Appendix D:
Project Coordination

SUMMARY OF PUBLIC, STAKEHOLDER, AND ADVISORY COMMITTEE INVOLVEMENT

Development of the feasibility study included multiple forums and opportunities for public and stakeholder involvement. Additionally, the project included a Project Advisory Committee (PAC) that met periodically throughout the duration of the project. The table below summarizes the informational meetings and PAC meetings held throughout development of the study. Documentation from the public and project team coordination meetings is attached.

Table 1: Summary of Public and Project Team Coordination Activities

Meeting	Location	Date	Number of Attendants (per sign-in sheets)
INFORMATIONAL MEETINGS			
Stakeholder Kickoff Meeting	City Council Chambers	January 13, 2014 (9:30AM)	20
Stakeholder Kickoff Meeting	City Council Chambers	January 13, 2014 (1:00PM)	17
Stakeholder Kickoff Meeting	City Council Chambers	January 13, 2014 (2:00PM)	2
Stakeholder Kickoff Meeting	Missoula Children's Theater	January 13, 2014 (5:30PM)	8
Public Informational Meeting #1	City Council Chambers	May 14, 2014	9
Public Informational Meeting #2	City Council Chambers	April 14, 2015	TBD
PROJECT ADVISORY COMMITTEE (PAC) MEETINGS			
PAC Meeting #1	MRA Hal Fraser Conference Room	April 22, 2014	
PAC Meeting #2	MRA Hal Fraser Conference Room	July 16, 2014	
PAC Meeting #3	MRA Hal Fraser Conference Room	October 7, 2014	
PAC Meeting #4	MRA Hal Fraser Conference Room	February 3, 2015	
PAC Meeting #5	MRA Hal Fraser Conference Room	March 19, 2015	

Meeting Minutes

Project:	Front Street and Main Street Study
Subject:	Combined Meeting Notes
Date:	Monday, January 13, 2014

Facilitator: Mick Johnson

Front Street and Main Street Conversion Feasibility Study

The Downtown Master Plan that was done in 2009 identified the conversion of the couplet to 2-way as the top priority in the plan.

This is not a new concept, it has been worked on both successfully and unsuccessfully in all parts of the United States and in fact this has been discussed in several Montana cities over the past 10 years. Billings has been back and forth on it; Helena did a partial conversion several years ago when they converted part of Last Chance Gulch to a walking mall from a 1-way; Great Falls has discussed it for several years; Missoula has the desire to review it and the Missoula Redevelopment Agency is the catalyst for getting something done.

HDR has been asked to review the operation of the current 1 way Couplet in downtown Missoula – and to analyze the affect of converting that operation to 2-way.

We intend to develop a Purpose and Needs Statement based upon input, goals and objectives that we find as we conduct these meetings and in cooperation with the Stakeholders.

This is our Project Kickoff and over the next 2-3 days we are meeting and getting input from many of the stakeholders to start our review of the Existing Conditions including some discussions with the Montana Department of Transportation Traffic personnel in Helena.

We will look at how a change might affect:

Commercial Business

Residential Property

- Public Transit
- Motorized and Non-Motorized use
- Safety
- Parking
- Air Quality
- Intersection Connectivity
- Future Development plans
- Many More

One of the first tasks that we will undertake is to analyze some existing conditions. That will allow us to develop a base line of the current conditions of multi modal use. Much of the information is available and

we will do research to find it and we will analyze it, but if we need something that is unavailable then we will gather any information we feel is important in order for us to make the best recommendation.

Then we intend to work with City staff, MRA, MDT, Developers and interest groups to forecast what future transit demands, economic conditions might be and we will do some modeling of those forecast conditions.

HDR will develop some build alternatives – in which we hope to look at:

Traffic Management

- Intersection Geometry
- Turning movements
- Safety – things like accident history
- Parking
- Non-motorized mobility – both pedestrians and bicyclists
- Public transit
- Residential usage

Improve the Linkage between Employment, Housing, Cultural and Commercial Components

Enhance Non-Motorized Transportation Options

We intend to have 2 Public Meetings

The First public meeting we intend to show existing conditions and gather input from the public

At the Second will be a presentation of our Draft Report

Lastly, will be a report that will give detail of the recommended alternative – including demand forecasts, some conceptual design and a probable cost estimate. We are also tasked with identifying potential sources of funding for the improvements.

Our Schedule is to have the project completed in 12 months and likely we will be working very hard to get it done within that deadline.

Lisa - went over the study area

WD – did a presentation regarding the Traffic issues he would be focusing on

Oliver – explained how his part of the study would look at the non-motorized part of the study and the streetscape.

Now we would like to hear from you – the Public:

- Are there issues of concerns you think we need to know about?
- Do you see room for improvement along this couplet?

Overview of the Economic review was presented

Overview of the current economic conditions in the downtown area

Overview of general business conditions in the downtown area

Overview of general residential operations in the study area

Summary of a range of possible but realistic expectations should there be a traffic conversion change

A general overview/historic summary of what some areas that have converted couplets back to 2-way operations have seen happen to the economics of the affected areas.

9:30 AM MEETING NOTES

HDR Representatives introduced themselves, public did self introductions.

HDR Staff explained the project and asked the public for input with regard to the Feasibility Study. What issues would they like to see addressed and what issues that seem of concern – these are some of the issues that were raised and comments noted.

- Simple intersections and improving the Ped Environment
- Consider stopping short of Madison – so that Intersection does not tank the project
- On the one ways, cars are often observed going the wrong way
- Emergency vehicles use Main a lot and are not opposed to either 2-ways or bike lanes, they are favorable to bike lanes which they would use should the lanes be narrower
- Considered somewhat dangerous because of the increased volumes of traffic
- Turning from Main to Higgins there seem to be a number of pedestrian accidents
- There needs to be a healthier environment on Higgins to grow commercial business
- There will be a new Missoula College and traffic volumes may change
- Riverfront Development needs to have good access to and from downtown
- Healthy Pedestrian access to business areas
- Improve the livability and residential experience of living downtown
- This is a Cultural Corridor and that needs to be preserved
- There needs to be beneficial cultural use
- 50% of bicyclists ride on the sidewalk
- Street scape needs to improve, the best section is the 2 way block of Front
- Remember the bike and ped people are going somewhere and try to create connectivity – especially to the trail system
- How will the 2-way affect retail operations
- 2009 Master Plan has a recommendation of 2-way bike traffic on one side
- There are proposals for way-finding and mapping, keep those in mind
- One way streets force riders to the streets with heavier traffic, like Broadway
- Keep the Long Range Plan in mind
- Library is concerned about 1-way on Washington

NOTES FROM THE 1:00 PM SESSION

Mick went over the presentation of the reason for the study – each HDR member introduced themselves – the public self introduced

Comments received from the public:

- Mike Day – Tangles – in business for over 20 years and the parking adjacent to the beauty salon is critical for the business – they need drive up parking. Their biggest concern was the reconfiguration at the Orange Street intersection with Front and Main Street. His wife wants to keep her current assets. Initial planning documents included in the Master Plan show a reconfiguration of their current parking lot.

- Property Owner of Red's and Walking Mustache (NW corner of Main and Ryman) – Parking is vital to downtown businesses. If you take way parking, you take away their business. They depend on walking traffic and drive-in traffic for to-go orders.
- Melanie Brock – Msla Econ Partners – Pedestrian safety is an issue, she was nearly hit twice in a crosswalk – also there is no crosswalk on the SE corner of the library block. The south ped crossing at Washington and Main was specifically a concern.
- Todd – Trailhead – June 2004 hit by a LT vehicle – hospital for 2 days there is a blind spot where the driver does not see a ped on his left when the driver is making a LT. He favors the conversion and wants parking preserved. Lots of peds in the area of MCT. Once eastbound traffic crosses Pattee Street on Front, vehicles are typically at or above the posted speed limit. Slow Traffic down and he wonders about the transition at the ends.
- Elizabeth Jonkel – Library – the building is located between 2 one ways and it would be nice to improve access. The Library is a destination, they are conducting a feasibility study regarding the facility and it could require 3 times the floor space. The library sees up to 2000 visitors per day. The library's goal is to stay downtown. Their feasibility study can be accessed on their website at: www.missoulapubliclibrary.org/images/files/foundation/mpl-feasibilitystudy
- KECI - NBC MT. – is indifferent and will support either direction. The large dishes are currently in use.
- Heidi Kendall – Children's Museum (CM) – The Children's Museum has been at the current location for 7 years. They would like to see the entire area made safer for peds and bikes, many people use the CM and Carousel with bikes and trailers for the kids or strollers. The Orange Street ped crossings can be especially intimidating.
- Hugh Sheehy – Higgins Bldg – for the health of downtown there is a need to entice more people to come downtown. Parking is an issue because many people prefer to park close to the business they are using, so preserve parking. Angled vs. parallel parking will be of interest since angled parking provides more spaces per roadway length.
- Libby Schneider – Pi Property Mgmt – she was involved in an accident downtown. She was on her motorcycle and a vehicle turned across her lane to park in the angle parking space on the opposite side of the road, never saw her. She is not favorable to angle parking. People do not always see the danger behind them.
- John Torma – Downtown for 25 years and is very favorable of the conversion back to 2-way, one-way streets can be unfamiliar to people in their operation because there are so few one-way streets in Missoula.
- Brad Dantic – Alps, representing the Florence Building – maximizes parking for both the Tenants and the Customers. The Florence building has up to 200 users per day so maximizing parking will be a key issue. LT from Main Street onto Higgins toward the bridge is dangerous, several accidents there.
- Ian Tooley – MCT – has both the entrance and exit to the facility is located on Main Street, keep that in mind when changing the configuration. On-site parking can become an issue at events, so customers will park off-site and walk to MCT. Pedestrian safety and parking will be of interest. Broadway poses large parking issues. There is also interest in the economic analysis and the outcome in similar communities.
- N Higgins' street scape and lighting have been adopted by the CoM as standard; any improvements should be consistent to these standards.

- Matt Ellis indicated that there is a new development project in downtown one at the intersection of Main & N Pattee, the former Firestone building is being sold and the documents should be completed in the next month. The contact is likely Carl Posewitz (549-6120) -- Later in the day we heard this will be the site of a new Brewery.
- A business owner on Front St near Orange suggested that there would be an opportunity to create a public amenity/plaza area at the Orange intersection.
- A couple people indicated that Front Street between Orange and Higgins is frequently used by bicyclists as a connection between the Milwaukie Trail on Broadway and the bike lanes on Higgins.
- There were a couple of concerns about the crosswalks on Ryman and Front Street. The particular angle of the crosswalks causes southbound pedestrians to face away from traffic. In addition, there are insufficient curb ramps at the south side of Front.
- Linda McCarthy recommended looking at the way finding plan being developed

5:30 PM SESSION

Comment from Ann Emmons and Greg Wood regarding the landscaping at the intersection of Madison it was not 4f funding that would be used for the project. They also asked if Federal monies would be involved and if an environmental assessment (EA) was going to be performed.

A general question was asked if it was of interest for MRA and MDA to encourage owner occupied housing in the downtown area. MRA answered that yes, it was.

Resident at corner of Front and Madison wanted to know if the signal shown in the master plan was still on the table. She has concerns about the impact of flashing light on her property.

In general, there were proponents of the proposed signal at Madison and Front as well as people with concerns. Greg Wood also wondered about a grade separated bike/ped crossing. The development of a roundabout instead of a signal at Madison was also discussed but the grades and right-of-way needs would be undesirable.

A resident suggested removing the paving for the merge lane on the west side of Madison to add width to the informal planter area between Madison and Hartman.

A resident wondered about rerouting the #1 bus line to Broadway to reduce noise impact on residents. They would also like to know any impacts concerning noise pollution and light abatement near the Madison intersection.

A number of residents emphasized the importance of on-street parking.

Residents reported that there is a trash and weed problem on some of the rental properties along Front and Main.

Residents suggested that the connections to and from the Riverfront trail and the Madison under-bridge could be improved. Apparently, some bicyclists take Front Street and travel Westbound, against traffic coming off the trail. A viable option needs to be found for bicyclists to access Front and Main from under the bridge at Madison. There should be a balance between bike lanes, boulevards, lane widths, etc.

There was a discussion about the width of the Boulevards along Front Street and the health of the existing trees. One resident suggested it was time to replant. Ellen pointed out that a tree inventory was

done in 2013 that will be helpful in determining which trees are worth saving and which ones could be replaced if they are beyond their useful life.

A resident expressed concerns about narrowing the road due to narrow driveways on adjacent properties. He currently has to pull out into the far lane of traffic just to get onto the street.

A landowner informed the team of a planned apartment development on the site currently occupied by the former First Interstate drive-thru.

Circulation getting from Kiwanis Park is difficult, especially during the summer. Hartman is a dead end and tends to get pretty backed up during the summer months for recreational access to the park.

A question was asked as to what would happen to the side streets in the area, such as Adams and Jefferson. There is currently congestion along those streets that they would like to see improved but parking is important.

Ellen also mentioned that the development of the Riverfront Park Triangle area has come back and has a good shot at moving forward during the feasibility study project's development. The timing works well and the project team will keep this and future developments in mind as the feasibility study progresses.

Meeting Minutes

Project:	Front/Main Feasibility Study
Subject:	Project Advisory Committee Meeting #1
Date:	Tuesday, April 22, 2014
Location:	MRA Hal Fraser Conference Room

Attendees:	Tod Gass	Ellen Buchanan	Doug Harby
	Michael Tree	Glen Cameron	Ben Weiss
	Dave Gray	Jessica Morriss	Anne Guest
	Mick Johnson	Jon Schick	Lisa Fischer

INTRODUCTIONS

HDR Presentation (Mick Johnson)

- HDR Staff introductions
- Project Overview
- Project Schedule
- Current Activities
- Future Meetings
    - Tentatively May 13 has been identified as Public Meeting #1, location TBD.

General Discussion:

1. The economic analysis of existing conditions may want to examine other metrics other than just number of businesses (e.g., square footage, vacancy rates, etc.)
    a. The BID Inventory may provide more detailed information
2. The study should be cautionary in analyzing Level of Service (LOS). The City and MDT may have different ideas on what future LOS is acceptable. The City doesn't consider a drop in the LOS a deal breaker, if it results in improvements in transit or non-motorized uses.

Project Purpose and Need:

The intention was to solicit from the PAC their thoughts on the needs for the study. The following are issues raised by the group.

1. The study should focus on economic benefits and how to increase foot traffic in the study area to benefit businesses.
2. Downtown parking:
    a. Preserve parking: do not decrease the number of spaces.
    b. Coordinate with parking meter study and final recommendations when available. Reconfiguring parking along couplet may not be detrimental to any newly installed parking meters depending on types of meters implemented.
3. Higher level of comfort and safety for both motorized and non-motorized traffic.
    a. Many one-way violations (motorized and non-motorized)
    b. Traffic is moving too fast

    c. Visibility is an issue for both vehicles and peds.
4. Transit and amenities:
    a. Bus stops need to be located more strategically
    b. Bus benches that have no overhang
    c. Do not hamper fixed route transit
5. Ryman and Front intersection is a problem but has great potential to becoming the gateway to the Caras Park and offer more of a river focus.
6. Mid block pedestrian crossing is problematic (near Zip Auto and Woody/Main)
7. Pedestrian enhancements, green space
8. Sidewalk modifications to enhance use (sidewalk café)
    a. Section of Main Street (west of Higgins) is currently 66' curb to curb. Could look at increased sidewalk widths in this area.
9. Front Street section with three lanes: look at adding angled parking on one side of the street if lane configuration changes.
10. Back-in angle parking was discussed. MRA has looked at this in the past but found that large pickup truck overhang tends to take up additional sidewalk width and exhaust near patio seating is not favorable. Back-in angle parking is also not ideal on higher volume streets.
11. Bulb outs seem to work well, especially on wider streets but need to keep in mind drainage impacts
12. Improve street lighting. There are currently inconsistent lighting levels in the study area.
13. Signal timing seems to be short in areas where the peds consist of seniors.
    a. DA Davidson & Clark Fork Manor have voiced concerns
14. Top Hat is a major generator of concerts in downtown and is very important to downtown businesses – issues that need attention.
    a. Loading for the entertainers is an issue; they leave the bus parked in front for long periods of time.
    b. The equipment is brought in from the front since alley cannot accommodate larger vehicles.
    c. The parking of large vehicles block the adjacent businesses.
    d. Nick Checota operates the Top Hat.
15. Loading zones are used in downtown and deliveries are encouraged in off peak hours and to use alley access.
16. Visitors need to find downtown more friendly/easy to get around.
17. Two-way travel may provide better access for 2 parking structures.
18. Annually there are numerous street closures for events – drivers get frustrated with one-way operations during a street closure.
19. The Front/Main Feasibility Study should examine findings from recent downtown studies:
    a. Missoula College is doing an expansion east of Madison on Broadway and there is a traffic study being done (by PCI) that should be completed in a few weeks.
    b. A draft Madison/Higgins bridge study (DOWL HKM) is available.
20. During reconstruction of the bridges traffic will be detoured and will affect downtown traffic flow. There is potential that 2-way travel would be beneficial and aid traffic movement during construction.
21. Riverfront Triangle master plan will be unveiled in June (area just west of Orange Street)
    a. Hotel, restaurants, medical facility and residences.

Measurables:

1. Increase in use of parking structures
2. Leases of empty spaces

3. Increase in bicyclist compliance with traffic laws
4. Decrease in sidewalk riding by bicycles

Meeting Minutes

Project:	Front/Main Feasibility Study
Subject:	Public Meeting #1
Date:	Wednesday, May 14, 2014
Location:	City Council Chambers, 140 W. Pine St., Missoula, MT

Advertisement for the May 14th, 2014 public meeting #1 was published online on the City of Missoula main calendar as well as on MRA's website. Additionally, an email notice was sent to the PAC and all participants from the January meetings. A notice of the public meeting was sent to the Missoulian; however, they failed to include the advertisement in the Sunday, May 11th, 2014 edition and subsequently an ad was not published in the local paper. The project team decided that outreach efforts were sufficient to continue with the meeting.

A total of 9 people signed in at the May 14th, 2014 meeting. It is estimated that approximately 15 were in attendance.

Mick conducted a short presentation describing the study, introduced the project team, the Purpose and Need for the project, schedule, and current status of the project.

The meeting was opened up for comment in an open-house fashion. Below is a bulleted list of general topics discussed and specific comments received:

- Improved safety
- Bicycle lanes
    - Will the study be examining bike lanes, cycle tracks (protected lanes), or sharrows?
- Aesthetics
- Parking and integration with the 3 parking garages downtown
- Intersection safety
- LOS was of interest
    - Can the LOS decline if the result is a great increase in safety?
    - Can Missoula determine the LOS allowable, or will it be held to MDT's standard?
    - How is MDT going to react?
- Traffic Simulations
    - Will these rely on projections or current conditions
    - Pointed out that some traffic projections show a decline in ADT
- One comment was received regarding the need for a roundabout at Orange/Front/Main
    - It was noted that the City owns much of the adjacent property which could ease ROW acquisition if necessary
- East Main and Adams: Pedestrians can not see both lanes when crossing
- Front and Ryman: The entrance to Caras Park needs improvement
- There was an indication that the intersection of Owen and Front will be changed due to a potential Convention Center being built south of Front and Owen

- The Crow Design Guide from the Netherlands is the guide that should be used instead of NACTO
- Bulb outs or other safety measures at corners, without forcing bikes around them
- Events downtown fill parking
- One alternative should be examined that keeps the one-ways in the eastern residential section. It could save costs by leaving the Madison intersections how they are today.
- Crossing Madison would be nice
- Higgins to a 3-lane section would be nice and should be part of the MDT Bridge study
- Ryman and Front Intersection is troublesome
- Streetscape should follow the design used in the N Higgins and Wyoming Street projects – light poles, trees and curb extensions
- Front Street Parking: could potentially convert some parallel parking spaces to diagonal.
- A Bike Boulevard will be pursued along Broadway once the Russell Street Bridge is completed.
- Study should include an implementation plan and identify funding sources.

One comment was received in the comment box:
"Protected Intersections would add an element of safety lacking on many new infrastructure projects. A great explanation of what I would like to see can be found at protectedintersections.com. Intersections with cycle tracks make for exceptionally safe travel."

Meeting Minutes

Project:	Front/Main Conversion Feasibility Study
Subject:	PAC Meeting #2
Date:	Wednesday, July 16, 2014
Location:	MRA Hal Fraser Conference Room
Attendees:	See Sign In Sheet

	Topic	*Facilitator*
1	Schedule	Mick Johnson
2	Orange Street Intersection Layouts	Mick Johnson
3	Madison Street Intersection Layouts	Mick Johnson

GENERAL NOTES:

Ellen asked the group to think about where we want to send traffic that will be traveling through downtown to access Madison. Which street should be emphasized? For example, if you keep Front Street as the main connection, the intersection at Madison could be signalized. If Main Street was set as the main connection, the residential area along Front would be avoided and traffic could potentially decrease in the Caras Park area to aid in pedestrian and bicyclist safety. Some pros/cons are listed below.

Front Street	Main Street
Merc Building	Library Access
Library Access	Parking Garage Access
Parking Garage Access	Remove traffic from residential area
Signalized intersection at Madison	Wider curb-to-curb distance
Higher pedestrian usage to/from University	

Overall, and based on the preferences of the intersection options presented, the committee was favorable to the idea that the Orange Street option would emphasize Main Street and the Madison Street option would emphasize Front Street, in essence balancing out the traffic volumes via Higgins Ave.

ORANGE STREET INTERSECTIONS:

The parking lot in front of Tangles is a private lot and currently accommodates 9 spaces.

All alternatives presented from here on will take into consideration driveways and business access and will list total number of parking spaces that are either saved or lost from the current condition.

Option 1: Front Street as Primary

- Look at a 2-way left turn median and bike lanes east of the Orange intersection and prior to Main Street tie-in.
- Realign cross walk on north approach to tie into sidewalk along Front, not Main. This could provide additional left turn storage for the SB traffic on Orange.
- The green area could potentially become a land swap for public parking.

- Need to address access to KECI and parking lot.
- Seems like there is a loss of parking in front of the KECI building.
- Bike boxes: Ben commented that the bike boxes that they currently have on Madison and 6th are not very effective. Would prefer not to have them but does like the two-step launch pads for left turning as shown in Option 2.
- Extend double yellow through the curve on Main Street to ensure traffic is in the correct lane at the intersection with Front.

Option 2: Main Street as Primary

- This was the preferred alternative for this intersection.
- Need to revise parking to accommodate one driveway for Tangles access. Tangles has voiced concerns of traffic using their parking lot as a thru street to access Front Street. Since both Main and Front are two-way, they should only need one access point.
- Revise layout to provide access for KECI building and parking lot.
- Will a right on red be allowed for northbound traffic? There is a lot of area between the stop bar and Main Street.
- Realign south crosswalk to tie into the sidewalk on Main Street. This could help decrease the space discussed above for the NB right turning traffic.
- Kevin was concerned with the field of vision for left turning traffic on Front since the signalized intersection at Orange could be outside their line of sight.
- Can we accommodate bike lanes with the angled parking on Main? Ellen did not think so because this matches the current conditions. In addition, bike lanes are not favorable with angled parking for safety.
- Need to address crossing on Woody to get to the south side of Front Street. For example, people traveling south to get to Bigga Pizza will cross at Woody, not at the Front intersection.
- Need to keep in mind any redevelopment of KECI space and the Fox Site Redevelopment.
- Echoing the bike box comment above, Ben like the bike launch pad concept, but didn't feel the other bike boxes would be very effective.\
- Linda noted that this concept (having green space on south side) was included in the Downtown Master Plan due to the higher redevelopment potential of the buildings on the south side. It also seemed more intuitive to have green space on riverside.

A third option should be developed that aligns the intersection with Orange Street in the middle of the two presented.

Ellen brought up the potential redevelopment of the Riverside Triangle that could turn Front Street to a dead end or the main access point for the development. An alternative should be put together that would assume Front Street would not need to tie into Main Street.

MADISON STREET INTERSECTIONS:

Option 1: Right-In/Right-Out Only for Front and Main

- New proposed signal at Adams and Broadway to minimize through traffic in residential area.
- Move cross walk on Madison and Front to south side of intersection. There will be more pedestrians on this side Front Street due to the University and the hotel (Double Tree).
- The angled green markings shown for the northbound bike lane is no longer accepted. Ben mentioned that they just had to replace a few of these around town. The preferred markings are a

white dashed line on the left side NB bike lane that curves into the receiving bike lane on Broadway.
- Overall, the group did not favor the right-in/right-out only movements.

Option 2: Signal at Front/Madison

- This was the favored alternative for the Madison intersection alternatives.
- Change green angled bike lane transition as described in previous option.
- This layout will provide better access to the new East Campus that will be developed east on Broadway. The modeling should take into consideration additional traffic traveling to/from the new campus.
- Shane mentioned that MDT has looked at the Broadway/Madison intersection and could send over their model from when they analyzed removing the dual lefts for WB traffic.

TRAFFIC SIMULATIONS:

- Shane wanted to verify that the modeling was using the PM Peak hour volumes.
- Model should be refined to show how traffic would be distributed on both ends of the project. For example, if Option 2 was used at Orange Street, how would that impact the volumes at Higgins and Madison?
- The simulation at Madison seemed to have light volumes on Front. Please verify and make any modifications for specific options as previously discussed.
- Orange Street intersection simulation shows a signal at the Front/Main connection. Should this be removed from the model?
- Ellen mentioned removing the trucks on Front St from the simulation. (unsure if this was a legitimate comment or not?)

Montana Department of Transportation
PO Box 201001
Helena, MT 59620-1001

Memorandum

To: Shiela Ludlow
Planner

From: Danielle Bolan, P.E.
Traffic Operations Engineer

Date: September 25, 2014

Subject: Front/Main Study - Missoula

Not nearly enough background information was submitted to make any sort of reasonable determination regarding the feasibility of converting Main and Front from one way to two way streets. Synchro models do not provide geometric details, volume redistribution information, or an explanation of the benefits of this change. We have reviewed the Synchro models without this supporting background information and have found several major concerns. The following comments highlight the concerns from the Synchro models, but may not cover all issues with the proposed plan due to the lack of information provided. The comments can be grouped into three categories

- Missing or incomplete information
- Significant changes to existing signal operations along Orange & Broadway
- General Synchro coding errors

Missing or Incomplete Information
These models deleted several downtown intersections that are currently running in coordination – Orange & Spruce, Higgins & Spruce, Higgins & Pine, Broadway & Pattee, Broadway & Ryman, and Broadway & Van Buren. No existing/proposed comparisons about operations on Orange, Broadway, or Higgins can be made since these models are not showing the same extents as the existing models.

Will the new signal at Main & Front even meet signal warrants? Since a left and right turn lane is shown in the model, the warrant study would generally be based on left turning volume only and those volumes are fairly low (AM – 13, NN – 40, PM – 39, WE – 39).

Will the new signal at Madison & Front meet warrants?

Lane configurations at Higgins & Main show three lanes with an EB left, EB shared through/right, and WB through. There appears to be two lanes currently with parking. How are you proposing to make three lanes out of two? Synchro is not a geometric

program, are there any plans for these changes that would show lane configurations and widths and other key design features?

Are there any geometric plans that show the impacts for delivery trucks making turns?

How were the volume redistributions handled? It appears that volumes at Higgins & Front and Higgins & Main were evenly divided with the change from one way to two way streets. Volumes at Broadway & Madison increased NB, SB throughs decreased, SB rights increased, WB lefts decreased, and WB throughs increased. At Orange & Front, the WB rights decreased, and the SB lefts decreased. The SB lefts at Orange & Broadway subsequently increased by the same amount the SB lefts at Orange & Front decreased. How were volume changes at the outer boundary streets determined especially Orange and Madison?

Were the Broadway & Adams Street volumes based on counts?

Significant changes to existing signal operations along Orange & Broadway
PM Plan
The existing PM plan on Orange Street runs a 150s cycle. The original implemented cycle length in 2011 was 120s and was very ineffective resulting in excessive queuing and numerous phase failures. Field tuning produced a much longer cycle of 150s to handle demand on Orange Street. In this model, Orange & Broadway uses a 130s cycle, Orange & Front uses a 85s cycle, and Orange & Spruce is excluded. Based on this it appears that coordination on Orange has been abandoned in the PM peak in order to limit the backup WB between Orange & Front and the new Front & Main signal. MDT does not want to sacrifice operations on Orange by dropping coordination. We also want to maintain that 150s cycle based on field observations. This will most likely cause WB backup between Orange Street and the new signal at Main & Front, since the new signal is located in very close proximity to Orange (approx. 225' east).

In the PM plan at Front & Orange, a 10s split for a left turn arrow leaving a green time of 6s for a volume of 223 vehicles is inappropriate and too short.

The existing PM plan at Broadway & Madison and Broadway & Van Buren runs a 110s cycle. Van Buren is the controlling intersection due to a very heavy EB left turn volume. This model shows a 95s cycle at Madison but excludes the Van Buren intersection. Abandoning the coordination on Broadway between these two intersections is not an option during this time of day and it is not clear whether a 95s cycle will work at Van Buren.

The Synchro model also shows a 95% NB RT queue from Broadway & Madison through the new Madison & Front intersection.

NN Plan
The existing NN plan on Orange Street runs a 120s cycle. Cycle lengths in your model are 90s at Broadway & Orange and 85s at Front & Orange. It appears that coordination

along Orange has been abandoned in order to limit queuing WB between Orange and the new signal at Main & Front. MDT does not want to sacrifice operations on Orange by dropping coordination.

A 10s split for the WB left turn phase at Orange & Front with a 200 vph volume is too short and inappropriate.

The 90s cycle at Broadway & Orange is too short with left turn phases that are problematic for WB and NB especially.

Broadway & Higgins timings have been switched from favoring Broadway to favoring Higgins. Since the volumes at this intersection have not changed in your model, it is unclear as to why this switch would need to be made.

WE Plan
Existing cycle length is 90s on Orange Street. This model shows 85s at Front & Orange. It appears that coordination is being abandoned on Orange and that is not acceptable.

General Synchro Coding Errors
In all models, there are some confusing volume and lane things happening at Node 81 (on Front St between Orange & Higgins). Headed NW there is a right turn only lane with no volume into a short side street approach but no through lane. The volume from Higgins gets dropped at this node and then reappears at the new Main & Front signal. As it exists now, it appears that Front between Ryman and Higgins is a two way stretch with two lanes headed EB and one lane headed WB that drops at Ryman. The Synchro file makes it very unclear as to the new lane configuration here.

At the new Front & Main signal, phase 2 should be C-Max as well as Phase 6. Phase 2 needs to be a protected phase for the NWT (not permitted) or vehicles will not proceed through the intersection.

Pedestrian timings are generally inappropriately short at the new signalized intersections. Particularly at Madison & Front during the PM plan, split times for phase 4 and 8 are likely too short to accommodate realistic pedestrian walk and flashing don't walk times.

copies: Ed Toavs
Shane Stack
Glen Cameron
Stan Brelin
Julie Wotring

Memo

Date:	Thursday, September 25, 2014
Project:	MRA Front Street/Main Street Two-Way Conversion Feasibility Study
To:	Sheila Ludlow, MDT
From:	Mick Johnson, HDR
Subject:	**Air Quality Conformity Analysis // MOVES model results for the Two-way Conversion**

One component of Front Street/Main Street Two-Way Conversion Feasibility Study is to examine the effects of the proposed two-way conversion on air quality. Projected total air emissions from the two-way conversion for the year 2040 were modeled using the U.S. Environmental Protection Agency's (EPA) MOVES 2010a (Motor Vehicle Emission Simulator model). A more current MOVES model is available; however, the air emission projections presented in the 2012 Missoula LRTP Air Quality Conformity Analysis utilized the MOVES 2010a model and it was determined that the same model version should be used to obtain results that are directly comparable to the 2040 projections published in the 2012 Missoula LRTP.

LSA Associates, Inc. retains an on-call service with the Missoula Office of Development Services for air quality and traffic modeling services. LSA was subcontracted for the MRA project to run the air quality conformity analysis using the MPO's TransCAD model inputs for the two-way conversion scenario. LSA provided results of the MOVES analysis and the data has been incorporated into the conformity determination tables (Tables 8-1 and 8-2) as presented in the 2012 Missoula LRTP to provide a comparison of 2040 projections for the existing one-way condition versus the proposed two-way condition.

Table 1: Carbon Monoxide Emission Projections for 2040, One-Way to Two-Way Conversion

	2012 LRTP Results				*2014 Two-Way Conversion Results*		
Year	**2010**	**2020**	**2030**	**2040**	**2040 Two-way Conversion**	**Δ 2040 One-way to 2040 Two-way**	**2040 % Change**
Budget (tons/day)	43.22	42.67	42.67	42.67	42.67	NA	NA
Seasonal VMT	991,962	1,193,691	1,395,420	1,597,149	1,635,148	37,999	2.4
Projection (lbs/day)	72,808	51,591	43,827	42,505	43,034	529	1.2
Projection (tons/day)	36.40	25.80	21.91	21.25	21.52	0.26	1.2
Conformity (Projection < Budget?)	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Table 2: PM10 Emission Projections for 2040, One-Way to Two-Way Conversion

Year	*2012 LRTP Results*				*2014 Two-Way Conversion Results*		
	2010	**2020**	**2030**	**2040**	**2040 Two-way Conversion**	**Δ 2040 One-way to 2040 Two-way**	**2040 % Change**
Budget (lbs/day)*	16,119	16,119	16,119	16,119	16,119	NA	NA
Seasonal VMT	860,118	1,025,386	1,190,653	1,355,921	1,400,925	45,004	3.3
Road Dust rate (grams/mile)	5.0310	5.0526	5.0682	4.8540	4.3545	0	-10.3
Projection: Tailpipe Particulates (lbs/day)							
Gpm (gasoline particulates)	2	2	2	2	2	0	0.0
Ec (diesel elemental carbon)	368	73	38	30	31	1	3.3
Oc (diesel organic carbon)	582	198	166	178	184	6	3.4
Pbr (brake particulates)	513	615	720	826	853	27	3.3
Pti (tire wear particulates)	20	24	28	32	33	1	3.1
Total Tailpipe Particulates (lbs/day)	**1,485**	**912**	**954**	**1,068**	**1,103**	**35**	**3.3**
Projection: Road Dust Particulates (lbs/day) ****							
Deicer Areas	5,305	6,274	7,242	8,211	9,509	1,299	15.8
Washed Sand Area	1,858	2,313	2,769	4,425	3,570	-856	-19.3
Unwashed Sand Area	2,379	2,837	3,296	1,877	373	-1,504	-80.1
Total Road dust Particulates (lbs/day)	9,542	11,424	13,306	14,513	13,452	-1,061	-7.3
Total Parcticulates (lbs/day)	11,027	12,336	14,260	15,581	14,555	-1,026	-6.6
Conformity (Projection < Budget?)	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

** Includes road dust, elemental carbon, organic carbon, gasoline exhaust particulates, tire wear, and brake wear*
*** Projection= Emission Rate x Seasonal VMT, then divide by 453.5 to convert to pounds*

The two-way conversion results in a minor increase in Seasonal VMT for both the CO and PM10 modeled areas. Results from the MOVES model show a minor increase in the projected amount of CO emissions for the year 2040. The 2040 projections for the two-way conversion result in an increase of 529 lbs/day (0.26 tons/day), or a 1.2% increase, of CO emissions over the one-way condition. Overall, the projected CO levels are within the emissions budgeted for the Missoula area and pass the CO conformity determination.

PM10 projections for the 2040 two-way conversion show a decrease in total particulates over the one-way condition. While total tailpipe particulates increase by 3.3%, the total particulates (tailpipe and road dust combined) show a 6.6% reduction over the one-way condition. Again, the projected PM10 levels are well below the budgeted levels for the Missoula area and pass the conformity determination.

Meeting Minutes

Project:	Front/Main Feasibility Study
Subject:	Project Advisory Committee Meeting #3
Date:	Tuesday, October 07, 2014
Location:	MRA Hal Fraser Conference Room

Attendees:	Tod Gass, MRA	Ellen Buchanan, MRA	Kevin Slovarp, City
	Ben Weiss, City	Dave Gray, City/MPO	Shane Stack, MDT
	Danielle Bolan, MDT	Julie Wotring, MDT	Sheila Ludlow, MDT
	Vicki Crnich, MDT	Jessica Morriss, City/MPO	Anne Guest, City Parking Commission
	Mike Haynes, City	Jon Schick, HDR	Lisa Fischer, HDR
	W.D. Baldwin, HDR	Mick Johnson, HDR	Josh Shippy, HDR*
	Linda McCarthy, Dwntn Mso Partnership		

* Indicates participation via conference call

INTRODUCTIONS: Brief introductions of attendees, project overview, study area, purpose and need statement

Air Quality MOVES model results:

- The results from the AQ analysis were presented to the PAC
- In general all participants were comfortable with the level of analysis and results
- It was noted to keep in perspective that the MOVES analysis is a regional model that was conducted for a local project. The results may not be very revealing due to the scaling discrepancy.
- The AQ results from the Synchro analysis were brought up. The project team discussed that the results indicated a general increase in emissions ranging from 3-8% approximately. These results don't take into account the potential reduction of emissions on other roads (Broadway, in particular) where traffic volumes may see a reduction due to the 2-way conversion.
- Shelia Ludlow agreed that the AQ results from the MOVES analysis were acceptable.

Orange Street intersection

- The revised Orange Street intersection concept was presented
- Ben Weiss asked why we removed the bike boxes from the previous concept. It was brought to his attention that his previous comment from the July PAC meeting was to remove them. His current view is that he likes them and encourages their use; however, there may be an impact to traffic flow due to the removal of the right on red movement if the boxes are included.

- The PAC agreed that if LOS was affected by the bike boxes, then they should not be included.
- The PAC asked whether Synchro was able to analyze the inclusion of the bike boxes. WD pointed out that no, the model isn't that sophisticated. Subsequent follow-up after the meeting: Synchro does not allow for the coding of bike boxes. For the southbound left-turn bicycle movement at Orange and Main, the two-stage bike box does not present any concern for the analysis because the intersection geometry separates the bicycles from vehicular traffic. For the westbound approach of the intersection, the addition of a bike box would prohibit vehicular traffic from making a right turn on red (RTOR). Level-of-service (LOS) does not degrade with the RTOR removal. Westbound queue lengths on Main do show a minimal increase of approximately one car length for the AM peak hour, three car lengths for the noon peak hour, and two car lengths during the PM and weekend peak hours.
- Kevin Slovarp asked about the PAC's previous idea of exploring a third option that aligns the intersection with Orange Street in the middle of the two options presented. Lisa pointed out that the geometrics wouldn't work well and the option was not forwarded.
- Overall the PAC was pleased with the current concept.
- It was noted that this intersection sees a high peak in the AM more so than the PM. The model should consider the AM volumes as well. HDR has run these for AM, noon, PM and weekends. We will provide the results for all of these in the traffic memo.
- There was discussion on the signal warrant where Front joins Main Street. At present, it was noted that the intersection uses a stop sign. Based on 2040 model, a signal would likely be warranted. Would it make sense to include it now, in order to better coordinate E-W signalization?
- The PAC would like to see the total number of parking spaces gained and lost for each option. It may also be valuable to note any private parking space changes vs. metered parking spaces, for example at the Tangles parking lot.

Madison Street intersection:

- The revised Madison Street intersection was presented to the PAC.
- It was asked if additional angled parking could be created on the west side of Madison in lieu of the wide green space buffer. It was pointed out that the high traffic volumes on Madison likely preclude this idea. Also, angled parking requires a buffer for vehicles to back into, which would not be available on Madison.
- It was reiterated that parking in this vicinity of the study area is important. The MCT frequently has events that max out their available spaces.
- Opportunities to add parking in this vicinity should be explored. Parallel parking on Madison could an option.
- The current concept graphic are missing crosswalks on Broadway (north and east approach). These should be included. Subsequent meeting follow-up: These were both included in the analysis. They were just missing from the graphic.

Higgins Avenue Option A

- Higgins Ave Option A was presented. This is the 4-lane option that was advanced and modeled.
- The PAC had questions on the current left turn prohibitions during peak hours and whether that was modeled. It was pointed out that turn restrictions were not modeled. If there is not a reduction of LOS at these intersections during the peak hour, then the left turn lane restriction would not be necessary.
- MDT discussed existing safety issues at the intersection. The project team should keep bicyclists visible at the intersections. This may require taking a closer look at sight distance and parking spaces near the intersection.

Higgins Avenue Option B & C

- These 2 concepts were presented; however, it was pointed out the 3-lane Higgins configuration resulted in a reduction in LOS and were therefore not carried forward..
- It was asked what the LOS decline actually was. A minor increase in delay? Or a full LOS level decline? It was pointed out that the decline resulted in a full letter decline, which appeared unanimously agreed upon that that was an unacceptable impact.
- The Option C cycle track option wasn't favored. There are current safety issues with that configuration on North Higgins where the track empties out at the intersection (conflict point) and MDT has recently made some minor modifications to address this.
- MDT has a safety improvement project at the Broadway and Higgins intersection to add a Protected/permissive left-turn. The project is currently scheduled to be constructed in 2016.
- The consensus was made that a 3-lane Higgins should not be carried forward due to the reduction in LOS.

Front Street/Ryman Street intersection

- Overall this concept was viewed favorably. The squaring of intersections and use of curb extensions would appear to improve safety.
- The current offset from Caras Park to Ryman may require a 'turkey track' striping to make the movement more obvious to vehicles.
- The removal of the one parking lot access point (from Front) on the NW corner of the intersection seemed reasonable. There is still access from Ryman.

General Comments:

- MDT withheld comment on the model until they had an opportunity to review the updatedsubmittal.
- MDT would also like to see the lane configurations for each alternative. HDR has provided them with the plan views of the project area. Cross sections showing the proposed lane widths and the existing curb-to-curb dimensions will be included in future exhibits/submittals for review.
- Ellen asked about the inclusion of the existing and proposed fixed route transit into the analysis.

- Overall the design vehicle for intersection improvements needs to be considered to ensure large truck access. The proposed bulb outs will need to accommodate fire trucks and business delivery trucks. Also, events at Caras Park often require large trucks, which typically access the park from the Front Street/Ryman Street intersection.

Montana Department of Transportation
PO Box 201001
Helena, MT 59620-1001

Memorandum

To: Sheila Ludlow
Planner

From: DCB Danielle Bolan, P.E.
Traffic Operations Engineer

Date: October 31, 2014

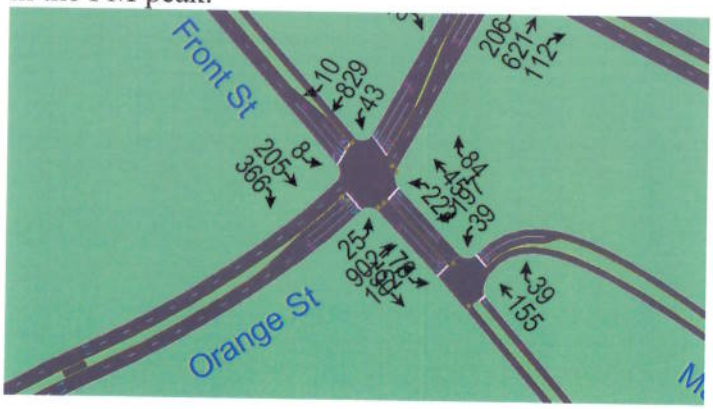
Subject: Front/Main Study - Missoula

We have reviewed HDR's October 30, 2014 submittal of the comment responses, updated Synchro files, and conceptual intersection layouts and typical sections for the Front/Main Conversion Study in Downtown Missoula and offer the following comments.

HDR Responses to MDT's 9/25/14 memo

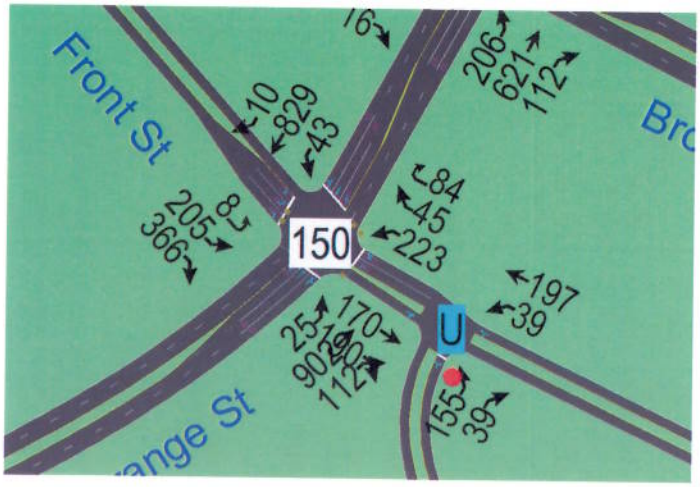
Comment #3 regarding signal warrants at Main & Front
MDT questioned signal warrants at this intersection due to the configuration that was originally submitted to us. The configuration has changed considerably since the first submitted Synchro file.

The first submittal showed a left and right turn lane with Main tee-ing into Front. Warrants would be based on the left turn volume which was fairly low with 39 vehicles in the PM peak.



This latest submittal shows a shared left and right lane with Front tee-ing into Main. With the existing layout and geometrics, this configuration makes more sense. The volume on Front is then much higher at 194 in the PM peak which may be more likely to meet warrants sooner than the 2040 timeframe. MDT needs to see how this intersection functions both as a stop controlled intersection and as a signalized intersection to

determine the feasibility of this concept.



Comment #4 regarding signal warrants at Madison & Front
There is no "unusual case" that would justify the use of the Peak Hour Warrant at this location. Since this location may not meet warrants initially, MDT requests both a stop controlled and signalized analysis at this intersection.

Comment #6 regarding truck turning movements
We are very disappointed to hear that HDR will not address truck turning movements as requested in the initial meeting with HDR and MDT Traffic and Safety. The issue of truck turning movements and the potential for operational and safety concerns due to constrained geometrics was first brought to the attention of the consultant when we met in January and was raised in our previous set of written comments. In particular MDT is very concerned that the proposed changes as considered by this study in conjunction with the existing constrained geometrics may result in commercial traffic encroaching into opposing traffic movements resulting in both safety and operational issues (crashes and/or potential lockup of the intersection). MDT design philosophy in regards to new projects with constrained geometrics is that the proposed improvement options will not make it worse than current conditions allow. In addition the project should strive to improve operations for all vehicles served by the roadway network in question.

To be clear MDT is not asking for a major change in scope for this project other than to simply verify current truck traffic using the facility now is able to use the same roadways after the changes take place. This can be accomplished by providing existing plan views showing what design vehicles are accommodated now and verifying that the same (or bigger) design vehicles are accommodated with the proposed changes. If the existing design vehicles are not accommodated with the proposed changes then we consider this to be a fatal flaw in the design. Again MDT raised this issue with HDR personnel at the very beginning of this project, therefore we do not consider our comment to be any change in scope for this project. We look forward to HDR providing the truck turning paths as previously requested.

Comment #19 regarding the new Front & Main signal
In order to fully assess the feasibility of this concept, we would be looking at your 2040 scenarios. Are 2040 Synchro scenarios to be provided showing future volumes and signal timings?

Synchro Files

AM Peak Model
At Orange & Front/Main, the SER movement still allows for RTOR. If the bike box remains and RTOR is prohibited, the LOS for this movement drops from an existing A to a D during this time period.

NN Peak Model
At Orange & Front/Main, the overall intersection LOS degrades from a B to a C. This primarily looks like a difference between the directions of the NWLT vs WBLT in the two models. A straight comparison between the two does yield a worse LOS in the HDR model, but relooking at the phasing and directions may help this situation.

Also at this intersection, the NWL 95% queue backs up through the new intersection at Main & Front.

At Orange & Front/Main, the SER movement still allows for RTOR. If the bike box remains and RTOR is prohibited, the LOS for this movement drops from an existing A to an E during this time period.

PM Peak Model
At Orange & Front/Main, the existing model that was provided to HDR showed the WB LT as a protected only movement. This is not correct - it is actually a protected/permissive movement. This was the only time period to show it as protected only. HDR's model accurately showed the existing P/P phasing. When the existing model is corrected to show a P/P WB LT, the LOS for this intersection in the existing configuration is a C. The LOS then degrades to a D in the new configuration.

The WB LT 95% queue backs up through the new intersection at Main & Front.

At Orange & Front/Main, the SER movement still allows for RTOR. If the bike box remains and RTOR is prohibited, the LOS for this movement drops from an existing E to an F- during this time period.

WE Peak Model
At Orange & Front/Main, the overall LOS degrades from a B to a C.

At Orange & Front/Main, the SER movement still allows for RTOR. If the bike box remains and RTOR is prohibited, the LOS for this movement drops from an existing A to a D during this time period.

Conceptuals and Typical Sections

MDT requests typical sections that show the existing lane configurations, not just the curb to curb width.

Orange & Main

How is the existing curb to curb distance 66' on the east approach? There is one left turn lane and one shared through and right lane with parking on the right side only.

Higgins & Front

Currently in the eastbound direction there is a right turn only lane and a shared through and left lane. The new conceptual drawing shows a left turn only lane and a shared through/right lane. How much of a shift across the intersection is this for the through movement from the outside lane?

Is the existing northbound curb to curb distance greater than 66' with the NB right turn lane?

Madison & Main

The conceptual shows three lanes NB with the right turn lane developing in advance of the intersection. The Synchro models show two lanes NB with the outside lane turning into the right turn lane. This may be an issue with coding in Synchro only though.

Madison & Front

The east approach curb to curb distance appears closer to 32' than 38'. What are the proposed lane widths with this narrower width?

For the north approach, the conceptual shown with the southbound right turn lane would eliminate the parking that currently exists on the short one way NB frontage road.

copies: Ed Toavs
Shane Stack
Glen Cameron
Stan Brelin
Sarah Karjala
Julie Wotring

Meeting Minutes

Project:	MRA Front & Main Feasibility Study
Subject:	Downtown Missoula truck turning movement/design vehicles for intersection treatments
Date:	Monday, January 05, 2015
Location:	Conference Call
Attendees:	Sheila Ludlow – MDT Danielle Bolan – MDT Stan Brelin – MDT Vicki Crnich – MDT Sarah Karjala – MDT Shane Stack – MDT Ed Toavs – MDT Kevin Slovarp – City of Missoula Jessica Morriss – City of Missoula Dave Gray – City of Missoula Mick Johnson – HDR Oliver Kuehne – HDR Jon Schick - HDR

The purpose of this conference call was to determine the truck turning radii that needs to be accommodated as part of the Feasibility Study (study). This discussion pertains to the intersection crosswalk improvements being considered in the Feasibility Study. The study is looking into possible incorporation of curb extensions/bulb-outs at intersections within the Study Area for the purpose of making the pedestrian more visible, to reduce the crossing distance, and to better identify the intention of the pedestrian.

Preliminary analysis has shown that current intersection configurations allow for an SU30 (single unit 30 feet) design vehicle.

On routes maintained by the Montana Department of Transportation the intersections should be able to accommodate the largest Missoula Fire Apparatus. No one on the call could identify what size vehicle that is. MDT will not allow curb extensions/mountable curbs on state-maintained routes because of safety concerns.

On routes maintained by the City of Missoula, even though the route is part of the Federal Aid Urban System, MDT would defer to the City to make the design vehicle determination. The City of Missoula prefers that the current condition be maintained; however, that can be accommodated with the use of curb extensions that are designed to allow vehicles to drive over them in a turning movement. The City would prefer that in those instances where an extension is built that the pedestrian have some form of protection, like a bollard to ensure their safety. MDT suggested that truncated domes may be required around the entire curb.

As a side note, MRA has encountered this issue on the North Higgins/Broadway Street intersection improvements. Curb extensions placed on Broadway were built to handle overtracking of trucks onto the curb. Similar intersection treatments made for N. Higgins/Broadway could potentially work within the Study Area.

MDT is agreeable with that recommendation but wanted to make sure that anything that is determine to be acceptable meet the new standards of the PROWAG and meets ADA requirements. MDT is further ok with curb extensions/non-mountable on MDT routes as long as they accommodate the largest vehicle that is currently able to make the turn.

Meeting Minutes

Project:	Front / Main Two-Way Conversion Study	
Subject:	Status Meeting with MRA	
Date:	Wednesday, January 14, 2015	
Location:	MRA Conference Room	
Attendees:	Ellen Buchanan	Mick Johnson
	Tod Gass	Lisa Fischer

Topic

Design Vehicle and Curb Extension/Mountable Curb on MDT Routes

- Mick shared recent correspondence with MDT regarding the use of mountable curb and curb extensions along MDT routes. MDT's position is as follows:

  MDT will not allow curb extensions with mountable curbs (to accommodate turning movements) on state-maintained routes because of safety concerns

  MDT will allow curb extensions on state routes as long as they accommodate the largest design vehicle.

- The current assumed design vehicle for the study is the largest emergency vehicle.
- The width of Madison Street at the intersection with Front Street is particularly of interest. Due to the increased width at this location, curb extensions would be ideal. HDR will look into additional design alternatives that will be allowed by MDT to include as options in the report. *(Mick to discuss with MDT)*
- HDR will discuss the design vehicle being used for the Russell Street project since the proposed design includes curb extensions. *(Lisa)*

On-Street Parking

- HDR shared the total amount of on-street parking spaces gained vs. lost for the preferred alternative at each intersection. Overall there is a loss of 24 spaces.
- HDR will set up a meeting with Anne Guest and Ellen to discuss parking. *(Lisa)*
- HDR will discuss the option of utilizing the area south of Main Street and west of the proposed Front Street intersection for additional parking. *(Mick)*
- HDR will coordinate with the Missoula Parking Commission for a total number of parking spaces within the study limits. *(Lisa)*

Tangles Parking

- HDR will set up a meeting with Tangles to discuss the parking impacts with the preferred intersection layout.
- This meeting should take place prior to the next scheduled PAC meeting.

Upcoming Meetings

- Next PAC Meeting is scheduled for February 3 at 12:00pm. MRA will provide pizza for lunch.
- Next Public Meeting is scheduled for February 19 at 6:00pm. The City Council Chambers has been reserved.

missoula parking commission

To: Lisa Fischer
Transportation Engineer
HDR

From: Anne Guest
Director of the Missoula Parking Commission

Date: February 3, 2015

RE: Front-Main Two –Way Conversion

The Missoula Parking Commission (MPC) plays a very important role in the success of Downtown Missoula and helps to ensure continuation of its vibrancy for years to come. Our on-street parking is one of our most important assets that needs to be well managed. The Parking Commission not only understands that extremely well, we greatly respect it.

The current project to convert Front St. and Main St, from one-way traffic flow to two-way could result in the loss of approximately 24 parking spaces. Fortunately both Front and Main Streets are very wide for a downtown setting. The Parking Commission staff has looked at the impact of this project and has come up with a few suggestions to help mitigate the loss of these spaces.

Overall Project Area:

Generally speaking, we would like to explore the possibility to establish a combination of angle and parallel parking on both sides of the Front and Main Streets.

- 100 E. Front — On the south side, east of the turn lane will stay parallel parking
  On the north side, east of the turn lane will stay angle parking (as is)
- 200 E. Front — On the south side, east of Park Place angle parking to the corner (12)
  On the north side, east of the Loading Zone by Elks angle parking (10)
- 300 E. Front — Remove parking on the south side
  Add angle parking on the north side (10)
- 400 E. Front — Same as 300 E. Front (10)
- 500 E. Front — Same as 300 E. Front (10)

==========

- 100 W. Front — On the south side, angle parking west of the turn lane (18)
  On the north side, angle parking west of the turn lane (16)
- 200 W. Front — On the north side, angle parking (14)
  On the south side, angle parking (32)
- 300 W. Front — On the north side, angle parking (6)
  On the south side, angle parking (as is)

==========

- 100 E. Main — On both sides of the street, angle parking (as is with turn lane)
- 200 E. Main — On both sides of the street, angle parking (as is)
  On south side remove crosswalk (4)
- 300 E. Main — On both sides of the street, angle parking (as is)
- 400 E. Main — Remove parking on the south side
  Add angle parking on the north side (10)
- 500 E. Main — Same as 500 E. Main (10)

==========

- 100 W. Main — On both sides, angle parking (as is with turn lane)
- 200 W. Main — On both sides, angle parking (as is)
- 300 W. Main — Remove parking on the south side.
  Add angle parking on the north side (10)

Evaluate the following:

Ryman – north east corner shorten the Yellow Zone (1)

100 Jefferson & 100 Washington – parking on both sides of the street

Meeting Minutes

Project:	Front/Main Feasibility Study
Subject:	Project Advisory Committee Meeting #4
Date:	Tuesday, February 03, 2015
Location:	MRA Hal Fraser Conference Room

Attendees:	Tod Gass, MRA	Ellen Buchanan, MRA	Kevin Slovarp, City
	Ben Weiss, City	Dave Gray, City/MPO	Shane Stack, MDT
	Linda McCarthy, Dwntn Mso Partnership	Jessica Morriss, City/MPO	Anne Guest, City Parking Commission
	Mike Haynes, City	Mike Tree, Mountain Line	Danielle Bolan, MDT*
	Sheila Ludlow, MDT*	Vicki Crnich, MDT*	Mick Johnson, HDR
	Jon Schick, HDR	Lisa Fischer, HDR	Josh Shippy, HDR*

* Indicates participation via conference call

Introductions: Brief introductions of attendees, project overview, study area, purpose and need statement.

Orange Street Intersection (Option 2)

- No modification to the intersection configuration was required to accommodate turning movements of buses.
- Provide access to Tangles from Front Street
- Access to KECI provided
- Bulb-outs provided to decrease the crosswalk distance on Woody Street.
- Bike lanes on Orange Street have not been modified from the current condition.

Madison Street Intersections (Option 2)

- Current conditions at the Madison Street and Front Street intersection do not provide enough room for larger right-turning vehicles. The NB right turn movement needs to swing into the WB left turn lane.
- No changes are proposed for the southeast corner of the Madison/Front intersection.
- In order to improve this corner the eastbound lane of Front Street would need to be widened by rotating the curb to be parallel with the existing sidewalk.
- Main Street: Raised median shown on the east end of Main Street from Washington to Madison should be removed. Snow removal and ownership/maintenance would be a concern. The raised median could also add access issues along this section of Main Street, which is similar to problems MRA has run into on other projects.
    - Look at adding angled parking or dedicated bike lanes on this section of Main Street.

Higgins Avenue Intersections (Option 1 Revised)

- Curb extensions were revised or removed in order to accommodate a standard bus (40-ft) or largest emergency response vehicle (fire truck) on all MDT routes.
- MDT will not allow curb extensions with mountable curbs (to accommodate turning movements) on state-maintained routes because of safety concerns.
- Mountain Line routes within the study area are summarized in the table below. There is only one route that runs along Higgins Avenue. The current route map and schedule can be found online at: www.mountainline.com/maps-schedules/overview/

	Mountain Line Routes
Front Street	1, 7, 12
Main Street	1, 12
Orange Street	7, 9
Higgins Avenue	6
Madison Street	1, 12

- The current Mountain Line routes use Pattee Street or Ryman Street to get from Main to Front Street instead of Higgins Avenue.

Front Street/Ryman Street Intersection

- No modification to the intersection configuration was required to accommodate turning movements of buses.
- The intersection is squared up, shortening the pedestrian crosswalks on Front Street and curb extensions are added.
- Dedicated bike lanes are on Front Street from Orange Street to Higgins Avenue.
- There is some concern to the shared spaced for left turning traffic at the intersection, especially the NB and SB left on Ryman and the Caras Park access.
- The NB left turning movement may not be needed at the Caras Park access. HDR will examine removing this movement and forcing vehicles leaving the Caras Park area either straight onto Ryman or right onto Front Street. Business access should also be examined. The goal is to improve or maintain business access through the project area.
- There are preliminary plans/discussions to remove the raised median at the Caras Park access and shift the northbound existing traffic to the west. The sidewalk along the east side would be widened to improve pedestrian access to the park.

Traffic Model Update:

- HDR has submitted the updated traffic model and comment responses to MDT for review. Review comments are expected within the next two weeks.
- A summary of the existing one-way and two-way conditions was presented. HDR also summarized the finding from the model using 2040 traffic projections.
- Southbound left turns on Higgins Avenue at Front Street are currently not allowed between 4pm and 6pm. HDR redistributed the traffic when analyzing the two-way operations and did not include this restriction. HDR will review the left turning volumes at this intersection to verify.
- The growth factor used for the 2040 traffic volumes was 39%, which translates to a 2-3% annual growth rate. MDT agreed with HDR's approach for future traffic conditions.

Parking Analysis:

- Tangles Private Parking: The preferred alternative for the Orange Street intersection results in the loss of two private parking spaces.

- A new parking lot could potentially be located within the City right-of-way between Orange Street and Front Street, south of Main. Approximately 16 spaces could be added at this location.
- Madison Street Parking: There is a loss of seven parallel parking spaces currently located on the existing frontage road between Front Street and Main Street. Parallel parking spaces could be introduced along SB Madison Street if approved during final design.
    - This parking is typically used by residents in the neighboring apartment complex.
- Main Street – Washington to Madison: HDR will look into adding angled parking on one or both sides of Main Street with the removal of the raised median.
- Higgins Intersections: The majority of parking spaces that are lost within the project limits are from the two intersections with Higgins Avenue. By adding a dedicated left turn lane Front and Main Street approaches, the angled parking on the north side of the street is replaced with parallel parking.
- Future plans for neighboring development should be reviewed for added parking. Sites such as the Riverside Triangle could be adding a number of public parking spaces.
- Anne Guest provided a summary of areas that parking spaces could be added. For example, by removing the parallel parking on the south side of the street, angled parking could be added to the north side along the 300 and 400 blocks of Front and Main. HDR will look at the existing curb-to-curb distances throughout the project to identify areas that are feasible. Travel lane alignment at the intersections will need to be maintained.
- The final report will discuss the overall percentage of parking loss/gained with the two-way conversion.

General Comments:

- Economic Analysis: By data from past two-way conversion projects in downtown areas, the following economic trends were identified.
    - Increase in sales:
        - Approximately 10% increase over three years due to increased vehicle traffic visibility.
        - Approximately 3% increase over three years due to increased bicycle and pedestrian traffic.
- Air Quality: The air quality analysis was presented in the previous PAC meeting. There was an overall increase in emissions of 1%, which is within the emissions budget for Missoula.
- Crash Data: HDR has received the crash data from 2009-2013 for the project area. The crash study area included Broadway from Russell Street to Van Buren Street.
    - No intersection within the study area had more than 50 crashes within the 5 year period.
    - There were no identified crash patterns.
    - The majority of accidents that were reported were bicycle accidents.
    - HDR will review the crash data to identify any accidents resulting from vehicles traveling the wrong way on a one-way street.

Next Steps:

- Final Report
- Public Meeting in March

Montana Department of Transportation
PO Box 201001
Helena, MT 59620-1001

Memorandum

To: Sheila Ludlow
Planner

From: DCB Danielle Bolan, P.E.
Traffic Operations Engineer

Date: February 10, 2015

Subject: Front/Main Study - Missoula

We have reviewed HDR's January/February 2015 submittal of updated Synchro files, response to comments, and conceptual intersection layouts for the Front/Main Conversion Study in Downtown Missoula and offer the following comments.

Our primary concern is to ensure that the conversion does not have a significant impact on delay for vehicles travelling on the mainlines (e.g., Orange St, Broadway St, Higgins Ave, and Madison St). As shown in the Synchro files, the conversion of Front and Main can be accommodated without significant impact to mainline traffic. For the most part, the proposed layout maintains the existing LOS at intersections in the study area.

However, we do foresee issues at the proposed intersection of Front/Main, due to its close proximity to Orange/Front (200 ft. spacing). The westbound queue at Orange/Front is expected to extend into the the intersection of Front/Main with 2014 traffic volumes (queue length of 211 ft. in the PM peak). Any growth in traffic at that approach would cause the westbound queue to extend past and block the Front/Main intersection, resulting in high delay for northbound Front Street. The 2040 westbound queue at Orange/Front is expected to be 591 ft. in the PM peak. This queuing will cause issues regardless of the traffic control implemented at Front/Main (i.e. signal vs. stop-control).

The proposed Front/Main intersection represents a known issue with the proposed design where problems could be expected to surface early on after project completion. Careful consideration and weighting should be given to this issue which would severely impact travel on Front Street.

Lastly, we wanted to make note that the proposed layout at Front/Madison is expected to incur high delay to the Front Street approaches with a two-way stop-controlled (TWSC) intersection. With TWSC, the intersection PM peak LOS would drop from B to F with the proposed layout, due to sidestreet delay. Signalization of the intersection would be needed to maintain the existing LOS; further study is recommended to determine if sidestreet traffic volumes warrant a signal with the proposed layout.

copies: Ed Toavs
Shane Stack
Glen Cameron
Stan Brelin
Sarah Karjala
Julie Wotring

Meeting Minutes

Project:	Front/Main Feasibility Study
Subject:	Project Advisory Committee Meeting #5
Date:	Thursday, March 19, 2015
Location:	MRA Hal Fraser Conference Room

Attendees:	Tod Gass, MRA	Ellen Buchanan, MRA	Dave Gray, City Dev. Services
	Ben Weiss, City	Corey Aldridge, MUTD	Jeff Logan, MUTD
	Shane Stack, MDT	Sheila Ludlow, MDT*	Matt Ellis, MDA/MPC
	Anne Guest, City Parking Commission	Jon Schick, HDR	Lisa Fischer, HDR
	Mick Johnson, HDR		

* Indicates participation via conference call

Introductions: Brief introductions of attendees

Summary of Study Findings:

- Mick provided a brief overview of the Study findings, confirming that, based on analyses and results described in the document, that the project team believes the conversion from one-way to two-way streets in Downtown Missoula is feasible.

Review of Comments

- Mick reviewed the comments submitted by MDT and provided responses.
- In general, all comments have been accepted and incorporated into the draft document.
- Crosswalks: The Study currently recommends and shows on the graphics use of continental crosswalks. MDT commented that continental crosswalks are only to be used on federal-aid routes at school crossings. MRA pointed out that continental crosswalks are used on North Higgins. MRA's desire is to continue a consistent treatment and use them, if possible. The MUTCD recommends the use of continental crosswalks where heavy pedestrian activity is present. It may require getting a design exception. MDT will discuss internally and provide an answer early the week of 3/23.
- Parking: The report needs to address areas where parking could be potentially gained off-site. The recommendations need to include this discussion as to provide an anticipated response to public concern over loss of parking. HDR will send a draft of the revised section of the report discussing parking to Anne Guest for review and will incorporate the total number of parking spaces lost/gained including the offsite recommendations.

- The report will also be revised to include the discussion of the potential parking gain if a parking area were developed on the west end of the project. This would depend on the development of Riverside Triangle and the southeast corner of the Orange Street intersection with Main/Front.

Public Meeting

- The public meeting has been confirmed for Tuesday, April 14th, 2015 at the City Council Chambers.
- The meeting will be advertised in the MDA newsletter and in the Missoulian.
- HDR will send an email notice to the project contact list, which includes attendees from the first public meeting.

TTAC meeting

- HDR will present the feasibility study findings at the 4/2 TTAC meeting. Mick Johnson will present to the committee.

Final Report

- The PAC was encouraged to submit comments by early next week (week of 3/23) to be considered in the final report.
- MRA has asked that all the report tables be formatted differently to improve readability. The black text on dark background will be changed to white.
- The final report will be revised to include all changes discussed, including the graphics (pending resolution of the crosswalks discussion), and an electronic version of the report will be distributed. The final report will be posted onto the MRA and MDA website. The final report should be distributed 2 weeks prior to the public meeting.

Other Items

- MRA asked if Zip Auto has been included in recent stakeholder communications. They have not. Zip Auto was initially outspoken on the study and should be contacted.