public entrance to the building. In the case where no public entrance exists, street connections shall be provided to the main employee entrance.**
   d. **Residential Entrance. For residential buildings the "primary entrance" is the front door (i.e., facing the street). For multifamily buildings in which each unit does not have its own exterior entrance, the "primary entrance" may be a lobby, courtyard or breezeway which serves as a common entrance for more than one dwelling.**

3. **Connections Within Development. For all developments subject to Site Design Review, pathways shall connect all building entrances to one another. In addition, pathways shall connect all parking areas, storage areas, recreational facilities and common areas (as applicable), and adjacent developments to the site, as applicable.**

The Preliminary Site Plan does not indicate location of pedestrian access and circulation within the development. A Final Site Plan shall be submitted before development showing a system of pathways designed to meet the City of Boardman Development Code and all requirements of the Americans with Disabilities Act. This is listed as a Condition of Approval.

**Chapter 3.2 Landscaping, Street Trees, Fences and Walls**
**3.2.200 New Landscaping**

**A. Applicability. This Section shall apply to all developments requiring Site Design Review, and other developments with required landscaping.**
**B. Landscaping Plan Required. A landscape plan is required. All landscape plans shall conform to the requirements in Chapter 4.2, Section 500.B (Landscape Plans).**
**C. Landscape Area Standards. The minimum percentage of required landscaping equals:**
**…**

2. **Commercial District. 10 percent of the site.**

The applicant has submitted a Preliminary Site Plan showing landscaping. The applicant shall submit a Final Landscaping Plan prior to issuance of the Development Review Permit which shall meet City of Boardman Development Code requirements for design, installation, and maintenance. This is listed as a Condition of Approval.

**…**

**Chapter 3.3 Vehicle and Bicycle Parking**
**3.3.300 Vehicle Parking Standards**
**…**

**A. Minimum Required Off-street Parking Spaces**
**…**

3. **Industrial Uses**
   **Industrial uses, except warehousing. One space per two employees on the largest shift or for each 700 square feet of gross floor area, whichever is less plus one space per company vehicle.**

The submitted Preliminary Site Plan shows a total of 15 parking spaces, including one Van Accessible ADA Parking Space. This criterion has been met.

**…**

**B. Parking Location and Shared Parking**

1. **Location. Vehicle parking is allowed only on approved parking shoulders (streets), within garages, carports and other structures, or on driveways or parking lots that have been developed in conformance with this code. Specific locations for parking are indicated in Chapter 2 for some land uses (e.g., the requirement that parking be located to side or rear of buildings, with access from alleys, for some uses). (See also, Section 3.1 - Access and Circulation).**
2. **Off-site parking. Except for single family, two-family, and three-family dwellings, the vehicle parking spaces required by this Chapter may be located on another parcel of land, provided the parcel is within ¼ mile of the use it serves. The distance from the parking area to the use shall be measured from the nearest parking space to a building entrance, following a sidewalk or other pedestrian route. The right to use the off-site parking must be evidenced by a recorded deed, lease, easement, or similar written instrument.**

3. **Mixed uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street automobile parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (i.e., the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly.**
4. **Shared parking. Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlap (e.g., uses primarily of a daytime versus nighttime nature), and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument establishing the joint use.**
5. **Availability of facilities. Owners of off-street parking facilities may post a sign indicating that all parking on the site is available only for residents, customers and/or employees, as applicable. Signs shall conform to the standards of Chapter 3.6.**

**C. Maximum Number of Parking Spaces. The number of parking spaces provided by any particular use in ground surface parking lots shall not exceed the required minimum number of spaces provided by this Section by more than 10%. Spaces provided on-street, or within the building footprint of structures, such as in rooftop parking, or under-structure parking, or in multi-level parking above or below surface lots, shall not apply towards the maximum number of allowable spaces. Parking spaces provided through "shared parking" also do not apply toward the maximum number.**

**D. Parking Stall Size and Design Standards. All off-street parking stalls shall be improved to conform to City standards for surfacing, stormwater management and striping, and have a net area of not less than 180 square feet exclusive of access drives or aisles, and shall be of usual shape and condition. If determined on a gross area basis, 280 square feet shall be allowed per vehicles. (Disabled person parking shall be provided in conformance with Section F)**

**E. Disabled Person Parking Spaces. The following parking shall be provided for disabled persons, in conformance with the Americans with Disabilities Act and State Law. Disabled parking is included in the minimum number of required parking spaces in Section A.**

The applicant has submitted a preliminary site plan that shows 15 parking spaces including one van accessible ADA Parking Space. A final parking plan shall be submitted as part of the Development Review Permit that meets the above requirements. This is listed as a Condition of Approval.

**3.3.400 Bicycle Parking Requirements**

**A. Number of Bicycle Parking Spaces. The following additional standards apply to specific types of development:**

**…**

5. **Multiple Uses. For buildings with multiple uses (such as a commercial or mixed use center), bicycle parking standards shall be calculated by using the total number of motor vehicle parking spaces required for the entire development. A minimum of one bicycle parking space for every 10 motor vehicle parking spaces is required.**

The applicant has addressed bicycle parking in the submitted narrative. The flex building will have two bicycle parking spaces. This condition has been met.

**Chapter 3.4 Public Facilities Standards**

**3.4.000 Purpose and Applicability**

**A. Purpose. The purpose of this chapter is to provide planning and design standards for public and private transportation facilities and utilities. Streets are the most common public spaces, touching virtually every parcel of land. Therefore, one of the primary purposes of this Chapter is to provide standards for attractive and safe streets that can accommodate vehicle traffic from planned**

**growth, and provide a range of transportation options, including options for driving, walking and bicycling. This Chapter is also intended to implement the City's Transportation System Plan. Important cross-reference to other standards: The City requires that streets provide direct and convenient access, including regular intersections. Chapter 3.1 - Access and Circulation, provides standards for intersections and blocks, and requires pedestrian access ways to break up long blocks.**

**B. Applicability. Unless otherwise provided, the standard specifications for construction, reconstruction or repair of transportation facilities, utilities and other public improvements within the City shall occur in accordance with the standards of this Chapter. No development may occur unless the public facilities related to development comply with the public facility requirements established in this Chapter.**

**C. Standard Specifications. The City Manager or his/her designee shall establish standard construction specifications consistent with the design standards of this Chapter and application of engineering principles. They are incorporated in this code by reference.**

**D Conditions of Development Approval. No development may occur unless required public facilities are in place or guaranteed, in conformance with the provisions of this Code. Improvements required as a condition of development approval, when not voluntarily accepted by the applicant, shall be roughly proportional to the impact of development. Findings in the development approval shall indicate how the required improvements are roughly proportional to the impact.**

Water and wastewater connections were discussed during the Site Team meeting. Connection locations were identified off Yates Lane. All installations shall comply with the Boardman Development Code and Public Works Standards. This is listed as a Condition of Approval.

**3.4.100 Transportation Standards**

**A. Development Standards. No development shall occur unless the development has frontage or approved access to a public street, in conformance with the provisions of Chapter 3.1 - Access and Circulation, and the following standards are met:**

**1. Streets within or adjacent to a development shall be improved in accordance with the Transportation System Plan and the provisions of this Chapter.**

**2. Development of new streets, and additional street width or improvements planned as a portion of an existing street, shall be improved in accordance with this Section, and public streets shall be dedicated to the applicable city, county or state jurisdiction;**

**3. New streets and drives connected to a collector or arterial street shall be paved; and**

**4. The City may accept a future improvement guarantee [e.g., the property owner agrees not to remonstrate (object) against the formation of a local improvement district in the future which the City may require as a deed restriction] in lieu of street improvements if one or more of the following conditions exist:**

**a. A partial improvement may create a potential safety hazard to motorists or pedestrians;**

**b. Due to the developed condition of adjacent properties it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide increased street safety or capacity, or improved pedestrian circulation;**

**c. The improvement would be in conflict with an adopted capital improvement plan; or**

**d. The improvement is associated with an approved land partition on property zoned residential and the proposed land partition does not create any new streets.**

**…**

**C. Creation of Rights-of-Way for Streets and Related Purposes. Streets shall be created through the approval and recording of a final subdivision or partition plat; except the City may approve the creation of a street by acceptance of a deed, provided that the street is deemed essential by the**

**City Council for the purpose of implementing the Transportation System Plan, and the deeded right-of-way conforms to the standards of this Code. All deeds of dedication shall be in a form prescribed by the City Manager or his/her designee and shall name "the public," as grantee.**

**…**

**E. Street Location, Width and Grade. Except as noted below, the location, width and grade of all streets shall conform to the Transportation System Plan, and an approved street plan or subdivision plat. Street location, width and grade shall be determined in relation to existing and planned streets, topographic conditions, public convenience and safety, and in appropriate relation to the proposed use of the land to be served by such streets.**

**…**

Frontage road improvements shall be completed in conformance to the City of Boardman Development Code and Public Works Standards before a Certificate of Occupancy can be obtained. This is listed as a Condition of Approval.

…

**3.4.300 Sanitary Sewer and Water Service Improvements**

**A. Sewers and Water Mains Required. Sanitary sewers and water mains shall be installed to serve each new development and to connect developments to existing mains in accordance with the City's construction specifications and the applicable Comprehensive Plan policies.**

**B. Sewer and Water Plan approval. Development permits for sewer and water improvements shall not be issued until the City Manager or his/her designee has approved all sanitary sewer and water plans in conformance with City standards.**

**…**

Water and wastewater connections can be achieved. All installations shall conform to this section. This is listed as a Condition of Approval.

**3.4.400 Storm Drainage**

**A. General Provisions. The City shall issue a development permit only where adequate provisions for storm water and flood water runoff have been made in conformance with Chapter 3.5 - Surface Water Management.**

**…**

Storm water shall be maintained on site and in conformance with Chapter 3.5 Stormwater Management. This is listed as a Condition of Approval.

**3.4.500 Utilities**

**A. Underground Utilities. All utility lines including, but not limited to, those required for electric, communication, lighting and cable television services and related facilities, shall be placed underground, except for surface mounted transformers, surface mounted connection boxes and meter cabinets which may be placed above ground, temporary utility service facilities during construction, and high capacity electric lines operating at 50,000 volts or above.**

**…**

All installed utilities shall comply with this standard and others found in the Boardman Development Code or Municipal Code related to utilities. This is listed as a Condition of Approval.

**3.4.600 Easements**

**Easements for sewers, storm drainage and water quality facilities, water mains, electric lines or other public utilities shall be dedicated on a final plat, or provided for in the deed restrictions. See also, Chapter 4.2 – Site Design Review, and Chapter 4.3 – Land Divisions. The developer or applicant shall make arrangements with the City, the applicable district and each utility franchise for the provision and dedication of utility easements necessary to provide full services to the development. The City's standard width for public main line utility easements shall be 10 feet unless otherwise specified by the utility company, applicable district, or City Manager or his/her designee.**

Easements shall be accomplished as required by this standard for the development. This is listed as a Condition of Approval.

…

**3.4.700 Construction Plan Approval and Assurances**

**No public improvements, including sanitary sewers, storm sewers, streets, sidewalks, curbs, lighting, parks, or other requirements shall be undertaken except after the plans have been approved by the City, permit fee paid, and permit issued. The permit fee is required to defray the cost and expenses incurred by the City for construction and other services in connection with the improvement. The permit fee shall be set by City Council. The City may require the developer or subdivider to provide bonding or other performance guarantees to ensure completion of required public improvements.** Review of the Construction Plan shall be done by City Engineer prior to construction. This is listed as a Condition of Approval.

…

**3.4.800 Installation**

**A. Conformance Required. Improvements installed by the developer either as a requirement of these regulations or at his/her own option, shall conform to the requirements of this chapter, approved construction plans, and to improvement standards and specifications adopted by the City.**

**B. Adopted Installation Standards. The Standard Specifications for Public Works Construction, Oregon Chapter A.P.W.A. shall be a part of the City's adopted installation standard(s); other standards may also be required upon recommendation of the City Engineer.**

**C. Commencement. Work shall not begin until the City has been notified in advance.**

**D. Resumption. If work is discontinued for more than one month, it shall not be resumed until the City is notified, and the City approves resumption.**

**E. City Inspection. Improvements shall be constructed under the inspection and to the satisfaction of the City. The City may require minor changes in typical sections and details if unusual conditions arising during construction warrant such changes in the public interest. Modifications requested by the developer shall be subject to land use review under Chapter 4.6 - Modifications to Approved Plans and Conditions of Approval. Any monuments that are disturbed before all improvements are completed by the subdivider shall be replaced prior to final acceptance of the improvements.**

**F. Engineer's Certification and As-Built Plans. A registered engineer shall provide written certification in a form required by the City that all improvements, workmanship and materials are in accord with current and standard engineering and construction practices, conform to approved plans and conditions of approval, and are of high grade, prior to City acceptance of the public improvements, or any portion thereof, for operation and maintenance. The developer's engineer shall also provide 10 set(s) of "as-built" plans, in conformance with the City Manager or his/her designee's specifications, for permanent filing with the City.**

All infrastructure proposed for the development will need to meet these requirements. This is listed as a Condition of Approval.

**Chapter 3.5 Stormwater Management**

**A. Purpose. The purpose of this chapter is to provide planning and design standards for stormwater management within the City. The primary intent of this chapter is to provide standards for effective and cost efficient stormwater management. Stormwater management is accomplished through a combination of design standards reflecting a more accurate representation of natural climatic, hydraulic and geologic conditions. Included in this chapter are stormwater detention criteria for development, grading and drainage plan requirements, landscaping criteria, street, curb and sidewalk designs. These are designed to keep all precipitation from each lot contained**

**upon that lot. Important cross reference to other standards: The following code chapters are to be cross referenced to assess impacts of the provisions of this chapter; Chapter 3.1, Chapter 3.2, Chapter 3.3, Chapter 3.4, Chapter 3.6, Chapter 4.1, Chapter 4.2 and Chapter 5.1.**

**B. Applicability. Where storm sewer infrastructure is currently available or unless otherwise provided, the standard specifications for construction or reconstruction of stormwater management facilities, utilities and other public improvements within the City shall occur in accordance with the standards of this chapter. This chapter applies to development on or within public properties and rights-of-way and privately owned properties**.

…

Stormwater Management is applicable to this property. All stormwater shall be maintained on-site and shall comply with the design and installation standards outlined in City of Boardman Development Code.

**Chapter 3.6 Other Standards**

**…**

**3.6.500 Signs**

**…**

**B. Sign classifications**

**1. Permanent signs. Signs placed for a period of 31 days or longer within one calendar year shall be classified as permanent; shall advertise or provide direction to the premises of the identified business located within the City of Boardman; shall be subject to a permanent sign permit; and shall conform to this and other City of Boardman ordinances.**

**a. On-premises signs shall be permitted within the regulations of this ordinance, with any exceptions subject to the requirements set forth within this ordinance for requesting variances or, where conditional use is specified, the provisions for such as set forth in the zoning ordinance.**

**…**

**C. Permits Required.**

**The following permits are required for all new signs, for all signs being altered due to change in ownership, business name or business type and for all signs being altered structurally.**

**1) Structural Building Codes Permit**

**2) Electrical Building Codes Permit (if lighted)**

**3) Sign Permit for Planning of Planning Review and Approval**

The applicant has stated in the narrative that each individual renter will be responsible for obtaining all necessary sign permits before sign installation.

…

**Chapter 4 Applications and Review Procedures**

**5. Conditions required as part of a Land Division (Chapter 4.3), Conditional Use Permit (Chapter 4.4), Master Planned Development (Chapter 4.5), or other approval shall be met.**

There are no other land use approvals that are currently under consideration.

**6. Exceptions to criteria 4.a-f, above, may be granted only when approved as a Variance (Chapter 5.1)**

At this point no Variances have been deemed necessary.

**III. PROPERTY OWNERS NOTIFIED:** April 23, 2024

List of landowners notified is retained as part of the file.

**IV. PUBLISHED NOTICE:** April 23, 2024

East Oregonian

**V. AGENCIES NOTIFIED:** April 24, 2024.

Mike Lees, City Engineer; Marty Broadbent, Boardman Fire Protection District; Loren Dieter, Interim Chief of Police; Rolf Prog, City of Boardman Public Work Director; Wendy Neal, Windwave; Monte Ellis, UEC; Justin Samp, UEC; Richard Lani, ODOT; Teresa Penninger, ODOT; David Boyd, ODOT; Cheryl Jarvis-Smith, ODOT; Lana Eckman, USPS; Joe Franell, EOT; George Shimer, Boardman Parks and Rec

**VI. SITE TEAM MEETING:** May 2, 2024
Boardman City Hall

**VII. PLANNING OFFICIAL RECOMMENDATION:** The Planning Official recommends approval of this request with the following CONDITIONS OF APPROVAL:

1. An Access Permit will be required before development.
2. The applicant shall submit plans for and obtain proper permits for structures and landscaping.
3. A Final Site Plan shall be submitted before development showing a system of pathways designed to meet the City of Boardman Development Code and all requirements of the Americans with Disabilities Act.
4. The applicant shall submit a final landscaping plan prior to issuance of Development Review Permit.
5. A final parking plan shall be submitted as a part of the Development Review Permit that meets the City of Boardman Development Code and Public Works Standards.
6. All water and wastewater installations shall comply with the Boardman Development Code and Public Works Standards.
7. Frontage road improvements shall be completed in conformance to the City of Boardman Development Code and Public Works Standards before a Certificate of Occupancy can be obtained.
8. Storm water shall be maintained on-site in conformance with Chapter 3.5 Stormwater Management.
9. Easements shall be accomplished as required by the City of Boardman Development Code and Public Works Standard.
10. Review of Construction Plan shall be done by City Engineer prior to construction.
11. All infrastructure shall meet City of Boardman Development Code and Public Works Standard.

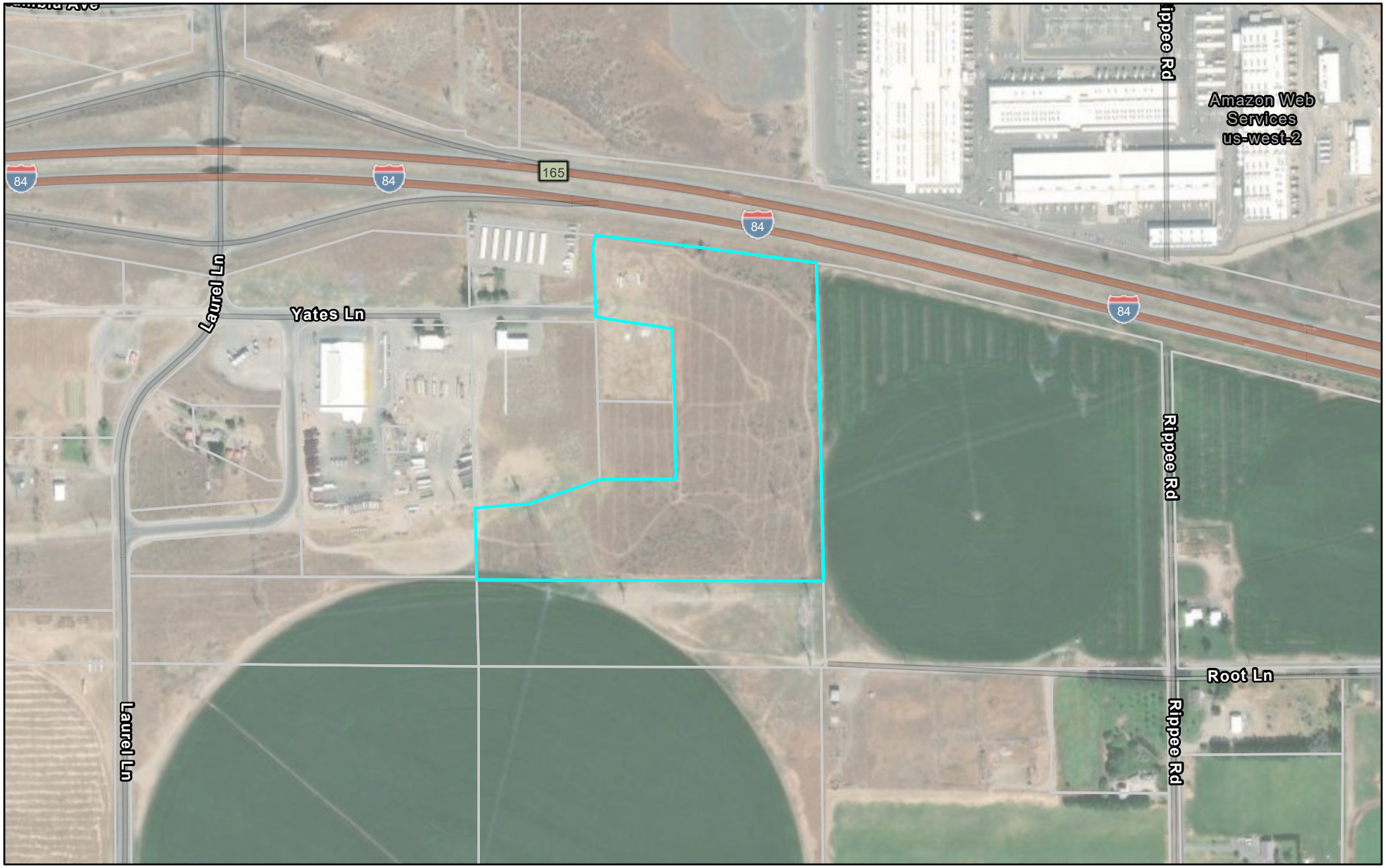
_____

Zack Barresse, Chair Date

ATTACHMENTS:
Vicinity Map
Preliminary Site Plan

# Vicinity Map



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Taxlots

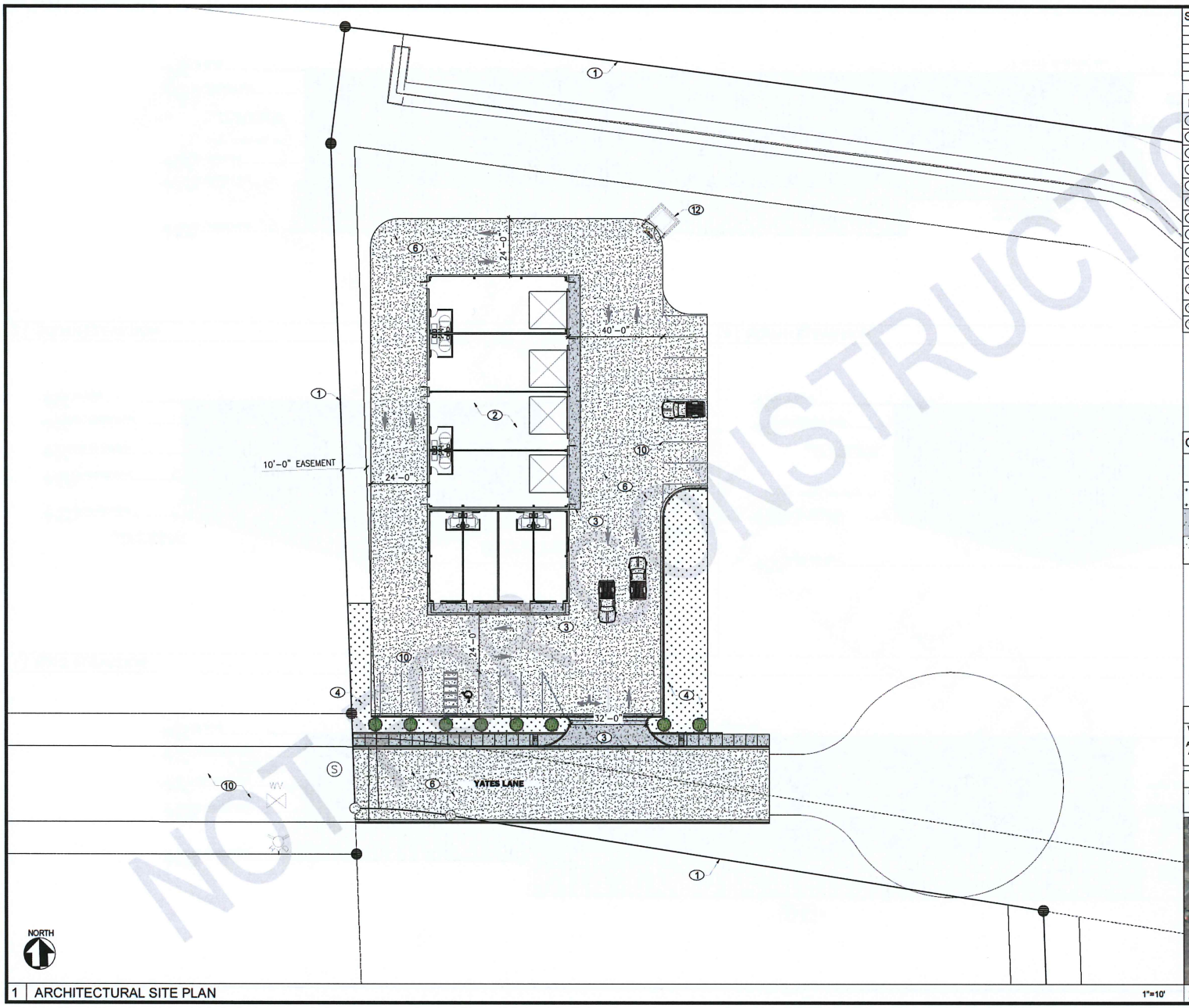
1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Esri Community Maps Contributors, WSU Facilities Services GIS, Oregon State Parks, State of Oregon GEO, WA State Parks GIS, © OpenStreet

ArcGIS Web AppB




1 ARCHITECTURAL SITE PLAN 1"=10'

## SITE INFORMATION:

| | |
|---|---|
| 1 | ASSESSORS MAP PARCEL: 4N2511-CO-00300 |
| 2 | ADDRESS: 000 YATES LANE |
| 3 | LEGAL DESCRIPTION: |
| 3 | OWNER: TAYLOR, JOSEPH V ET AL |
| 4 | ACRES: 24.00 |
| 5 | SETBACKS: FRONT: 10'-0" SIDE: 10'-0" BACK: 10'-0" |

## KEYED NOTES:

| | |
|---|---|
| 1 | PROPERTY LINE |
| 2 | PROPOSED NEW BUILDING |
| 3 | PROPOSED NEW DRIVEWAY |
| 4 | PROPOSED NEW LANDSCAPE AREA |
| 5 | PROPOSED NEW CONCRETE/SIDEWALK |
| 6 | PROPOSED NEW ASPHALT |
| 7 | EXISTING POWER CONNECTION (CONTRACTOR TO VERIFY LOCATION) |
| 8 | EXISTING WATER CONNECTION (CONTRACTOR TO VERIFY LOCATION) |
| 9 | EXISTING SEWER CONNECTION (CONTRACTOR TO VERIFY LOCATION) |
| 10 | NEW PARKING SPACES |
| 11 | EXISTING ASPHALT |
| 12 | PROPOSED TRASH ENCLOSURE LOCATION |
| 13 | EXISTING CITY LIGHT POST |

## GENERAL LANDSCAPING LEGEND:

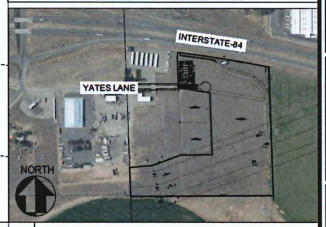
| | |
|---|---|
| | DECIDUOUS STREET TREE PER LANDSCAPE PLAN |
| | NEW LANDSCAPING AREA |
| | NEW CONCRETE |
| | NEW ASPHALT |

## ATTENTION

WHERE APPLICABLE; STRUCTURAL, MECHANICAL, &/OR CIVIL ENGINEERED PLANS SHALL SUPERCEDE ANY/ALL INFORMATION HEREIN THE ARCHITECTURAL DESIGN SET INCLUDING BUT NOT LIMITED TO ASSEMBLIES AND/OR ARCHITECTURAL DETAILS (CONTRACTOR TO VERIFY ANY AND ALL ASPECTS OF DESIGN PRIOR TO START OF CONSTRUCTION)

## PROPERTY REGULATIONS:

SEE HOA PROPERTY REGULATIONS AND STRICTLY FOLLOW CC&R. NOT INCLUDED IN A DRAWING SET, PLEASE WORK WITH OWNER AND GET THE INFORMATION PROVIDED TO YOU




2 VICINITY MAP APROX LOCATION

NOT FOR CONSTRUCTION

APRIL 16, 2024

DRAFTCO DESIGNS LLC
509.516.0365 MILENKO@DRAFTCODESIGNS.COM
WHL ARCHITECTURE, PLLC
509.520.6999 WHLARCHITECT@GMAIL.COM

| APPROVAL | | |
|---|---|---|
| STARTED | DC | |
| DRAWN | DC | |
| CHECKED | EL | |
| APPROVED | EL | |



# DOUBLE T FLEX
MULTI-TENANT BUILDING
000 YATES LN
BOARDMAN, OR 97818

## BUILDING INFO:

| | |
|---|---|
| OFFICE BUILDING | 2400 |
| SHOP BUILDING | 6000 |
| TOTAL SCOPE | 8400 |

JOB # 23-151

CONCEPTUAL ARCHITECTURAL SITE PLAN

A-1

# CITY OF BOARDMAN

## PLANNING COMMISSION 2024 MEETING DATES AND DEADLINES

MEETINGS HELD AT COUNCIL CHAMBERS AT CITY OF BOARDMAN AT 7:00PM

| *DATE | APPLICATION DEADLINE |
|---|---|
| JANUARY 17, 2024 | DECEMBER 13, 2023 |
| FEBRUARY 21, 2024 | JANUARY 17, 2024 |
| MARCH 20, 2024 | FEBRUARY 14, 2024 |
| APRIL 17, 2024 | MARCH 13, 2024 |
| MAY 15, 2024 | APRIL 10, 2024 |
| JUNE 20, 2024 | MAY 16, 2024 |
| JULY 18, 2024 | JUNE 13, 2024 |
| AUGUST 15, 2024 | JULY 18, 2024 |
| SEPTEMBER 19, 2024 | AUGUST 15, 2024 |
| OCTOBER 17, 2024 | SEPTEMBER 12, 2024 |
| NOVEMBER 21, 2024 | OCTOBER 17, 2024 |
| DECEMBER 19, 2024 | NOVEMBER 14, 2024 |

*Meetings in January-May will be held on third Wednesday of the month. Meetings June-December will be held on third Thursday of the month.

City of Boardman

200 City Center Circle
P.O. Box 229
Boardman, OR 97818
Phone: (541) 481-9252
Fax: (541) 481-3244
TTY Relay 711
www.cityofboardman.com

## Land Use Decisions: Who makes them, what is the process, and what is the role of each decision maker.

The City of Boardman has a Planning Commission but what exactly do they do? Does the City Council make land use decisions? And who decides where different types of development can happen? And what exactly does Planning staff do?

There are a variety of decisions that occur related to how and where development occurs in Boardman with the City's Comprehensive Plan providing guidance with the Development Code providing the regulatory framework. There are other plans and regulations that can be applied but for this discussion we are going to keep the focus narrow.

"I want to build a house. What do I need to do?" This decision is identified as a Type I and is accomplished by staff as long as the house is proposed on an approved lot in an area zoned Residential. The application process requires submittal of a site plan and architectural rending of the home along with the application fee. A variety of clear and objective standards are applied and if the proposed house meets them the request is approved. Any appeals of a Type I decision are reviewed by the Planning Commission.

"I have a small lot that I want to further divide to allow additional homes to be built on land zoned Residential. What do I need to do?" For this example, the decision would be to create three parcels which would be done as a Type II decision and is accomplished by staff with notice to adjoining landowners and potentially affected agencies. Why the notice? Because there is the potential for more input and discretion to be needed when making the decision. In other words, the criteria may be clear but there may be more than one way to get to yes. Any appeals of a Type II decision are reviewed by the Planning Commission.

"I own some land zoned Commercial and I want to have a small retail store. What do I need to do?" For most Commercial and multi-family developments the decision would be done as a Type III with a public hearing before the Planning Commission. This would also involve public notice, notice to adjoining landowners, and to affected agencies. In the City of Boardman, it may also require a Site Team meeting to gain input from affected utilities and service providers. While the Planning Commission can approve, approve with conditions, or deny the request those actions are done in accordance with the applicable law and the application of clear and objective criteria. Any appeals of a Type III decision are reviewed by the City Council.

"I want to change the zoning of my property or the text of the Development Code to allow an activity that is either currently prohibited or not addressed. What do I need to do?" Any changes to the Comprehensive Plan, Development Code, or Zoning Map is a Legislative Decision also called a Type IV Decision. This type of decision is considered legislative as it is either creating or amending the regulatory framework or law that governs how and where development occurs in the City of Boardman. The only body that can do that is the City Council and is based upon a recommendation of the Planning Commission. Any appeals of a Type IV decision are accomplished at the Land Use Board of Appeals.