APPENDIX A: LIST OF TECHNICAL REPORTS

Technical Report Title	Prepared By:	Contact
A Reconnaissance Survey of Archaeological Resources within the 1800 North Study Area, Davis and Weber Counties, Utah	CH2MHill Aaron Fergusson, RPA 215 South State Street Suite 1000 Salt Lake City, Utah 84111	Brian Michels CH2MHill 215 South State Street Suite 1000 Salt Lake City, Utah 84111
Community Social Assessment	Rocky Mountain Social Science Richard S. Krannich, PhD P.O. Box 184 Paradise, Utah 84328	Ryan Pitts Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Existing Safety Conditions Analysis	Horrocks Engineers	Mike Seely Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Phase 1 Submittals	Horrocks Engineers	Nicole Tolley Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Preliminary Noise Analysis	Horrocks Engineers Brian Jones	Nicole Tolley Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Project Design Criteria	Horrocks Engineers	Justin Beddoes Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Right-of-Way Tables	Horrocks Engineers	Nicole Tolley Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Selective Reconnaissance Level Survey Clearfield, Clinton, Hill Air Force Base, and Sunset in Davis County, Utah Roy in Weber County, Utah	Horrocks Engineers Nancy Calkins Historic Preservation Specialist	Nicole Tolley Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Traffic Memos	Horrocks Engineers	Mike Seely Horrocks Engineers 2162 West Grove Parkway Pleasant Grove, Utah 84062
Zoning and Land Use Maps	N/A	N/A

Appendix A Technical Reports can be found on the attached CD.

SOCIAL CONDITIONS: AFFECTED ENVIRONMENT

The following discussion summarizes existing social and demographic conditions in the 1800 North project area. While some information presented here pertains to the broader community conditions that characterize Sunset and Clinton cities, greater emphasis is placed on documenting conditions that characterize portions of these communities located in close proximity to the 1800 North road corridor.

The community social assessment was designed to address potential project effects on community social organization, including levels of localized social interaction and activity patterns, neighborhood social integration and community cohesion, and other key quality of life dimensions. Also considered were residents' travel and use patterns on area roadways, their perceptions of existing neighborhood and community traffic problems, and their views regarding possible effects of the proposed transportation system upgrades on their community and their neighborhood. In addition, attention was focused on the sociodemographic characteristics of localized populations, in order to determine whether the proposed project might have disproportionate impacts on particularly vulnerable populations such as racial/ethnic minorities, the elderly, or persons in economically disadvantaged households.

What data sources and methods were used to assess local social conditions?

The community social assessment effort was based on the acquisition and analysis of data from several sources. First, community-level data from the 2010 Census of Population and from the 2006-10 American Community Survey for the Sunset and Clinton communities were acquired from the U.S. Census Bureau's web site (http://factfinder2.census.gov). These data provide a general profile of current social and demographic conditions and trends in the broader community setting within which the 1800 North project area is situated.

A second component of the data collection and analysis effort involved administration of self-completion survey questionnaires to adult members of residential households in two spatially-distinct portions of the project area:

- "On-corridor" households. This category includes residences located on property parcels that are immediately adjacent to the proposed 1800 North project construction corridor. A total of 104 non-vacant private residences were identified within this "on-corridor" category. All of the households in this category were selected for participation in the survey.

- "Nearby off-corridor" households. This category includes private residences located on parcels that are not immediately adjacent to the proposed project construction corridor, but are in close proximity (located within ¼ mile to the north or south of 1800 North). A total of 356 property addresses within these surrounding off-corridor areas were selected through random sampling procedures for possible survey participation. Of these, 29 addresses were determined to be either vacant or in non-residential use, resulting in an adjusted sample size of 327 households.

Surveys were administered to households included in these two spatially-distinct portions of the project study area during a two-week period in July, 2011 using a personalized drop-off/pick-up methodology. Field workers went to each selected residence and, upon successful contact with an adult living in the residence, requested participation in the survey by the adult household member whose birthdate had occurred most recently, a widely used strategy for randomizing selection of survey participants within households. If that individual was not available to participate, response was requested from another adult decision-maker in the household. Completed questionnaires were retrieved from 95 of the 104 households enumerated in the on-corridor portions of the project area, representing a survey response rate of 91.3%. Responses were obtained from 256 of the 327 households included in the off-corridor sample, representing a response rate of 78.3%.

Overall, what social conditions and trends characterize the local community?

<u>Sunset</u>

Sunset city, which encompasses and surrounds the eastern portion of the project area (areas located east of the railroad line at approximately 500 West), has experienced virtually no change in population size over the past decade. At the time of the 2010 Census the city had a population of 5,122, slightly below the 5,204 residents reported for 2000. There are very few recently-constructed homes in Sunset, and few undeveloped land parcels that would accommodate new residential development. Most of the property parcels located adjacent to 1800 North between Main Street and 500 West are in residential use, and most residences located in corridor-adjacent areas and in neighborhoods located immediately north or south of the 1800 North corridor are at least several decades old. Data from the Census Bureau's American Community Survey indicate that approximately 85% of residential units in Sunset are single-unit structures. Census data for 2010 indicate that 29.6% of occupied housing units were renter-occupied. In addition, 43.9% of all households in Sunset included one or more individuals under the age of 18, and 25.1% included one or more individuals age 65 and over.

At the time of the 2010 U.S. Census, Sunset city exhibited a relatively high level of racial and ethnic diversity compared to that observed for Davis County as a whole: 16.7% of the city's residents were classified as non-white or of mixed race and 15.3% were classified as Hispanic, compared to 10% and 8.4% of county residents classified as non-white and Hispanic, respectively. In 2010 12.2% of Sunset residents were age 65 or older, compared to just 4.5% of Davis County residents. Household income levels in Sunset are lower overall than is the case countywide – the estimated median household income (as derived from the American Community Survey) for Sunset was $49,202, compared to $66,866 for Davis County (in 2010 dollars). In addition, the five-year estimate of the percentage of families with income levels falling below the federally-designated poverty level (derived from the 2006-2010 American Family Survey) was 10.7% for Sunset city, considerably higher than the 5.2% estimated for Davis County overall.

Clinton

The city of Clinton encompasses portions of the project area that are bounded on the east by the railroad line located at approximately 500 West and on the west by the 2000 West road corridor. In contrast to the lack of population growth that has characterized Sunset over the past decade, Clinton has experienced substantial new residential development and population growth. Between 2000 and 2010 the city's population increased from 12,585 to 20,426 residents, a 62.3% increase. While most homes located immediately adjacent to the 1800 North corridor are at least several decades old, areas of newer residential development are evident in some surrounding neighborhoods, particularly those located in western portions of the project area between 1500 West and 2000 West. Some portions of the 1800 North corridor located in Clinton, particularly those lying between approximately 500 West and 800 West and between approximately 1150 West and 1350 West, are still characterized by primarily residential land uses. Other portions of the project corridor, particularly those located near the intersections of 1800 North with 1000 West and 1500 West along with areas located between 1500 West and 2000 West, are characterized by more extensive commercial development, though in some of these areas newer commercial facilities are interspersed with properties that remain in residential use. For Clinton as a whole, data from the American Community Survey indicate that approximately 95% of residential units are in single-unit structures. In 2010 12.5% of occupied housing units in the city were renter-occupied. The most recent Census data also indicate that 56.5% of households in Clinton included at least one individual under the age of 18, while only 12.7% included an individual or individuals age 65 and over.

A review of Census data also reveals that the population of Clinton city is somewhat less diverse racially and ethnically than is the case in Sunset, though the city's population is more diverse than is the case for Davis County as a whole. At the time of the 2010 Census 11.7% of Clinton residents were classified as non-white or of mixed race, and 11.3% were classified as Hispanic. Only 2.8% of Clinton residents were age 65 and older, a considerably smaller percentage than that observed for Sunset or for Davis County. Estimated median household income in Clinton (derived from the American Community Survey) was $65,168, much higher than that observed for Sunset. The American Family Survey five-year estimate of the percentage of families with incomes below the poverty threshold was 3.3% for Clinton, considerably below the percentage reported for Sunset and also lower than that reported for Davis County overall.

What are the social conditions and characteristics of specific areas and neighborhoods in the study area?

Additional documentation of social conditions among residents of households located within designated portions of the project area is provided by results from the community social survey described above. In addition to detailing selected demographic characteristics of residents several major aspects of local social organization are explored using these survey data, including neighborhood social integration and community cohesion, neighborhood interaction patterns, and patterns of use and activity on roadways that might be altered or affected by proposed project activities. Survey results are reported separately for "on-corridor" respondents whose residential properties are located in areas immediately adjacent to proposed project construction areas and for those who reside in nearby "off-corridor" areas located immediately north and south of the 1800 North corridor.

<u>Resident and household characteristics</u>

Several questions were included in the survey questionnaire to assess the socio-demographic characteristics of residents and households in the two designated study area segments. Table 3-1 presents an overview of all of the social and demographic characteristics discussed in this section.

The presence of households that included only one or two individuals was slightly higher (40.9%) in the "on-corridor" portions of the project area than was the case in the nearby "off-corridor" (36.3%) areas located to the north and south. The percentage of corridor-adjacent households in which one or more residents was reported to be age 65 or older was slightly lower (17.9%) than was the case for off-corridor households (21%). The presence of children under the age of 18 in the household was reported by a slightly lower percentage of survey participants living in on-corridor locations (57.6%) than was the case among those in off-corridor areas (62.9%).

Only modest differences are evident across the two study area segments when we turn attention to survey responses that pertain to ethnicity and race. As indicated in Table 3-1, the concentration of Hispanic residents appears to be slightly lower in the "on-corridor" portion of the study area than in nearby off-corridor areas. Only 7.5% of survey participants living in corridor-adjacent households indicated that they are of Hispanic origin, while 8.6% reported that one or more other members of their households are Hispanic. In addition, relatively few on-corridor respondents reported their racial identity as something other than white (6.6%), with a similarly low proportion indicating a racial minority status for one or more other household members (8.4%). By comparison, 10.7% of survey respondents living in off-corridor locations identified themselves as Hispanic, with an identical percentage saying that one or more other household members are Hispanic. And, only 8.3% of off-corridor respondents identified themselves as being of a race other than white, with 8.2% saying that another person (or persons) living in their household was non-white. Although these estimates of ethnic and racial minority presence within households participating in the community social survey are not directly

Table 3-1 – Social and Demographic Characteristics of Specific Study Area Segments in the 1800 North Project Area (2011 community social survey results).

	Corridor-Adjacent Households	Nearby Off-Corridor Households
Households with one or two occupants	40.9%	36.3%
Households with at least one occupant age 65 or older	17.9%	21.0%
Households with at least one child age 18 or younger	57.6%	62.9%
Respondent identified as Hispanic	7.5%	10.7%
Other household member(s) identified as Hispanic	8.6%	10.7%
Respondent identified as non-white	6.6%	8.3%
Other household members(s) identified as non-white	8.4%	8.2%
Annual household income below $50,000	60.4%	48.2%
Annual household income above $100,000	5.5%	10.2%
Households classified as below poverty threshold	6.6%	7.5%

comparable to the population-based estimates derived from U.S. Census data, they suggest that the presence of residents who are of Hispanic origin or members of a racial minority group is somewhat lower in both the on-corridor and nearby off-corridor areas surrounding the 1800 North project corridor than is the case for the cities of Sunset and Clinton overall.

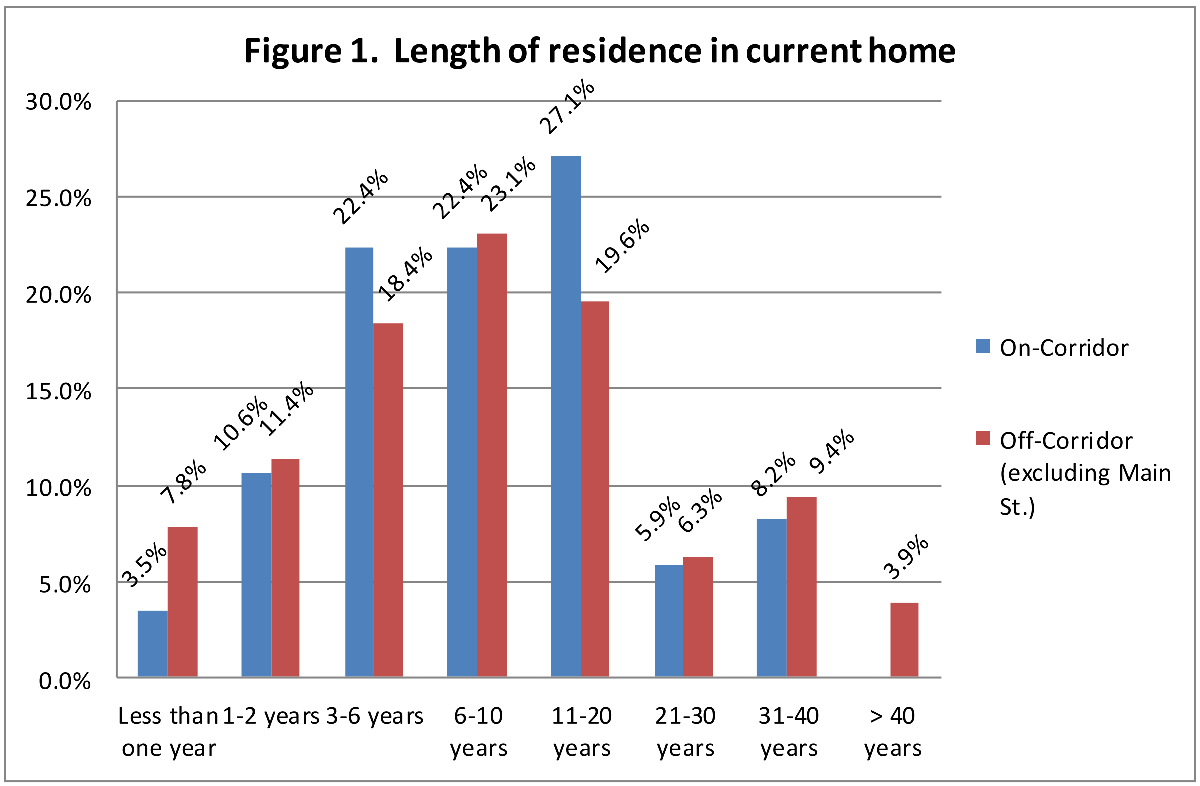
Survey data indicate that annual income levels tend to be somewhat lower for corridor-adjacent households than is the case in nearby off-corridor neighborhoods or the broader community area. Just over 60% of survey respondents living in on-corridor residences reported that their total household income in 2010 was under $50,000, while only 5.5% reported household incomes above $100,000. Based on extrapolation of responses to the income categories presented in the survey questionnaire, the median household income level among those living in on-corridor residences is estimated to be slightly under $45,000. By comparison, just under one-half (48.2%) of survey participants living in the nearby off-corridor neighborhoods reported annual household incomes below $50,000, while one in ten (10.2%) reported incomes above $100,000. The estimated median household income level for these off-corridor survey participants is approximately $52,000. For both on-corridor and off-corridor areas the median household income levels as estimated using these survey data are similar to those derived from Census data for Sunset city, but lower than those reported for Clinton or for Davis County as a whole.

Finally, the presence of households falling below the federally-designated poverty level (adjusted for household size) is relatively low in both the corridor-adjacent portions of the project area (6.6% of households responding to the survey questions) and in the off-corridor areas (7.5% of responding households). Although the percentages of households classified as falling below the poverty threshold are higher in both portions of the study area than is the case for Davis County as a whole and also higher than the percentage estimated using data from the American Family Survey for Clinton, they are lower than that estimated for Sunset. In addition, it is worth noting that the six on-corridor households classified as falling below the poverty threshold are not spatially concentrated within any particular portion of the 1800 North project corridor – three of these below-poverty households are located on the north side of the corridor and three on the south side; three are located along the portion of 1800 North located in Sunset, and three in Clinton.

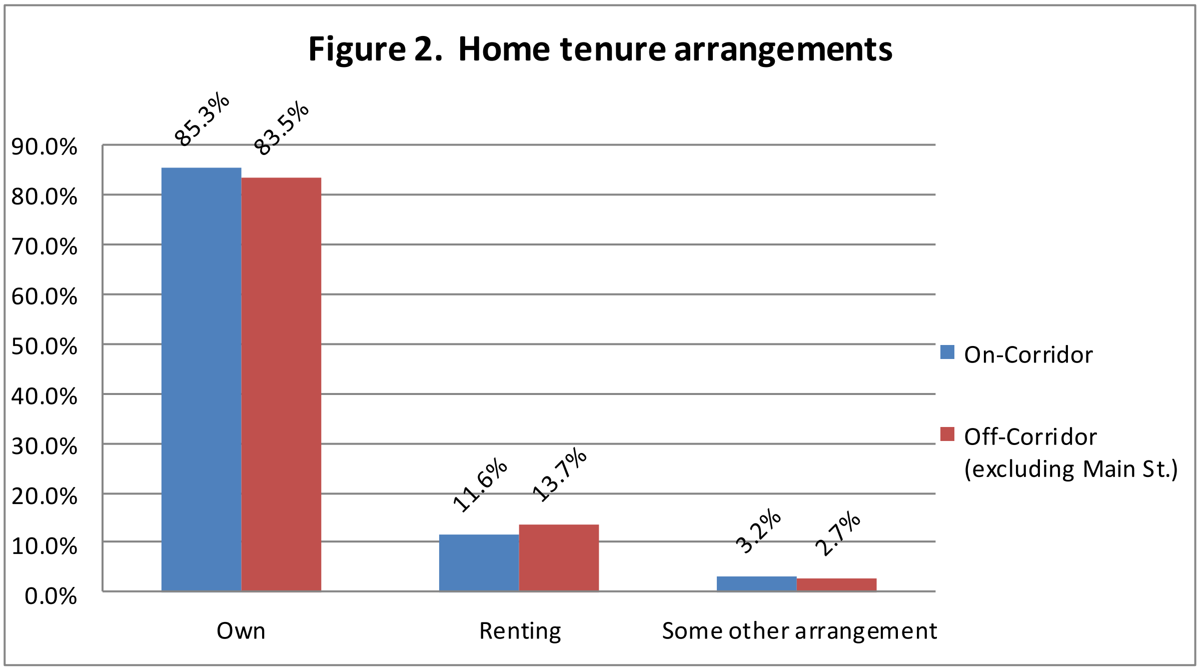
Neighborhood social integration and cohesion

Several questions included in the survey questionnaire measured various aspects of social integration and cohesion in the study area. These questions focus on levels of interaction among residents and the strength of residents' attachment to their neighborhoods. This information provides an important benchmark for evaluating the extent to which disruptive social effects might accompany relocations or other changes that could occur with implementation of the proposed 1800 North project.

Respondents were first asked to indicate how long they had lived in their current home in the study area. Inclusion of this question is based on a well-documented tendency for longer-term residents to exhibit higher levels of social attachment and integration into neighborhood and community life than is the case among those who have lived in a neighborhood or community for shorter periods. Survey results summarized in Figure 1 indicate that the proportion of residents who had lived in their current home for more than 10 years is similar among those residing in corridor-adjacent locations (41.2%) and those who live in nearby off-corridor neighborhoods (39.2%). On-corridor respondents were slightly less likely to report having lived in their current home for two years or less (14.1%) than was the case among those living in off-corridor portions of the study area (19.2%). Relatively few survey participants in either on-corridor or off-corridor portions of the study area reported having lived in their current residence for periods of longer than 20 years (14.1% of on-corridor respondents and 19.6% of off-corridor respondents). Overall, the data produced by this question indicate that the study area is characterized by relatively stable neighborhoods, with a majority of both on-corridor and off-corridor respondents having lived in their current homes for between 3 and 20 years.



A second item in this portion of the questionnaire asked respondents to indicate if they own the home they are living in. In both on-corridor and off-corridor portions of the study area, more than 80% of respondents said they own or are buying their home (Figure 2). This relatively high percentage of owner-occupied homes is consistent with data on home tenure arrangements reported in the 2010 Census for Sunset and Clinton, and reinforces the observation that the study area is not characterized by the higher levels of residential turnover that tend to be observed in areas characterized by more extensive home rental patterns.



Respondents were next asked to indicate how many adults living in the ten houses located nearest to their own they know on a first-name basis. As indicated in Figure 3, a higher proportion of residents living in the off-corridor portion of the study area (31.5%) reported knowing ten or more of their adult neighbors than was the case among respondents living in homes immediately adjacent to 1800 North (21.1%). Conversely, over one-third (34.7%) of those living in on-corridor residences said they know nobody or only one or two adults from the ten homes located nearest to theirs, compared to just 18.9% of respondents living in off-corridor neighborhoods. Clearly, levels of acquaintanceship among neighbors are lower in the on-corridor portion of the project area than is the case in immediately surrounding neighborhoods.

In addition, survey participants were asked to indicate how many of their closest personal friends live within their neighborhood (e.g., within a 2 to 3 block distance from their home). In both the on-corridor (44.2%) and off-corridor (47.1%) portions of the study area, respondents were most likely to indicate that they had no close personal friends living in the local neighborhood (see Figure 4). Approximately one in ten respondents living in on-corridor residences (10.5%) and fewer than one in twenty respondents living in off-corridor areas (4.7%) said they had more than 10 close personal friends living in their local neighborhood. And, while most respondents living in both on-corridor and off-corridor areas said they do not have adult relatives living within 2-3 blocks of their home, it is noteworthy that nearly one-third of on-corridor respondents (31.6%) said they do have relatives living in such close proximity (Figure 5).

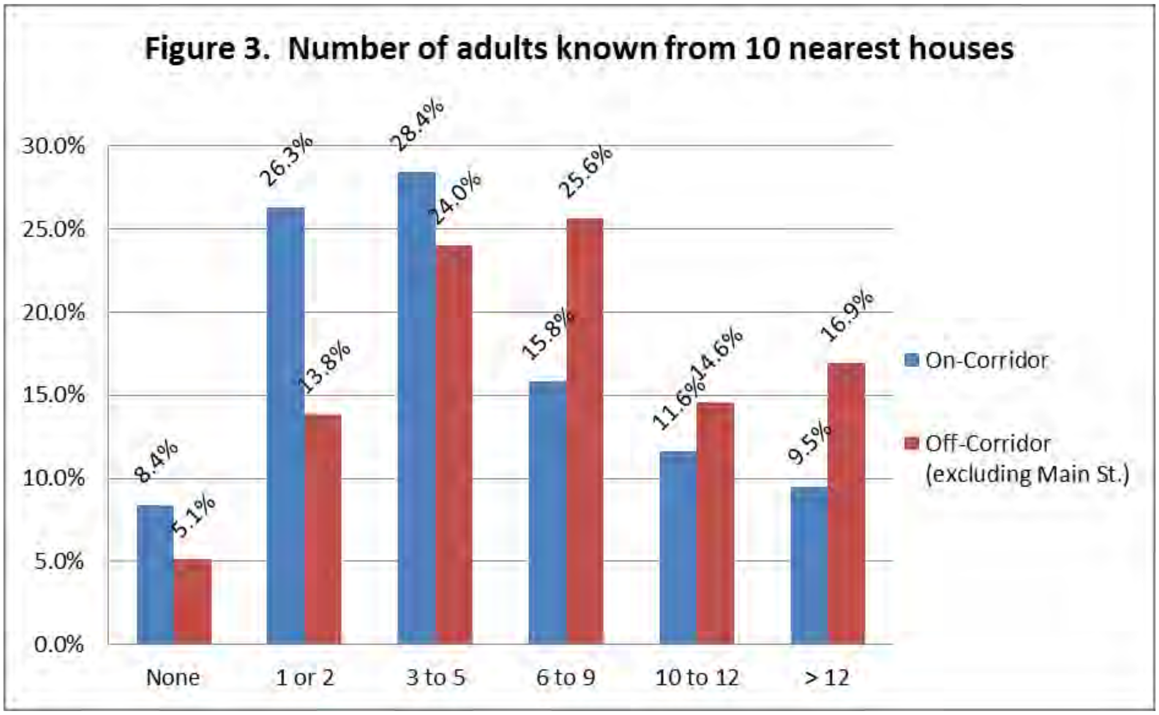


Figure 3. Number of adults known from 10 nearest houses
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
8.4%
5.1%
26.3%
13.8%
28.4%
24.0%
15.8%
25.6%
11.6%
14.6%
9.5%
16.9%
None
1 or 2
3 to 5
6 to 9
10 to 12
> 12
On-Corridor
Off-Corridor (excluding Main St.)

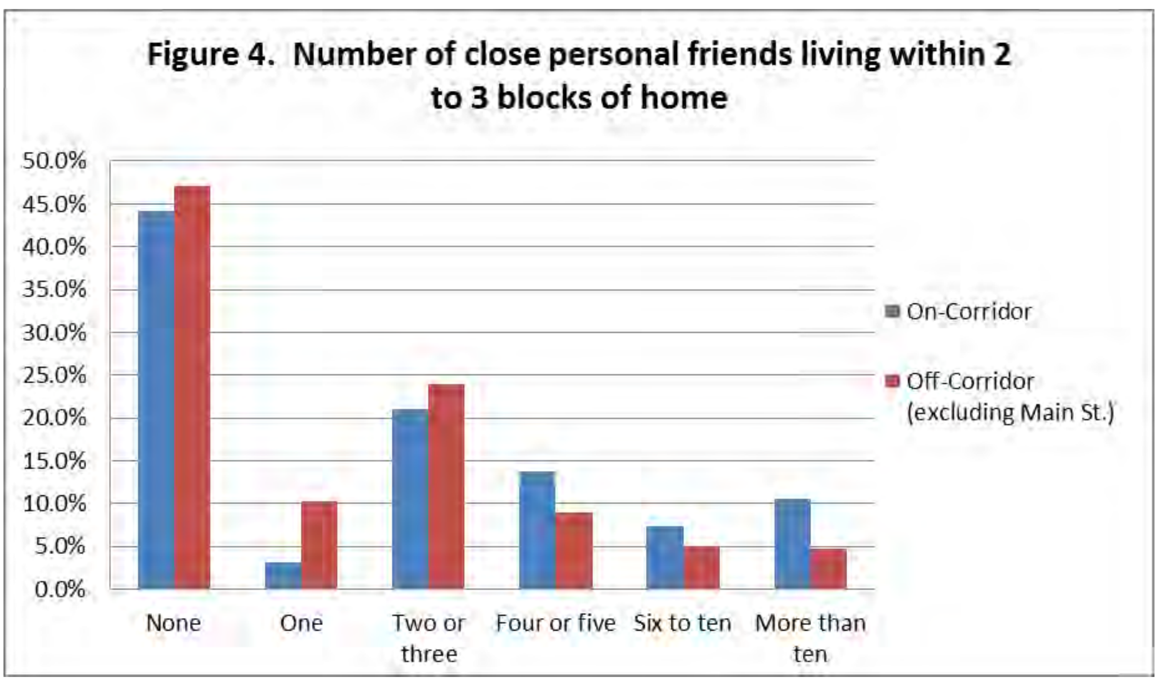
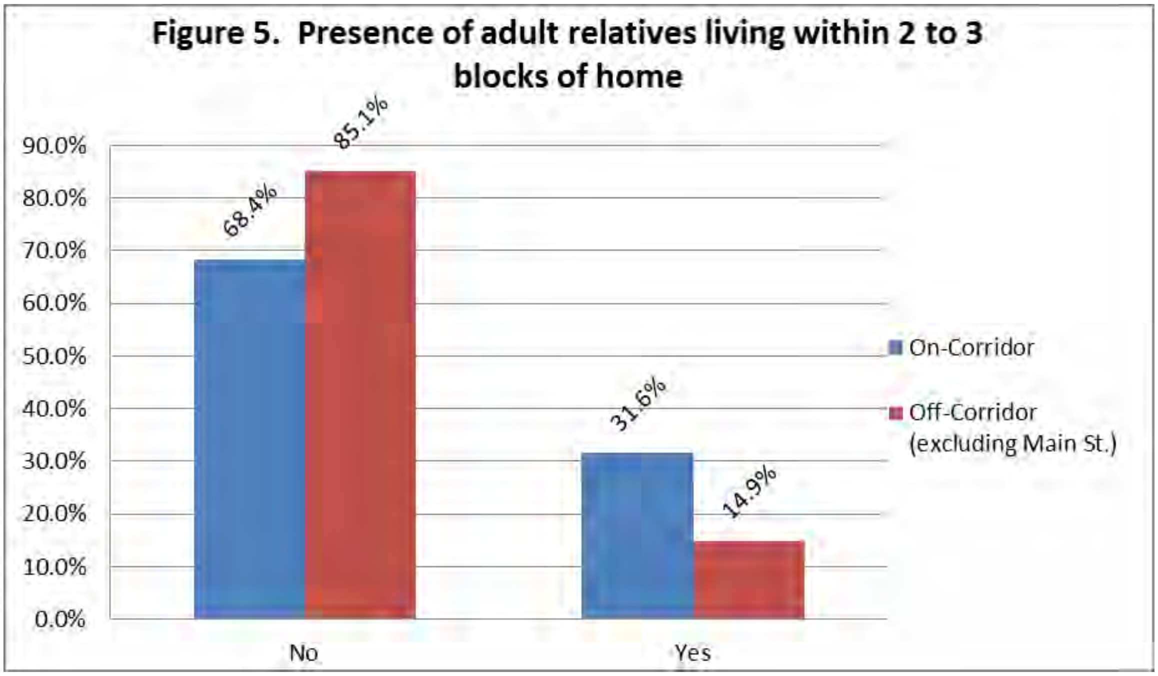


Figure 4. Number of close personal friends living within 2 to 3 blocks of home
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
None
One
Two or three
Four or five
Six to ten
More than ten
On-Corridor
Off-Corridor (excluding Main St.)



Respondents were next asked how often they visit or get together with any of their neighbors for informal social activities like playing cards, cookouts, or having dinner together (Figure 6). The percentage of individuals saying they "never" engage in these types of neighboring activities was similar in both the corridor-adjacent portions of the study area (34.7%) and off-corridor areas (36.1%). Similar proportions of respondents from each of these project area segments (31.6% of those in on-corridor residences and 34.8% of those living in off-corridor areas) indicated that they engage in such interactions with neighbors at least once every month or two or more frequently than that. Among those living in homes immediately adjacent to the project corridor, a substantial majority (67.7%) of respondents said they "never or almost never" engage in such socializing with neighbors who live on the opposite side of 1800 North (Figure 7). This result indicates that the roadway as currently configured does serve as a substantial barrier to interaction involving project area residents who live on opposite sides of the street.

Another dimension of neighborhood interaction and activity was addressed with a question asking respondents how often they get out in their neighborhood for a walk, jog or bicycle ride that takes them farther than one block from their home. As indicated in Figure 8, such activity is considerably more common among residents living in off-corridor portions of the study area than is the case among those living in residences that immediately adjoin the 1800 North road corridor. Two-thirds (66.7%) of off-corridor respondents, and nearly one-half (48.4%) of on-corridor respondents, said they walk, jog or bicycle in their local neighborhoods either several times a month or once a week or more. At the same time, relatively few respondents living in either of these areas (12.6% of those in on-corridor areas and 7.8% of those in off-corridor areas) said they "never or almost never" engage in such outdoor activity within their local neighborhoods.

Figure 6. Frequency of socializing with neighbors

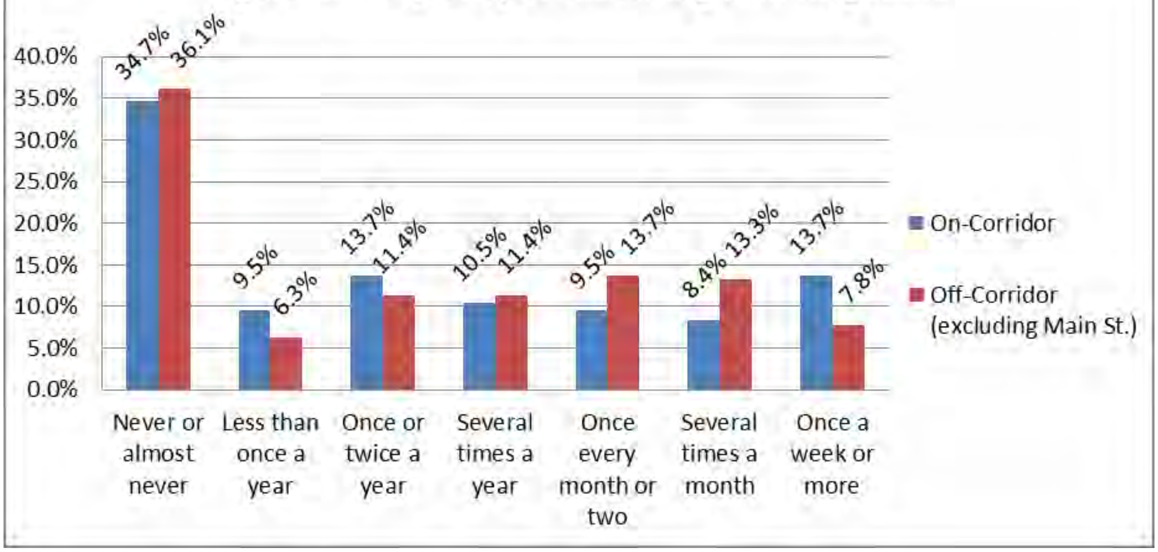
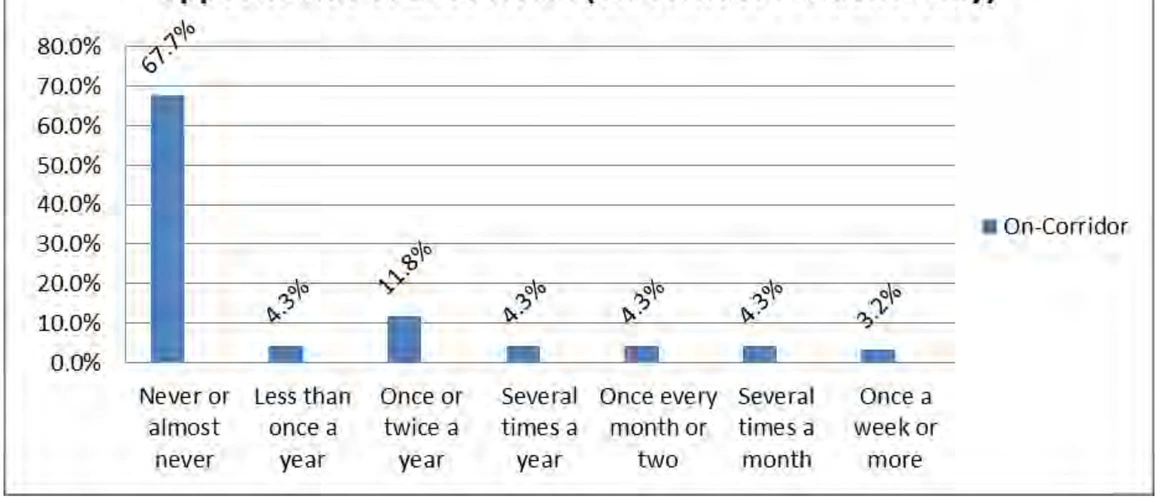
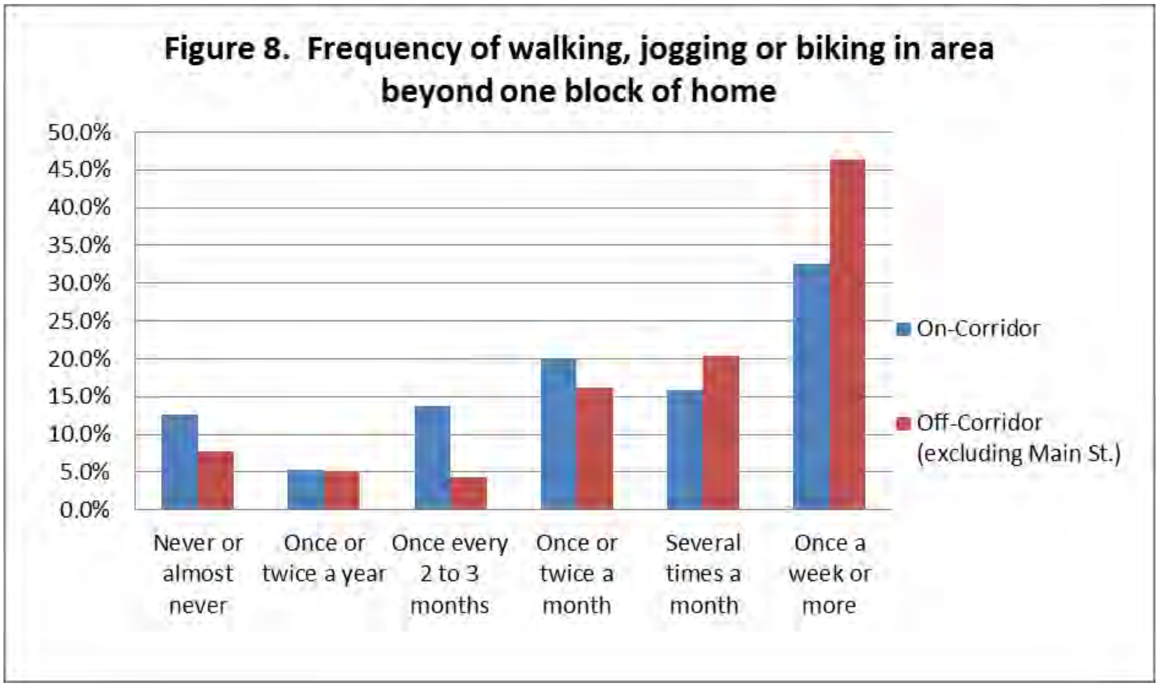


Figure 7. Frequency of socializing with neighbors living on opposite side of 1800 North (on-corridor residents only)





Despite widespread awareness about the proposal to reconstruct and widen the 1800 North roadway, relatively few local residents indicated that they anticipate moving away from their current home within the next 2-3 years (Figure 9). 19.1% of survey participants living in homes immediately adjacent to the road corridor said they either definitely or probably will relocate within that time frame, compared to 14.3% of respondents living in off-corridor areas. Most residents living in on-corridor locations (52.1%) as well as those in off-corridor areas (61.6%) said they either probably or definitely will not move within the next several years. Respondents were also asked how sorry or pleased they would be to move away from their neighborhoods if they had to leave for some reason. As indicated in Figure 10, respondents living in both the corridor-adjacent (36.6%) and off-corridor (41.2%) portions of the study area were most likely to say they would be "very sorry to leave" their neighborhood. At the same time, those whose properties are immediately adjacent to 1800 North were considerably more likely to say they would be either somewhat pleased or very pleased to move away (20.4%) than were survey participants living in off-corridor locations (4.7%).

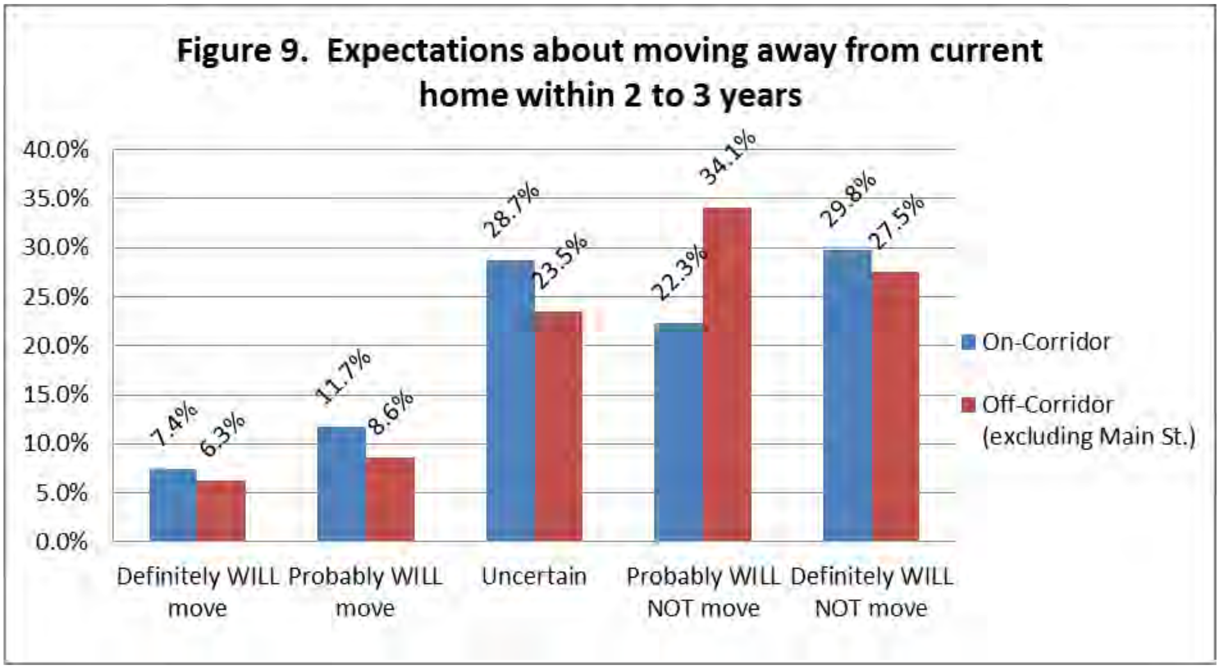


Figure 9. Expectations about moving away from current home within 2 to 3 years
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
7.4%
6.3%
11.7%
8.6%
28.7%
23.5%
22.3%
34.1%
29.8%
27.5%
Definitely WILL move
Probably WILL move
Uncertain
Probably WILL NOT move
Definitely WILL NOT move
On-Corridor
Off-Corridor (excluding Main St.)

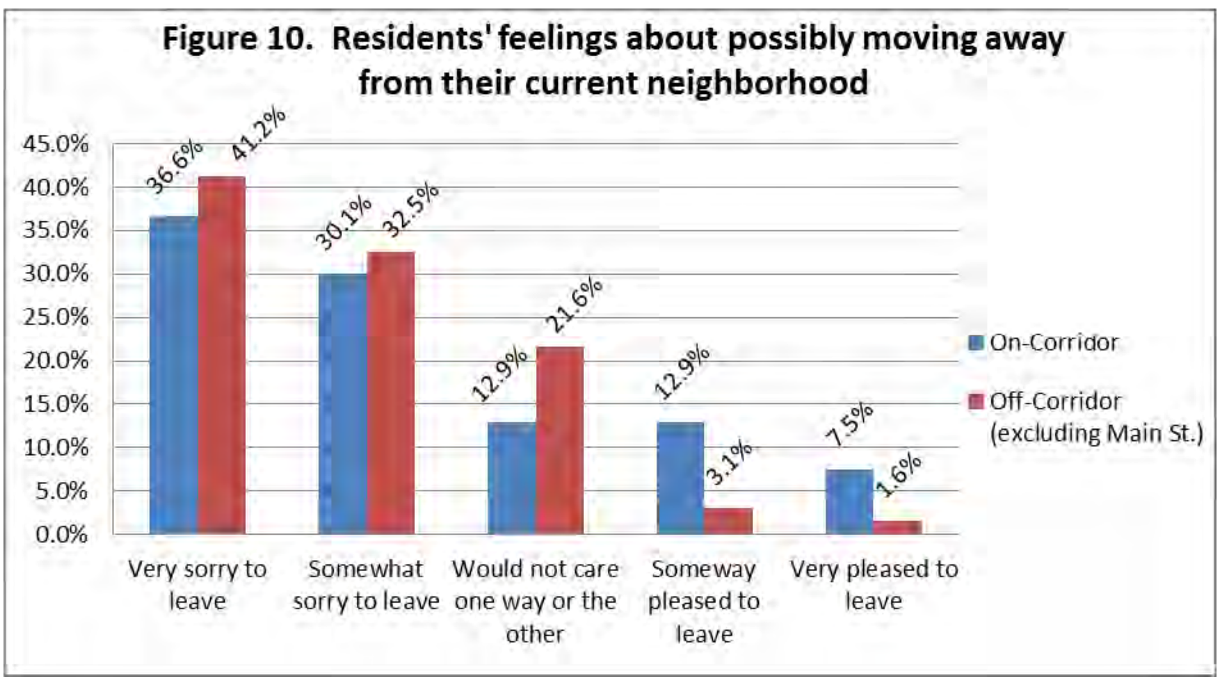


Figure 10. Residents' feelings about possibly moving away from their current neighborhood
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
36.6%
41.2%
30.1%
32.5%
12.9%
21.6%
12.9%
3.1%
7.5%
1.6%
Very sorry to leave
Somewhat sorry to leave
Would not care one way or the other
Someway pleased to leave
Very pleased to leave
On-Corridor
Off-Corridor (excluding Main St.)

Overall, responses to this series of questions provide mixed evidence regarding the levels of social cohesion and neighborhood integration that exist among residents of the study area. Those whose homes are located in areas immediately adjacent to the 1800 North road corridor appear somewhat less likely than those living in surrounding off-corridor neighborhoods to know their nearby neighbors, and are less likely to get out in their neighborhoods to walk, jog or bicycle on a regular basis. They are also somewhat less likely than those living in off-corridor areas to say they would be sorry to move away from their neighborhoods. At the same time, residents of both on-corridor and off-corridor portions of the project area exhibit similarities in terms of being relatively well-established with respect to length of residence in their current homes and reporting high home ownership levels, and in expressing a preference to continue living where they currently reside. Residents of on-corridor and off-corridor areas are also similar in reporting relatively few close personal friends located in their local neighborhoods, and saying that they do not socialize frequently with neighbors. Taken as a whole, survey responses do not reveal an especially high level of localized social interaction, social cohesion, or neighborhood involvement in either the on-corridor or off-corridor portions of the study area. While some residents are undoubtedly very strongly attached to their homes and neighborhoods, and some very actively involved in neighborhood and community life, many appear to have weaker attachments to the local area and more limited neighborhood and community ties.

What do area residents report about their travel experiences, and about traffic and transportation conditions?

Several survey questions were designed to assess area residents' travel patterns and experiences in and around their community, and their views about current traffic conditions and problems in the area.

<u>Travel to work patterns</u>

The first question in this portion of the survey instrument asked respondents to provide information on their normal travel patterns when going to and from work. Slightly more than one-fifth of respondents in both on-corridor and off-corridor areas indicated that they are either not currently employed or work from their homes, and consequently do not regularly travel to work (Figure 11). At the same time, most survey participants reported work-related travel patterns that normally take them beyond the localized Sunset/Clinton community area. Six out of ten residents in both the on-corridor and off-corridor areas said they drive five miles or more one-way to work, with at least one in three saying their one-way driving distance is greater than 10 miles.

<u>Uses of and views about 1800 North</u>

The next set of questions asked survey participants about their experiences driving and engaging in other activities on portions of 1800 North located between Main Street and 2000 West. As indicated in Figure 12, a large majority of respondents indicated that they

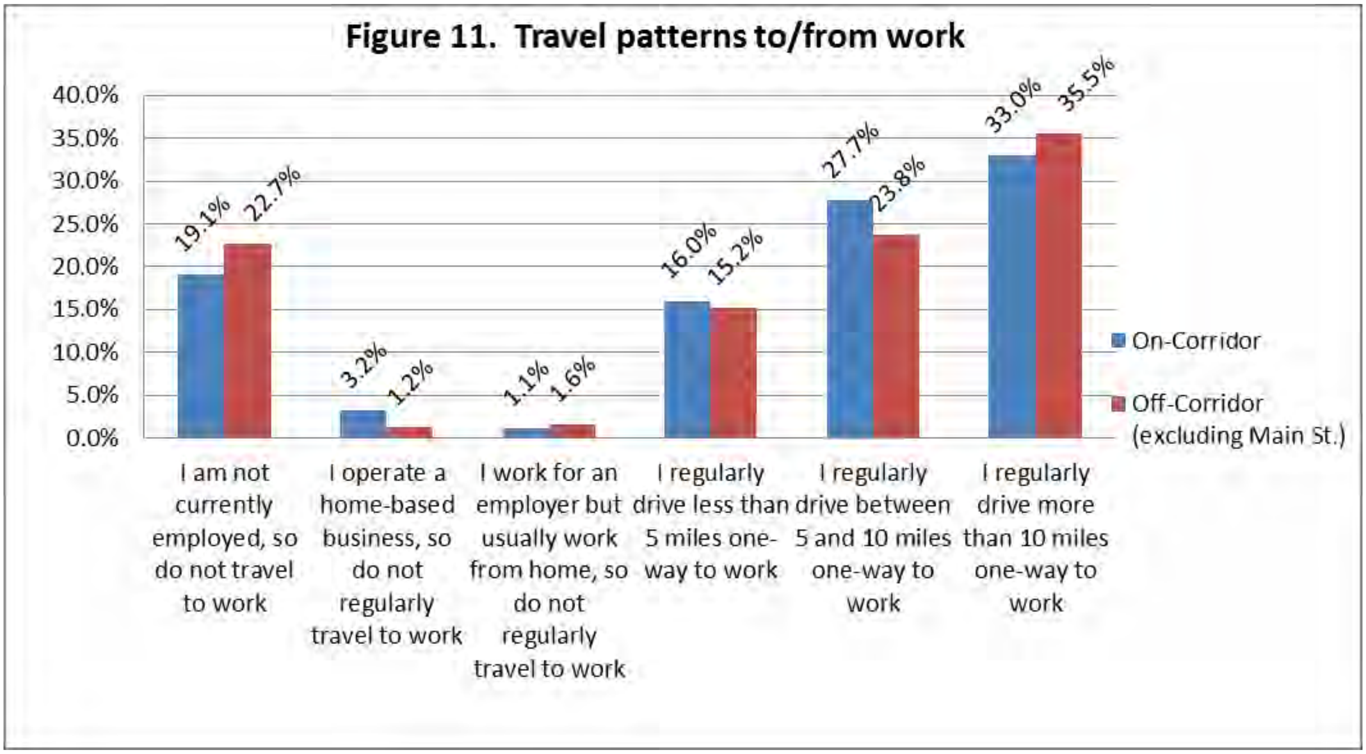


Figure 11. Travel patterns to/from work
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
19.1%
22.7%
3.2%
1.2%
1.1%
1.6%
16.0%
15.2%
27.7%
23.8%
33.0%
35.5%
On-Corridor
Off-Corridor (excluding Main St.)
I am not currently employed, so do not travel to work
I operate a home-based business, so do not regularly travel to work
I work for an employer but usually work from home, so do not regularly travel to work
I regularly drive less than 5 miles one-way to work
I regularly drive between 5 and 10 miles one-way to work
I regularly drive more than 10 miles one-way to work

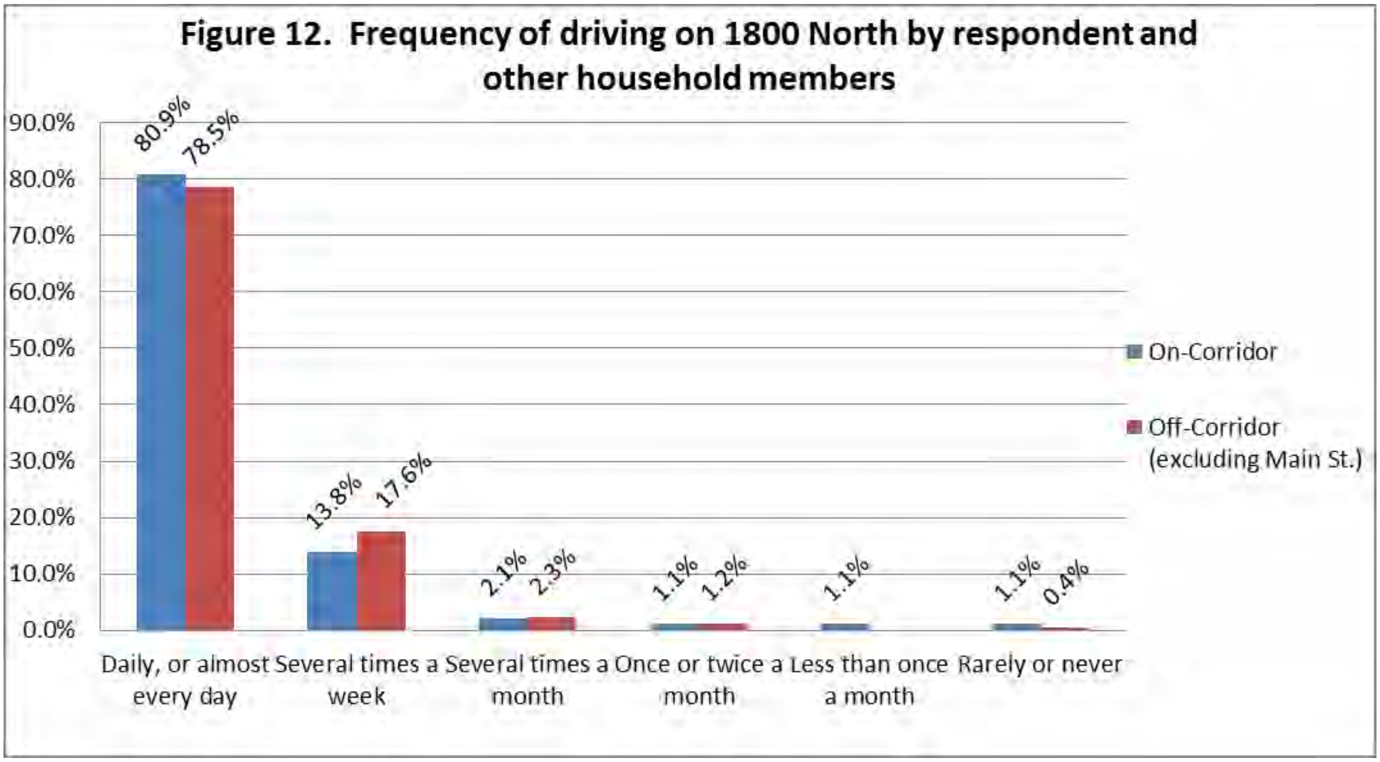
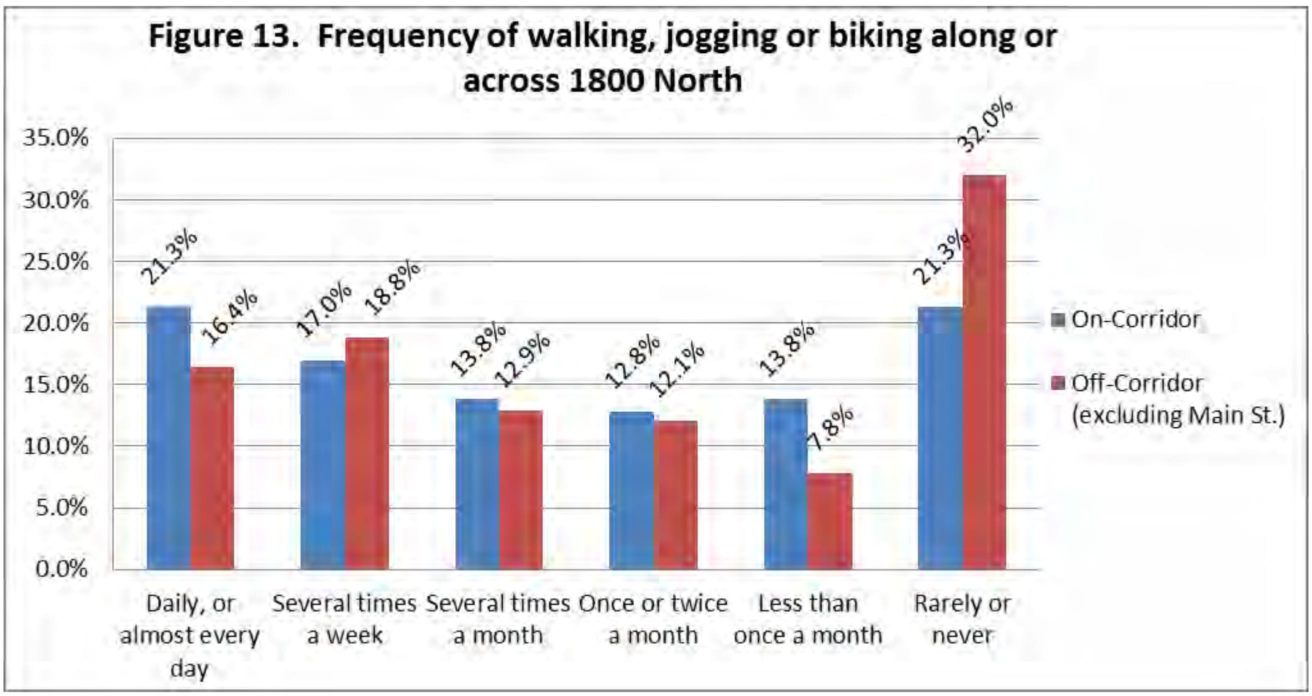
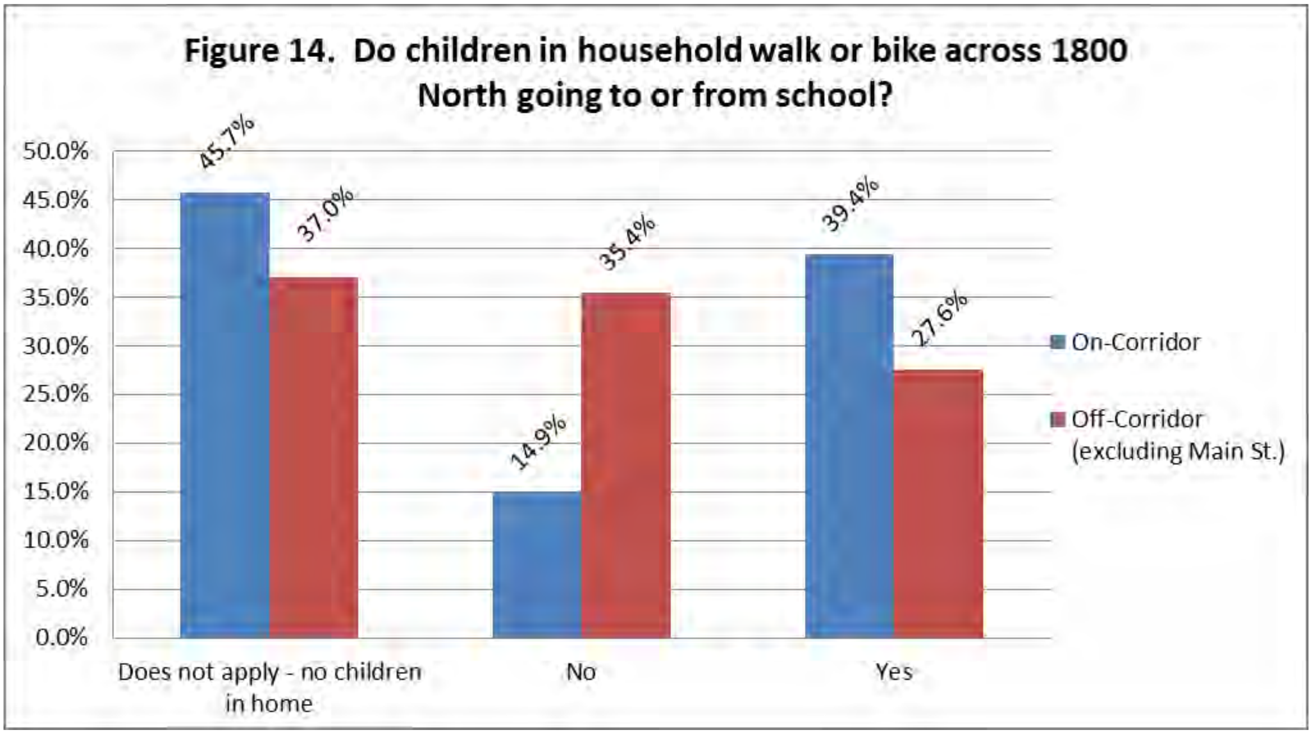


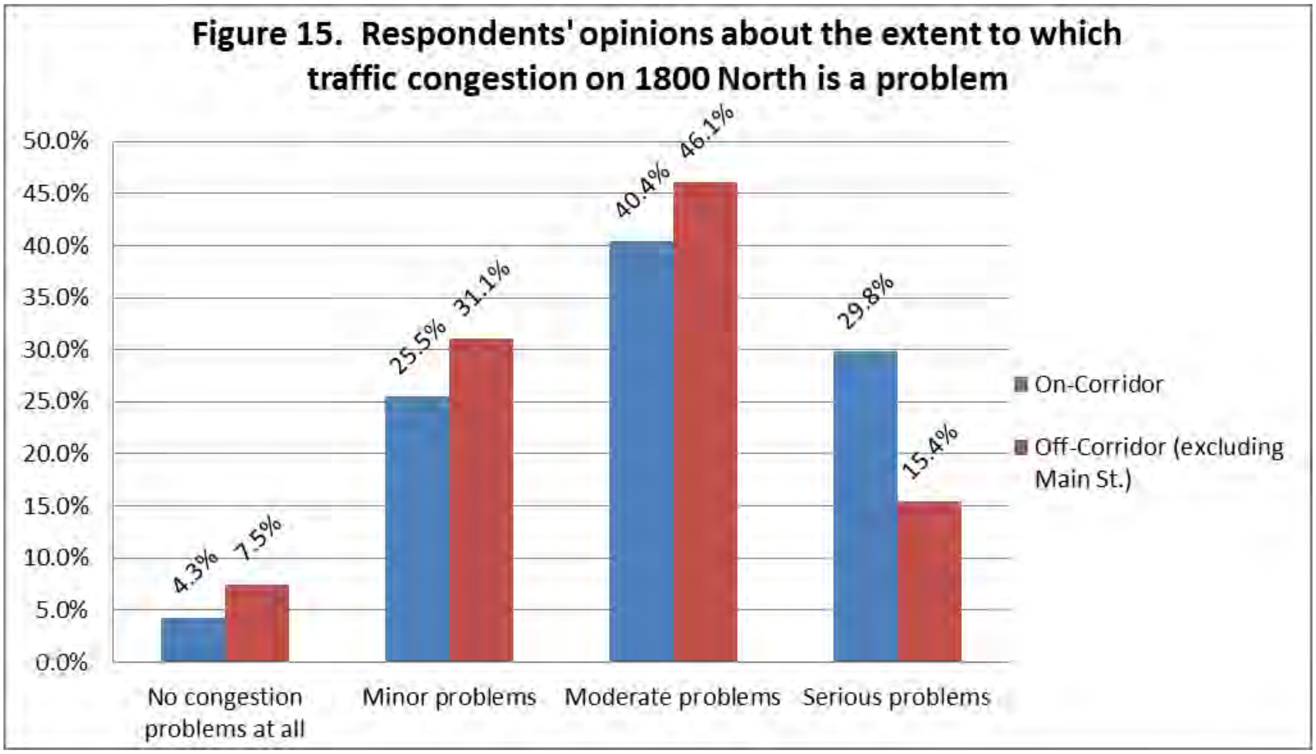
Figure 12. Frequency of driving on 1800 North by respondent and other household members
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
80.9%
78.5%
13.8%
17.6%
2.1%
2.3%
1.1%
1.2%
1.1%
1.1%
0.4%
Daily, or almost every day
Several times a week
Several times a month
Once or twice a month
Less than once a month
Rarely or never
On-Corridor
Off-Corridor (excluding Main St.)

or members of their households drive daily or nearly every day on this roadway (80.9% of on-corridor residents and 78.5% of those living in off-corridor areas). Although substantially lower proportions of respondents said they or other household members walk, jog or bike along or across 1800 North on a regular basis, over one-third of those in both the on-corridor (38.3%) and off-corridor (34.4%) areas said such use does occur on either a daily basis or at least several times weekly (Figure 13). And, as indicated in Figure 14, nearly four out of ten respondents living in on-corridor residences (39.4%) and over one-fourth of those in off-corridor areas (27.6%) said that a child or children living in their household walks or bikes across 1800 North when going to or from school. Clearly, the 1800 North roadway is regularly utilized in a variety of ways both by those living in homes immediately adjacent to the road corridor and those who live in surrounding nearby neighborhoods.





Survey participants were also asked to evaluate the severity of problems with traffic congestion and delays on 1800 North. As indicated in Figure 15, the most common response among on-corridor residents (40.4%) was that they perceive "moderate" problems with traffic congestion on this roadway, while nearly one in three (29.8%) perceive congestion and delay to be "serious." Off-corridor respondents were also most likely to say that traffic congestion and delays on 1800 North are causing "moderate" problems (46.1%), but considerably less likely than those living on-corridor to perceive such problems as "serious" (15.4%). Given the high levels of use of this roadway by both on-corridor and off-corridor respondents, it is not surprising that very few (4.3% of on-corridor and 7.5% of off-corridor respondents) said there are "no congestion problems at all" on 1800 North.



Travel to and beyond I-15

The final set of questions in this series asked respondents to report on the frequency with which they or members of their household drive on I-15 or to areas east of the I-15 corridor, and their experiences with traffic delays and congestion when they do so. As indicated in Figure 16, most respondents living in both on-corridor and off-corridor areas reported that they or other household members regularly drive on I-15 to access areas located north or south of the project area; the most common response among both respondent groups was that such use occurs "daily or almost every day" (50.5% of on-corridor and 58.3% of off-corridor responses). In addition, most respondents also reported regular driving by themselves or other household members to areas like Roy or Hill Air Force Base located east of I-15, with 40% of on-corridor residents and 36.7% of those from off-corridor areas saying such drives occur daily or almost daily (Figure 17).

Figure 16. Frequency of driving on I-15 to access areas to the north or south by respondent and/or other household members

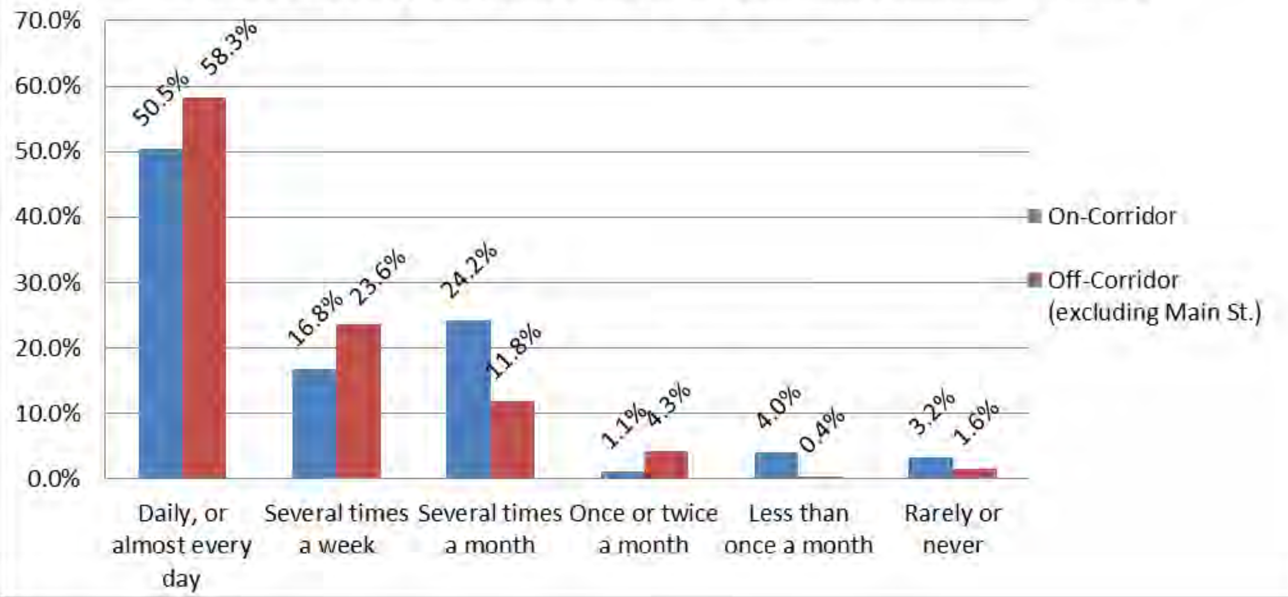
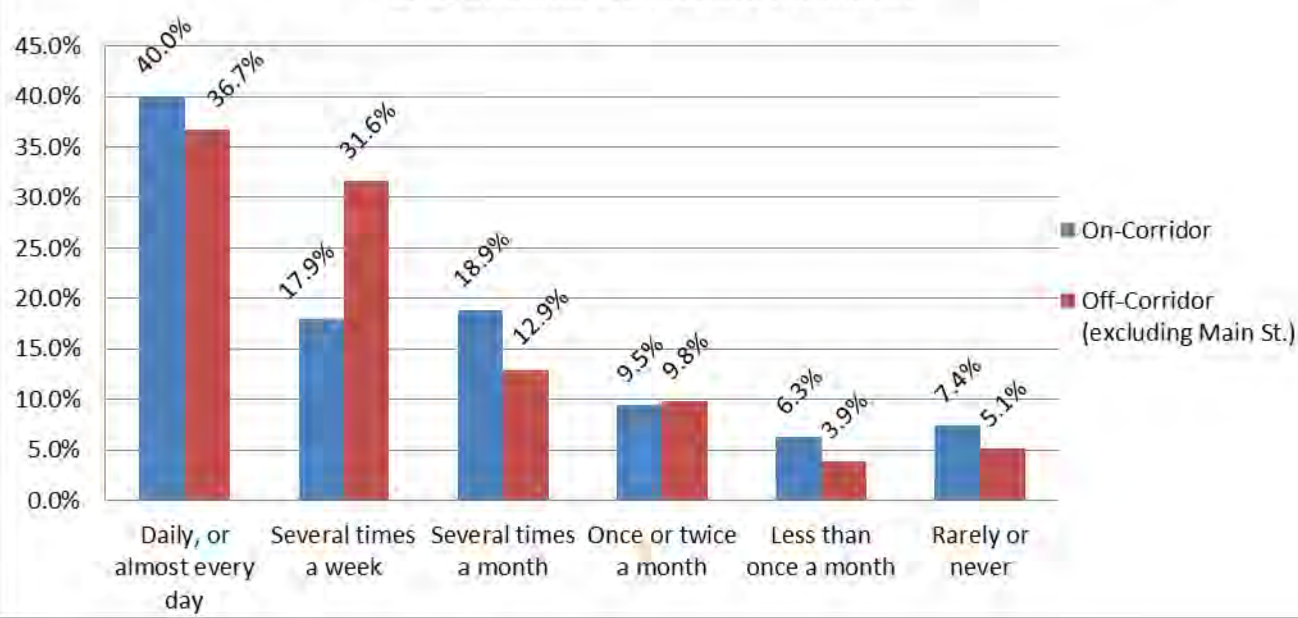
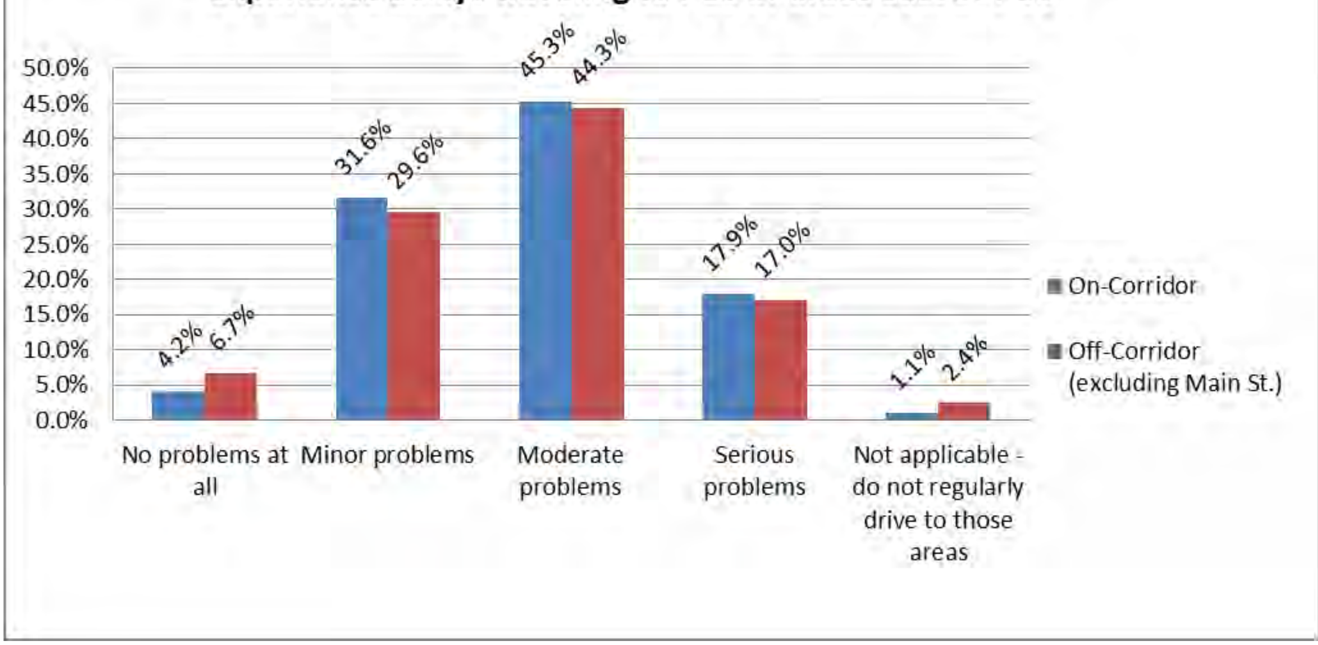


Figure 17. Frequency of driving to areas east of I-15 by respondent and/or other household members



When asked about the extent to which they experience traffic delays and congestion when driving from their neighborhood to I-15 or to areas east of I-15, respondents were most likely to report "moderate" delay and congestion problems (Figure 18). Those selecting other response options were more likely to say that traffic delay and congestion problems when accessing or driving east of I-15 tend to be "minor" (31.6% of on-corridor and 29.6% of off-corridor responses) than to say they perceive "major" problems. At the same time, very few respondents (4.2% of those in on-corridor areas and 6.7% in off-corridor areas) perceived "no problems at all" due to traffic delays and congestion when they drive from their neighborhoods to access I-15 or into areas east of I-15.

Figure 18. Extent to which respondent or household members experience delays traveling to I-15 or areas east of I-15



What do area residents view as possible consequences of the proposed 1800 North road construction and I-15 interchange project?

An additional series of items included in the survey questionnaire addressed project area residents' views about potential consequences and changes that could accompany implementation of the proposed 1800 North project. Survey participants were provided with an information sheet outlining key aspects of the project, and also informed within the questionnaire itself about specific construction activities under consideration. They were then asked to provide their views about possible effects associated with various aspects of the proposed project, and about possible effects of a "no build" alternative that would maintain current road conditions. There had already been considerable effort to inform local-area residents that 1800 North reconstruction is under consideration prior to the time when the community social survey was conducted. Given this, residents' views and expectations regarding the project and its possible consequences represent an important dimension of the existing social environment at a point prior to project implementation.

Anticipated effects of a reconstructed 1800 North road corridor

The initial series of questions in this portion of the survey instrument focused on changes that could result from reconstruction and widening of the 1800 North road corridor between Main Street and 2000 West. First, survey participants were asked to consider overall effects of the 1800 North project on the local community as a whole. Response patterns to this question, reported in Figure 19, reveal generally positive expectations among both on-corridor and off-corridor residents regarding the effects of 1800 North reconstruction on their community. In combination, over half of respondents in both on-corridor (55.3%) and off-corridor (61%) portions of the project area anticipated positive effects community-wide as a result of the road reconstruction. Expectations that overall consequences for the community might be either moderately or very negative were considerably less widespread, with such views expressed by about one-third (34.1%) of on-corridor respondents and just 21.2% of those living in off-corridor areas.

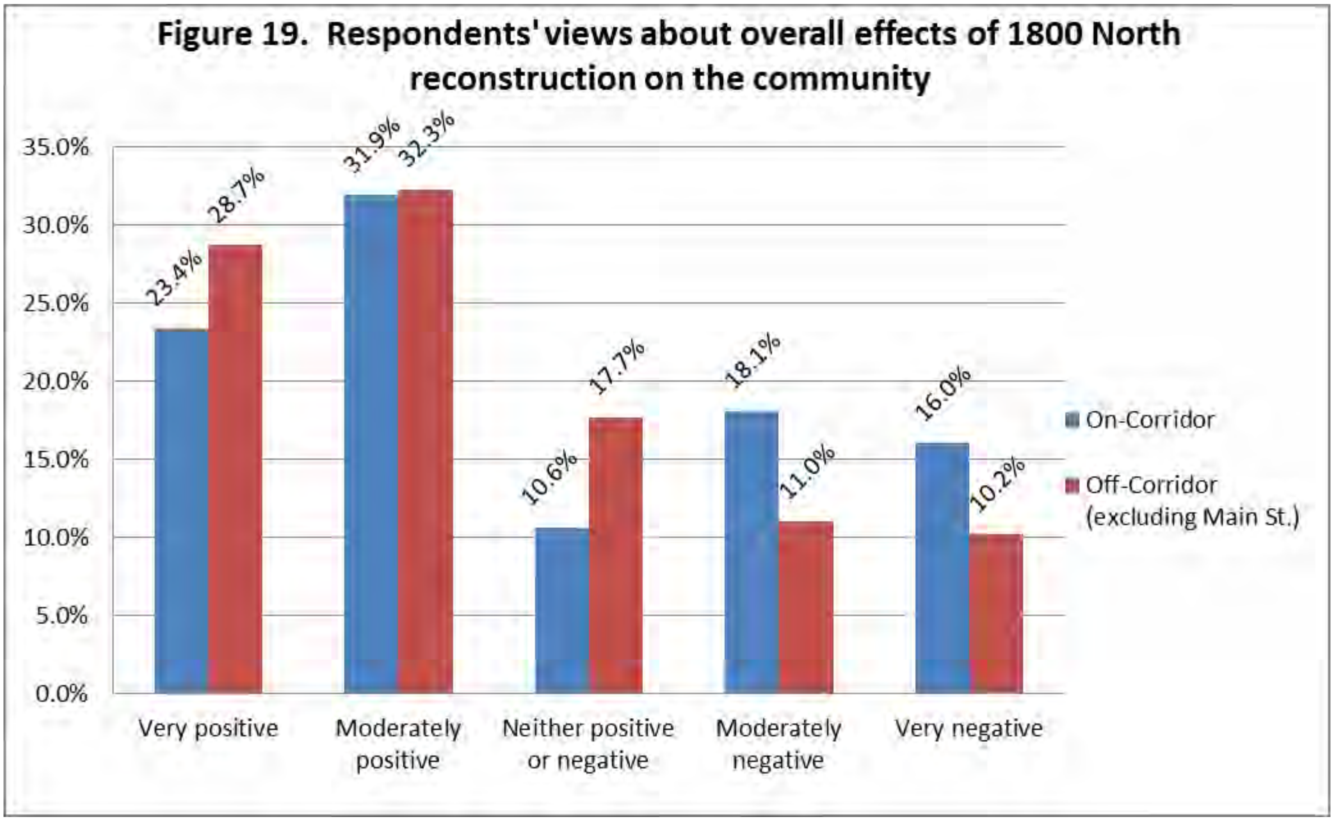
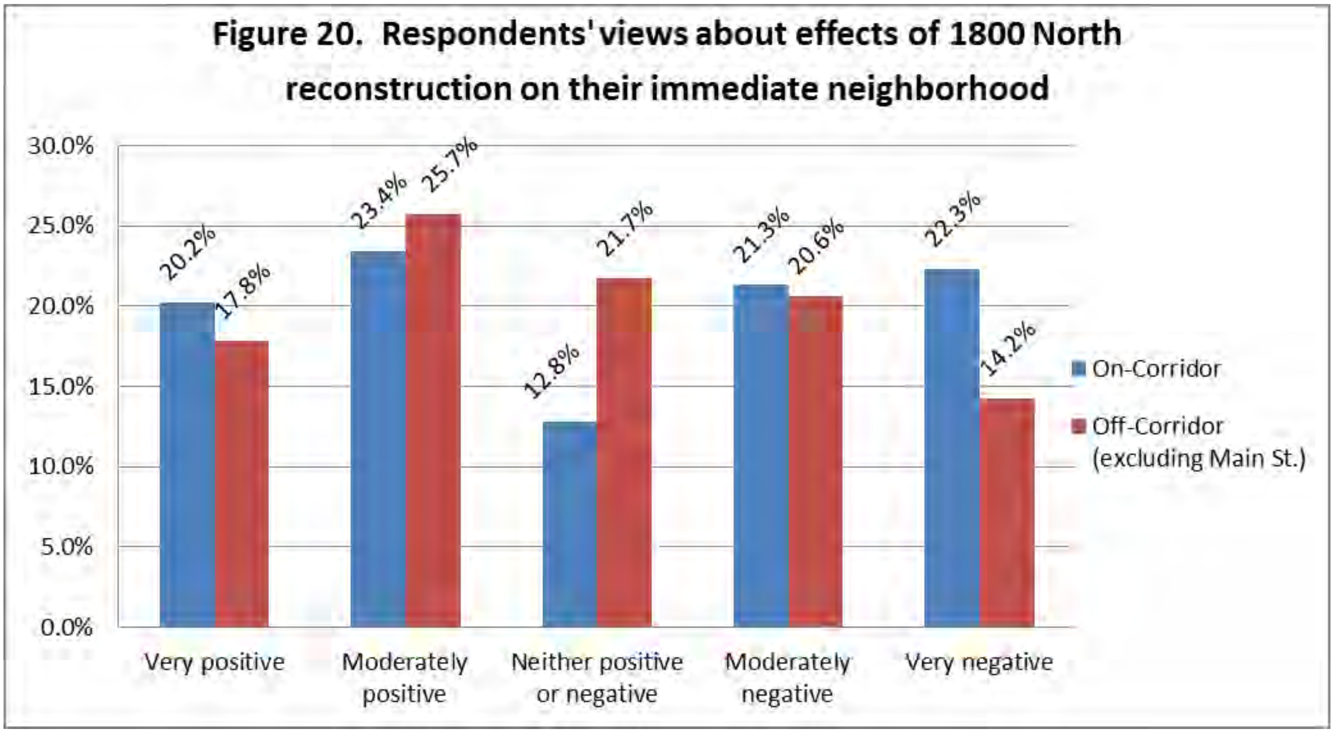


Figure 19. Respondents' views about overall effects of 1800 North reconstruction on the community
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
23.4%
28.7%
31.9%
32.3%
10.6%
17.7%
18.1%
11.0%
16.0%
10.2%
Very positive
Moderately positive
Neither positive or negative
Moderately negative
Very negative
On-Corridor
Off-Corridor (excluding Main St.)

Similarly, respondents were asked to consider the possible effects of reconstruction of the 1800 North roadway on local neighborhood areas within two blocks of their homes. As indicated in Figure 20, responses to this question were distributed more evenly across the five available response options. Among survey participants living in on-corridor locations, 43.6% of responses reflected expectations of generally "positive" (e.g., either moderately or very positive) project effects on their local neighborhoods, with an identical percentage (also 43.6%) anticipating either moderately or very negative effects. In contrast, off-corridor respondents were more likely to anticipate either moderately or very positive neighborhood effects of 1800 North reconstruction (43.5%) than to expect such effects to be either moderately or very negative (a combined 34.8%).



Finally, survey participants living in on-corridor portions of the project area were asked to think about possible effects of reconstructing the 1800 North roadway on themselves and their families. Given the potential for removal of a number of homes located in close proximity to the existing roadway, it is not surprising that many on-corridor residents anticipate negative project consequences for themselves and their families (Figure 21). A combined 56.3% of survey responses to this question were on the "negative" side of the measurement scale, with "very negative" being the most common response (45.7%). When asked to consider a more specific scenario in which their own homes would remain in place but homes on the opposite side of 1800 North would be removed, respondents were less likely to anticipate very negative consequences for themselves and their families (30.9%), and more likely to say the effects would be moderately negative or neither positive or negative (see Figure 22).

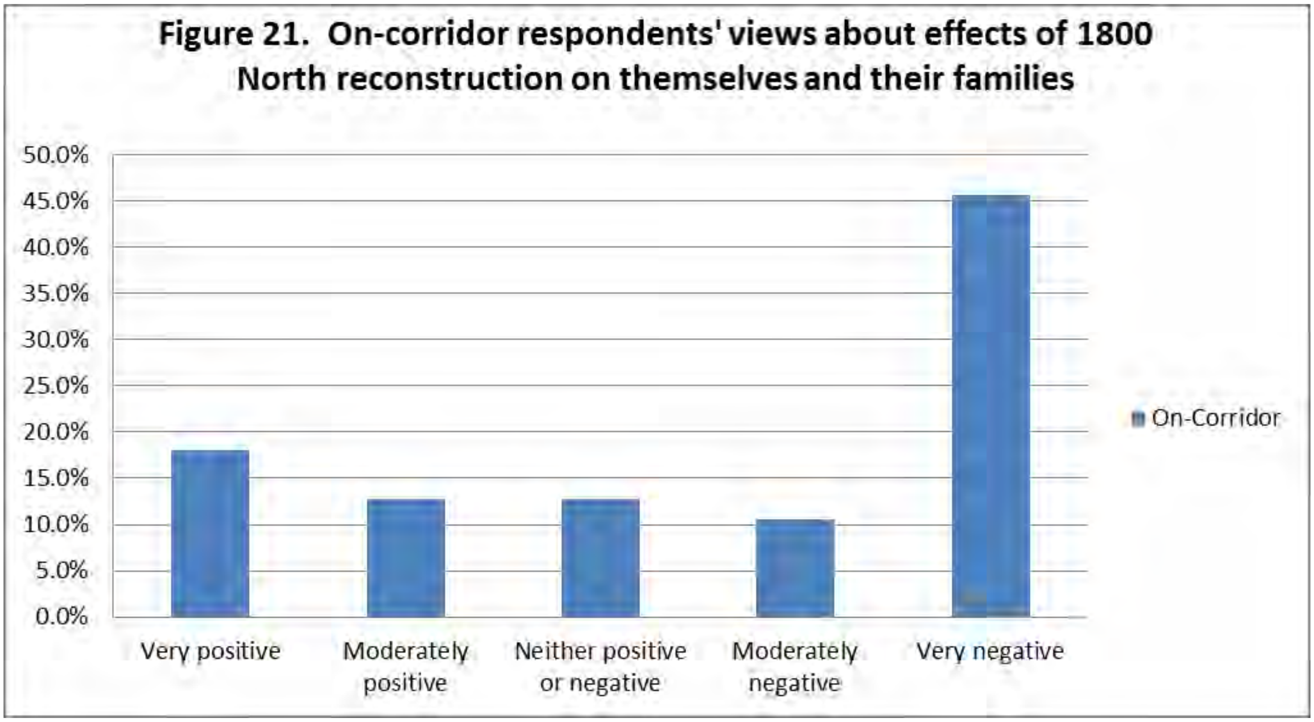


Figure 21. On-corridor respondents' views about effects of 1800 North reconstruction on themselves and their families
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Very positive
Moderately positive
Neither positive or negative
Moderately negative
Very negative
On-Corridor

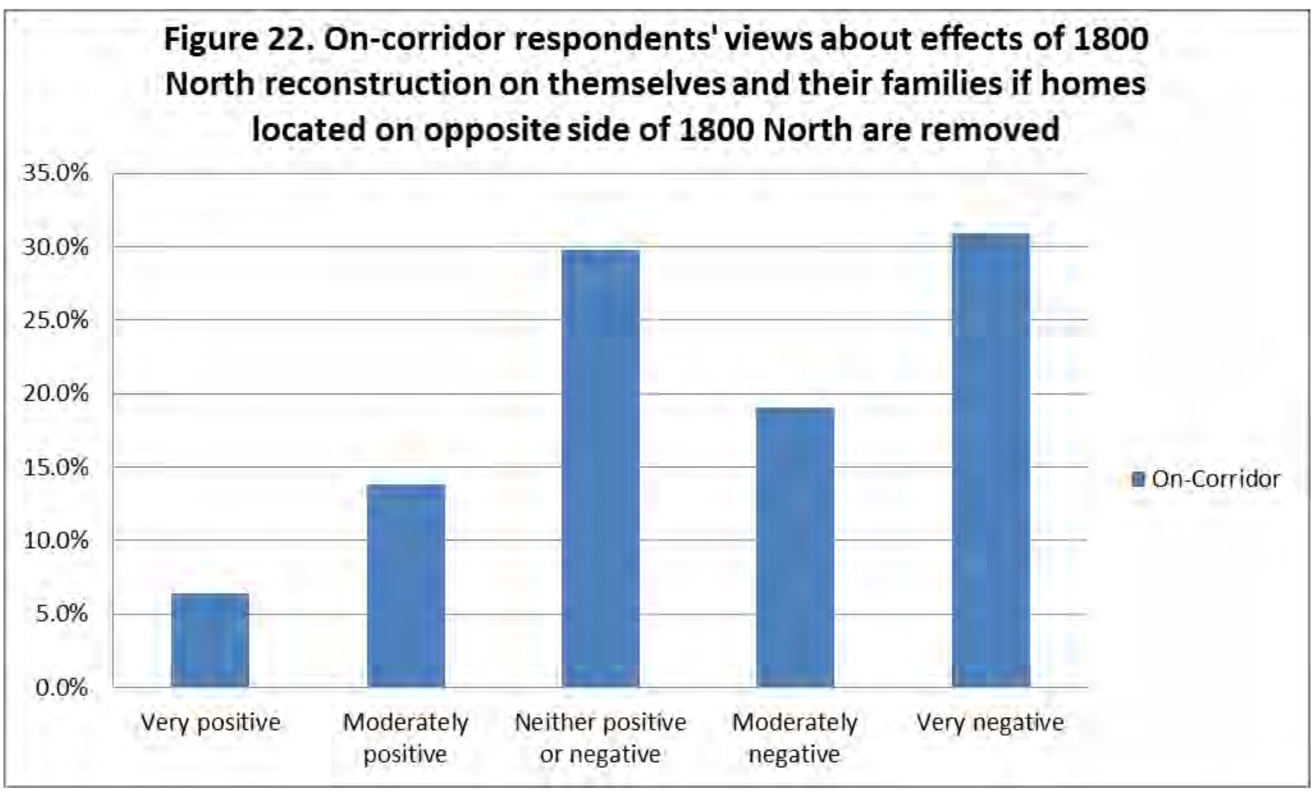
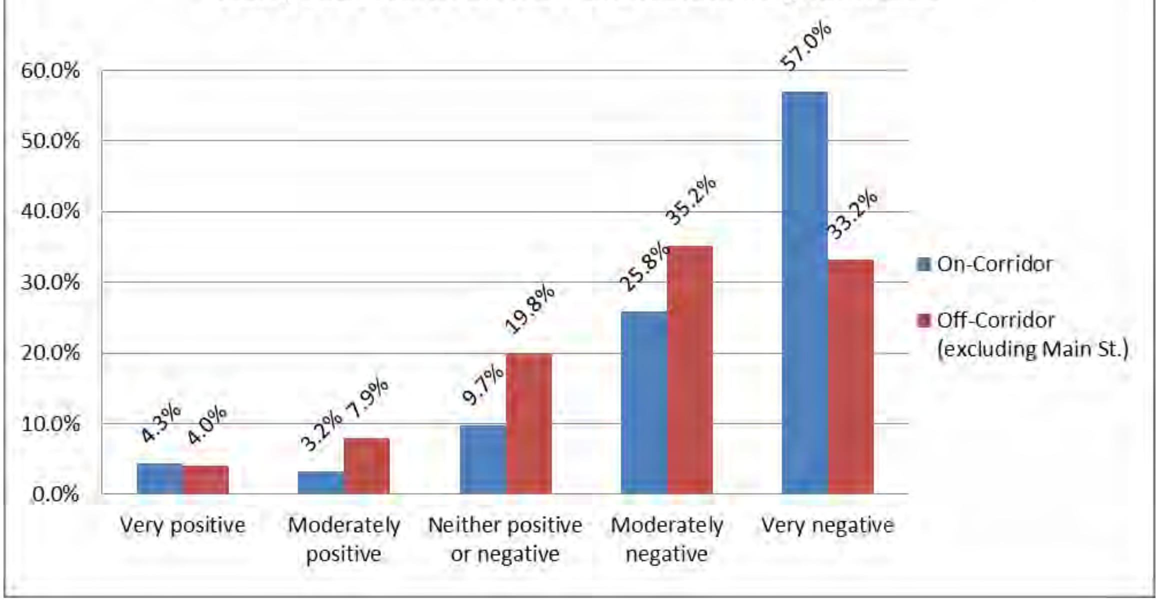
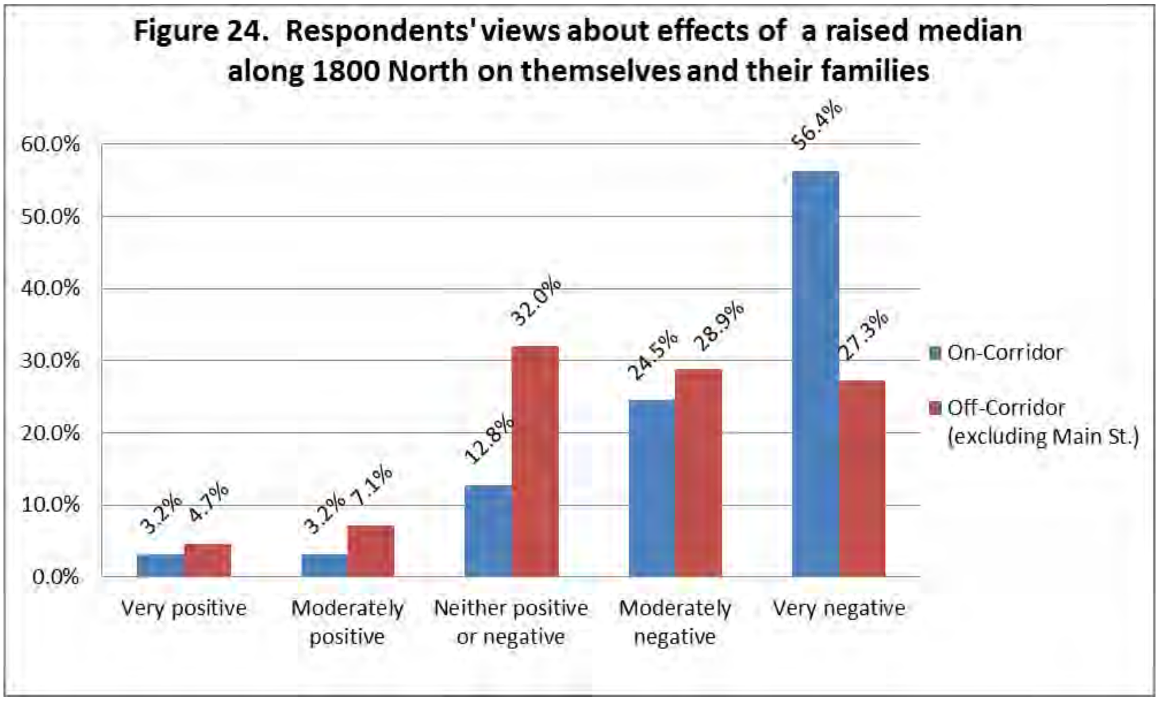


Figure 22. On-corridor respondents' views about effects of 1800 North reconstruction on themselves and their families if homes located on opposite side of 1800 North are removed
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Very positive
Moderately positive
Neither positive or negative
Moderately negative
Very negative
On-Corridor

In addition, respondents were asked to consider a specific element of 1800 North reconstruction pertaining to the possible construction of a raised median along most segments of the road corridor, which would allow left turns to occur only at intersections and prevent drivers from turning left into either residential or commercial properties located between the intersections. As indicated in Figure 23, on-corridor respondents in particular expressed major reservations about the effects of having a raised median throughout most sections of the road corridor – over half (57%) anticipated "very negative" consequences for the neighborhood located within two blocks of their home, and one-fourth believed the effects would be "moderately negative." Expressions of concern regarding use of a raised median were somewhat less evident among those living in nearby off-corridor areas, yet even among that segment of survey participants more than two-thirds of respondents anticipated either moderately negative (35.2%) or very negative (33.2%) effects. Generally similar response patterns were observed for a parallel question that asked respondents to consider effects of a raised median along 1800 North on themselves and their families, rather than on their surrounding neighborhoods (Figure 24).

Figure 23. Respondents' views about effects of a raised median along 1800 North on their immediate neighborhood





Anticipated effects of a railroad overpass at 500 West

Additional questions focused respondents' attention on possible provision of an overpass above the railroad tracks located at approximately 500 West. When asked to indicate their expectations about how construction of such an overpass might affect the neighborhood located within 2-3 blocks of their home, respondents in both on-corridor and off-corridor areas were most likely to anticipate positive effects (Figure 25). Among on-corridor respondents, a combined 61% of respondents said provision of this railroad overpass would have either very positive (35.8%) or moderately positive (25.3%) effects for the neighborhood where they live. Among those living in nearby off-corridor neighborhoods expectations of positive effects were even greater, with 45.7% of selecting the "very positive" response and an additional 23.7% indicating that they would anticipate "moderately positive" effects on their neighborhood. Once again, generally similar response patterns were produced by a parallel question that asked respondents to consider effects of a railroad overpass on themselves and members of their own household (Figure 26).

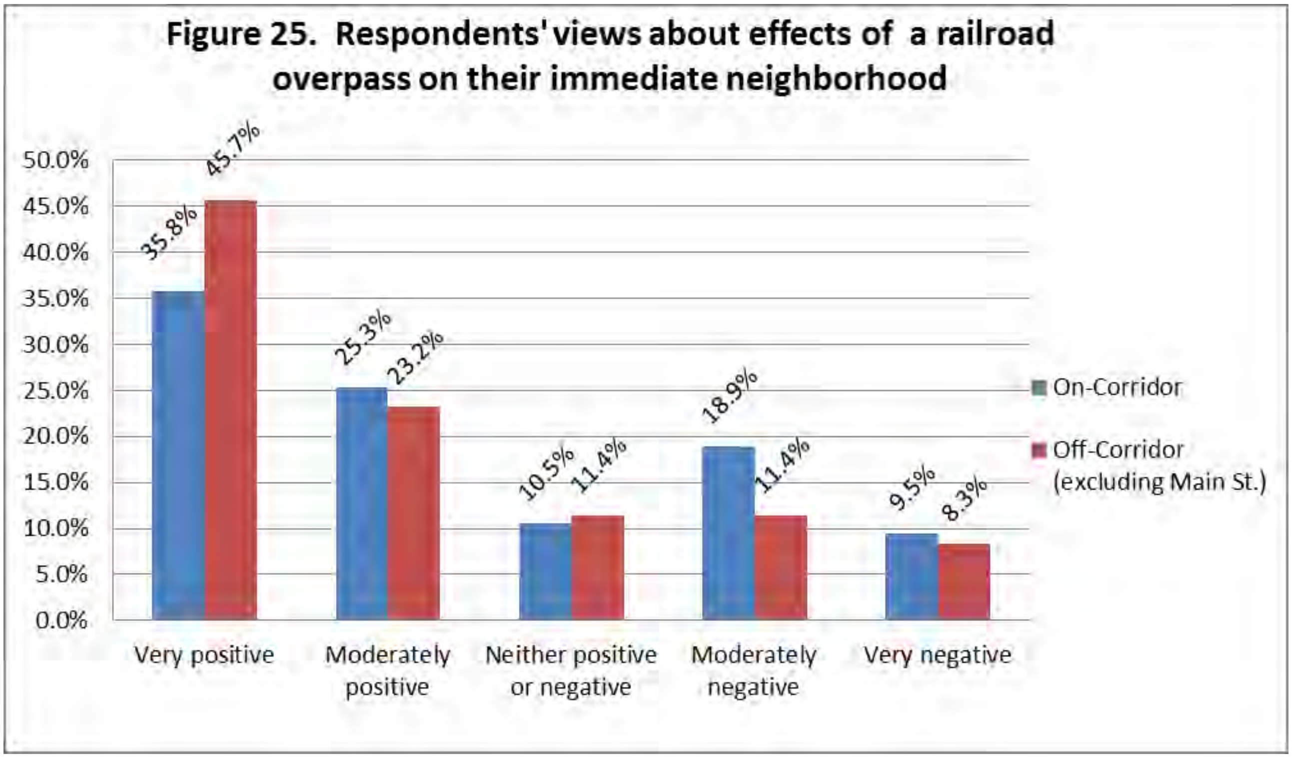


Figure 25. Respondents' views about effects of a railroad overpass on their immediate neighborhood
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
35.8%
45.7%
25.3%
23.2%
10.5%
11.4%
18.9%
11.4%
9.5%
8.3%
Very positive
Moderately positive
Neither positive or negative
Moderately negative
Very negative
On-Corridor
Off-Corridor (excluding Main St.)

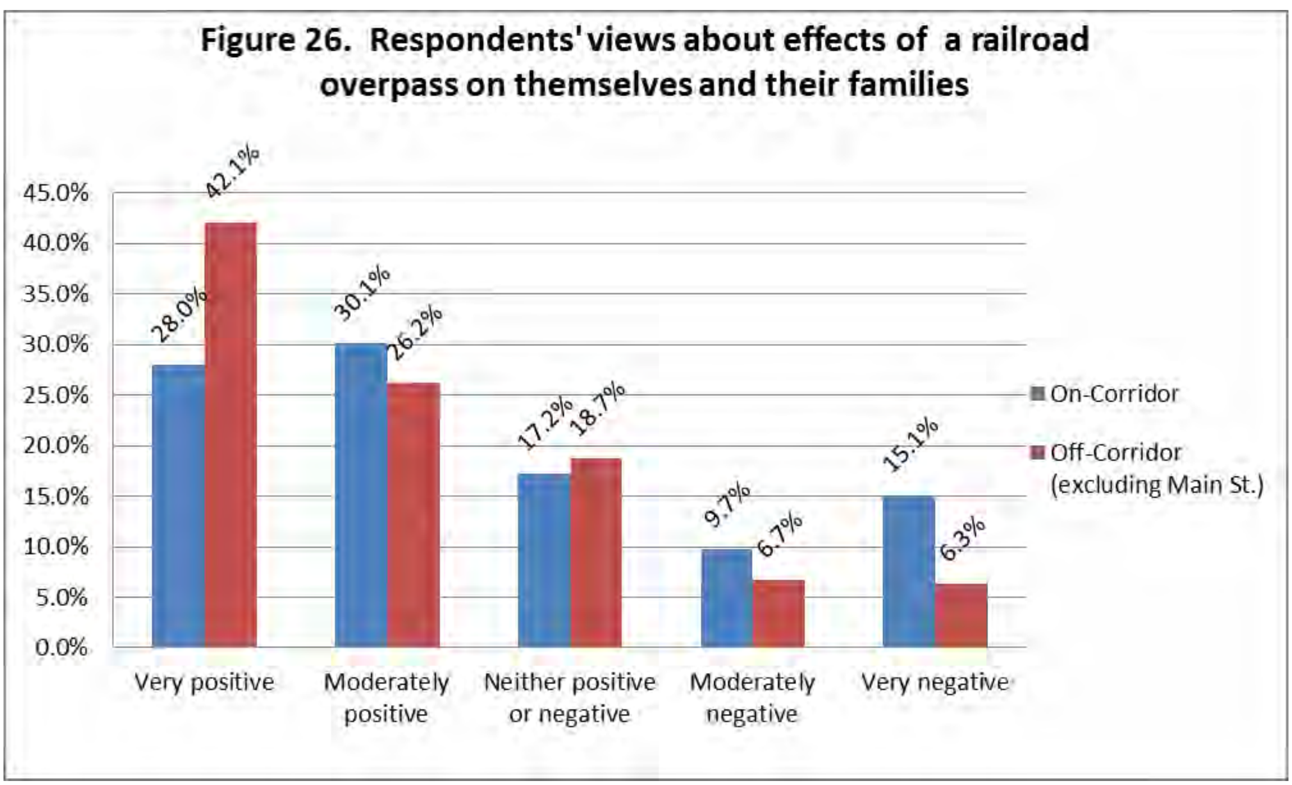
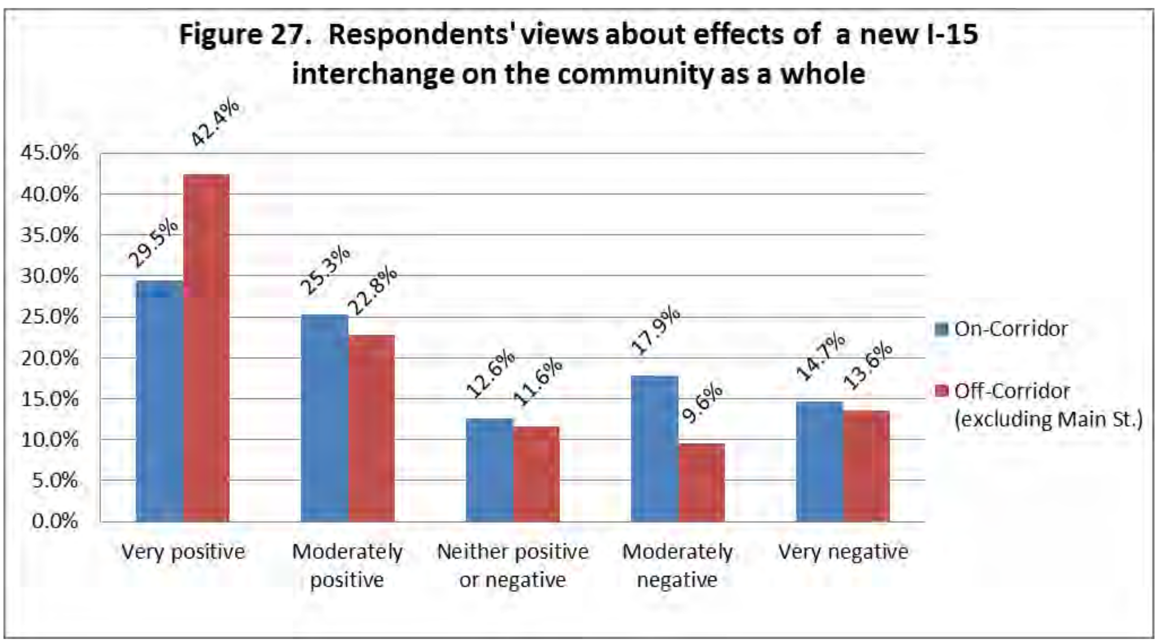


Figure 26. Respondents' views about effects of a railroad overpass on themselves and their families
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
28.0%
42.1%
30.1%
26.2%
17.2%
18.7%
9.7%
6.7%
15.1%
6.3%
Very positive
Moderately positive
Neither positive or negative
Moderately negative
Very negative
On-Corridor
Off-Corridor (excluding Main St.)

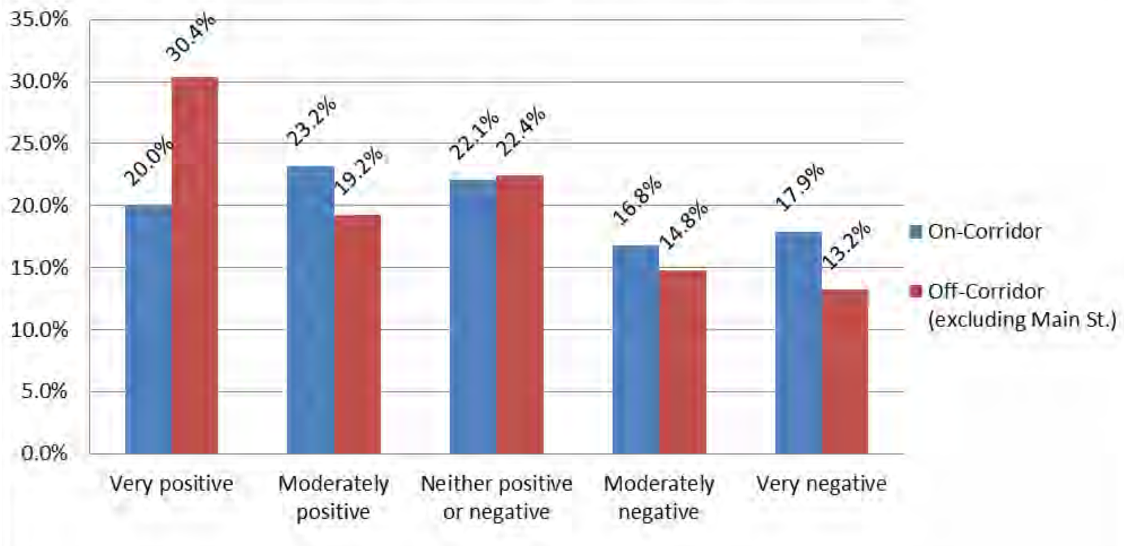
Anticipated effects of I-15 Interchange construction

Although specific details regarding the possible configuration of a new I-15 interchange at 1800 North were not available when the community social survey was conducted, respondents were asked to provide input regarding their general expectations about consequences of having a new interchange built at that location. The first question in this series asked respondents to evaluate the possible effects of a new I-15 interchange on "the community as a whole." As indicated in Figure 27, survey participants living throughout the project area were considerably more likely to anticipate positive community-level effects of a new interchange than to anticipate negative effects. A combined 54.8% of survey respondents living in residences immediately adjacent to the 1800 North corridor said they would expect such effects to be positive overall. Among those living in off-corridor neighborhoods expectations of generally positive effects from a new I-15 interchange were more widespread, reported by about two-thirds (65.2%) of respondents. In particular, off-corridor respondents were considerably more likely to anticipate "very positive" effects (42.4%) than were those who live in on-corridor residences (29.5%).

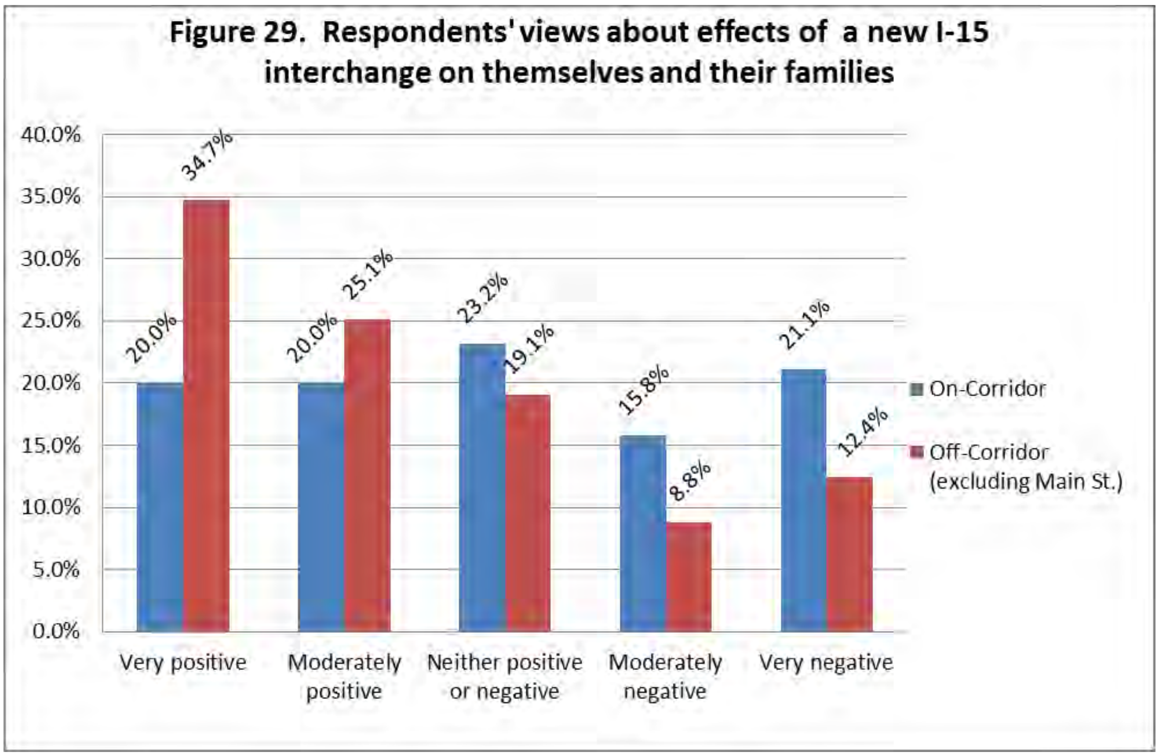


When respondents were asked to consider possible effects of a new I-15 interchange on their immediate neighborhood, expectations of generally positive consequences again were more common than expectations of negative effects (Figure 28). The combined percentages of responses reflecting an expectation of generally "positive" effects was 43.2% among on-corridor residents, and 49.6% among off-corridor residents. Over one-fifth of responses to this question fell into the "neither positive or negative" category (22.1% for on-corridor and 22.4% for off-corridor respondents), which largely accounts for the lower percentage of positive response to this question compared to what was observed for the question focusing on community-wide consequences.

Figure 28. Respondents' views about effects of a new I-15 interchange on their immediate neighborhood



The last question in this series asked respondents to consider possible effects of a new I-15 interchange on themselves and their families. Response patterns summarized in Figure 29 are generally similar to those produced by the two previous questions: 40% of on-corridor respondents and 59.8% of off-corridor respondents said they would anticipate generally positive effects. As with other questions in this series, expectations of negative effects resulting from provision of a new interchange were relatively uncommon among those living in off-corridor areas, and more evident among those who live in on-corridor residences.



Anticipated positive and negative consequences of the project

The survey instrument also included open-ended questions providing respondents with the opportunity to describe in their own words the most important positive and negative consequences they anticipate would accompany widening and reconstruction activities along the 1800 North corridor, and also the construction of a new I-15 interchange.

Comments focusing on anticipated positive effects associated with reconstruction of the 1800 North corridor revolved primarily around three interrelated sets of expectations: reduced traffic congestion and delays while driving in the community (53.1% of responses from residents of on-corridor areas who provided some answer to the question, and 47% of responses from nearby off-corridor areas), easier or more convenient access to and from I-15 (37.9% of responses from on-corridor residents, but only 5.9% of off-corridor responses), and reduced congestion/delays along with improved safety effects associated with placement of a railroad overpass on 1800 North at 500 West (24.9% of responses from off-corridor residents, but not mentioned by any on-corridor respondents).

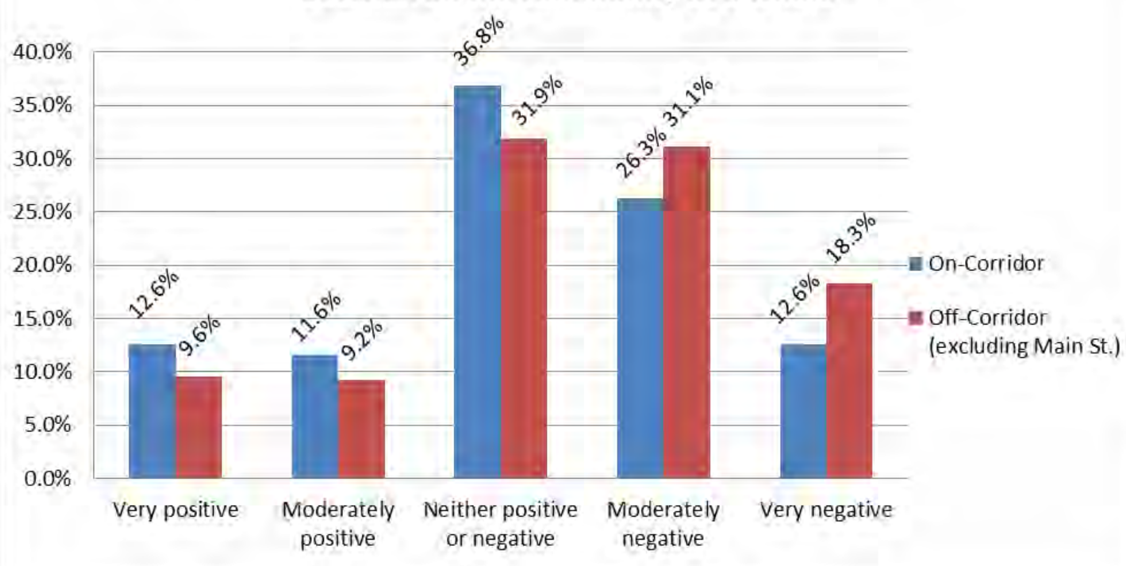
Comments regarding anticipated negative consequences of 1800 North reconstruction varied more widely across the two study area segments. Among residents living in on-corridor locations, the most frequent responses involved expressions of concern about increased traffic volume in the 1800 North corridor (50.7% of the answers provided), construction-period delays and inconveniences (6%), possible loss of property values (6%), possible removal and loss of their own homes (6%), and potential for increased traffic noise (4.5%). Among those living in the nearby off-corridor areas, expressions of concern about potential negative effects focused on increased traffic levels in general (19.6%), delays and other inconveniences associated with the project construction period (16.2%), limited access to and from 1800 North due to the use of raised medians (15.6%), and general concerns about the removal of homes along the corridor (9.5%).

When asked to comment on expected positive effects of a new I-15 interchange, those providing an answer most often focused on easier and more convenient access to the interstate highway (37.9% of on-corridor responses and 44.6% of off-corridor responses), general improvements in traffic flows and reduced congestion (19.7% of on-corridor and 18.7% of off-corridor responses), reduced congestion at existing I-15 interchanges in the surrounding area (7.6% of on-corridor and 10.2% of off-corridor responses), and improved traffic flows to and from Hill Air Force Base (7.6% of on-corridor and 7.2% of off-corridor responses). Expectations of negative effects associated with a new I-15 interchange centered on increases in traffic volume on 1800 North and immediately surrounding areas (50.7% of on-corridor and 44.8% of off-corridor responses), concerns about construction-phase delays and inconveniences (6% of on-corridor and 14.5% of off-corridor responses) and, only among those living in on-corridor areas, concerns about possible removal of their homes (6% of responses) or loss of property values (6% of responses).

What do area residents think about the possible consequences of selecting a "No Build" alternative?

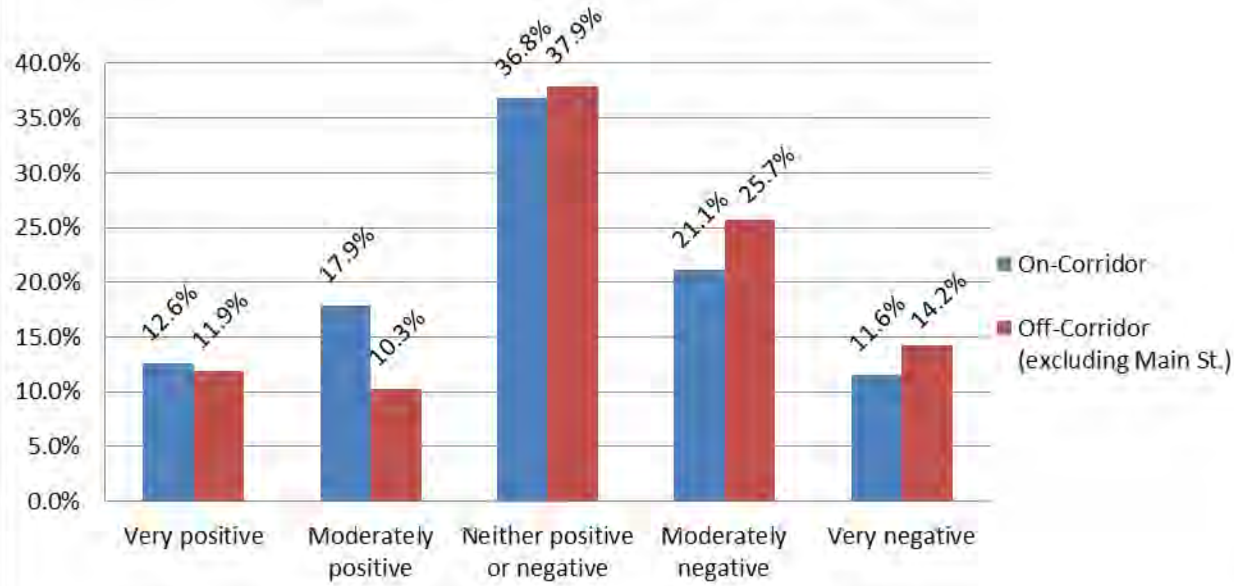
Survey respondents were also asked to consider the possible community-wide, neighborhood, and personal consequences of implementing a "No Build" alternative that would maintain existing transportation infrastructure and conditions in the study area. The first question in this series asked respondents to evaluate the effects they expect such a decision would have for the local community as a whole. The most frequently-selected answer to this question was "neither positive or negative," selected by roughly one-third of both on-corridor (36.8%) and off-corridor (31.9%) residents (see Figure 30). At the same time, respondents from both of the study area segments were considerably more likely to anticipate negative community consequences of a "no build" decision than to believe consequences would be positive. Among on-corridor residents, a combined 24.2% of responses were on the "positive effects" side of the response scale, compared to 38.9% of responses on the "negative effects" side of the scale. Among off-corridor residents only 18.8% of respondents anticipated generally positive effects of a no build decision, while nearly half (49.4%) said effects on the community would be generally negative. Overall, these results reflect a widespread recognition among area residents that some transportation system changes are needed to address current and future traffic problems affecting the project area.

Figure 30. Respondents' views about effects of a 'no build' decision on the community as a whole



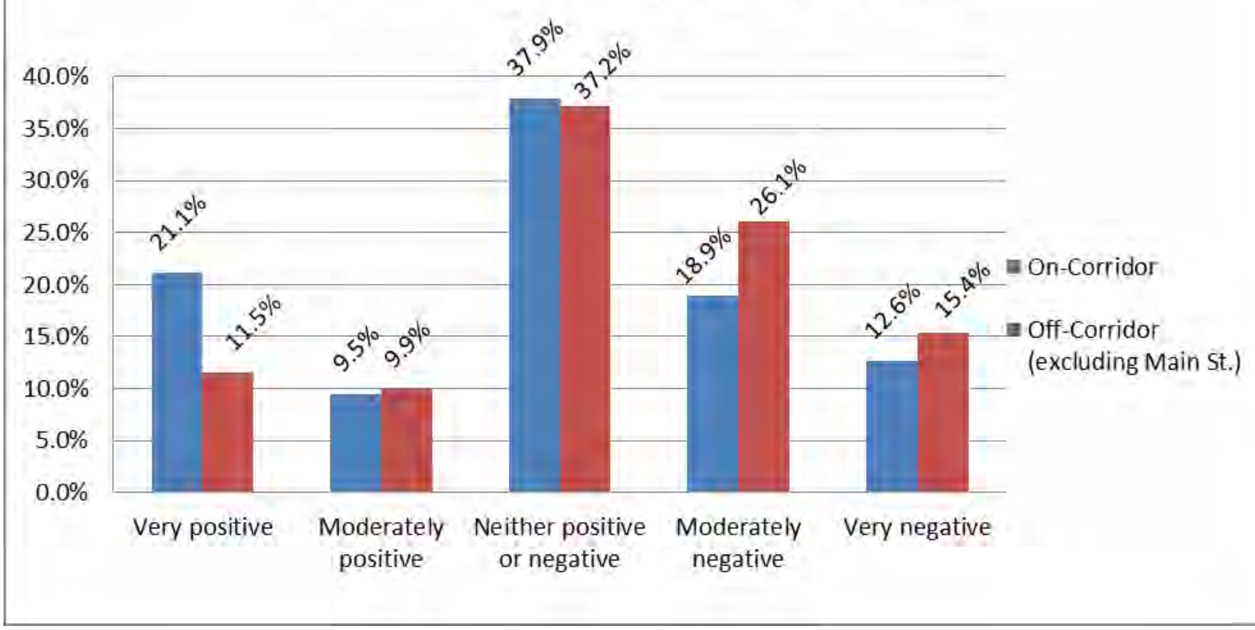
Survey participants were next asked to consider possible effects of a no build decision on the neighborhoods within two blocks of their homes (Figure 31), Once again the most common response among both on-corridor and off-corridor residents was that effects on their neighborhood would be "neither positive or negative." At the same time, among both groups respondents were at least slightly less likely to anticipate generally positive effects from a no-build decision (30.5% of on-corridor and 22.2% of off-corridor responses) than to expect negative effects (32.7% of on-corridor and 39.9% of off-corridor responses).

Figure 31. Respondents' views about effects of a 'no build' decision on their immediate neighborhood



Generally similar response patterns were produced by the third question in this series, which asked survey participants to think about potential effects of a no build decision on themselves and their families. As indicated in Figure 32, over one-third of respondents in both on-corridor and off-corridor areas said that effects would be "neither positive or negative." Among on-corridor residents, about three in ten responses were on the "positive" side of the measurement scale, with one in five respondents saying a no build decision would have "very positive" effects for them and their family. At the same time, a nearly identical proportion of on-corridor responses fell on the "negative effects" side of the scale. Clearly, on-corridor residents express widely varied views about the ways in which they and their families might be impacted should a no build decision occur. In contrast, off-corridor residents were considerably more likely to anticipate negative effects (34.3 of responses) as opposed to positive effects (21.4%) for themselves and their families should a no-build decision emerge, consistent with response patterns produced by the two prior questions.

Figure 32. Respondents' views about effects of a 'no build' decision on themselves and their families



Finally, respondents were provided with an opportunity to indicate in their own words what they believe would be the most positive and the most negative effects of a decision to not build any of the highway infrastructure improvements being considered for the 1800 North project area.

Among on-corridor residents, the most frequently-mentioned positive consequences of a no build decision centered around the avoidance of home removals and unwanted relocations (38.5% of those who provided a response), avoidance of disruptive changes to neighborhoods and the local community (13.8% of responses), avoidance of actions they considered unnecessary because current traffic conditions are viewed as acceptable (10.7%), and prevention of possible project-related impacts on property values (7.7%). Among off-corridor residents, the most common responses regarding positive effects of a no-build decision included avoidance of disturbance and inconvenience associated with construction activities (28.9% of those who responded), avoidance of disruptive changes to neighborhoods and the local community (14.1%), avoidance of home removals and unwanted relocations (9.6%), and avoidance of traffic volume increases expected to result from transportation system improvements (8.1%).

Finally, we turn to respondents' views about potential negative consequences of a no-build decision. Responses provided by on-corridor residents most frequently involved concerns about a failure to address current and/or future traffic congestion problems

(66.7% of those who provided a response) and failure to address safety concerns involving the railroad crossing located at 500 West (5.6% of responses). Among off-corridor residents, responses regarding possible negative consequences of a no-build decision centered around a failure to address current and/or future traffic congestion problems (66.2% of responses), failure to address safety concerns involving the railroad crossing (4.6%), and failure to improve access to I-15 (4.6%).

SOCIAL CONDITIONS: ENVIRONMENTAL CONSEQUENCES

No Action Alternative

A decision to adopt the No Action alternative would leave existing social conditions and trends in the project area intact. Future residential and commercial development in the Clinton/Sunset project area and nearby portions of western Davis and Weber counties would contribute to further increases in traffic volume on 1800 North and other area roadways used to access I-15, Hill Air Force Base, and areas east of the I-15 corridor. Problems with traffic congestion and traffic safety would inevitably increase, particularly during peak flow periods and when passing trains stop the flow of traffic on 1800 North. Area residents as well as others who drive into and through the area would experience continued frustration associated with high traffic volumes and congestion on 1800 North and other routes used to travel within and beyond the project area. The already high levels of concern and dissatisfaction that many area residents express regarding such conditions would almost certainly increase as traffic volume continues to expand and problems associated with congestion and transportation safety increase. Responses to a question included in the community survey asking participants to identify what they would consider to be negative outcomes associated with a decision to not pursue the proposed transportation improvements clearly reflect such concerns. Two-thirds of both on-corridor respondents and those living in nearby off-corridor neighborhoods volunteered responses indicating concern that such a decision would fail to address current and future traffic congestion problems in the area. As these conditions become more problematic, increasing numbers of residents living immediately adjacent to or in close proximity to 1800 North could be expected to relocate. Should that occur, a resulting rise in residential turnover, would over time contribute to lower levels of familiarity and acquaintanceship among neighbors and a gradual decline in social cohesion in the neighborhoods immediately proximate to 1800 North.

At the same time, implementation of the No Action alternative would avoid the more sudden disruptions associated with the substantial number of residential relocations that would accompany reconstruction of the 1800 North corridor. Such relocations, particularly when they involve large numbers of households, have considerable potential to adversely affect localized social ties and levels of social cohesion in affected neighborhoods; such effects would not occur under a No Action alternative. In addition, corridor-adjacent residents whose homes would need to be removed under any of the construction alternatives would not experience the individual and household-level social and economic stresses that frequently accompany forced relocation, and those who wish to remain in their current homes could do so into the foreseeable future.

In addition, a decision to not pursue the proposed reconstruction of 1800 North or the proposed I-15 interchange would at least temporarily alleviate concerns expressed by some residents about construction-related traffic delays and disruptions, alteration of existing neighborhood conditions in areas located closest to project construction areas, relocation of substantial numbers of corridor-adjacent residents, effects on property values, and anticipated increases in traffic volume. When asked to identify potential positive consequences of a "no build" decision, respondents to the community survey focused most frequently on these areas of concern. Among corridor-adjacent residents, the most common responses revolved around the opportunity to avoid home removal and forced relocation of people living in the area (38.5% of volunteered responses), prevention of disruptive changes to local neighborhoods and families (13.8%), and avoidance of anticipated negative effects on property values (7.7%). Among residents of nearby off-corridor areas, responses most frequently focused on avoidance of construction-phase disturbance and inconvenience (28.9%), the ability to maintain existing neighborhood and community conditions (14.1%), prevention of forced relocations of local residents (9.6%), and avoidance of traffic increases expected to result following reconstruction of 1800 North (8.1%).

Despite the fact that many local residents do see some advantages associated with a decision to forego reconstruction of 1800 North, most also express concerns and dissatisfaction about current traffic conditions and see a need for transportation system improvements in the area. As such, implementation of the No Action alternative would be inconsistent with the expectations and preferences of most residents of the broader project area.

Alternatives A, B and C

The configurations of road corridor reconstruction activities and of the proposed railroad overpass along the 1800 North corridor between Main Street in Sunset and 2000 West in Clinton are identical under Alternatives A, B and C. While these alternatives do differ with respect to the configuration of a proposed new I-15 interchange at 1800 North, the land use changes associated with each of those interchange configurations would not intrude into existing residential neighborhoods or have differential consequences for social conditions within neighborhoods adjoining or in close proximity to the 1800 North corridor. Because the social effects associated with each of these three alternatives would be essentially identical, they are not evaluated separately here.

The road reconstruction, railroad overpass construction, and associated transportation system upgrades along the 1800 North corridor proposed under these alternatives would require removal of an estimated 55 corridor-adjacent residences – approximately one-half of those currently present and occupied along the length of the corridor. Areas in which removal of residences would be most extensive include the portion of the corridor between Main Street and 300 West (where all corridor-adjacent homes located north of the roadway would be removed), the segment located between 300 West and 600 West (where all homes on the north side and nearly all on the south side would potentially be removed), and the segment between 600 West and 900 West (where all homes located on the north side of the corridor would potentially be removed).

Relocation of these residences is likely to prove disruptive both economically and socially to many of the individuals and households that would be affected, for a variety of reasons. Although property owners would receive fair market compensation for the values of their homes, some have expressed concern that in the current real estate market such compensation would be inadequate. Given that on-corridor residents generally reported more modest household income levels than those living in surrounding portions of the project area, some displaced homeowners as well as renters could find it difficult to locate alternative housing at equivalent or affordable cost, particularly in areas where they would prefer to live. Some would also likely find it difficult to afford the financial costs associated with moving, or to grapple with the variety of individual and family-level financial and psychological stress effects that research has shown to be associated with relocation.

In addition, even though overall social cohesion does not appear to be unusually strong among residents of corridor-adjacent portions of the project area, some do report substantial ties with neighbors and strong attachments to their neighborhoods. Many have lived in their current homes for an extended period of time, a factor contributing to patterns of attachment and localized social ties that would make it more difficult to accept or adjust to a required relocation. The relocation of many households throughout the project corridor would undoubtedly impact neighborhood-based social interaction patterns and social integration levels both for members of the relocated households and for those neighbors with whom they are most closely engaged. In addition, responses to the community social survey suggest that many of those confronted with the need to relocate would be unhappy about doing so. While some on-corridor residents did indicate a preference for relocation, most (about two-thirds) said they would be sorry to leave their current homes and neighborhoods. The requirement to relocate would be especially unsettling and disruptive for those who express a strong preference to continue living where they now reside. Those required to relocate would experience a variety of individual and family-level disruptions, due to alteration or loss of neighborhood-based social ties as well as social interaction patterns linked by residential location to participation in church, school, and other localized organizational activities. Although most individuals can be expected to adapt successfully to such relocation effects over time, these impacts would be experienced in the short term by nearly all of those affected by relocation requirements. Longer-term adaptive difficulties would be more likely to occur among elderly and low-income residents affected by relocation, because those populations tend generally to have less access to the range of resources and opportunities needed to establish interpersonal and organizational ties that rely less heavily on residential location and proximity.

It is conceivable that dissatisfaction, adjustment difficulties, and reduced social cohesion associated with residential relocations might be experienced at higher or lower levels within particular localized neighborhoods along the project corridor, particularly in those areas where all or most homes would potentially be removed. However, data from the community social survey do not clearly indicate that to be the case. When response patterns for survey questions pertaining to such issues were compared for groups of on-corridor respondents living along various segments of 1800 North, no statistically significant differences were identified. Moreover, even where seemingly noteworthy differences between particular localized areas were observed the evidence regarding potentially greater or lesser social effects was inconsistent. For example, when compared to other localized areas along the project corridor, residents living on the north side of 1800 North in the eastern portions of the corridor (Main Street to 500 North) were less likely to know many of their neighbors, and less likely to socialize with neighbors. At the same time, residents of that localized area were more likely have a substantial number of close friends in the surrounding neighborhoods, and least likely to anticipate positive effects for themselves or their families as a result of the proposed road reconstruction. Given this mixed evidence, the potential for removal under Alternatives A, B and C of all residences located on the north side of this segment of 1800 North would not necessarily cause more negative effects on individual well-being or localized social cohesion than would occur with relocation of residences in areas located elsewhere along the project corridor.

In the short term, residents living throughout the project area would experience inconvenience and frustration associated with traffic diversions, delays, and roadway closures during the construction phase of the project. Since a large majority of residents living in both on-corridor and nearby off-corridor portions of the project area report that they and members of their households drive nearly every day on 1800 North, these short-term adverse effects would be widespread. Those living immediately adjacent to the project corridor who are not required to relocate, as well as residents of nearby surrounding neighborhoods who regularly drive to and from their homes via 1800 North, would experience difficulties and delays in accessing their properties during at least some portions of the construction phase. In addition, residents of corridor-adjacent areas in particular would experience disturbances associated with the effects of construction-related noise and localized deterioration of air quality resulting from increased airborne dust generated by construction activity. Residents of nearby off-corridor neighborhoods within a 2-3 block distance of construction areas would also experience these effects, though at somewhat lower intensity. Residents of other areas outside of the project area who drive through affected portions of Sunset and Clinton or along the portion of I-15 that would be affected by construction of the proposed new interchange would also experience inconvenience during the construction phase of the project due to periodic road closures, detours, delays, and associated traffic congestion effects.

Over the longer term on-corridor residents who are not required to relocate would experience substantial changes in the environmental conditions that characterize their neighborhoods, due in part to increased proximity of the 1800 North roadway and associated infrastructure affecting some residential properties as well as exposure to increased traffic volumes and traffic noise. In addition, the proposed use of a raised median along all or most of the reconstructed road corridor would require that those living in on-corridor residences turn only to the right when driving away from their homes, and to access their driveways from only the side of the roadway on which the home is located when returning. As was noted in Chapter 3, the prospect of having a raised median included as part of the proposed reconstruction of 1800 North was identified as a major concern by many on-corridor residents, and represents a probable source of ongoing inconvenience and dissatisfaction for those who would continue to live there following completion of construction.

Residents of nearby off-corridor portions of the project area would experience few if any long-term environmental disturbances following the completion of construction activities, due largely to their greater spatial separation from the expanded transportation corridor. There is little reason to anticipate significant changes in social interaction or community participation patterns among residents of these surrounding off-corridor neighborhoods, since land use changes associated with the project would not intrude into those areas. Neighborhood-based levels of familiarity, interaction, and social cohesion are also not likely to be affected by the presence of a wider and more heavily-utilized 1800 North corridor, since the existing roadway appears already to limit familiarity and interaction among those living on opposite sides of the corridor and because it currently serves as boundary separating the LDS church wards that provide a key organizational context for localized social interactions and engagement in this area.

Once project construction activities are completed residents of the project area and surrounding portions of Davis and Weber counties would experience reduced frustrations associated with traffic congestion along the 1800 North corridor, improved ability to access I-15 for travel to areas north and south, and easier access to Hill Air Force Base and other areas located east of the I-15 corridor. Such improvements would contribute positively to levels of satisfaction among the majority of project area residents, who at present are generally dissatisfied with current traffic conditions and travel difficulties involving the 1800 North corridor.

Alternatives D, E and F

As was the case with Alternatives A, B and C, Alternatives D, E and F incorporate identical configurations of transportation system changes proposed for portions of 1800 North located between Main Street in Sunset and 2000 West in Clinton. These three alternatives do differ with respect to configurations for the proposed interchange of 1800 North with I-15, but none of those interchange configurations would involve land use changes extending into portions of the project area where residential properties and neighborhoods occur. As a result Alternatives D, E and F are considered as having indistinguishable social effects, and are therefore evaluated jointly rather than separately here.

The road reconstruction, railroad overpass construction, and associated transportation system upgrades proposed for the 1800 North corridor under these alternatives would require removal of an estimated 47 corridor-adjacent residences. While this total is slightly lower than the 55 relocations associated with Alternatives A, B and C, it still represents nearly half of the occupied homes currently present along the length of the corridor. Areas in which removal of residences would be most extensive include the corridor segment located between Main Street and 300 West (where all corridor-adjacent homes south of the roadway and one north of the roadway would potentially be removed), the segment located between 300 West and 600 West (where all homes on the north side and nearly all on the south side would potentially be removed), and the segment between 600 West and 900 West (where all homes located on the north side of the corridor would potentially be removed). Road corridor shifts and requirements for relocation of residences and other structures are the same under Alternatives D, E, and F as those anticipated under Alternatives A, B, and C in portions of the project corridor located west of approximately 600 West. The primary area in which residential relocations would differ relative to those projected to occur under Alternatives A, B and C is the corridor segment located between Main Street and 300 West. As noted previously, under Alternatives A, B and C the road corridor in that area would shift to the north, requiring removal of structures on north side of the existing roadway. In contrast, under Alternatives D, E and F the corridor would shift to the south and primarily require removal of a somewhat smaller number of structures located on the south side of the roadway.

Overall, the social effects of this set of alternatives would be only slightly different from those outlined for Alternatives A, B and C. Slightly fewer households would be affected by relocation. At the same time, removal of nearly half of the homes directly adjoining the 1800 North project corridor would be economically and socially disruptive to many of the families and individuals confronted with the need to relocate. Economic issues of concern to displaced residents include potential disputes and dissatisfaction on the part of some property owners regarding the determination of fair market value of their homes, the ability of displaced residents to find affordable alternative housing in appropriate or preferred locations, and financial burdens associated with the costs of moving and establishing a new place of residence. Individual-level psychological effects as well as strains experienced by families confronted by the stressful effects of relocation would in all likelihood affect some portion of those required to move. Social interaction patterns and levels of social integration would be impacted among both members of relocated households and the broader neighborhoods in which they currently reside. A general preference expressed by most on-corridor residents to remain in their current homes would contribute to dissatisfaction among many of those confronted by a requirement that they relocate. While most of those who relocate are likely to exhibit successful adaptation after an initial period of adjustment to new residential areas and differing social interaction opportunities, some would likely experience longer-term difficulties in establishing new social ties and the kinds of associations that are central to social integration and well-being.

Although the effects of relocation would be experienced directly by slightly fewer households and individuals under this set of alternatives than under Alternatives A, B and C, the overall effects on neighborhood-level and community social cohesion would not clearly differ across the two sets of alternatives. In addition, since consistent differences in levels of social engagement or community attachment are not evident across localized segments of the 1800 North road corridor, the removal of fewer homes accompanying a south shift of the roadway between Main Street and 300 West under Alternatives D, E and F would from a social effects standpoint not be indisputably preferable to the removal of a slightly larger number of homes under the north shift alignment associated with Alternatives A, B and C.

In the short term, residents living throughout the project area would experience the same types and levels of inconvenience and frustration associated with traffic diversions and roadway closures during the construction phase of the project under this set of alternatives as were discussed regarding Alternatives A, B and C. Those who remain in residences adjacent to the project corridor and some residents of nearby surrounding neighborhoods would experience difficulties and delays in accessing their properties during portions of the construction phase. In addition, residents of corridor-adjacent areas and to a lesser extent those in nearby off-corridor neighborhoods would experience disturbances associated with noise and dust generated by construction activity. Residents of other areas who drive through portions of the project area would also be inconvenienced by periodic road closures, detours, delays, and associated traffic congestion effects.

Longer-term social effects would also be essentially identical under alternatives D, E and F as those outlined for Alternatives A, B, and C. Many on-corridor residents who do not relocate would experience increased proximity of the 1800 North roadway and associated infrastructure, and all would be exposed to increased traffic volumes and noise. Use of a raised median would create inconvenience and add to levels of dissatisfaction among many of those who continue to live along 1800 North. Residents of nearby off-corridor portions of the project area would experience few if any long-term environmental disturbances following the completion of construction activities, and levels of familiarity, interaction, and social cohesion in those areas would be essentially unaffected by expansion and improvements of the 1800 North corridor associated with this set of alternatives. In addition, residents of the project area and surrounding portions of Davis and Weber counties would experience reduced frustrations associated with traffic congestion along the 1800 North corridor, improved ability to access I-15 for travel to areas north and south, and easier access to Hill Air Force Base and other areas located east of the I-15 corridor.

Mitigation

For on-corridor residents whose homes would not be removed, major issues of concern under either set of alternatives include exposure to increased traffic noise and a potential for increased proximity of the roadway and associated loss of yard and driveway space if the corridor is shifted toward their properties. Where possible, the road corridor alignment should be shifted in a fashion that minimizes intrusion into residential properties that do not require removal. In addition, a substantial number of residents expressed interest in the provision of structures that would help to mitigate the effects of increased traffic noise. Although sound wall structures may be impractical in this setting, the use of vegetative plantings to both enhance the aesthetics of the road corridor and provide some visual and sound buffering for residents who remain in corridor-adjacent homes would be advisable. Mature landscaping should be left intact wherever possible, and new landscaping features should be considered as part of the final construction plan.

ENVIRONMENTAL JUSTICE: AFFECTED ENVIRONMENT

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994, directs federal agencies to take appropriate and necessary steps to identify disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent possible and permitted by law.

Fundamental Environmental Justice principles include:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process
- To prevent the denial of, reduction in, or substantial delay in the receipt of benefits by minority and low-income populations

Executive Order 12898 and the United States Department of Transportation (USDOT) and Federal Highway Administration (FHWA) Orders on Environmental Justice address persons belonging to any of the following groups:

- Black – a person having origins in any of the black racial groups of Africa
- Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
- Asian – a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
- American Indian and Alaskan Native – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition
- Native Hawaiian or Other Pacific Islander – a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
- Low-Income – a person whose household income (or in the case of a community or group, whose median household income) is at or below the HHS poverty guidelines

Census-Based Data Relating to Environmental Justice

<u>Clinton and Sunset Cities</u>

As was discussed in the Social section of this chapter, the cities of Clinton and Sunset are both characterized by somewhat higher concentrations of minority populations than is the case in Davis County as a whole. In 2010 11.7% of residents living in Clinton and 16.7% of Sunset residents were classified as members of a non-white racial minority.

Hispanic/Latino persons represented 11.3% of Clinton's population and 15.3% of Sunset's population in 2010. With respect to income, the median household income reported for Clinton ($65,168) was just slightly below that reported for all of Davis County ($66,866). However, median income was considerably lower in Sunset ($49,202). Although the percentage of families with incomes below the poverty level was lower in Clinton (3.3%) than in Davis County overall (5.2%), the percentage was considerably higher for families living in Sunset (10.7%).

Census Tract Data

Because the Census Bureau is still in the process of releasing data from the 2010 Census for some smaller-scale geographic units, assessment of the presence of Environmental Justice populations for very localized areas such as census-defined blocks or block group areas within the 1800 North project area is currently not possible. However, data from the 2010 Census are available for somewhat larger census tracts, which allow for some evaluation of the spatial distributions of minority and low-income populations for areas smaller than most municipal boundaries. In the case of the 1800 North project area, relevant data are reported for three census tracts: (1) Census Tract 1253.01, which encompasses essentially all of Sunset city; (2) Census Tract 1253.04, which encompasses portions of Clinton located east of 2000 West and north of 1800 North; and (3) Census Tract 1253.05, which encompasses portions of Clinton located east of 2000 West and south of 1800 North.

Census data pertaining to minority and low-income populations within these three census tracts are reported in Table 3-2. With respect to racial minority populations, the data indicate a greater concentration of racial and ethnic minority populations in the eastern portion of the project area encompassed by Census Tract 1253.01 in Sunset (16.7% non-white and 15.4% Hispanic) than is evident for either of the census tracts that encompass portions of the project area located within Clinton. In the northern segment of the Clinton portion of the project area (Census Tract 1253.04) 13.4% of residents were classified as non-white, and 11.8% were classified as Hispanic. In the southern segment of the Clinton portion of the project area (Census Tract 1253.05), 11.8% of residents were classified as non-white and 11.6% as Hispanic.

In addition, data for these census tracts reveal both substantially lower household income levels and a markedly higher concentration of persons living below the poverty level in the eastern portion of the project area than in western portions. For the Sunset area encompassed by Census Tract 1253.01 the median household income was just over $50,000, and 12.5% of residents were living in households with incomes below the poverty level. In contrast, within the Clinton portion of the project area located north of 1800 North (Census Tract 1253.04) the median household income was just over $65,000, and only 0.5% of residents were below the poverty level. In the Clinton portion of the project area located south of 1800 North (Census Tract 1253.05) the median income was over $74,000, with 3.5% of residents below the poverty level.

Table 3-2. Population Characteristics (from 2010 Census Data) Relating to Environmental Justice for Three Census Tracts Encompassing the 1800 North Project Area

	Census Tract 1253.01 Portions of project area located in Sunset	**Census Tract 1253.04** Portions of project area located north of 1800 North in Clinton	**Census Tract 1253.05** Portions of project area located south of 1800 North in Clinton
Total population in area	5,108	4,901	6,152
RACE			
White alone	4,254 (83.3%)	4,242 (86.6%)	5,427 (88.2%)
Black or African American alone	74 (1.4%)	56 (1.1%)	90 (1.5%)
American Indian/Alaskan Native alone	35 (0.7%)	25 (0.5%)	34 (0.6%)
Asian alone	122 (2.4%)	108 (2.2%)	167 (2.7%)
Native Hawaiian/other Pacific Islander alone	15 (0.3%)	4 (0.1%)	39 (0.6%)
Other race alone	368 (7.2%)	242 (4.9%)	221 (3.6%)
Two or more races	240 (4.7%)	224 (4.6%)	174 (2.8%)
HISPANIC OR LATINO	785 (15.4%)	580 (11.8%)	715 (11.6%)
MEDIAN HOUSEHOLD INCOME	$50,116	$65,075	$74,323
PERCENT OF PERSONS BELOW POVERTY LEVEL	12.5%	0.5%	3.5%

Corridor-Specific Survey Data Relating to Environmental Justice

The Census-based data summarized above indicate that there is a concentration of Environmental Justice populations in some areas surrounding the 1800 North project corridor – most notably in areas that encompass eastern portions of the project area. However, those data are reported at spatial scales that do not clearly reveal whether either minority or low-income populations are disproportionately represented among a considerably smaller subset of local-area residents who live in immediate proximity to the 1800 North project corridor or the proposed new I-15 interchange. Exposure to construction-related disturbances, future increases in traffic volume, emissions and noise, increased residential proximity to a widened roadway, and potential for required relocation from existing residences all would be most directly experienced by persons living immediately adjacent to the areas proposed for construction. Therefore, analysis that is focused explicitly on those who live in corridor-adjacent residences is necessary to more clearly reveal whether the proposed 1800 North project is likely to have disproportionately adverse environmental and health effects on minority and low-income populations. Unlike the information derived from Census reports, data derived from the community social survey of project area residents conducted in 2011 allow for this type of more fine-grained analysis.

Corridor-Adjacent Minority Populations

With respect to minority populations, responses to the community social survey revealed that 6.6% of survey participants living in corridor-adjacent residences identified themselves as members of a non-white racial category, while 8.4% indicated that another member (or members) of their household was non-white. In addition, 7.5% of these on-corridor survey respondents identified themselves as Hispanic and 8.6% said one or more other household members were Hispanic.

When compared to the Census-based data for Clinton and Sunset discussed above, results from the survey of on-corridor residents indicate that both racial minority and Hispanic populations occur at lower percentages in portions of the project area immediately adjoining the 1800 North construction corridor than is the case for the surrounding communities as a whole. The survey data do reveal somewhat higher concentrations of minority populations within specific localized segments of the project corridor – for example, 9.6% of survey participants living on the north side of 1800 North between Main Street and 500 West identified themselves as non-white and 9.5% identified themselves as Hispanic, while 15% of those living on the south side of 1800 North between 500 West and 1000 West said they were Hispanic. However, even in these more localized areas along the project corridor the percentages of respondents identified as members of minority populations are similar to or lower than the percentages for the broader area comprised of Sunset and Clinton cities.

Given the apparently low concentration of minority residents living in homes located immediately adjacent to areas proposed for construction as part of the 1800 North project, there appears to be little potential that the project would cause disproportionately adverse

environmental or health effects on minority populations living in the project area.
Corridor-Adjacent Low-Income Populations

The presence of low-income populations of potential concern in terms of Environmental Justice issues was determined by examining responses to the community social survey regarding household income levels and household size. HHS poverty guidelines in effect at the time of the survey were used to identify below-poverty households with reported incomes ranging from $10,830 or less (for a family unit of one person) to $37,010 (for a family unit of 8 persons).

Among all corridor-adjacent residents who responded to the survey, a total of six reported income and household size information indicating that their household was at or below the poverty level. That total represents 6.6% of the 91 on-corridor households for which responses to questions needed to determine poverty status were provided, and 6.3% of the 95 households for which some survey response was obtained.

Three of these below-poverty households were located in the portion of the project corridor located within Sunset, east of the Union Pacific/Frontrunner rail line located at approximately 500 West; one was located on the north side of the corridor, and two on the south side. Those three households represent approximately 8.6% of the households for which survey data were obtained in this eastern portion of the project corridor, a percentage considerably lower than the 12.5% of below-poverty households reported above for Census Tract 1253.0, which surrounds the eastern portion of the project corridor.

The remaining three below-poverty households were located in the portion of the project corridor located in Clinton between 500 West and 1000 West; two of these were located on the north side of the road corridor, and one on the south side. Those three households represent 5% of the households for which survey data were obtained in on-corridor portions of the project area located within Clinton. This is a somewhat higher percentage of below-poverty households than the 0.5% identified for Census Tract 1253.04 (portions of Clinton located north of the project corridor) or Census Tract 1253.05 (areas south of this portion of the corridor). At the same time, it is considerably lower than the percentage of below-poverty households identified in the on-corridor portion of the project area located in Sunset, and nearly identical to the county-wide percentage of families below the poverty level in Davis County.

Taken as a whole, these survey-based data indicate that the presence of below-poverty households in portions of the project area immediately adjacent to the 1800 North construction corridor is not unusually high relative to levels observed for Davis County or for the broader Clinton/Sunset community area. Because of this, it appears that there is little potential for the proposed transportation construction project to have disproportionately adverse environmental or health effects on low-income populations living in the project area.

ENVIRONMENTAL JUSTICE: ENVIRONMENTAL CONSEQUENCES

Data derived from the social survey conducted in 2011 indicate that there is not an especially high concentration of racial or ethnic minority populations in either on-corridor or off-corridor portions of the project area. There is also little evidence that there are unusually high numbers of low-income households in the project area. Further, there is no indication that there are more localized areas along the 1800 North road corridor in which there is a major concentration of either minority or low-income households. These conditions indicate that Environmental Justice issues are not a significant issue with this proposed project, since disproportionately high and adverse environmental or health effects on minority or low-income populations would not occur.

Mitigation

Because Environmental Justice concerns have not been identified, no mitigation focused specifically on such concerns is required.

1800 North Existing Safety Conditions Analysis

The safety analysis covers the following locations in the study area:

- On I-15, the four mile section from MP 335 to MP 339. This includes the two existing interchanges in the study area: 650 North and 5600 South.
- On SR-103 (650 North), the 0.225 mile section from SR-126 (Main Street) to the gate entrance at Hill Air Force Base.
- On SR-97 (5600 South), the 0.252 mile section from SR-126 (Main Street) to the gate entrance at Hill Air Force Base.
- At the intersection of SR-37 (1800 North) and SR-126 (Main Street), the three approaches within 0.25 miles of the intersection.

Crash data for these areas were provided by UDOT for the last three years of available data (2008 through 2010). Using the crash data and Average Annual Daily Traffic (AADT) from UDOT, the crash rates on each roadway facility were determined. These rates demonstrated the number of total crashes per million vehicle miles traveled, as well as the number of severe crashes (incapacitating injury and fatal crashes) per 100 million vehicle miles traveled. These rates were compared to the average crash rates on UDOT facilities of similar functionality and traffic volume. Summaries of the types of crashes (manner of collision) and crash severity were also compiled for each roadway facility. Lastly, crash cluster locations were identified in an attempt to detect trends or hotspots where specific crash types are occurring. The source data contained in this analysis is confidential and is protected under Federal Law (23 USC 409).

Existing I-15 Safety Conditions

Crash data were evaluated along I-15 from milepost (MP) 334.20 (700 South northbound on-ramp) to MP 339.21 (Riverdale Road southbound on-ramp). Over the last three years, the crash rate was approximately 1.24 crashes per million vehicle miles traveled, which is less than the average rate for similar UDOT facilities (1.51 ±0.10). The crash severity rate index was slightly less, however not statistically significant, compared to the UDOT average for similar facilities. Table 1 summarizes the crash rates for the last three years along this segment of I-15, including the average severity (1 meaning “No Injury” and 5 meaning “Fatality”).

Table 1 - Crash Rate Summary for I-15

Year	Number of Crashes	Crash Rate[1]	# of Severe Crashes	Crash Severity Rate[2]	AADT	Average Crash Severity
2008	207	1.18	3	1.71	95,664	1.40
2009	258	1.30	3	1.52	108,156	1.33
2010	233	1.21	6	3.13	104,983	1.37
Total	**698**	**1.24**	**12**	**2.13**	**102,934**	**1.36**

UDOT Average Rates for Similar Roadway Facilities						
Average Rates:		**1.51 ±0.10**		**2.40 ±0.30**	**75K – 250K**	**1.34**

[1] Crashes per million vehicle miles traveled

[2] Severe crashes per 100 million vehicle miles traveled

The average severity of crashes along this stretch of I-15 was slightly higher than average. Some of these crashes and the overall severity may be lower today as a result of UDOT installing a cable barrier in the median of I-15 through this segment sometime between 2009 and 2010. In addition, UDOT recently (in 2012) added an auxiliary lane approaching the northbound off-ramp to 5600 South (SR-97) and widened the ramp itself, which in turn has added capacity to ramp. This widening of I-15 may have an influence on the crash rates observed through this area. Table 2 summarizes the overall crash severity through this section of I-15.

Table 2 - Crash Severity Summary for I-15

Crash Severity	No. of Crashes	Percent
No Injury	524	75.1%
Possible Injury	110	15.8%
Non-Incapacitating Injury	52	7.4%
Incapacitating Injury	9	1.3%
Fatality	3	0.4%
Total	**698**	**100.0%**

Most of the crashes within this segment of I-15 are single vehicle crashes.

Table 3 summarized the different manners of collision along this stretch of I-15. The next highest manners of collision observed within this segment of I-15 are rear end and side swipe crashes, respectively.

Table 3 - Collision Type Summary for I-15

Type of Collision	No. of Crashes	Percent
Angle	28	4.0%
Rear End	221	31.7%

Head on	3	0.4%
Side Swipe	123	17.6%
Parked Vehicle	6	0.9%
Rear to Side	2	0.3%
single vehicle	315	45.1%
	698	**100.0%**

Most of the crashes occurred at or near the interchanges. For example, there were a significant number of rear-end crashes on and near the northbound off ramps to both 650 North and 5600 South. Five segments on I-15 were identified as crash cluster areas, i.e., locations within the study area where crashes are more prevalent: These cluster areas are summarized in

Table 4.

- Milepost 334.2 to 335.6: This cluster has a high number of rear end, side swipe, and single vehicle crashes on the interstate mainline. There are also a significant number of rear end crashes reported on the northbound off-ramp to 650 North. The recurring congestion on the northbound off-ramp to 650 North contributes to the high number of crashes in this cluster segment.
- Milepost 335.6 to 336.1: Crashes in this area may be associated with either congestion near the 650 North interchange or the mainline curvature of I-15 through this area. Most of the crashes in this area were either rear end or single vehicle crashes.
- Milepost 336.1 to 336.5: These crashes may be attributed to congestion near the 650 North interchange. Most of the crashes in this area were also either rear end or single vehicle crashes.
- Milepost MP 337.6 to 338.3: The most common crash type in this area is a single vehicle crash. These crashes may be attributed to congestion from the northbound off-ramp to 5600 South. A significant number of rear end crashes were also reported to have occurred on the northbound 5600 South off-ramp.
- Milepost 338.4 to 339.2: Many of these crashes were single vehicle crashes. Perhaps some of these crashes could be attributed to congestion at the 5600 South interchange or possible the short weaving section between the 5600 South and Riverdale Rd on and off-ramps.

Table 4 - Crash Cluster Summary for I-15

I-15 Milepost		Length (Miles)	Angle	Rear End	Head on	Side Swipe	Parked Vehicle	Rear to Side	Single Vehicle	Total Crashes
334.20	335.59	1.4	8	50	1	40	1	0	81	181
650 North NB Off Ramp MP 335.577		N/A	1	14	0	1	0	0	0	16
335.60	336.09	0.5	1	27	1	17	2	0	32	80
336.10	336.49	0.4	2	22	0	13	0	0	19	56
337.60	338.29	0.7	4	21	0	17	2	1	60	105
5600 South NB Off Ramp MP 338.206		N/A	0	11	0	2	0	0	3	16
5600 South SB Off Ramp MP 338.636		N/A	0	8	0	1	0	0	3	12
338.40	339.21	0.8	5	31	1	19	0	1	73	130

Existing Safety Conditions for 650 North

Crash data along 650 North were evaluated from Main St (SR-126) (SR-103 MP 0.00) to the Hill Air Force Base (SR-103 MP 0.24). Table 5 summarizes the crash rates for 650 North. The crash rate is higher than the UDOT average for a similar facility. There were no severe crashes over the last three years and as a result the severe crash rate was significantly less than the average rate on similar facilities. A summary of the overall crash severity on 650 North is shown in

Table 6.

Table 5 - Crash Rate Summary for 650 North

Year	Number of Crashes	Crash Rate[1]	# of Severe Crashes	Crash Severity Rate[2]	ADT	Average Severity
2008	14	7.46	0	0.00	21,420	1.36
2009	8	4.29	0	0.00	21,295	1.25
2010	10	6.96	0	0.00	16,405	1.20
Total	**32**	**6.18**	**0**	**0.00**	**19,707**	**1.27**

UDOT Average Rates for Similar Roadway Facilities					
Average Rates:	**4.54 ±0.34**		**10.3 ±0.9**	**20K – 65K**	**1.55**

[1] Crashes per million vehicle miles traveled

[2] Severe crashes per 100 million vehicle miles traveled

Table 6 - Crash Severity Summary for 650 North

Crash Severity	No. of Crashes	Percent
No Injury	23	71.9%
Possible Injury	9	28.1%
Non-Incapacitating Injury	0	0.0%
Incapacitating Injury	0	0.0%
Fatality	0	0.0%
Total	**32**	**100.0%**

The most common manner of collision type along both 650 North is a rear-end collision. This collision type is typically observed near signalized intersections. Table 7 summarizes the type of collisions experienced over the last three years on 650 North. The crash cluster locations by milepost and by crash type for 650 North are shown in Table 8. As expected, most of the crashes occurred at or near intersections, as demonstrated in the crash cluster tables below.

Table 7 – Collision Type Summary for 650 North

Collision Type	No. of Crashes	Percent
Angle	9	28.1%
Rear End	16	50.0%
Side Swipe	5	15.6%
Parked Vehicle	0	0.0%
Single Vehicle	2	6.3%
Total	**32**	**100.0%**

Table 8 - Crash Cluster Locations for 650 North

Mileposts (MP 0.00 to 0.24)		Collision Type					Reference Locations
		Angle	Rear End	Side Swipe	Single Vehicle	Total Crashes	
0.00	0.02	0	3	2	1	**6**	Main St (SR-126) MP 0
0.03	0.05	1	0	1	0	**2**	
0.06	0.08	2	5	1	1	**9**	I-15 SB Ramps, MP 0.08
0.09	0.11	0	1	0	0	**1**	
0.12	0.14	0	1	1	0	**2**	
0.15	0.17	6	3	0	0	**9**	I-15 NB Ramps, MP 0.17
0.18	0.20	0	3	0	0	**3**	
Total		**9**	**16**	**5**	**2**	**32**	

Existing Safety Conditions at 5600 South

Crash data along 5600 South were evaluated from Main St (SR-126) (SR-97 MP 5.06) through the northbound off-ramp intersection (SR-97 MP 5.34). The crash rate summary is provided in Table 9 and the crash severity summary in Table 10. The crash rate is higher than the UDOT average for a similar facility. With only one severe crash having occurred over the last three years, there is not a significant difference between the observed severe crash rate and the average severe crash rate for similar UDOT facilities.

Table 9 - Crash Rate Summary for 5600 South

Year	Number of Crashes	Crash Rate[1]	# of Severe Crashes	Crash Severity Rate[2]	ADT	Average Severity
2008	35	11.31	0	0.00	30,293	1.23
2009	34	11.05	1	32.50	30,108	1.29
2010	27	8.82	0	0.00	29,954	1.52
Total	**96**	**10.40**	**1**	**10.83**	**30,118**	**1.35**
UDOT Average Rates for Similar Roadway Facilities						
Average Rates:		**4.54 ±0.34**		**10.3 ±0.9**	**20K – 65K**	**1.55**

[1] Crashes per million vehicle miles traveled

[2] Severe crashes per 100 million vehicle miles traveled

Table 10 - Crash Severity Summary for 5600 South

Crash Severity	No. of Crashes	Percent
No Injury	73	76.0%
Possible Injury	15	15.6%
Non-Incapacitating Injury	7	7.3%
Incapacitating Injury	1	1.0%
Fatality	0	0.0%
Total	**96**	**100.0%**

The most common type of collision on 5600 South was the rear-end collision, as typically observed near signalized intersections. The one severe crash (incapacitating injury) that occurred on 5600 South at the southbound I-15 ramp terminal intersection was the result of an angle type collision. Table 11 summarizes the manner of collisions experienced over the last three years on 5600 South. The crash cluster locations by milepost and by crash type for 5600 South is shown in Table 12. As expected, most of the crashes occurred at or near intersections.

Table 11 - Collision Type Summary for 5600 South

Type of Collision	No. of Crashes	Percent

Angle	37	38.5%
Rear End	42	43.8%
Side Swipe	10	10.4%
Parked Vehicle	1	1.0%
Single Vehicle	6	6.3%
Total	**96**	**100.0%**

Table 12 - Crash Cluster Locations for 5600 South

Mileposts (MP 5.06 to 5.34)		**Angle**	**Rear End**	**Side Swipe**	**Parked Vehicle**	**Single Vehicle**	**Total Crashes**	**Reference Locations**
5.06	5.08	2	7	2	0	1	**12**	Main St (SR-126) MP 5.095
5.09	5.11	11	11	2	0	1	**25**	
5.12	5.14	4	2	0	0	0	**6**	
5.15	5.17	5	4	1	0	1	**11**	
5.18	5.20	3	5	1	0	1	**10**	I-15 SB Ramps MP 5.213
5.21	5.23	6	7	2	0	1	**16**	
5.24	5.29	2	2	1	0	1	**6**	
5.30	5.32	4	4	1	1	0	**10**	I-15 NB Ramps MP 5.318
Total		**37**	**42**	**10**	**1**	**6**	**96**	

Existing Safety Conditions at the 1800 North & Main Street Intersection

Crash data from UDOT was also evaluated a quarter mile in each direction from the intersection of 1800 North (SR-37) and Main St (SR-126). Crash rates along both 1800 North and Main Street were less than the average crash rates observed on similar UDOT facilities, as shown in Table 13 and Table 14, below. No severe crashes were recorded near the intersection of 1800 North and Main Street. Table 15 shows a summary of the crash severity for crashes that occurred within the vicinity of 1800 North and Main Street. As shown in Table 16 below, the majority of the crashes in the vicinity of 1800 North and Main Street were angle type collisions. As demonstrated in the crash cluster tables below (Table 17 and Table 18), most of these crashes occurred at the intersection of 1800 North and Main Street.

Table 13 - Crash Rate Summary for 1800 North

Year	Number of Crashes	Crash Rate[1]	# of Severe Crashes	Crash Severity Rate[2]	ADT	Average Severity
2008	3	2.61	0	0.00	12,595	1.67
2009	1	0.88	0	0.00	12,520	1.00
2010	4	3.02	0	0.00	14,495	1.25
Total	**8**	**2.21**	**0**	**0.00**	**13,203**	**1.31**

UDOT Average Rates for Similar Roadway Facilities					
Average Rates:	**3.36 ±0.27**		**9.10 ±1.0**	**1K – 20K**	**1.54**

[1] Crashes per million vehicle miles traveled

[2] Severe crashes per 100 million vehicle miles traveled

Table 14 - Crash Rate Summary for Main Street

Main St (SR-126) MP 6.99 to 7.49						
Years 2008 to 2010						
Year	**Number of Crashes**	**Crash Rate[1]**	**# of Severe Crashes**	**Crash Severity Rate[2]**	**ADT**	**Average Severity**
2008	8	1.77	0	0.00	24,740	1.63
2009	11	2.52	0	0.00	23,876	1.73
2010	11	2.53	0	0.00	23,778	1.64
Total	**30**	**2.27**	**0**	**0.00**	**24,131**	**1.66**

UDOT Average Rates for Similar Roadway Facilities					
Average Rates:	**4.54 ±0.34**		**10.3 ±0.9**	**20K – 65K**	**1.55**

[1] Crashes per million vehicle miles traveled

[2] Severe crashes per 100 million vehicle miles traveled

Table 15 - Crash Severity Summary for the 1800 North & Main Street Intersection

Crash Severity	1800 N (SR-37)		Main Street (SR-126)	
	No. of Crashes	Percent	No. of Crashes	Percent
No Injury	5	62.5%	13	43.3%
Possible Injury	3	37.5%	14	46.7%
Non-Incapacitating Injury	0	0.0%	3	10.0%
Incapacitating Injury	0	0.0%	0	0.0%
Fatality	0	0.0%	0	0.0%
Total	**8**	**100.0%**	**30**	**100.0%**

Table 16 – Collision Type Summary for the 1800 North & Main Street Intersection

Collision Type	1800 N (SR-37) MP 0.0 to 0.25		Main St (SR-126) MP 6.99 to 7.49	
	No. of Crashes	Percent	No. of Crashes	Percent
Angle	3	37.5%	18	60.0%
Rear End	2	25.0%	8	26.7%
Side Swipe	1	12.5%	1	3.3%
Single Vehicle	2	25.0%	3	10.0%
Totals	**8**	**100.0%**	**30**	**100.0%**

Table 17 - Crash Cluster Locations for 1800 North

Mileposts		Angle	Rear End	Side Swipe	Single Vehicle	Total Crashes	Reference Locations
0.00	0.05	0	0	0	1	**1**	Main Street (SR-126)
0.06	0.08	0	0	0	1	**1**	75 West
0.15	0.23	1	2	1	0	**4**	200 West
0.24	0.25	2	0	0	0	**2**	250 West
Total		**3**	**2**	**1**	**2**	**8**	

Table 18 - Crash Cluster Locations for Main Street

Mileposts		Angle	Rear End	Side Swipe	Single Vehicle	Total Crashes	Reference Locations
7.05	7.10	0	1	0	1	**2**	1600 North
7.14	7.25	17	6	1	1	**25**	1800 North (SR-37)
7.41	7.43	1	1	0	1	**3**	2000 North
Total		**18**	**8**	**1**	**3**	**30**	

PHASE I SUBMITTALS

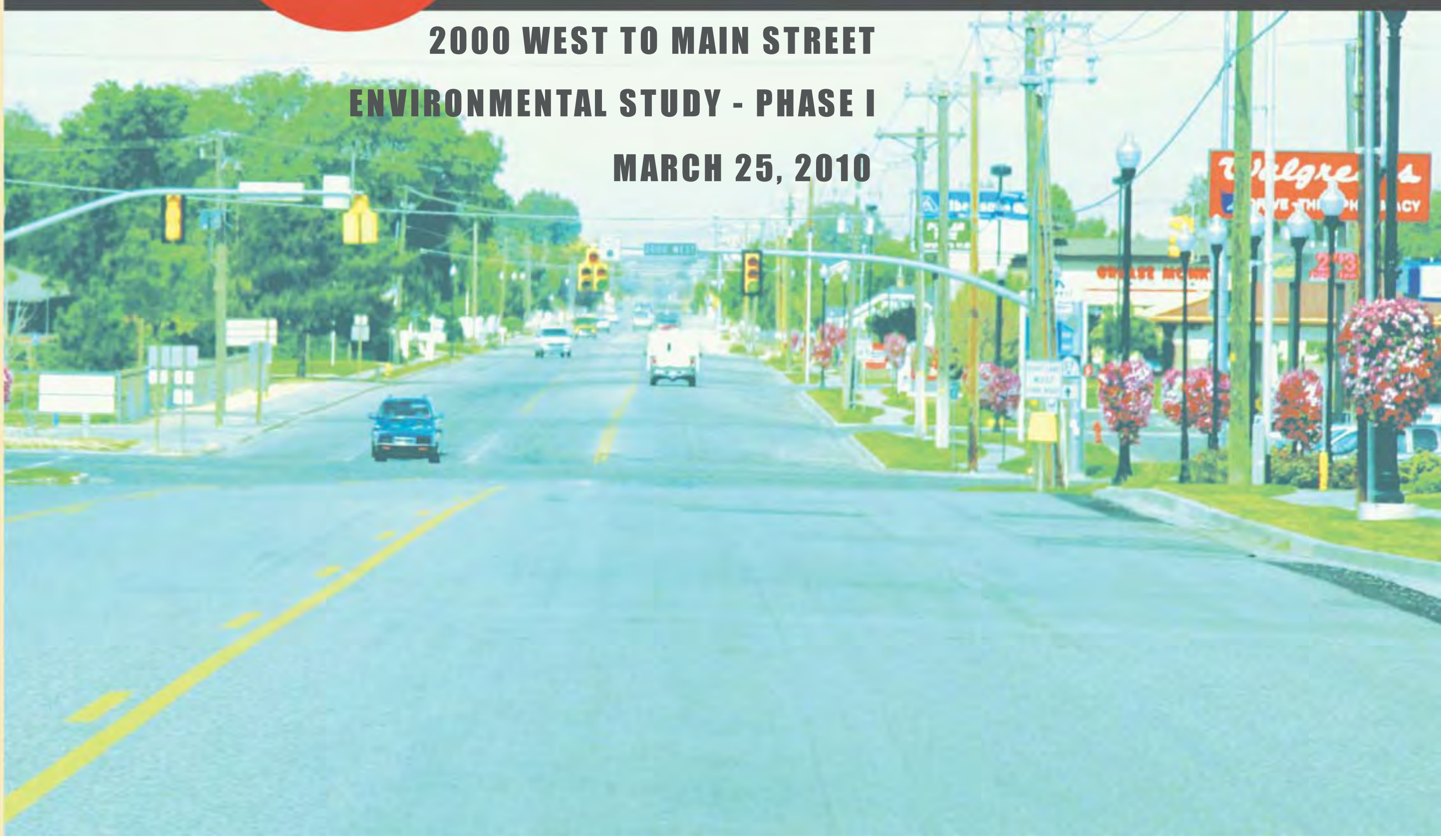
PROJECT NO: F-0037(4)0

1800 NORTH [SR-37]

2000 WEST TO MAIN STREET

ENVIRONMENTAL STUDY - PHASE I

MARCH 25, 2010



1800 North (SR-37), 2000 West to Main Street
PHASE I SUBMITTAL – SUMMARY OF DELIVERABLES

Introduction

The Utah Department of Transportation (UDOT) intends to prepare an environmental document for transportation needs in the 1800 North corridor in Davis County, Utah with the Federal Highway Administration (FHWA) as the lead Federal Agency. In furtherance of this goal, we have conducted the following studies and activities to provide UDOT and FHWA with the necessary information regarding existing conditions, land uses, and transportation needs in order for them to determine the appropriate scope of transportation improvements needed in the 1800 North corridor and the appropriate level of environmental document (Environmental Assessment or Environmental Impact Statement) required consistent with the National Environmental Policy Act (NEPA):

- Existing Roadway Conditions and Project Design Criteria (PDC): analyzes the existing infrastructure conditions and cross section elements and establishes design criteria for the proposed project.
- Existing Drainage: contains information from Federal, State and local entities regarding existing drainage conditions in the proposed project area.
- Existing Utilities: contains information obtained from local governmental and utility entities regarding existing utility facilities; also includes mapping.
- Existing Railroad: contains information regarding the existing railroad facilities in the area, as well as an analysis of whether a grade-separated railroad crossing is justified.
- Right of Way (ROW): GIS information was obtained from Davis County and has been incorporated into the Existing Roadway Figures included with this submittal.
- Geotechnical: contains background information on regional and local geological conditions for the project area.
- Traffic Analysis: contains an explanation as to the traffic modeling used to evaluate the needs of 1800 North and an analysis of the current and future travel demand for 1800 North, both with and without the inclusion of a new interchange on I-15 at 1800 North.
- Public Involvement: contains a Public Involvement Plan and a report on all activities performed in Phase I of this project.
- Mapping and/or Photography: Aerial photography is currently being scheduled. It was not performed earlier due to snow cover and the question as to whether a new interchange would be included in the proposed project.
- Project Management: includes a summary of internal and extended team meetings, the project charter, the QC/QA manual, and project schedule.

Details of the reports are summarized below.

Existing Roadway Conditions and Project Design Criteria (Appendix A)

This report details the specific existing roadway conditions, broken down into ten segments for this report only, and identifies several potential obstructions to the proposed roadway widening. These obstructions include two buildings (a pizza parlor and a dentist office) located in Segment 10 (between the railroad and Main Street) that are sited about 5 feet from the back of the sidewalk; a water tank on the south side of 1800 North just west of the railroad that would be impacted by either widening to the south or by the implementation of a grade-separated railroad crossing; and large power line structures located at the back of the sidewalk along the north side of 1800 North.

The PDC spreadsheets included with this submittal contain the existing and standard roadway specifications for both of the existing speed limits on 1800 North. The PDCs do not contain any proposed specifications for improvements for the roadway, as preliminary design work was not contemplated at this stage of the project. The PDCs also do not address any requirements for interchange design or configuration.

Existing Drainage Facilities (Appendix B)

This report discusses the existing drainage systems in the project area and identifies areas where more information would be needed for the design of a new interchange. The existing drainage systems consist mainly of the following:

- Main Street Trunk Line: There is an 18" trunk line flowing north along the east side of Main Street through the project area.
- Davis County Trunk Line: There is a trunk line flowing west along 2300 North from either 500 West or 1000 West to 1500 West then south to 2050 North, then west again before discharging into the Davis County Drainage Channel just west of 2000 West.
- 475 West Trunk Line: There is a trunk line flowing north along 475 West to a 16.5 ac-ft detention pond located just north of 1800 North, then a 24" outlet pipe flows from the detention pond before emptying into the Davis County trunk line.
- 1800 North: There is an 18" trunk line flowing west on the south side of 1800 North from approximately 250 West to 475 West (where it merges with the 475 West Trunk Line) in Sunset. At 475 West, there is a separate 12 to 24" trunk line flowing west along the south side of 1800 North from the 475 West Trunk Line to 2000 West, where it merges with the Davis & Weber Counties Canal Company unpressurized irrigation ditch flowing west along the north side of 1800 North.
- There is a 16.5 ac-ft detention pond on 475 West just north of 1800 North with a 12" or 15" low-flow bypass pipe that runs below it and connects to a 24" outlet pipe.
- There is a 1.2 ac-ft detention pond on 1800 North just east of 1000 West.

There is also an irrigation ditch belonging to the Davis & Weber Counties Canal Company beginning on the south side of 1800 North at Main Street and running west along 1800 North to 475 West, where it crosses to the north side of 1800 North.

This report also identifies existing and future problems that would need to be addressed in connection with widening of 1800 North. These problems include potentially inadequate capacity for existing and/or future drainage needs, degraded facilities in places, and shallow irrigations system facilities.

Existing Utility Facilities (Appendix C)

This report describes the existing utility facilities in the project area, detailing information obtained from Clinton City, Sunset City, the Davis and Weber Canal Company, Qwest Communications, Questar Gas, Rocky Mountain Power, the Weber Basin Water Conservancy District, Comcast Cable Television, Level 3 Communications, Chevron, the North Davis Sewer District, UDOT, UTA/UPRR, and Hill Air Force Base (HAFB).

The report indicates that widening of 1800 North would most likely require the relocation of the Clinton City 500,000 Gallon Water tank and associated 20" and 12" waterlines; the 20" and 6" High Pressure Questar gas lines; the sewer lines for Clinton, Sunset, and North Davis Sewer District; the Clinton and Sunset storm drain lines; the Rocky Mountain Power pole lines and steel transmission towers on the north side of 1800 North; and the Qwest fiber optic duct systems and associated structures on the north side of 1800 North; and the Qwest telephone poles on the south side of 1800 North from Main Street to 1500 West.

The identified utility facilities are included in the basemap file submitted electronically as part of this submittal.

Existing Railroad Facilities (Appendix D)

The railroad report depicts the existing railroad facilities in the area. There are two UPRR tracks and one UTA track in use, with roadway traffic controlled by four quadrant gates with exit gate management detection. The report also contains a discussion regarding whether a grade-separated railway crossing is recommended under both of the FHWA criteria, concluding that a grade-separated railroad crossing is justifiable under the applicable design criteria for either scenario (although an economic analysis was not performed for Criteria B).

Right of Way (ROW)

Preliminary GIS information was obtained from Davis County and has been incorporated into the Existing Roadway Figures included with this submittal. This information will need to be examined and verified using actual deed descriptions for the parcel boundaries in Phase II.

Geotechnical (Appendix E)

CH2M HILL prepared the geotechnical report which contains a summary of existing geotechnical information for the project area and recommends additional testing needs. Existing geological conditions for the area include:

- Subsurface soils consisting primarily of sand deposits separated by discontinuous silt and clay lenses of varying thickness and lateral extent, with the major surface soil being fine sandy loam
- Three principal aquifers of differing depths
- Shallow groundwater resources
- Two known areas of groundwater contamination associated with HAFB
- A seismic hazard maps rating of Site Class B ("firm rock"). However, CH2M HILL's calculations indicate that it may be better classified as Class D ("stiff soil"), based upon available data (which would need to be supplemented to make an actual site-specific determination).
- Moderate liquefaction potential throughout the majority of the project area with an area of high potential near the intersection of 1800 North and 2000 West and also an area of low potential near HAFB.

The report indicates that there is only a limited amount of soil data testing available at this point in time, mostly in the western section (although there is archived soil data in relation to HAFB that was not available for review at this time). The report recommends additional soil data testing in Phase II, especially on the eastern end of the project area where the installation of structures as part of the project is the most likely to occur.

Traffic Analysis (Appendix F)

Several reports regarding existing traffic conditions and travel demand are included with this submittal. The reports included consist of the 1800 North Environmental Study Technical Report – Travel Demand Model ("Travel Demand Report"), the 1800 North (SR-37) 2000 W. to Main Street Environmental Study Technical Report – Existing Conditions ("Existing Conditions Report"), and the 1800 North (SR-37) 2000 W. to Main Street Pneumatic Tube Count Supplemental Report – Existing Conditions ("Supplemental

Report"). The purpose of the Travel Demand Report is to determine when 1800 North will require improvements and what those improvements would include, as well as whether there is a need for a new interchange on I-15 at 1800 North. The Travel Demand Report discusses the modeling methodology used and analyzes the need for improvements to 1800 North through 2040 with all of the projects that are currently included in the Regional Transportation Plan (which includes an interchange on 1-15 at 1800 North). The Travel Demand Report details the modeling process used, which included modifications to the Wasatch Front Regional Council (WFRC) v6.0 travel demand model such as splitting Traffic Analysis Zones, adding existing roadways, modifying transit lines to reflect existing routes, ensuring current functional type and geometries are reflected in the roadway network, and adjusting some links for speed and capacity based on traffic count data.

The Travel Demand Report concludes that 1800 North between 1000 West and 2000 West is already operating at Level of Service (LOS) E and is in need of widening under its current travel demand, with a 5-lane cross section being required to handle projected 2040 travel demand within acceptable LOS. The Travel Demand Report also finds that other Regional Transportation Plan projects would not eliminate the need for additional lanes on 1800 North and that the inclusion of an interchange on I-15 at 1800 North would greatly increase the need to expand 1800 North to five lanes. In regards to a new interchange at 1800 North, the Travel Demand Report also finds that the 1800 North interchange would be needed by 2016 to prevent the 5600 South interchange from operating above capacity and that the 1800 North interchange would benefit the 650 North interchange such that no additional capacity would be needed for any of the study years.

The Existing Conditions Report details the current conditions of the 1800 North corridor between 2000 West and Main Street, including a safety analysis, a description of the existing trails and transit corridors, a summary of traffic count data, and a traffic operations analysis. The Supplemental Report details the daily traffic counts and/or tube count data collected on and around the 1800 North corridor.

Public Involvement (Appendix G)

A public involvement plan has been prepared and presented as part of Phase I. Public involvement activities have been minimal to this point, owing in part to the nature of the activities being performed, and included preparing a stakeholder address database (with both residential and commercial properties) and responding to questions from the public, as documented in the phone log. Only three inquiries were received; however, the input received indicated that further public involvement activities should be implemented to offset incorrect rumors regarding the project that have begun to circulate, especially the rumor that the roadway would be widened to both sides and take out buildings on both sides of the roadway. Therefore, work has begun on establishing a hotline number and email address, setting up a project website, and developing an initial newsletter for distribution. Also, a key stakeholder meeting with Hill Air Force Base is in the process of being scheduled.

Mapping and/or Photography

No aerial photography was performed in Phase I due to questions over the potential scope of the proposed project for which the study is being performed and the presence of snow cover on the ground; however, aerial photography is currently being scheduled. A basemap has been prepared that incorporates existing utilities, drainage facilities, GIS data, and other such information, as set forth in the scope of work for Phase I, which will be provided in electronic format.

Project Management (Appendix H)

A copy of the current QC/QA manual for Horrocks Engineers is included with this submittal, along with the project charter.

Recommendations or Issues for Consideration in Phase II

Based upon the investigations undertaken in Phase I of this project and in light of the potential of a new I-15 interchange at 1800 North to be included as an integral part of this project, the following activities and/or additional information or testing, in addition to those activities and/or data collections usual for an environmental analysis, are recommended:

- Further investigation into the drainage facilities for and around I-15 in the project area. This would require investigation into both location and capacity for NB I-15 and verification as to the previously identified facilities for SB I-15, including the location of the outfall of the Main Street Trunk Line.
- Obtaining detailed information regarding certain high-risk utility facilities that may require relocation in order to fully understand the potential impacts of the proposed project, which would include a timely and efficient relocation procedure for these high-risk facilities.
- Further investigation into existing utility facilities in relation to I-15, with special consideration given to impacts from the potential construction of new interchange structures.
- Further investigation into existing traffic demand and volumes in relation to I-15, including additional traffic counts.
- Additional soil survey investigation for the area adjacent to I-15 needed in order to determine soil types and any geological hazards or conditions that may need to be considered in determining potential alternatives in relation to an interchange on I-15 and a potential grade-separated railroad crossing.
- Continuing public involvement activities, including a project website, email address and hotline number, and the development of an initial newsletter.

List of Preparers

For more information or questions, please contact the following:

Report	Contact Information
Existing Roadway Conditions and Project Design Criteria (PDC)	Justin Beddoes Zak Vermillion Horrocks Engineers 2162 W. Grove Parkway, Suite 400 Pleasant Grove, Utah 84062
Existing Drainage Facilities	Ruston Carter Horrocks Engineers 2162 W. Grove Parkway, Suite 400 Pleasant Grove, Utah 84062
Existing Utilities Report Including High-Risk, High-Profile Conditions	Shawn Conlin Horrocks Engineers 2162 W. Grove Parkway, Suite 400 Pleasant Grove, Utah 84062

Report	Contact Information
Existing Conditions Report At-Grade Railroad Crossing DOT 805-619V	Michael Seely Horrocks Engineers 2162 W. Grove Parkway, Suite 400 Pleasant Grove, Utah 84062
Preliminary Geological Assessment for the 1800 North 2000 West to Main Street Environmental Study	Jesse Negherbon CH2M HILL 215 South State Street, Suite 1000 Salt Lake City, Utah 84111
1800 North (SR-37) 2000 W. to Main Street Environmental Study Technical Report for Traffic Conditions and Travel Demand Model Report	Jayson Cluff Horrocks Engineers 2162 W. Grove Parkway, Suite 400 Pleasant Grove, Utah 84062
Public Involvement • Phase I Report • Public Involvement Plan • Communication Plan	Beau Hunter Kimberly Winterton Horrocks Engineers 2162 W. Grove Parkway, Suite 400 Pleasant Grove, Utah 84062
Project Management • QC/QA Manual • Project Charter	John Miller Tom Allen Michael Dobry Stan Jorgensen Horrocks Engineers 2162 W. Grove Parkway, Suite 400 Pleasant Grove, Utah 84062

APPENDIX A

Existing Roadway Conditions and Project Design Criteria (PDC)

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May 4, 2010

TECHNICAL MEMORANDUM

Subject: Existing Roadway Conditions Report

UDOT Project Number: F-0037(3)12; Pin 6552
Street Name: 1800 North, SR-37
Municipality: Clinton (West)/Sunset (East)

This memo documents the existing roadway conditions of the 1800 North Corridor between 2000 West and Main Street, as observed during a site visit.

Existing Roadway Information:

		Median	**Pavement Width**	**Sidewalk**	
			Feet	South Side	North Side
Segment 1:	2000 W to 1700 W	Painted/TWLTL*	60	Yes	Yes
Segment 2:	1700 W to 1500 W	Painted/TWLTL	51	Yes	No
Segment 3:	1500 W to 1350 W	Painted/TWLTL	68	Yes	Yes
Segment 4:	1350 W to 1000 W	Painted/TWLTL	61	Yes	Yes
Segment 5:	1000 W to 900 W	N/A	61	Yes	Yes
Segment 6:	900 W to 850 W	N/A	51	Yes	Yes
Segment 7:	850 W to 700 W	N/A	61	Yes	Yes
Segment 8:	700 W to Railroad	N/A	48	Yes	Yes
Segment 9:	Railroad Crossing	N/A	38-39	Yes	Yes
Segment 10:	Railroad to Main St	N/A	48	Yes	Yes

*Stands for two-way left turning lane

		Park Strip		**No. of Lanes**		**Speed Limit**
		South Side	North Side	South Side	North Side	
Segment 1:	2000 W to 1700 W	Yes	Yes	1	1	40 mph
Segment 2:	1700 W to 1500 W	No	No	1	1	40 mph
Segment 3:	1500 W to 1350 W	Yes	No	1	1	40 mph
Segment 4:	1350 W to 1000 W	Yes	Yes	1	1	40 mph
Segment 5:	1000 W to 900 W	Yes	Yes	1	1	40 mph
Segment 6:	900 W to 850 W	Yes	Yes	1	1	40 mph
Segment 7:	850 W to 700 W	Yes	Yes	1	1	40 mph
Segment 8:	700 W to Railroad	Yes	Yes	1	1	30 mph
Segment 9:	Railroad Crossing	Yes	Yes	1	1	30 mph
Segment 10:	Railroad to Main St	Yes	No	1	1	30 mph

The horizontal alignment for 1800 North is linear. No curves or spirals are present through the length of the corridor. The vertical alignment along the 1800 North corridor contains one section where there is a vertical grade of significance, with the remaining roadway being fairly flat. This section is located between 200 West and Main Street and raises the elevation of the roadway as one travels toward Main Street.

The condition of the pavement along 1800 North appeared to be in good condition. No alligator cracking, transverse cracking, or potholes were identified. Several longitudinal cracks were visible, but not a large amount to indicate a bad pavement structure.

Several obstructions lie in the path of widening. The first deals with two buildings, a pizza parlor and a dentist office, sitting about 5' from the back of the sidewalk in Segment 10. Another obstruction is the water tank to the south side, just west of the railroad, which would be impacted if any widening were to occur to the south of the project, or if grade separation were constructed at the tracks. Finally, large power line structures are located at the back of sidewalk north of the roadway. These will need to be moved, or the alignment shifted, to avoid impacting in any way the power lines.

There are three signalized intersections along the 1800 North corridor located at 2000 West, 1000 West and Main Street. Main Street is a t-intersection with 1800 North having right and left-turn lanes. The intersection at 2000 West and 1000 West has a through lane and left and right-turn lanes on both the west and east side of the intersection.

PROJECT DESIGN CRITERIA - URBAN ARTERIAL

I. PROJECT DESCRIPTION

DATE: 3/19/2010

Project No	F-0037(4)0	**Location**	1800 North (SR-37) Clinton/ Sunset; from 2000 West to Main Street
PIN	6552	**Concept**	Widening of 1800 North from 2000 West to Main Street

Describe the scope of the project Environmental Study

II. DESIGN STANDARDS BY ROADWAY

(Complete a separate PDC for each roadway on your project)

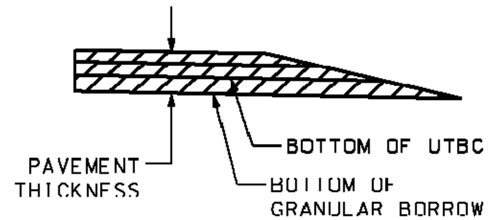
Date of OSR: 1/21/2010

Roadway Name: 1800 North

Roadway Characteristics

Functional Class	Urban Arterial			**Pavement Type**	Ashpalt	
Current Year	2009	**AADT=**	13000	**Terrain**	Flat	
Design Year	20XX	**AADT=**		**% Trucks (current)**	2	
Design Vehicle				**Posted / Design Speed**	40	45

Comments



Pavement Thickness consists of Hard Surfacing, UTBC, and Granular Borrow (if used).

Proposed Roadway Characteristics

Total Number of Lanes 5

Park Strip Width (Typ) 5'

Shoulder Width (Typ) 10

Sidewalk Width (Typ) 8

Curb & Gutter Type & Width (Typ) 2.5'

Design not Complete

Intersection #1:

Roadway Name	Dir.	# of LT Lanes	Storage Length	# of Thru Lanes	# of RT Lanes	Storage Length
	NB					
	SB					
	EB					
	WB					

Curb Radius From T.B.C.

NW Curb Radius: ____
SW Curb Radius: ____
NE Curb Radius: ____
SE Curb Radius: ____

Intersection #2:

Roadway Name	Dir.	# of LT Lanes	Storage Length	# of Thru Lanes	# of RT Lanes	Storage Length
	NB					
	SB					
	EB					
	WB					

NW Curb Radius: ____
SW Curb Radius: ____
NE Curb Radius: ____
SE Curb Radius: ____

Pavement Thickness

Unknown

	Section 1	Section 2	Section 3
Sta. From			
Sta. To			
Hard Surfacing (in)			
UTBC (in)			
Granular Borrow (in)			

Order of Precedence: SD - Standard Drawings; MOI - Roadway Design Manual of Instruction; GB - AASHTO Green Book 2004 Edition

FHWA 13 Critical Elements	UDOT Standard			Proposed/Used			Design Exception	References	Date of Decision, Comments, Mitigation, etc.
Design Speed	45			45			☑ Not Required ☐ Required ☐ Approved	**MOI** 2 - 1; **GB** pp. 66-72, 470	Posted speed is 40 mph.
Lane Width	**Mainline**	12'		12'			☑ Not Required ☐ Required ☐ Approved	**SD** (DD and ST series); **MOI** 7 - 1, 43, 45-7, 107; **GB** pp. 472-3	*Width contraints may force 11.0' through lanes and narrower left turn lanes*
	LT Turn Lane(s)	14' - 12'		14'					
	RT Turn Lane(s)	10'		10'					
Shoulder Width	**Outside**	**Inside**	**Barrier Offset**	**Outside**	**Inside**	**Barrier Offset**	☑ Not Required ☐ Required ☐ Approved	**SD** (DD and ST); **MOI** 7 - 44-6; **GB** pp. 312-5, 473	*Design Exception may be required due to contraints that would not allow full shoulder.*
	10.0'	N/A	2.0'	10.0'	N/A	2.0'			
Superelevation	**Maximum Superelevation**			**Maximum Superelevation**			☑ Not Required ☐ Required ☐ Approved	**SD** DD-1; **MOI** 7 - 26-9; **GB** pp. 471-2, 167 (Ex. 3-25)	*There are no curves.*
	6%			N/A					
Horizontal Alignment	**Minimum Radii Value**			**Minimum Radii Value**			☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 30-3, 50-5; **GB** pp. 471, 147 (Ex. 3-15), 167 (Ex. 3-25)	*Low Speed Urban Criteria may be desirable to apply, which would require a Design Exception*
	5930'			5930'					
Vertical Alignment	**Sag Curve Min. K Value**	**Crest Curve Min. K Value**		**Sag Curve Min. K Value**	**Crest Curve Min. K Value**		☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 56-60; **GB** pp. 272 (crest), 277 (sag)	
	79	61		79	61				
Profile Grades	**% Min**	**% Max**		**% Min**	**% Max**		☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 58; **GB** pp. 233-6, 471-2 (Ex. 7-10)	0.50% preferred
	0.30%	6%		0.30%	6%				
Cross Slope	**Standard Value**			**Value Proposed/Used**			☑ Not Required ☐ Required ☐ Approved	**SD** (DD Series); **MOI** 7 - 47; **GB** pp. 305-10, 472	
	2%			2%					
Stopping-Sight Distance	**Minimum**			**Minimum**			☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 62; **GB** pp. 110-7, 224-8, 471, 445 (Ex.7-1)	
	360'			360'					
Structural Capacity	**Design Loading**			**Design Loading**			☑ Not Required ☐ Required ☐ Approved	**MOI** 11 - 2; **GB** p. 447	HS-20 for existing; HL-93 for new construction
	HL-93			HL-93					
Bridge Width	**Minimum**			**Minimum**			☑ Not Required ☐ Required ☐ Approved	**SD** DD-9; **MOI** 11 - 3; **GB** pp. 481-2	*If a bridge is required*
	Add 2' width to each side of Bridge			Add 2' width to each side of Bridge					
Vertical Clearance*	**Minimum**			**Minimum**			☑ Not Required ☐ Required ☐ Approved	**SD** DD 8-10; **MOI** 11 - 4; **GB** p. 472	* Notify FHWA on any changes to Vertical Clearance on the National Highway System
	16.5' over road, 26.5' over rail			16.5' over road, 26.5' over rail					
Lateral Offset to Obstruction	**Minimum**			**Minimum**			☑ Not Required ☐ Required ☐ Approved	**GB** p. 481	
	1.5' tangent / 3' radius			1.5' tangent / 3' radius					

Design Waivers	UDOT Standard				Proposed/Used		Design Waiver	References	Date of Decision, Comments, Mitigation, etc.
Acceleration Lanes	**V**	**Va**	**V'a**	**L**	**Location**	**L**	☑ Not Required ☐ Required ☐ Approved	Refer to Exhibit 10-71 **GB** pg 848 to adjust for grade. A part of the ramp proper may also be considered in the acceleration length as a design waiver. Exhibit 10-70 **GB** pg 847. See also **GB** pp. 688-9, 844-5,849-56,859-60; **SD** DD 14-15, ST 3A; **MOI** 7-106	
	70 mph	53 mph	22	1420					
			26	1350					
			36	1000					
			40	820					
			44	580					
Deceleration Lanes	**V**	**Va**	**V'a**	**L**	**Location**	**L**	☑ Not Required ☐ Required ☐ Approved	Refer to Exhibit 10-71 **GB** pg 848 to adjust for grade. Exhibit 10-73 **GB** pg 851. See also **GB** pp. 688-9, 844-9, 852-59; **SD** DD 14-15, ST 3C - D; **MOI** 7-107	
	70 mph	58 mph	22	550					
			26	520					
			36	440					
			40	390					
			44	340					
Guardrail Bridge Connection	UDOT Std Dwg BA 4B & Bridge Rail or Parapet section of UDOT Design Exception Form.						☑ Not Required ☐ Required ☐ Approved	**SD** BA 4B, UDOT Design Exception Form	
Sideslopes	Meet clear zone slope compliant requirements.						☑ Not Required ☐ Required ☐ Approved	2006 Roadside Design Guide pg. 3-6 and Figure 3.2 pg. 3-8; **SD** DD 4, 8, 11-13,18	
Intersection Sight Distance	Meet 2004 AASHTO requirements for sight triangles cases A-F and skew.						☑ Not Required ☐ Required ☐ Approved	**GB** pp. 650-77, **MOI** 7-67	
Shoulder/Travel way (gutter pan)	The gutter pan is not considered a part of the traveled way or shoulder.						☑ Not Required ☐ Required ☐ Approved	**GB** pp. 322-3, 840; **MOI** 7-49	
Curb Configuration	2004 AASHTO p.840						☑ Not Required ☐ Required ☐ Approved	Determine if the curb is appropriate for the type of facility. **GB** pp. 322-3, 840; **SD** GW 2	
Traffic Control	Meet Traffic Control Standard Drawings requirements						☑ Not Required ☐ Required ☐ Approved	**SD** TC series	
Rumble Strips	Meet Paving Standard Drawings requirements						☑ Not Required ☐ Required ☐ Approved	**SD** PV 6-8	

Prepared by Justin Beddoes, P.E. ______ Date 2/10/2010
Horrocks Engineers

Verified Only ______ Date ______
- Local Government Projects Only

Approved by ______ Date ______

On local government projects that are not on a UDOT road, the Region Preconstruction Engineer signs the "Verified Only" line and the Engineer of Record signs the "Approved by" line. For all other projects, the "Verified Only" line is left blank and the Region Preconstruction Engineer signs the "Approved by" line.

PROJECT DESIGN CRITERIA - URBAN ARTERIAL

I. PROJECT DESCRIPTION

DATE: 3/19/2010

Project No	F-0037(4)0	**Location**	1800 North (SR-37) Clinton/ Sunset; from 2000 West to Main Street
PIN	6552	**Concept**	Widening of 1800 North from 2000 West to Main Street

Describe the scope of the project Environmental Study

II. DESIGN STANDARDS BY ROADWAY

(Complete a separate PDC for each roadway on your project)

Date of OSR: 1/21/2010

Roadway Name: 1800 North

Roadway Characteristics

Functional Class	Urban Arterial			**Pavement Type**	Ashpalt	
Current Year	2009	**AADT=**	13000	**Terrain**	Flat	
Design Year	20XX	**AADT=**		**% Trucks (current)**	2	
Design Vehicle				**Posted / Design Speed**	30	35

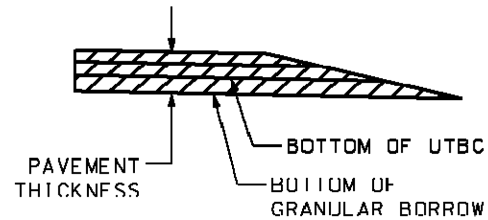
Proposed Roadway Characteristics

Total Number of Lanes 5 **Park Strip Width (Typ)** 5'

Shoulder Width (Typ) 10 **Sidewalk Width (Typ)** 8

Curb & Gutter Type & Width (Typ) 2.5'

Comments



Pavement Thickness consists of Hard Surfacing, UTBC, and Granular Borrow (if used).

Design not Complete

Intersection #1:

Roadway Name	Dir.	# of LT Lanes	Storage Length	# of Thru Lanes	# of RT Lanes	Storage Length
	NB					
	SB					
	EB					
	WB					

Curb Radius From T.B.C.

NW Curb Radius: ______

SW Curb Radius: ______

NE Curb Radius: ______

SE Curb Radius: ______

Intersection #2:

Roadway Name	Dir.	# of LT Lanes	Storage Length	# of Thru Lanes	# of RT Lanes	Storage Length
	NB					
	SB					
	EB					
	WB					

NW Curb Radius: ______

SW Curb Radius: ______

NE Curb Radius: ______

SE Curb Radius: ______

Pavement Thickness

Unknown

	Section 1	Section 2	Section 3
Sta. From			
Sta. To			
Hard Surfacing (in)			
UTBC (in)			
Granular Borrow (in)			

Order of Precedence: SD - Standard Drawings; MOI - Roadway Design Manual of Instruction; GB - AASHTO Green Book 2004 Edition

FHWA 13 Critical Elements	UDOT Standard	Proposed/Used	Design Exception	References	Date of Decision, Comments, Mitigation, etc.
Design Speed	35	35	☑ Not Required ☐ Required ☐ Approved	**MOI** 2 - 1; **GB** pp. 66-72, 470	Posted speed is 30 mph.
Lane Width	**Mainline**: 12' **LT Turn Lane(s)**: 14' - 12' **RT Turn Lane(s)**: 10'	12' 14' 10'	☑ Not Required ☐ Required ☐ Approved	**SD** (DD and ST series); **MOI** 7 - 1, 43, 45-7, 107; **GB** pp. 472-3	*Width contraints may force 11.0' through lanes and narrower left turn lanes*
Shoulder Width	**Outside**: 10.0' **Inside**: N/A **Barrier Offset**: 2.0'	**Outside**: 10.0' **Inside**: N/A **Barrier Offset**: 2.0'	☑ Not Required ☐ Required ☐ Approved	**SD** (DD and ST); **MOI** 7 - 44-6; **GB** pp. 312-5, 473	*Design Exception may be required due to contraints that would not allow full shoulder.*
Superelevation	**Maximum Superelevation** 6%	**Maximum Superelevation** N/A	☑ Not Required ☐ Required ☐ Approved	**SD** DD-1; **MOI** 7 - 26-9; **GB** pp. 471-2, 167 (Ex. 3-25)	*There are no curves.*
Horizontal Alignment	**Minimum Radii Value** 3730'	**Minimum Radii Value** 3730'	☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 30-3, 50-5; **GB** pp. 471, 147 (Ex. 3-15), 167 (Ex. 3-25)	*Low Speed Urban Criteria may be desirable to apply, which would require a Design Exception*
Vertical Alignment	**Sag Curve Min. K Value**: 49 **Crest Curve Min. K Value**: 29	**Sag Curve Min. K Value**: 49 **Crest Curve Min. K Value**: 29	☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 56-60; **GB** pp. 272 (crest), 277 (sag)	
Profile Grades	**% Min**: 0.30% **% Max**: 6%	**% Min**: 0.30% **% Max**: 6%	☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 58; **GB** pp. 233-6, 471-2 (Ex. 7-10)	0.50% preferred
Cross Slope	**Standard Value** 2%	**Value Proposed/Used** 2%	☑ Not Required ☐ Required ☐ Approved	**SD** (DD Series); **MOI** 7 - 47; **GB** pp. 305-10, 472	
Stopping-Sight Distance	**Minimum** 250'	**Minimum** 250'	☑ Not Required ☐ Required ☐ Approved	**MOI** 7 - 62; **GB** pp. 110-7, 224-8, 471, 445 (Ex.7-1)	
Structural Capacity	**Design Loading** HL-93	**Design Loading** HL-93	☑ Not Required ☐ Required ☐ Approved	**MOI** 11 - 2; **GB** p. 447	HS-20 for existing; HL-93 for new construction
Bridge Width	**Minimum** Add 2' width to each side of Bridge	**Minimum** Add 2' width to each side of Bridge	☑ Not Required ☐ Required ☐ Approved	**SD** DD-9; **MOI** 11 - 3; **GB** pp. 481-2	*If a bridge is required*
Vertical Clearance*	**Minimum** 16.5' over road, 26.5' over rail	**Minimum** 16.5' over road, 26.5' over rail	☑ Not Required ☐ Required ☐ Approved	**SD** DD 8-10; **MOI** 11 - 4; **GB** p. 472	* Notify FHWA on any changes to Vertical Clearance on the National Highway System
Lateral Offset to Obstruction	**Minimum** 1.5' tangent / 3' radius	**Minimum** 1.5' tangent / 3' radius	☑ Not Required ☐ Required ☐ Approved	**GB** p. 481	

Design Waivers	UDOT Standard				Proposed/Used		Design Waiver	References	Date of Decision, Comments, Mitigation, etc.
Acceleration Lanes	V	Va	V'a	L	Location	L	☑ Not Required ☐ Required ☐ Approved	Refer to Exhibit 10-71 **GB** pg 848 to adjust for grade. A part of the ramp proper may also be considered in the acceleration length as a design waiver. Exhibit 10-70 **GB** pg 847. See also **GB** pp. 688-9, 844-5,849-56,859-60; **SD** DD 14-15, ST 3A; **MOI** 7-106	
	70 mph	53 mph	22	1420					
			26	1350					
			36	1000					
			40	820					
			44	580					
Deceleration Lanes	V	Va	V'a	L	Location	L	☑ Not Required ☐ Required ☐ Approved	Refer to Exhibit 10-71 **GB** pg 848 to adjust for grade. Exhibit 10-73 **GB** pg 851. See also **GB** pp. 688-9, 844-9, 852-59; **SD** DD 14-15, ST 3C - D; **MOI** 7-107	
	70 mph	58 mph	22	550					
			26	520					
			36	440					
			40	390					
			44	340					
Guardrail Bridge Connection	UDOT Std Dwg BA 4B & Bridge Rail or Parapet section of UDOT Design Exception Form.						☑ Not Required ☐ Required ☐ Approved	**SD** BA 4B, UDOT Design Exception Form	
Sideslopes	Meet clear zone slope compliant requirements.						☑ Not Required ☐ Required ☐ Approved	2006 Roadside Design Guide pg. 3-6 and Figure 3.2 pg. 3-8; **SD** DD 4, 8, 11-13,18	
Intersection Sight Distance	Meet 2004 AASHTO requirements for sight triangles cases A-F and skew.						☑ Not Required ☐ Required ☐ Approved	**GB** pp. 650-77, **MOI** 7-67	
Shoulder/Travel way (gutter pan)	The gutter pan is not considered a part of the traveled way or shoulder.						☑ Not Required ☐ Required ☐ Approved	**GB** pp. 322-3, 840; **MOI** 7-49	
Curb Configuration	2004 AASHTO p.840						☑ Not Required ☐ Required ☐ Approved	Determine if the curb is appropriate for the type of facility. **GB** pp. 322-3, 840; **SD** GW 2	
Traffic Control	Meet Traffic Control Standard Drawings requirements						☑ Not Required ☐ Required ☐ Approved	**SD** TC series	
Rumble Strips	Meet Paving Standard Drawings requirements						☑ Not Required ☐ Required ☐ Approved	**SD** PV 6-8	

Prepared by Justin Beddoes, P.E. Date 2/10/2010
Horrocks Engineers

Verified Only ______________________ Date __________
- Local Government Projects Only

Approved by ______________________ Date __________

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1800 NORTH (SR-37)

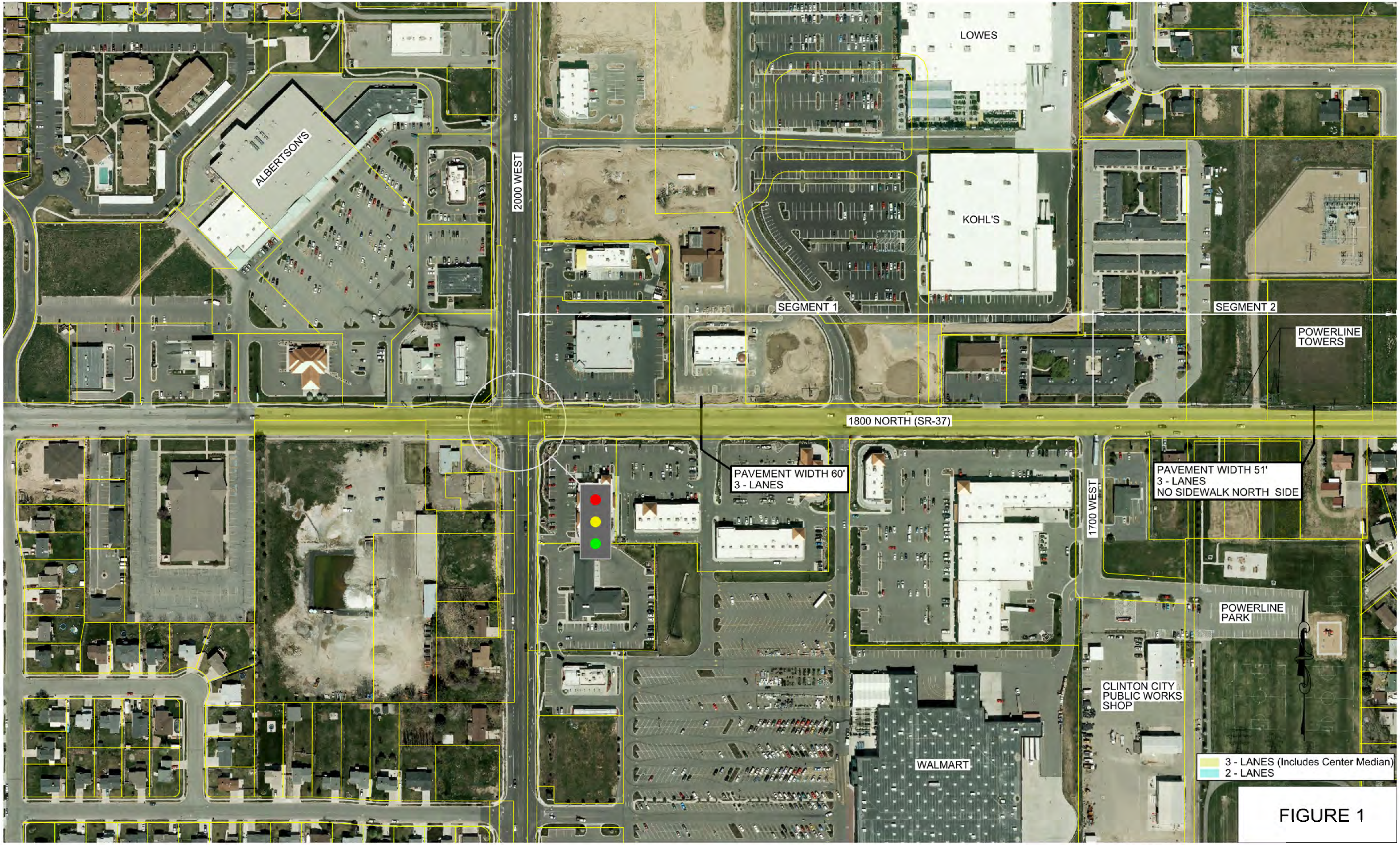


FIGURE 1

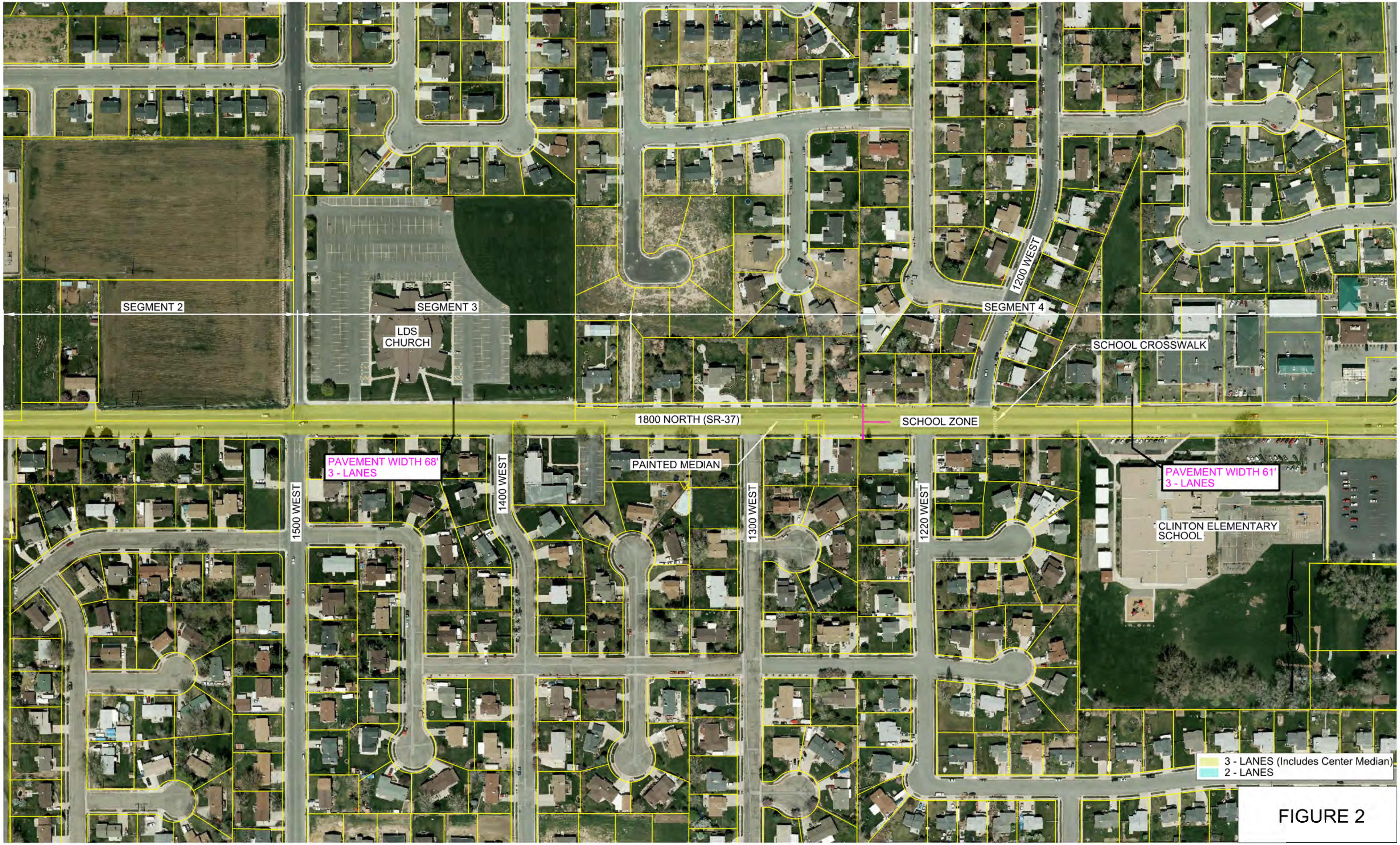
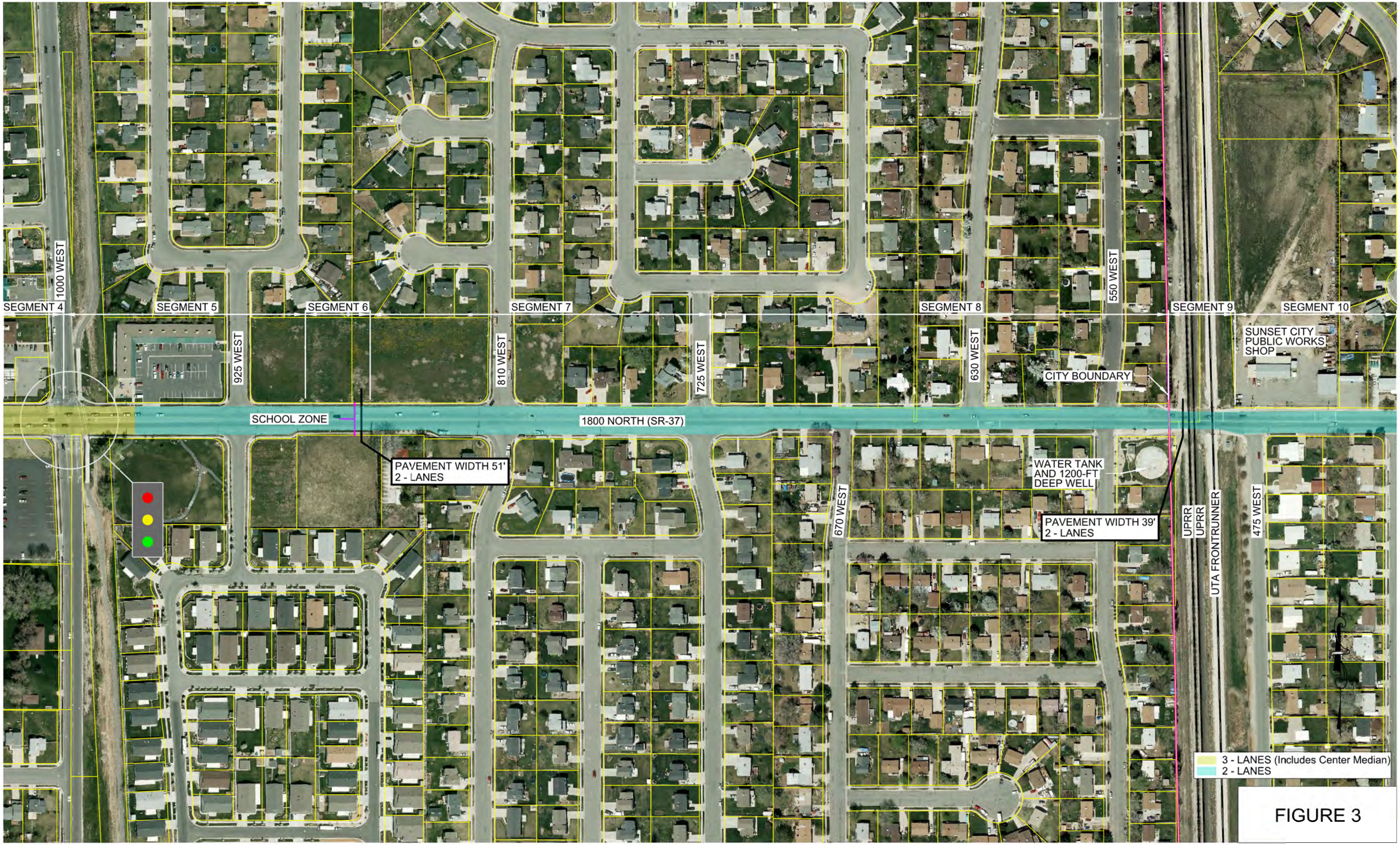

SEGMENT 2
SEGMENT 3
SEGMENT 4
LDS CHURCH
1200 WEST
SCHOOL CROSSWALK
1800 NORTH (SR-37)
SCHOOL ZONE
PAVEMENT WIDTH 68'
3 - LANES
1500 WEST
1400 WEST
PAINTED MEDIAN
1300 WEST
1220 WEST
PAVEMENT WIDTH 61'
3 - LANES
CLINTON ELEMENTARY SCHOOL
3 - LANES (Includes Center Median)
2 - LANES

FIGURE 2



1000 WEST
SEGMENT 4
SEGMENT 5
SEGMENT 6
SEGMENT 7
SEGMENT 8
SEGMENT 9
SEGMENT 10
550 WEST
925 WEST
810 WEST
725 WEST
630 WEST
SUNSET CITY PUBLIC WORKS SHOP
CITY BOUNDARY
SCHOOL ZONE
1800 NORTH (SR-37)
PAVEMENT WIDTH 51'
2 - LANES
WATER TANK AND 1200-FT DEEP WELL
670 WEST
PAVEMENT WIDTH 39'
2 - LANES
UPRR
UPRR
UTA FRONTRUNNER
475 WEST
3 - LANES (Includes Center Median)
2 - LANES

FIGURE 3

1800 NORTH (SR-37)

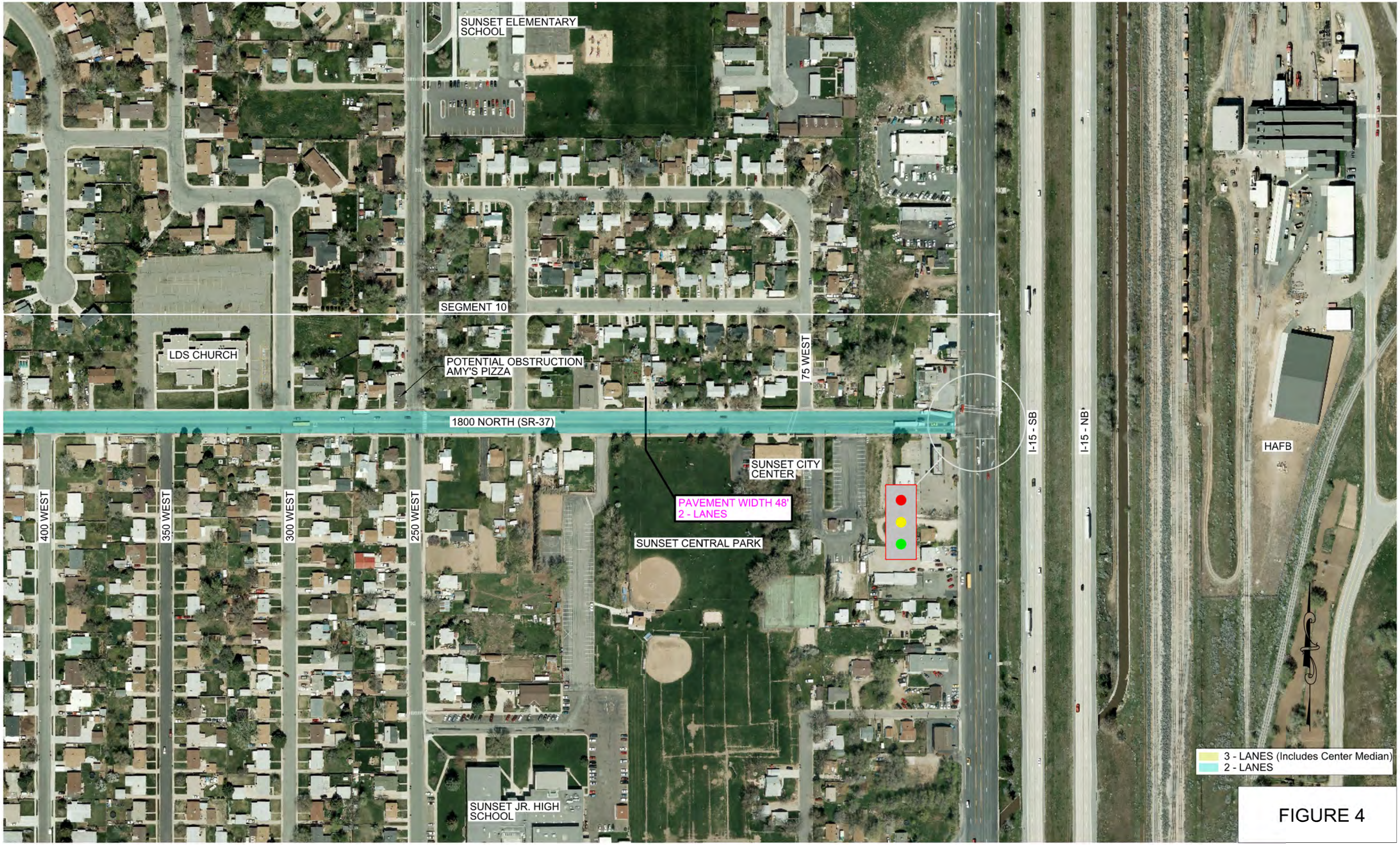


FIGURE 4

APPENDIX B

Existing Drainage Facilities

Ruston Carter
Horrocks Engineers
2162 W. Grove Parkway, Suite 400
Pleasant Grove, Utah 84062

2162 West Grove Parkway Ste 400
Pleasant Grove, Utah 84062
www.horrocks.com

HORROCKS ENGINEERS

Tel: 801.763.5100
Salt Lake line: 532.1545
Fax: 801.763.5101
In state toll free: 800.662.1644

March 15, 2010

Technical Memorandum

Subject: 1800 North (SR-37) 2000 West to Main Street Environmental Study Drainage Review
UDOT Project Number: F-0037(3)12; Pin 6552

Purpose

The purpose of this memo is to document the information obtained during the inventory of existing drainage conditions conducted during Phase 1 of the 1800 North (SR-37) 2000 West to Main Street Environmental Study. This memo summarizes the existing drainage and non-pressurized irrigation through Clinton and Sunset cities along 1800 North from 2000 West to Main Street and along Main Street and I-15 near 1800 North. Potential impacts to the drainage and irrigation systems along 1800 North that would be caused by widening the roadway and due to the installation of an interchange on I-15 at 1800 North are also discussed. Finally, the drainage design criteria for the project are discussed.

Existing Drainage and Irrigation Information

The following summarizes the existing drainage and non-pressurized irrigation systems (based on records, personal contacts, field reviews, etc.) throughout the study area. This information is also shown in the Existing Drainage – Figures 1 – 4. The information shown in the figures is based on data received from the cities and field investigations.

I-15/Main Street	• UDOT owns and maintains the drainage system for I-15 and Main Street. • Drainage from southbound I-15, I-15 median, and the east side of Main Street ends up in the Main Street trunk line. This trunk line flows north along Main Street and is located behind the east curb of Main Street. The size of the trunk line ranges from 15" south of the Davis & Weber Canal (the "Canal"), 18" just north of the Canal, and 24" at approximately 1950 North. • The Main Street roadside gutter appears to flow north from a high point south of the Canal to at least 2300 North. • There are no curb inlets along either side of Main Street between at least the Canal and 1950 North; however, the east side curb has been notched out at locations where inlets are located behind the curb (above the trunk line) to allow flow from the gutter into those inlets. • The Main Street trunk line is the only outfall for the drainage along Main Street and south bound I-15 between at least the Canal and 2300 North.

Davis County	• The Davis County trunk line runs west along 2300 North from either 500 West or 1000 West (unverified) until 1500 West, where it turns south into a 48" trunk line and then turns west at 2050 North. The trunk line becomes a 60" pipe at approximately 1930 West before discharging into the Davis County Drainage Channel just west of 2000 West. • All drainage from 1800 North between 2000 West and Main Street eventually ends up in the Davis County drainage system.
Sunset City	• The 1800 North roadway profile through Sunset City is quite steep, falling from east to west. • Both sides of 1800 North through Sunset are built out with curb and gutter and sidewalk. • It appears that the south side gutter along 1800 North picks up flow from the west gutter along Main Street. • The existing drainage system on 1800 North begins at 250 West with curb inlets and a 12" pipe (size not verified in the field) that connects to the 1800 North storm drain system from the south. An 18" trunk line on the south side of 1800 North carries flows from 250 West to 475 West, gaining flows from curb inlets located on the side streets. At 475 West, this trunk line crosses to the north side of 1800 North and then ends with the connection to the trunk line flowing north in 475 West (475 West Trunk Line) described below. • The 475 West Trunk Line flows north along 475 West as a 36" or 42" pipe (size must be verified) and is upsized to a 34"x53" elliptical pipe at 1800 North. This trunk line continues north into a detention basin located behind the Sunset City Shop just east of the railroad tracks. This trunk line originates along 1300 North where it picks up flows from Hill Air Force Base, described below. • The detention basin described above is reported as a 16.5 ac-ft basin. It has a 12" or 15" low-flow bypass pipe that runs below it and connects to a 24" outlet pipe from the basin. The 24" outlet pipe flows north along 450 West to the 2300 North Trunk Line. • The 2300 North Trunk Line flows west into Clinton City, joining the Davis County Trunk Line.

Clinton City	• The boundary between Sunset City and Clinton City is along the railroad tracks. • The 1800 North profile through Clinton City continues to slope from east to west with the trunk lines flowing west as well. • The entire south side of 1800 North, east of 2000 West to Sunset, is developed with curb and gutter, sidewalk and curb inlets. The north side also has curb and gutter and sidewalk except for a segment between 1500 West and 1700 West; however, the north side only has five curb inlets along the entire stretch from 500 West to 2000 West. • Clinton City has two main trunk lines along 1800 North through the study area. The first runs along the south side of 1800 North from the railroad tracks to approximately 1825 West where it turns north. The second starts at 1825 West and continues west along 1800 North to approximately 2250 West where it turns and flows north. These two trunk lines are described in more detail as follows: <u>1800 North Trunk Line from rail road tracks to 1825 West:</u> o This trunk line increases in size from 15” at the railroad tracks to a 30” at 1825 West where in turns north in a 36” pipe. From 1800 North, it flows on the west side of the Lowe’s and Kohl’s stores to 2050 North, where it joins the Davis County Trunk Line. o The trunk line has several inflows from curb inlets and smaller trunk lines coming from the south, as well as inflows from several land drains from different subdivisions installed due to the high water table in the area. o Just before 1000 West, the trunk line is routed through a detention basin in the south-east quadrant of the 1000 West/1800 North intersection. It is reported to have 1.2 ac-ft of storage capacity and a maximum release rate of 6.2 cfs. o Another inflow to this trunk line occurs at approximately 1700 West from the Power Line Detention Basin located at approximately 1650 West and 1600 North. The basin has a storage capacity of approximately 8 ac-ft with a release rate of 2.8 cfs into the 1800 North trunk line. This detention basin detains a large amount of flow from areas in Clinton City to the south and east of it, but does not detain any flows from 1800 North. <u>1800 North Trunk Line from 1825 West to 2250 West:</u> o This trunk line starts at approximately 1825 West in the same inlet where the first trunk line turns north. However, the trunk line is plated off in the inlet, separating it from the first trunk line. o This trunk line (reported as a 24” pipe) flows west along the south side of 1800 North until the manhole in the south-east corner of the intersection of 2000 West, where it is joined by another 24” trunk line flowing north along 2000 West. From this manhole, the two trunk lines cross the intersection diagonally through a 4’x2’ box culvert to a manhole located in the park strip of the north-west corner of the intersection. From there, the trunk line combines with the non-pressurized irrigation system, flowing west through a 36” pipe. At approximately 2250 West, this trunk line turns north and flows to the Davis County Drainage Channel. • Four of the five inlets along the north side of 1800 North drain to different drainage systems than the two main trunk lines described above. Inlets located along the north side of 1800 North at 1000 West, 1500 West, and approximately 1850 West all drain north through separate smaller trunk lines that originate at 1800 North as 12” or 15” lines. The storm drain line running north from 1800 North along 2000 West is an 18” line. These smaller trunk lines also end up in the Davis County Trunk Line.

Hill Air Force Base (HAFB)	• The existing HAFB drainage system crosses I-15 at approximately 1000 North. Another drainage pipe may cross I-15 at 1300 North (unverified). The sizes of these pipes are unverified. • Drainage from HAFB joins in to the Sunset City drainage system, flowing west along 1300 North. • The 1300 North drainage ends up in the 475 West Trunk Line described previously.

Davis and Weber Counties Canal Company	Davis and Weber Canal:
	• The Davis and Weber Canal is concrete lined and flows south along the east side of I-15 past 1800 North, crossing to the west side of Main Street at approximately 1600 North. Its dimensions are approximately 21' wide at the bottom with 45 degree side slopes that are 5' high (not field verified). Normal flow depth is approximately 3' and the canal usually carries about 175 cfs that may increase in the future (anticipate minimum flow rate of 250 cfs).
	• The Canal crosses I-15 and Main Street with large box culverts with the following dimensions:
	  o Box Culvert beneath I-15: 10' from invert to low chord, 23.75' wide
	  o Box Culvert beneath Main Street: 5' from invert to low chord, 23.75' wide
	Pressurized Irrigation System:
	• For information regarding the Davis and Weber Counties Canal Company pressurized irrigation system see the Technical Memorandum for Existing Utilities.
	Non-pressurized Irrigation System:
	• Non-pressurized irrigation system ("irrigation system") is a closed conveyance system with the exception of an open ditch area between 1500 West and approximately 1700 West. It branches off the Davis and Weber Canal at 1800 North and has active diversions through the study area at 1000 West going north to 2300 North; at 1500 West; and approximately 1630 West.
	• Between Main Street and 475 West, the irrigation system runs along the south side of 1800 North in an old trapezoidal concrete ditch under the south side sidewalk. The sidewalk serves as a cover over the old ditch through this segment.
	• At 475 West (just before the railroad tracks), the irrigation system crosses to the north side of the road (through a 24" pipe), where it stays under the park strip or sidewalk through the remainder of the study area (with the exception of the open ditch segments mentioned above).

Weber Basin Water Conservancy District	• The Weber Basin Water Conservancy District does not have any non-pressurized irrigation systems in the study area. • For information on their culinary water lines see the Technical Memorandum for Existing Utilities.

Known Problems

Sunset City

Due to the lack of adequate inlets along 1800 North through Sunset City, drainage flows across cross streets through waterways or flows around the curb returns and is picked up in the inlets on the cross streets – meaning that gutter flow crosses crosswalks. There may also be problems with gutter flow spread along 1800 North exceeding what is allowed per UDOT criteria. Regardless of which direction 1800 North is widened in the future, additional inlets will be needed on both sides of 1800 North through Sunset City.

Sunset City has reported problems with surcharging during heavy storm events in the 18” trunk line running down 1800 North and in the 24” outflow pipe between the detention basin behind the City Shop and 2300 North. This surcharging causes flooding and other issues. The detention basin is reported to fill up every year, indicating that it may be undersized. According to Sunset City, the trunk line along 475 West is already at full capacity. It is possible that this trunk line is undersized without consideration for existing flows coming from 1800 North.

Clinton City

According to Clinton City, the existing drainage system along 1800 North between 500 West and 2000 West handles the existing flows well. Clinton City used to have surcharging problems in the 1800 North trunk line at 1220 West; however, since routing the trunk line through the detention basin at 1000 West, they haven’t had any more problems with surcharging. The city did indicate an old stretch of the 18” trunk line from approximately 800 West to just west of 925 West that is in poor condition and needs to be replaced.

Since there are only 5 inlets along the entire north side of 1800 North between 500 West and 2000 West, there are likely problems with gutter flow spread exceeding what is allowed per UDOT criteria. Flows from 1800 North may turn and flow north along various cross roads. If 1800 North is widened, additional curb inlets will likely be needed.

Areas Where Further Investigation or Improvements Are Recommended and Potential Solutions

I-15/Main Street

Limited information regarding the drainage for northbound I-15 has been obtained – this area was not investigated in the field. More investigation is needed to determine where northbound I-15 drains to or if it simply sheet flows to the east side of the freeway. Further investigation is needed in order to determine the outfall location of the trunk line running north along Main Street. This trunk line needs to be analyzed to determine if it has available capacity for future flows or if it is even adequate for existing flows.

If an interchange is constructed at 1800 North, the new storm drain system may be able to tie into the trunk line running north along Main Street. If not, a new trunk line will be needed, possibly connecting into the Sunset City drainage system. Either way, new detention will be needed to reduce future runoff down to the capacity of the trunk line and the downstream drainage systems, with consideration given to downstream inflows to the trunk line.

Sunset City

Sunset City did not report any current plans for upgrades to the drainage system through 1800 North, except for what will be needed due to the widening of 1800 North. Any future widening of 1800 North may require the installation of a new trunk line through Sunset City in order to handle roadway runoff. New detention will be required upstream of any connection to the existing drainage system in order to reduce existing and future flows down to the capacity of the downstream drainage system. It may be possible to combine efforts and construction of a new trunk line and new detention in 1800 North to serve the needs for the future I-15 drainage if an interchange is constructed.

It may be possible to increase the storage capacity of the existing detention basin behind the City Shop by replacing the low-flow bypass pipe with a low-flow channel and then increasing the depth of the basin to the depth of the existing low-flow bypass pipe. This would need to be coordinated with Sunset City and the owners of the detention basin. Further investigation would also be necessary. This increase in storage may not be sufficient for what is required for 1800 North through Sunset, but may be a source of some added detention, reducing the needs of new storage capacity. Sunset City asks that any future trunk lines and detention basins to be sized for the 100-yr event before connecting into the existing drainage system in order to reduce the impacts to the downstream drainage system, since it is already undersized for existing flows.

Clinton City

As stated above, the existing drainage system along 1800 North has adequate capacity for existing flows. (The existing system has been sized for a 1-hr cloud burst event, using 1.0" of precipitation distributed over 1 hr, according to the Farmer-Fletcher temporal distribution.) However, the existing system is already at full capacity with the existing roadway. Therefore, any widening of 1800 North will require added storm drain capacity. Clinton City did not report any current plans for drainage improvements along the study area, except for what will be needed when the roadway is widened.

The likely solution for future drainage would be to maintain the existing outfalls by installing new detention basins to reduce future flows down to the existing capacity of the downstream drainage system to which it is being connected. There may be the need to replace some of the existing trunk line in areas where it is in poor condition. A new or additional trunk line may be required in order to convey flows to the next available detention basin before discharging into the existing drainage system.

Davis County

As stated above, all drainage from 1800 North between 2000 West and Main Street eventually ends up in the Davis County drainage system, no matter which trunk line it takes. Therefore, any increase in runoff will affect the County drainage system and will need to be coordinated with them. Since all of the trunk lines which tie into the County's system are already at full capacity, new detention will be required in order to reduce flows back down to existing trunk line capacity. Thus, any increase in flow rate in the County's system would be due to different offsets of the hydrograph peaks in the trunk lines due to the installation of new detention basins. This will need to be analyzed in the future when a better understanding of the future drainage system is in place.

Hill Air Force Base

Drainage coming from HAFB will likely increase due to the Falcon Hill development on the west side of HAFB. New detention for drainage coming from HAFB should be required in order to reduce flow rates back down to existing flows. HAFB is currently planning on detaining all increased flows from future development on site. HAFB will then discharge into the existing drainage system that crosses I-15 into Sunset City at its existing capacity.

Davis and Weber Counties Canal Company

The combined irrigation and storm drain system west of 2000 West is the main outfall for the area of 1800 North between 1850 West and 2000 West. However, in the future, it may be better to try and tie into the smaller 18" storm drain system flowing north along 2000 West in order to avoid problems associated with discharging more runoff into the irrigation system. There will need to be careful consideration and coordination before any storm drains are connected into the irrigation system in the future.

Most of the irrigation system appears to be quite shallow; however, the majority of the invert elevations were not measured. Widening 1800 North to the side of the roadway where the irrigation system is located may require lowering the pipeline in order to obtain adequate cover. This would definitely be the case through Sunset City, since the existing sidewalk was built directly on top of the old irrigation ditch. The irrigation system on the east end appears to have plenty of slope since it follows the profile of the roadway. Thus, pipe slopes can be flattened out in order to lower the system and the downstream invert elevations can still be matched. The irrigation system toward the west end appears to have a much flatter slope (as does the roadway profile). This would make it more difficult to lower the irrigation system and still match downstream invert elevations and required capacity.

Further investigation will need to be done to verify the design flow rate for the irrigation system.

Design Criteria

Clinton City, Sunset City, and HAFB were not able to provide written design criteria for drainage; however, the following criteria were supplied verbally:

<u>Clinton City Drainage Design Criteria</u>

- For sizing storm drain systems and trunk lines: use a 1.0" design storm distributed over 1 hr with the Farmer-Fletcher temporal distribution.
- Roadway to contain the 100-yr storm within the right-of-way.
- Minimum pipe diameter – 15".
- Minimum pipe slope – 0.5%.
- Maximum release rate from new development – 0.2 cfs/ac for 10-yr event or must not exceed downstream capacity, whichever is more restrictive.
- Catch Basin spacing no more than 500'; may also use catch basins as cleanouts.
- Trunk line should be placed below shoulder or curb and gutter. May also be placed in park strip if there are not other utility conflicts. City does not like to see the trunk line below traveled lanes unless UDOT is going to maintain it.
- Use UDOT spread criteria.
- Clinton City does not have defined criteria for detention basin design.

<u>Sunset City Drainage Design Criteria</u>

- Use NOAA Atlas 14 precipitation values.
- Rational method or SCS method with Type II 24-hr temporal distribution are acceptable analysis methods.
- Design trunk lines and detention basins to pass 100-yr event before tying into existing drainage system.

<u>Hill Air Force Base Drainage Design Criteria</u>

- Will detain all increased runoff from future development down to the capacity of the existing system that crosses I-15.

<u>UDOT Drainage Design Criteria</u>

UDOT's drainage design criteria are outlined in the *UDOT Manual of Instruction: Roadway Drainage* (2004 Ed.) This manual should be referenced for all drainage design criteria. Since the 1800 North system will be tying into the Sunset City and Clinton City systems, the more stringent criteria between the entities should be used. Criteria that vary between entities, such as the design storm and design event, will need to be agreed upon so that consistent analysis and design is used along the entire 1800 North study area.

The following table summarizes the UDOT drainage criteria that apply for 1800 North. The drainage design criteria for I-15 are also included, in case an interchange is added to the study.

Parameter	**Value**
Method of Hydrologic Analysis	SCS TR-55, SCS TR-20, or SCS unit hydrograph and Curve Number method, using SCS Type II 24-hr temporal distribution, or Rational method Rational method shall not be used for detention basins exceeding 0.3 ac-ft.
Roadway Classification	I-15 – Major Arterial (65 mph) 1800 North, 2000 West to 500 West – Urban Arterial (40 mph) 1800 North, 500 West to Main Street – Urban Arterial (30 mph)
Precipitation Depth-Duration-Frequency	From NOAA Atlas 14 Vol. 1 (download from http://hdsc.nws.noaa.gov/hdsc/pfds/sa/ut_pfds.html)
Design Storm	Storm Drains – 10-yr (50-yr for draining sag points on I-15; 25-yr for draining sag points on 1800 North) Roadway Gutters – 10-yr Storage Basins – 10-yr storage volume or downstream capacity, whichever is greater volume. 1’ freeboard above 100-yr high water surface elev. Check Storm – 100-yr event check storm shall be used for *all drainage structures and conveyance systems* to ensure runoff is safely conveyed/maintained within the R.O.W. and drainage easements without damaging roadway or adjacent or upstream property.
Spread Design Criteria	Maximum Spread: I-15 – To inside edge of shoulder for 10-yr event 1800 North – Shoulder + 3’ for 10-yr event Maximum Spread at Sag point – Shoulder + 3’ for 50-yr event (for I-15 and 1800 North)
Storm Drain Design Criteria	Minimum pipe diameter – 18” (smooth wall); 24” when functioning as a culvert at upstream end. Minimum Velocity – 2.5 ft/sec flowing full or 2.0 ft/sec at design flow, whichever requires steeper slope. Storm drains to be sized based on full flow capacity. Barring unforeseen circumstances, it is expected that the HGL for the design storm will not rise above the crown of pipe. Inlets: Recommend using 30% clogging factor for inlets on grade Use 50% clogging factor for inlets in sag
Storage Basin Design Criteria	Volume – Sized to detain 10-yr 24-hr flows. Maximum Release Rate – Limit to pre-developed flows for all flood frequencies and no more than 0.2 cfs/ac for 10-yr event; must not exceed downstream capacity. Emergency Spillway designed to safely pass the 100-yr flood Minimum freeboard – 1’ above 100-yr storm high-water elevation Riprap-protected slopes to be no steeper than 1V:2H; Vegetated slopes to be no steeper than 1V:3H. Design must conform to Utah State dam safety regulations and permits where applicable.

Recommendations or Issues for Consideration in Phase II

Phase I activities regarding existing drainage facilities focused on 1800 North itself, with I-15 and HAFB drainage being considered as it related to drainage through that area. With the potential inclusion of a new interchange on I-15, additional information regarding the I-15 and Main Street drainage would be needed. This would require investigation into both location and capacity for northbound I-15 and verification as to the previously identified facilities for southbound I-15, including the location of the outfall of the Main Street Trunk Line.

References

Clinton City

Bryce Wilcox, P.E., J-U-B Engineers, Inc., Contracted Engineer for Clinton City. (801) 547-0393

Clinton City. GIS Shape Files of Storm Drain System. Obtained from Mike Child.

Dave Williams, Assistant Public Works Director, Clinton City Corp. (801) 614-0870

J-U-B Engineers. *Clinton City Storm Drain Master Plan*. Sep. 2005.

Mike Child, Public Works Director, Clinton City Corp. (801) 614-0870

Davis County

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Kirk Schmalz, P.E., Davis County Public Works Director. (801) 444-2230

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Davis and Weber Counties Canal Company

Monte Byram, Canal Supervisor, Davis and Weber Counties Canal Company. (801)698-3482

Rob Elgren, Davis and Weber Counties Canal Company. (801) 774-6373

Gerald Hogge, Ditch Master of Ditch No. 8 of the Davis and Weber Counties Canal Company (Irrigation Pipe/Ditch along 1800 North). (801) 825-1785

Hill Air Force Base

David Waldron, S.E., Great Basin Engineering, Project Engineer for Falcon Hill Development. (801) 394-4515

Great Basin Engineering. AutoCAD files of existing utilities for Hill Air Force Base. Obtained from David Waldron.

Mark Holt, Hill Air Force Base, Project Engineer, Enhanced Use Lease. (801) 586-3986

Mike Petersen, P.E., Hill Air Force Base, Civil Engineering Division, Environmental Management Branch. (801) 775-6904

Sunset City

Civil Engineering Consultants. AutoCAD files of Sunset City Storm Drain Map. Obtained from Todd Freeman.

Gilson Engineering. Sunset City, Utah – City Basemap: Storm Drainage System. *Sunset City Public Works – Utility Drawings*. Feb. 2003.

Mickey Hennessee, Public Works Director/Building Official, Sunset City Utah. (801) 614-0014

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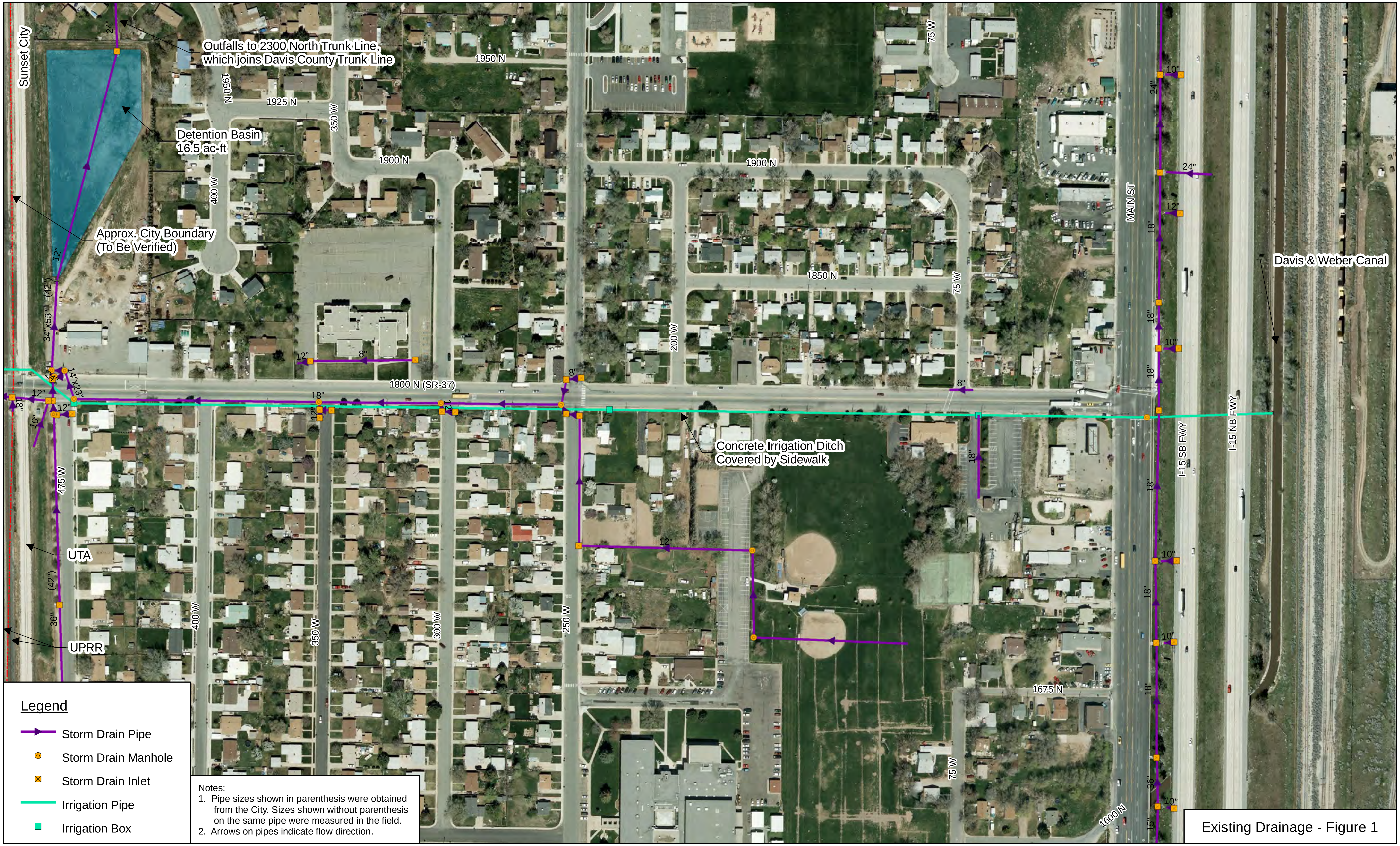
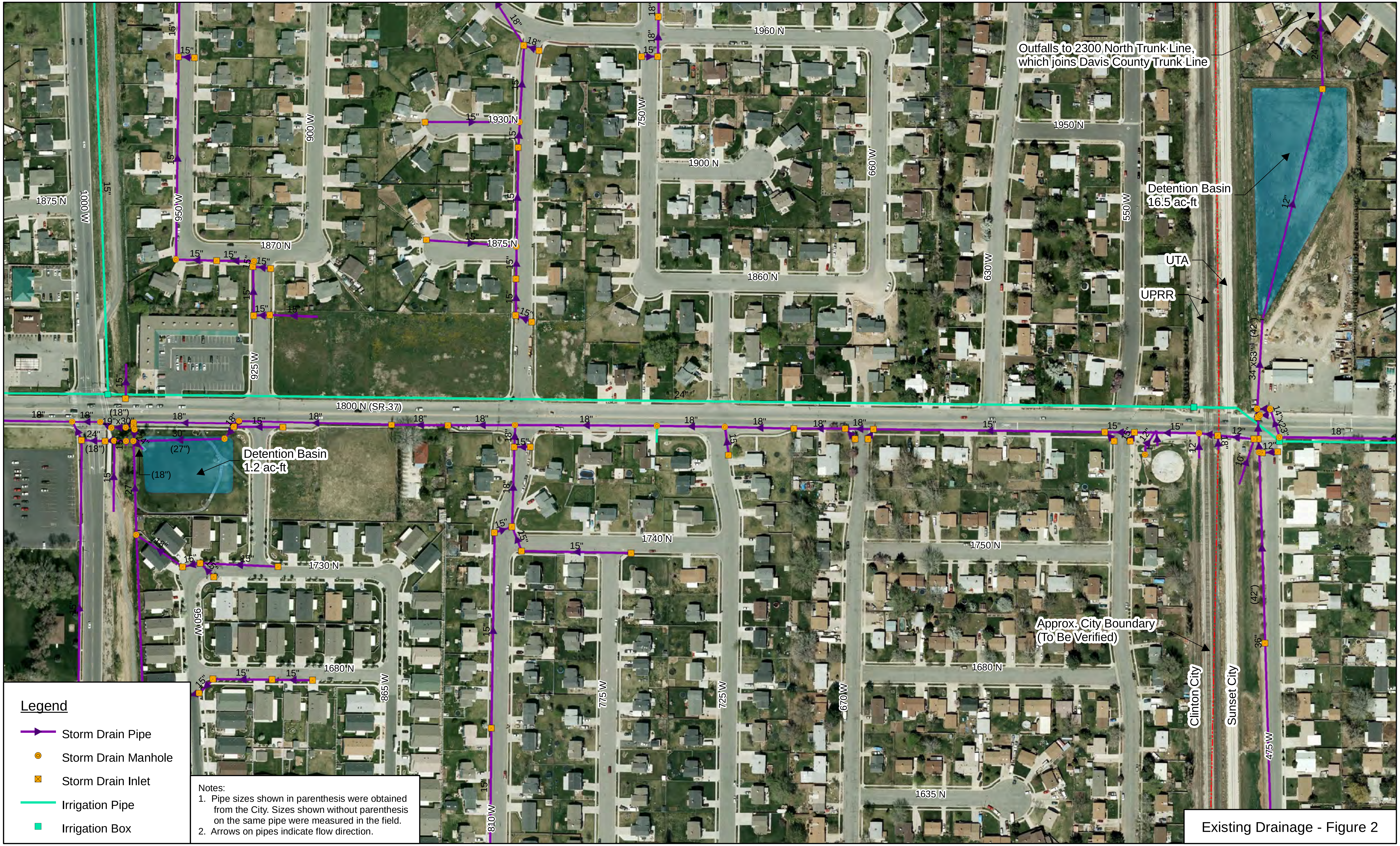
Randy Gerdano, UDOT Clinton Maintenance Station. (801) 791-7368
Rumi Marsh, UDOT Archiving. (801) 620-1644
Utah Department of Transportation. *Manual of Instruction: Roadway Drainage*. Jan 2004.

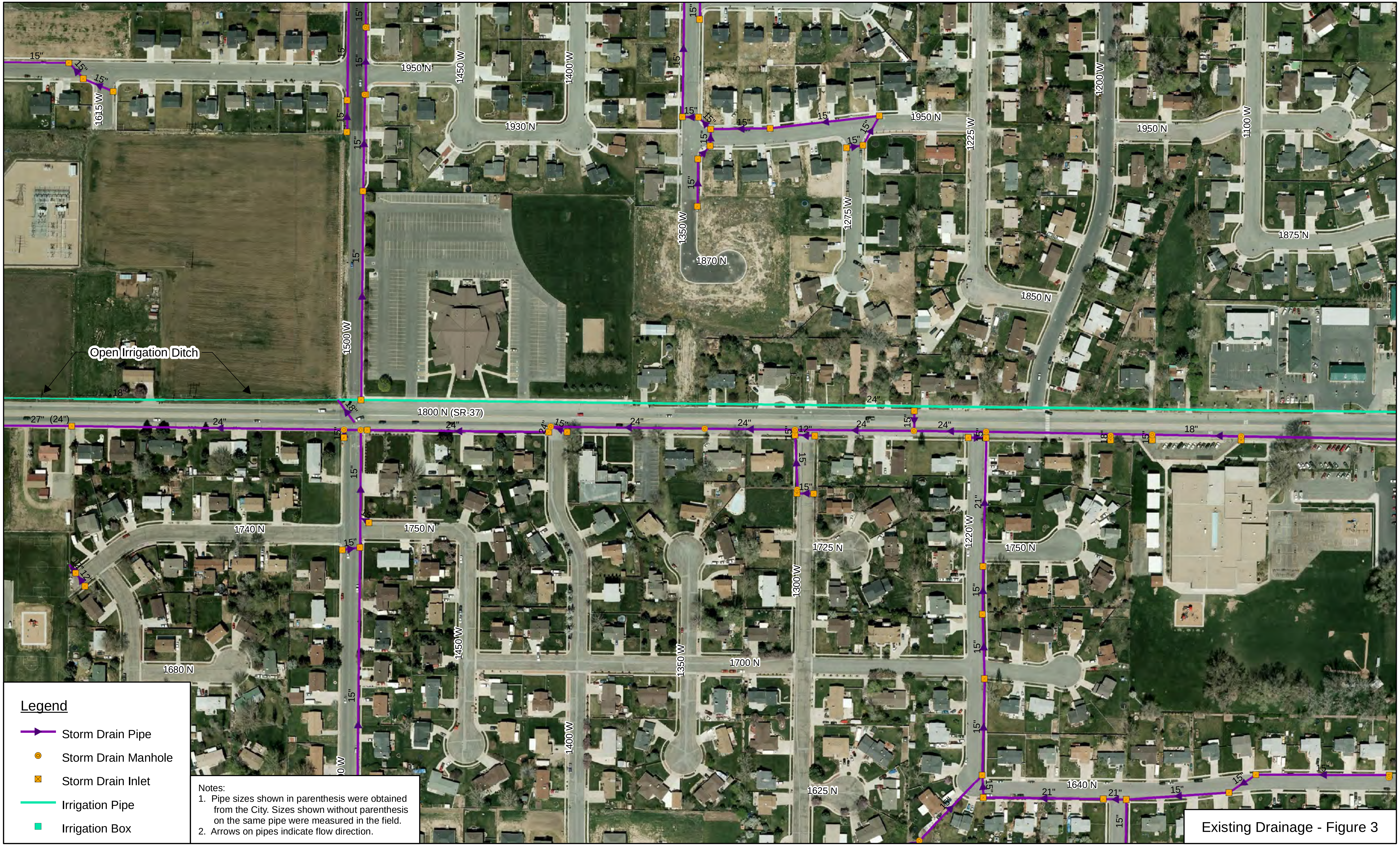


Existing Drainage - Figure 1



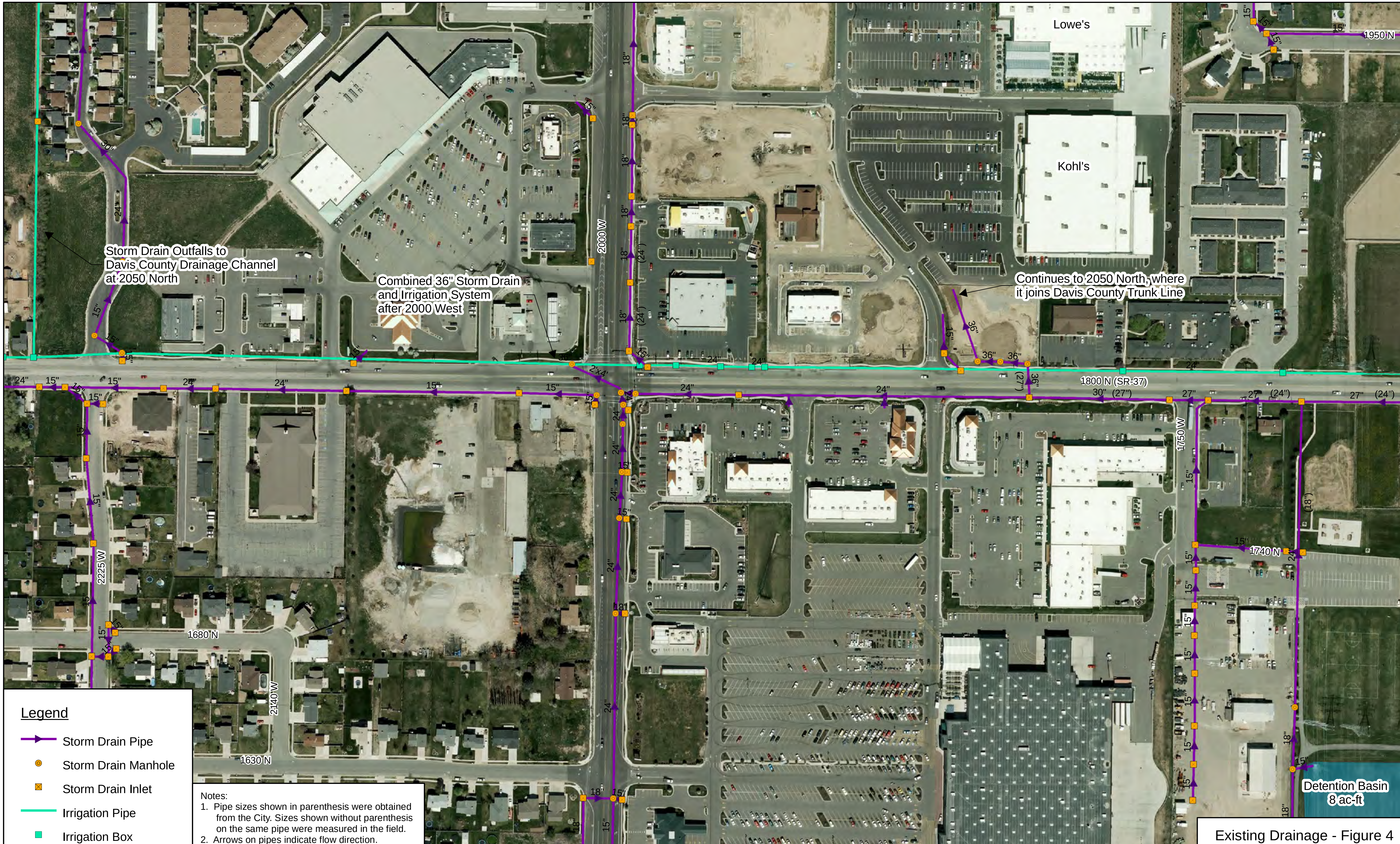
Existing Drainage - Figure 2

1800 NORTH (SR-37)



Notes:
1. Pipe sizes shown in parenthesis were obtained from the City. Sizes shown without parenthesis on the same pipe were measured in the field.
2. Arrows on pipes indicate flow direction.

Existing Drainage - Figure 3



Notes:
1. Pipe sizes shown in parenthesis were obtained from the City. Sizes shown without parenthesis on the same pipe were measured in the field.
2. Arrows on pipes indicate flow direction.

Existing Drainage - Figure 4

APPENDIX C

Existing Utilities Report Including High-Risk, High-Profile Conditions

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February 12, 2010

TECHNICAL MEMORANDUM

Subject: Existing Utilities Report
Including High-Risk, High-Profile Conditions

UDOT Project Number: F-0037(3)12; Pin 6552
UDOT Project Name: 1800 North, SR-37 Environmental Study
Municipalities/Areas Covered: Clinton, Sunset, I-15 & Hill Air Force Base

Purpose

The purpose of this memorandum is to document the inventory of existing utilities and their conditions conducted during Phase 1 of the 1800 North (SR-37) 2000 W. to Main St. Environmental Study. This memorandum gives a summary of the existing utilities through Clinton and Sunset cities along 1800 N. from 2000 W. to Main St. and along Main St. and I-15 near 1800 N. This memorandum also reviews some existing utilities that cross I-15 and continue into Hill Air Force Base (HAFB) property. Potential impacts to these existing utilities along 1800 N. that would be caused by widening the roadway and due to the installation of an interchange on I-15 at 1800 N. are also discussed.

Existing Utility Information (based on records research, as-builts, etc.)

Clinton City

Water	• A 500,000 Gallon Tank (Exhibit H) and associated 1200 foot well located on the South side of 1800 North at the UTA Rail Grade Crossing • A 2,000,000 Gallon Tank (Exhibit I) located on the east side of I-15 in the HAFB property • A 3,500,000 Gallon Tank (Exhibit I) located on the east side of I-15 in the HAFB property • An 18” waterline from 3.5MG & 2MG tanks on HAFB running under I-15 as 16” and connecting to meter station and sand trap on east side of Main Street • A 20” culinary waterline that runs along 1800 North the entire length of this project • A 12” waterline from the 500KG tank on 1800 North running in the entire length of 1800 N. that tees off at all side streets to various size waterlines
Sewer	• A 12” sewer trunk line running along 1800 North from the west end of the project and connecting to the North Davis Sewer District trunk line at 1500 West • Various sewer lines of various sizes (but mostly 8”), which tie into the city trunk line and NDSD trunk line at nearly all side road locations
Storm Drain	• A trunk line running along 1800 North with various inlets and tees to side roads • More detail on drainage included in the Drainage Report (see Appendix B)

Davis and Weber Canal Company

Pressurized Irrigation	• A 12” pressurized irrigation pipe running along the south side of 1800 North through the city boundaries • Various sizes of pipes that connect to this pipe at most all of the side roads

Sunset City

Water	• An 8” waterline running along 1800 North from Main Street to the city boundary at the UTA Rail line • Various other waterlines of other sizes connect to this line at most of the side roads.
Sewer	• A 12” sewer trunk line runs along 1800 North from Main Street to the city boundary at the UTA Rail where it dumps into NDSD sewer trunk line • Various size sewer pipes that connect to this system at most all of the side roads
Storm Drain	• A trunk line running along 1800 North with various inlets and tees to side roads • More detail on drainage included in the Drainage Report (see Appendix B)

Qwest Communications

Fiber Optic Cable	• Major Fiber Optic cables running in Qwest Duct Systems along 1800 North, as well as along Main Street, that vary in fiber count sizes up to 96-count, which are included in the Qwest duct systems that run along the north lanes of 1800 North
Telephone Cable	• Various cables run along 1800 North in the Qwest Duct System along with the fiber optic cables • Various direct buried cables run along 1800 North in the Qwest Duct System along with the fiber optic cable, which tie into various pedestals of varying size and functionality (Exhibit A, B & C) and vary in size from a simple 25-pair cable up to the high profile 1200-pair cables
Manhole Vaults	• 15 major Qwest Manhole Vaults in 1800 North that are access points to fiber optic and telephone cables • 7 minor hand holes along 1800 North that allow access to fiber optic cables

Questar Gas

High Pressure (HP) Gas	• A high-profile 20” HP gas pipeline that runs along the frontage road on the east side of I-15 • A high-profile 6” HP gas line that runs along 1500 West and crosses 1800 North in a steel casing • High Pressure lines have long lead times to relocate
Intermediate Pressure Gas	• A 4” IHP gas line runs along Main St. at 1800 North • A 2” IHP gas line runs along 1800 North from Main Street to 300 West and also from 1000 West to 2000 West • A 4” IHP gas line runs along 1800 North from 250 West to 1000 West and also from 2000 West and continuing west out of the project limits • Various sizes of 2”, 3” & 4” gas lines that tie into these mains at most all of the side roads

Rocky Mountain Power

Transmission Towers	• 3 main Transmission line systems that cross 1800 North at approximately 1600 West (Exhibit D). • 6 steel transmission towers that are near the 1800 North corridor (2 of which are extremely close to the roadway) • A transmission power substation (Exhibit E) on the north side of 1800 North at approximately 1550 West
Transmission Line Voltages	• The western system is 345 kV • The middle system is 230 kV • The eastern system is 138 kV

Buried Distribution Power Cables	• 4 main 3-phase power lines in a major power manhole vault (Exhibit F) on the north side of 1800 North at 1600 West. (This system crosses 1800 North here and then runs along the south side of 1800 North to 2000 West.) • Various sections along 1800 North where there are buried power cables of various voltages and phases
Aerial Distribution Power Cables	• A major 3-phase power line that consists of a 12.5 kV system running along the north side of 1800 North on power poles for the entire length of the project • Various power lines that intersect this system at most of the connecting side roads and consist of varying voltages and phases

Weber Basin Water Conservancy District

Water	• A 12" waterline from the Clinton City tanks on 1800 North running east along 1800 North through Sunset to the meter station on Main Street • A 14" waterline running along Main Street from the Main Street meter station and sand trap • A Meter Station in 1800 North at the Clinton City water tank location

Level 3 Communications

Fiber Optic Cable	• A 12 duct HDPE system buried along the east side of the Rail Trail at 1000 West with an unknown count fiber optic cable included. This duct system has 100+ inches of cover under 1800 North, as it was bored in under this area. (Level 3 mapping states that there is a leased cable in their system here.) • Fiber Optic Markers (Exhibit G) on the north side of 1800 North at 1000 West show that there is an MCI Fiber Optic Cable buried here. (It appears that MCI is the leased line.)
Hand Hole Vaults	• A hand hole vault for access to the fiber optic cable on the east side of the Rail Trail and on the north side of 1800 North

Comcast Cable Television

Fiber Optic Cable	• There are aerial fiber optic cables that are located on the Rocky Mountain Power poles along the north side of 1800 North and also along the west side of Main Street. These Fiber Optic cables vary in sizes of around 24 to 96-count and are typically armor sheathed. In some areas, such as 1500 West to 1700 West and the UTA Rail, these fiber cables are buried.
Trunk Cable	• There is trunk cable that is located on the power poles along the north side of 1800 North for the entire length of the project, as well as along the west side of Main Street. In some areas, such as 1500 West to 1700 West and around the UTA Rail, these trunk cables are buried.
Feeder Cable	• There is feeder cable that is located on the power poles along the north side of 1800 North for a majority of the entire length of the project, as well as along the west side of Main Street. In some areas, such as 1500 West to 1700 West and around the UTA Rail, these feeder cables are buried.

Chevron Pipeline

Petroleum Pipeline	• Two high profile 8" HP Petroleum pipelines (Exhibit J) buried along the east side of the UTA Rail just outside the east side of the right of way, which cross 1800 North here

North Davis Sewer District

Sewer	• A 24" sewer trunk line runs through 1800 North from Main Street to 1500 West. At that point, it diverts to the southwest and angles out of the project.

Davis and Weber Canal Company

Irrigation	• A 24" irrigation that runs along 1800 North • More detail on these lines included in the Drainage Report (see Appendix B)

UDOT

Traffic Signals	• Buried traffic signal power cable systems with video camera systems at 2000 West, 1000 West and at Main Street
Fiber Optic Cable	• An ATMS 1D fiber optic cable duct system along the east side of I-15 right of way

UTA / UPRR

Railway Power	• 2 crossing-arm operation buildings (Exhibit K & L) on the south side of 1800 North located on both sides of the rail that operate the crossing arms with buried power. It appears to be 480 Volt power systems that operate them.

Hill Air Force Base

Various	• There are various sewer, water, power, drainage, communications, etc. facilities and structures on the HAFB property that will need to be further investigated. The full extent of utilities in this property has yet to be determined and will need to be completely identified before the design of the interchange begins. It is unknown at this time as to what exactly is out there but it is assumed that there would be issues to be resolved, in the event that a build alternative is selected, such as relocations or alterations to design to accommodate the preservation of existing utilities.

Known Issues (If a Build Alternative is Selected)

- The 500,000 Gallon Water Tank (owned by Clinton City) which is located on the south side of 1800 North at the UTA Rail crossing may need to be relocated, as well as the 1200 foot well and the 20" and 12" waterlines in this area.
- The 20" High Pressure Questar gas line in the east frontage road may need to be relocated to accommodate the construction of a new interchange.
- The 6" High Pressure Questar gas line in 1500 West may need to be relocated to accommodate road widening.
- The Clinton, Sunset and North Davis Sewer District sewer lines may need to be relocated in the existing roadway to accommodate road widening.
- The Clinton and Sunset storm drain lines may need to be relocated in the existing roadway to accommodate road widening.
- The Rocky Mountain Power pole line on the north side of 1800 North may need to be relocated to accommodate roadway widening.
- The Rocky Mountain Power steel transmission towers on the north side of 1800 North at 1600 West are located just behind existing sidewalk and may need to be relocated to accommodate roadway widening.
- The Qwest Fiber Optic duct systems in the north side of the existing roadway may need to be relocated to accommodate road widening.
- There are various Qwest fiber optic structures and telephone cable pedestals on the north side of 1800 North that may need to be relocated to accommodate road widening.
- There are Qwest telephone poles running along the south side of 1800 North from Main Street to about 1500 West that carry the aerial telephone cables that may need to be relocated to accommodate road widening.

Possible Solutions (If a Build Alternative is Selected)

In the event that 1800 North is shifted to the south, it would require relocation of the Qwest telephone poles. However, a southern shift and creating utility easements would allow some utilities to be relocated and keep them out of the roadway.

Recommendations or Issues for Consideration in Phase II

The review of existing utility facilities during Phase I resulted in a determination that widening of 1800 North would likely require the relocation of several high-risk utility facilities, these being the Rocky Mountain Power steel transmission towers and power lines, the Rocky Mountain Power distribution power lines, and the 500,000 Gallon Water Tank and its associated water distribution lines. Therefore, detailed information regarding these facilities will need to be obtained as early as possible in Phase II, in order to allow for sufficient time and consideration of the issues and constraints involved to facilitate a timely and efficient relocation of these facilities, should a build alternative be selected. Also, should an interchange on I-15 be included in the project, additional data collection should be performed in order to ascertain any utility facilities in the area that would be impacted by the inclusion of access ramps, bridges, and other structures associated with interchange design.

Exhibit "A" – Qwest Duct System Fiber Optic and Telephone Cabinets at 100' West of UTA Rail

Exhibit "B" - Qwest Duct System Fiber Optic and Telephone Cabinets at 1375 West

Exhibit "C" - Qwest Duct System Telephone Cabinets at 790 West

Exhibit "D" – Rocky Mountain Power Transmission Lines at 1650 West

Exhibit "E" – Rocky Mountain Power Substation at approximately 1550 West

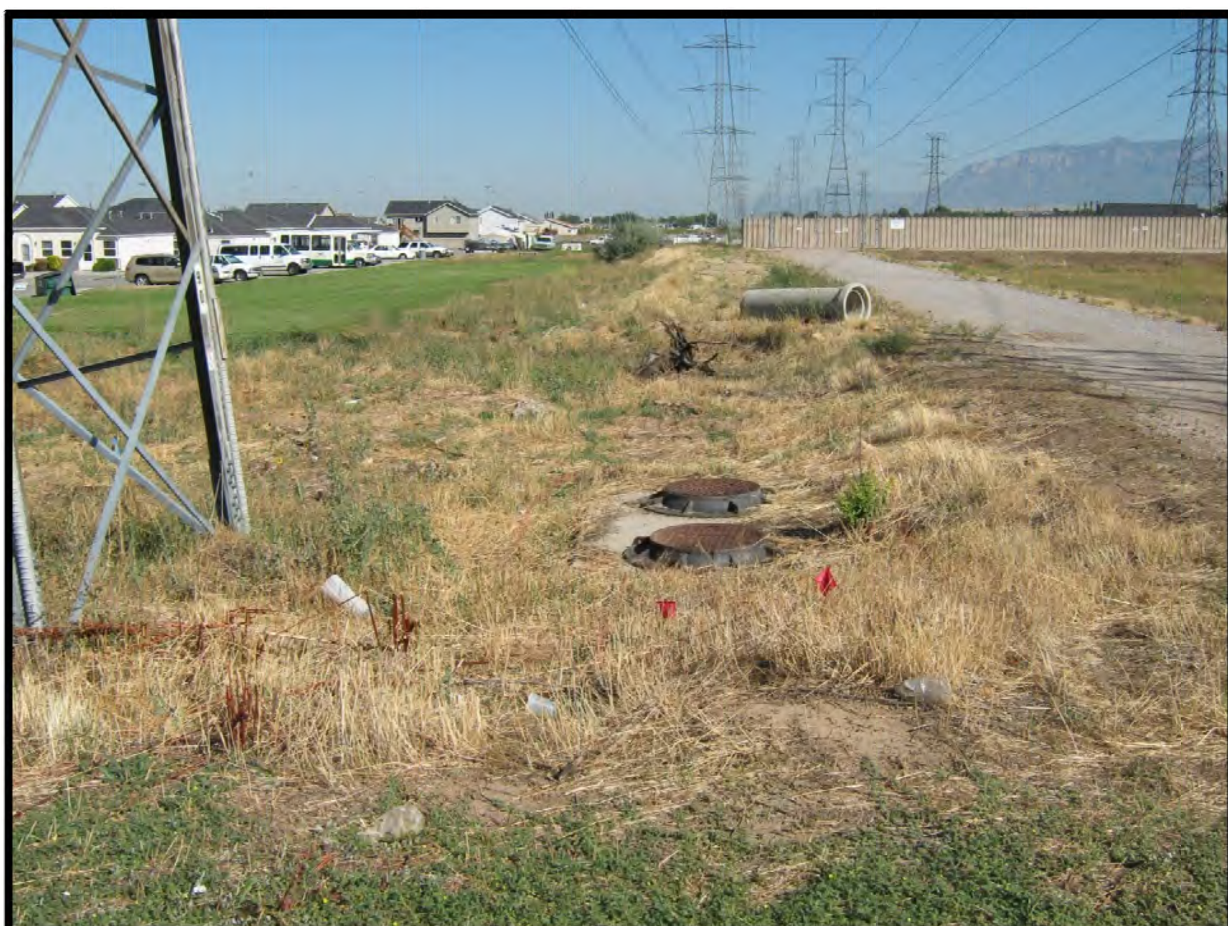

Exhibit "F" – Rocky Mountain Power Manhole Vault at 1600 West

Exhibit "G" – Level 3 Communications Fiber Optic Markers at 1000 West

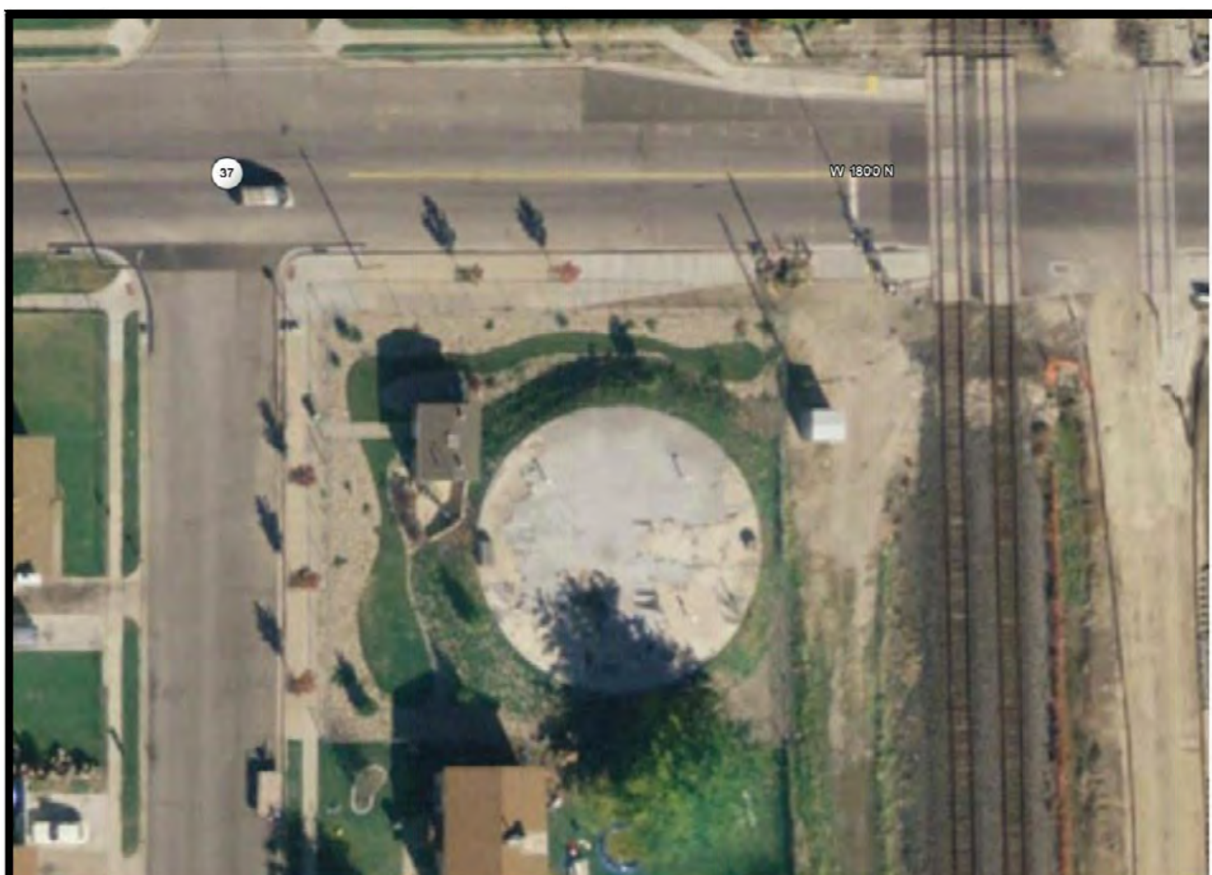

Exhibit "H" – 500,000 Gallon Water Tank & 1200 foot Well (Clinton City) at 100' West of UTA Rail

Exhibit "I" – 3,500,000 Gallon & 2,000,000 Gallon HAFB Water Tanks at ¼ Mile East of I-15

Exhibit "J" – Chevron HP Petroleum Pipelines at 100' East of UTA Rail

Exhibit "K" – UTA / UPRR Crossing Arm Operations Building at UTA Rail

Exhibit "L" - UTA / UPRR Crossing Arm Operations Building at UTA Rail

APPENDIX D

Existing Conditions Report At-Grade Railroad Crossing DOT 805-619V

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February 12, 2010

TECHNICAL MEMORANDUM

Subject: Existing Conditions Report At-Grade Railroad Crossing DOT 805-619V
UDOT Project Number: F-0037(3)12; Pin 6552

Roadway Information:

Street Name:	1800 North
Municipalities:	Clinton (West of tracks), Sunset (East of tracks)
Jurisdiction:	UDOT, as SR-37
DOT Crossing:	805-619V
2010 (2040) ADT:	14000 (31800)
Roadway geometry:	Single lane each direction, no raised median island.
Safety devices:	Active devices; Four quadrant gates with exit gate management (EGMS) detection
Train Detection:	Constant Warning Time (CWT) circuit
Quiet Zone Status:	Active Quiet Zone
Train/Vehicle Accident History	None in past 5 years (last incident in 1993)

Operating Railroads Information:

Union Pacific Railroad

Milepost/Subdivision	811.31/Salt Lake Subdivision
Number of tracks	Two
Minimum horizontal clearance	See UDOT Std. Dwg. DD-10
Minimum vertical clearance	23'6" (Freight Tracks)
Average Trains per Day	25
Maximum timetable speed	70 mph
Contact	Jim Marshall, 801-212-2783, jmarshal@up.com

Utah Transit Authority

Number of tracks	One
Minimum horizontal clearance	See UDOT Std. Dwg. DD-10
Minimum vertical clearance	14'0" (Passenger Tracks)
Average Trains per Day	71
Maximum timetable speed	79 mph
Contact	Crosby Mecham, 801-237-1927, cmecham@uta.cog.ut.us

Railroad Grade Separation Criteria

When considering a grade separation structure, both UPRR and UTA request that the entire structure span the width of the existing railroad right-of-way when possible. Structural supports are allowed on railroad right-of-way, but are discouraged. When structural supports are required, the placement must be coordinated with the right-of-way owner to ensure that future track locations are not compromised. The location of a future track must be accommodated by providing overall space within the right-of-way section; i.e., it is allowed to provide adequate width with the understanding that existing tracks may be adjusted to allow for the extra track.

As freight railroads seek to improve efficiency over the rail network, longer trains are becoming more common. Typical unit freight trains are 6000' to 7500' in length, with 8000' trains seeing service during times of heavy freight traffic. Union Pacific has tested trains with lengths up to 18000' on some mainlines. While this is not expected to be a common occurrence in the near (or far) future, it is likely that train lengths will regularly be longer than the typical 7500' seen today. This consideration must be taken into account when making predictions about future vehicle delay due to blocked crossings.

The Federal Highway Administration has published a set of criteria when considering grade separations at highway-rail grade crossings. These criteria are presented in the *Guidance on Traffic Control Devices at Highway-Rail Grade Crossings* published in November 2002. These criteria are:

Type A Criteria: Highway-rail grade crossings should be considered for grade separation or otherwise eliminated across the railroad right-of-way whenever one or more of the following conditions exist:		
	Criteria Met?	**Notes**
The highway is a part of the designated Interstate Highway System	**No**	Designated as a State Highway
The highway is otherwise designed to have full controlled access	**No**	Normal access
The posted highway speed equals or exceeds 70 mph	**No**	Posted speed 35 mph
AADT exceeds 100,000 in urban areas or 50,000 in rural areas	**No**	2010 ADT: 14000
Maximum authorized train speed exceeds 110 mph	**No**	Maximum speed 79 mph
An average of 150 or more trains per day or 300 Million Gross Tons (MGT) per year	**No**	96 trains/day, tonnage not available
An average of 75 or more passenger trains per day in urban areas or 30 or more passenger trains per day in rural areas	**No**	71 passenger trains
Crossing exposure (the product of the number of trains per day and AADT) exceeds 1,000,000 in urban areas or 250,000 in rural areas	**Yes**	Crossing exposure: 1344000
Passenger train crossing exposure (the product of the number of passenger trains per day and AADT) exceeds 800,000 in urban areas or 200,000 in rural areas	**Yes**	Crossing exposure: 994000
The expected accident frequency (EAF) for active devices with gates, as calculated by the USDOT Accident Prediction Formula including 5-year accident history, exceeds 0.5	**No**	Expected accident frequency: 0.11
Vehicle delay exceeds 40 vehicle hours per day	**NA**	To be determined by Vissim analysis. Waiting for ADT count data.

Type B Criteria: Highway-rail grade crossings should be considered for grade separation across the railroad right-of-way whenever the cost of grade separation can be economically justified based on fully allocated life cycle costs and one or more of the following conditions exist:		
	Criteria Met?	**Notes**
The highway is a part of the designated National Highway System	**No**	Designated as a State Highway
The highway is otherwise designed to have partial controlled access	**No**	Normal access
The posted highway speed exceeds 55 mph	**No**	Posted speed 35 mph
AADT exceeds 50,000 in urban areas or 25,000 in rural areas	**No**	2010 ADT: 14000
Maximum authorized train speed exceeds 100 mph	**No**	Maximum speed 79 mph
An average of 75 or more trains per day or 150 MGT per year	**Yes**	96 trains/day, tonnage not available
An average of 50 or more passenger trains per day in urban areas or 12 or more passenger trains per day in rural areas	**Yes**	71 passenger trains
Crossing exposure (the product of the number of trains per day and AADT) exceeds 500,000 in urban areas or 125,000 in rural areas	**Yes**	Crossing exposure: 1344000
Passenger train crossing exposure (the product of the number of passenger trains per day and AADT) exceeds 400,000 in urban areas or 100,000 in rural areas	**Yes**	Crossing exposure: 994000
The expected accident frequency (EAF) for active devices with gates, as calculated by the USDOT Accident Prediction Formula including 5-year accident history, exceeds 0.2	**No**	Expected accident frequency: 0.11
Vehicle delay exceeding 30 vehicle hours per day	**NA**	To be determined by Vissim analysis. Waiting for ADT count data.
An engineering study indicates that the absence of a grade separation structure would result in the highway facility performing at a level of service below its intended minimum design level 10% or more of the time	**No**	

APPENDIX E

Preliminary Geological Assessment for the 1800 North 2000 West to Main Street Environmental Study

Jesse Negherbon
CH2M HILL
215 South State Street, Suite 1000
Salt Lake City, Utah 84111

Preliminary Geological Assessment for 1800 North 2000 W. to Main St. Environmental Study – UDOT Project Number: F-0037(3)12; Pin 6552

PREPARED FOR: Horrocks Engineers

PREPARED BY: CH2M HILL

DATE: March 23, 2010

Geology

Regional Geology

The regional geology of the 1800 North Project area is characteristic of a horst and graben structure created by normal faulting associated with the formation of the Basin and Range physiographic province. The Wasatch Range, east of the project area, and Antelope and Fremont Islands, west of the project area in the Great Salt Lake, are horsts composed mainly of Precambrian metamorphic rocks. The 1800 North corridor is located within the graben associated with those horsts and is underlain by at least 1,500 feet of unconsolidated sediment derived from erosion of the Wasatch Mountains and subsequent deposition into the Lake Bonneville Basin (Feth et al., 1966).

Local Geology

The project area is located on the western flank of the Paleo-Weber River Delta, formed where the Weber River deposited sediments into ancient Lake Bonneville between approximately 32,000 to 14,000 years before present (Utah Geological Survey, 2010). The sediments underlying 1800 North consist of an interbedded mixture of deltaic, lacustrine, and alluvial deposits, primarily composed of sand, with some fine-grained and gravel deposits. Waves, currents, and subaerial erosion caused by fluctuations in Lake Bonneville water levels reworked the sediments into heterogeneous, laterally discontinuous mixtures. In general, the subsurface geology consists of sand deposits separated by discontinuous silt and clay lenses that vary in thickness and lateral extent. The near-surface soil types and surface water drainages are shown in the attached Figure 1 (United States Department of Agriculture, 2010). The major surface soil type in the area consists of fine sandy loam.

Hydrogeology

Regional Hydrogeology

Three principal aquifers underlie the project area. From the surface, the aquifers are (1) a shallow aquifer system, from the surface to about 300 feet below ground surface (bgs); (2) the Sunset aquifer, from about 300 to 400 feet bgs; and (3) the Delta aquifer, from about 500 to at least 700 feet bgs (Feth et al., 1966). The regional groundwater flow direction in all three aquifers is generally westward from recharge areas near the Wasatch Mountains to discharge areas near the Great Salt Lake.

The Delta aquifer is the primary source of drinking water in the area, and the Sunset aquifer is a secondary aquifer infrequently used for irrigation. The shallow aquifer system is not a source of drinking water in the area but may be used locally for irrigation.

Local Hydrogeology

Groundwater underlying the area is unconfined and shallow, with depths ranging from approximately ground surface in seeps and springs to approximately 20 feet bgs near the Hill Air Force Base (AFB) boundary (MWH Americas Inc. [MWH], 2003; CH2M HILL, 2010). The approximate depth to groundwater across the general area, where groundwater data are available, is depicted in the attached Figure 2. Groundwater flow is to the west with a horizontal hydraulic gradient of approximately 0.3 foot per foot (MWH, 2003; CH2M HILL, 2010). Measured hydraulic conductivities in the area range between 0.006 to 225 feet per day, with the majority of measurements ranging from about 3 to 5 feet per day (MWH, 2003; CH2M HILL, 2010). The wide range of hydraulic conductivities is a function of the interbedded nature of the sediments.

Known Groundwater Contamination

There are two known areas of groundwater contamination near the project area, both associated with Hill AFB: (1) Operable Unit 5 and (2) the 1100 Area of Operable Unit 9 (Figure 1) (MWH, 2003; CH2M HILL, 2010). Operable Unit 5 includes two shallow groundwater contaminant plumes that originate from the Base and extend off-Base in a westerly direction beneath the cities of Clinton, Sunset, and Roy. The 1100 Area of Operable Unit 9 consists of a TCE plume that extends from the Base to just west of Main Street in Sunset. Because of those plumes, use of groundwater in much of the project area (NW ¼, NE ¼, and SE ¼ of S26 T5N R2W and the NW ¼ and SW ¼ of S25 T5N R2W, Salt Lake Base and Meridian) has been restricted by the Utah Division of Water Rights (1995).

Geologic Hazards

Ground Shaking

Seismic hazard maps depicting probabilistic ground motions and spectral response have been developed for the United States by the United States Geological Survey (USGS) as part of the National Earthquake Hazards Reduction Program (NEHRP)/National Seismic Hazard Mapping Project (NSHMP) (Frankel et al., 1996). These maps have been incorporated into the *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures* (Federal Emergency Management Agency, 1997), the *International Building Code* (IBC) (International Code Council, 2006), and interactive ground-motion-calculating software (USGS, 2010). The maps typically show a seismic hazard with a 2 percent probability of exceedance in 50 years (2PE50), which is representative of the seismic event expected within a time period of approximately 2,500 years.

The site-specific 2PE50 peak ground acceleration (PGA) and spectral response acceleration were calculated at the intersection of 1800 North and Main Street (approximate latitude and longitude of 40.139˚ and -112.026˚, respectively). The NEHRP/NSHMP seismic hazard maps generally correspond to a “firm rock” site, known as Site Class B. However, based on the available data, it is our opinion that the project area may be better described as Site

Class D ("stiff soil"). More data will need to be collected to make an actual site-specific determination, however. To account for these assumed geologic conditions, our calculations were modified using a site coefficient that varies with the magnitude of spectral acceleration, distance to seismic source, and average shear wave velocity of earth materials in the upper 30 meters of the subsurface. The corrected 2PE50 PGA and spectral response accelerations are shown in Exhibit 1.

EXHIBIT 1
1800 North Seismic Hazard Values

PGA (g)	Calculated Spectral Response Acceleration (g)		Spectral Response Acceleration for Design Considerations[1] (g)	
	0.2 Second[2]	**1.0 Second[3]**	**0.2 Second[2]**	**1.0 Second[3]**
0.4974	1.205	0.747	0.804	0.498

NOTES:
g = percentage of Earth's gravitational pull
[1] IBC 1615.1.3 recommends scaling the maximum considered earthquake values by 2/3 to obtain the design spectral response acceleration values.
[2] 0.2-second spectral response acceleration is high-frequency ground shaking that is particularly damaging to one- to two-story structures.
[3] 1.0-second spectral response acceleration is lower frequency ground shaking that is more damaging to tall structures (about 10 stories or more).

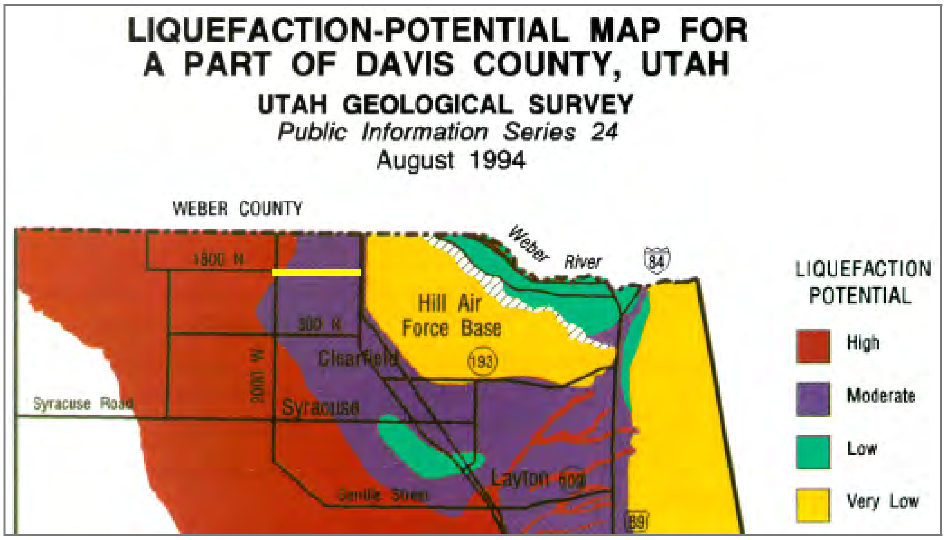
As noted previously, these seismic values are based on many assumptions and should not be used for design purposes. Further site-specific geotechnical information would need to be collected in order to assess site conditions.

Liquefaction

Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pore water pressure buildup resulting from dynamic loading, such as that caused by an earthquake, excavation, or construction vibration. Among other effects, liquefaction can result in densification of soil after an earthquake, causing settlements of overlying layers as excess pore water pressures are dissipated. The primary factors affecting liquefaction potential of soils are (1) intensity and duration of seismic ground motions; (2) soil type and consistency; and (3) depth to groundwater.

Exhibit 2 shows the liquefaction potential along the 1800 North corridor (highlighted yellow). The majority of the corridor lies within an area of moderate liquefaction potential, with high potential near the intersection with 2000 West and very low potential near Hill AFB (Utah Geological Survey, 1994).

EXHIBIT 2
Liquefaction Potential



This map provides an *estimate* of the liquefaction potential at the site; this information would need to be further refined with the collection of site-specific data.

Geotechnical Considerations

Pavement Condition

Dave Holmgren (dholmgren@utah.gov, 801-620-1606) at the UDOT's Region 1 construction department was contacted on 9 March 2010 to discuss the existing pavement conditions and surfacing history for 1800 North. Mr. Holmgren indicated that the 1800 North surface was last chip-sealed in 2001 and is scheduled to be chipped-sealed once more in the summer of 2010. The roadway surface has endured minor cracking and patchwork, and Mr. Holmgren knew of no significant issues with respect to the structural section or drainage. One additional piece of work occurring over the summer of 2010 will be the installation of a signalized intersection at the crossing of 1800 North and 1500 West. Mr. Holmgren provided photographic information on the pavement cores for the proposed intersection project, which indicated a pavement thickness of 7", but included no additional information regarding the roadway structural section along the corridor.

Existing Soils Data

Jon Bischoff (jonbischoff@utah.gov, 801-965-4326) and Jim Higbee (jhigbee@utah.gov, 801-965-4351), of the UDOT's geotechnical division, were both consulted regarding the availability of relevant geotechnical data in the project vicinity. CH2M HILL's most recent conversations with Mr. Bischoff and Mr. Higbee occurred 11 March 2010, and indicated that the closest available soils data that UDOT could provide would pertain to the design and construction of the I-15 interchanges at 5600 S Street, and E 650 North, both of which are located over 1.5 miles from the intersection of 1800 North with Main Street. This information was not pursued any further for this stage of the project due to its distance from 1800 North and the unknown spatial variability of the soil characteristics.

Lynn Vinzant (lvinzant@clintoncity.com, 801-614-0740), Assistant City Manager for Clinton City, provided soil reports for two private developments on the western side of the project area. The first of the reports, completed by Applied Geotechnical Engineering Consultants, Inc. (AGEC) in 1998, summarizes subsurface conditions for the Albertson's shopping center and adjoining residential development, located near the northwest corner of 1800 North and 2000 West, the western edge of the project area. The AGEC report catalogued six borings and noted the presence of fine grain soils, shallow groundwater, and low allowable bearing pressures. The second soil report was authored by Earthtec Testing & Engineering, and presented analysis of conditions for a subdivision development near 1800 North and 1300 West (approximately) in 2000. Earthtec's report provided analysis of eight borings and similarly indicated the presence of organics, silts, sands, and shallow groundwater. The reports are available from Clinton City, upon request.

The borings for both investigations were relatively shallow and averaged 15 feet in depth, with a maximum of approximately 30 feet. Additionally, both were preliminary investigations in support of light-to-medium load structures and low traffic volumes. Each report classified the liquefaction potential as "low", but given the depths of the borings and the variability of the soils in the area, liquefiable soils may be present at greater depths. The available geotechnical data suggests wide variability in subsurface soils throughout the project and while the AGEC and Earthtec investigations provide insight on the west end of 1800 North, there is little information available for the east end of 1800 N near the railroad crossing and the intersection with Main St., where future design alternatives are most likely to incorporate structures. More recent private development has occurred along 1800 North, between 1500 West and 2000 West, where the box stores for Kohl's and Lowes have been constructed. The soils reports for these sites were not available at the time of this document's completions, but may be available at later phases of the project.

Figure 2 illustrates the locations of archived soils data that CH2M HILL has collected in support of environmental remediation work for Hill Air Force Base (AFB). This data is numerous in both location and content, often times reflecting work to install groundwater monitoring wells or sample soil for environmental contaminants. The data for the exploratory points closest to the east end of 1800 North were not available for review at the time of this memo's draft. Significant development is occurring on the west side of Hill AFB, near the I-15 corridor. However, the nature and extent of the subsurface investigations completed by Hill AFB in the vicinity of 1800 North and Main Street is unknown.

Recommendations for Future Work

Acknowledging the limited available soils data for the general project vicinity, particularly on the east end of 1800 North, it is recommended that exploratory geotechnical investigations and tests be completed as necessitated by the development and delineation of alternatives. At this juncture of the study, the definition of design alternatives is not sufficient enough to provide direction on soil investigation specifics including number or borings or nature of soil tests.

References

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Enclosures

Figures

FIGURE 1

Soil Map—Davis-Weber Area, Utah
(1800 North)

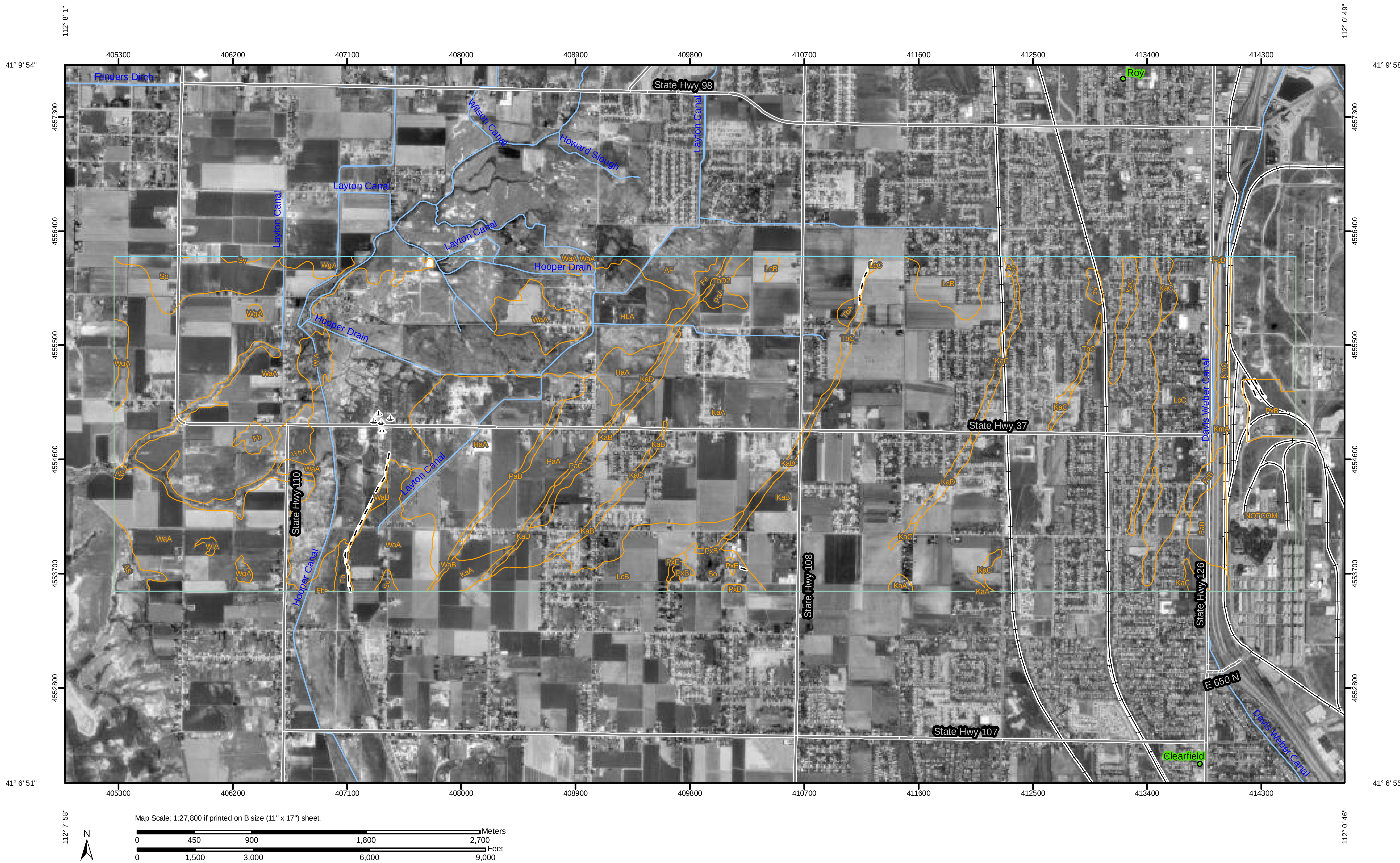

FIGURE 1

Soil Map–Davis-Weber Area, Utah
(1800 North)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:27,800 if printed on B size (11" × 17") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Davis-Weber Area, Utah
Survey Area Data: Version 5, Feb 10, 2010

Date(s) aerial images were photographed: 7/16/1997; 10/1/1997

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Davis-Weber Area, Utah (UT607)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Ac	Airport silt loam, 0 to 2 percent slopes	9.0	0.1%
AF	Airport-Ford complex, 0 to 1 percent slopes	34.8	0.6%
AS	Arave-Saltair complex, 0 to 1 percent slopes	28.1	0.5%
Fa	Ford loam, 0 to 1 percent slopes	13.2	0.2%
Fb	Ford loam, shallow water table, 0 to 1 percent slopes	22.1	0.4%
FcB	Francis loamy fine sand, 0 to 3 percent slopes	17.0	0.3%
HaA	Harrisville silt loam, 0 to 1 percent slopes	305.4	5.0%
HLA	Harrisville-Leland complex, 0 to 1 percent slopes	752.7	12.4%
KaA	Kidman fine sandy loam, 0 to 1 percent slopes	766.0	12.6%
KaB	Kidman fine sandy loam, 1 to 3 percent slopes	1,717.6	28.3%
KaC	Kidman fine sandy loam, 3 to 6 percent slopes	80.6	1.3%
KaD	Kidman fine sandy loam, 6 to 10 percent slopes	52.6	0.9%
KmA	Kilburn gravelly sandy loam, deep over clean sands, 0 to 3 percent slopes	8.4	0.1%
KmC	Kilburn gravelly sandy loam, deep over clean sands, 3 to 10 percent slopes	30.0	0.5%
LcB	Layton loamy fine sand, 0 to 3 percent slopes	184.3	3.0%
LcC	Layton loamy fine sand, 3 to 6 percent slopes	229.2	3.8%
NOTCOM	Not Complete	307.8	5.1%
PaA	Parleys loam, 0 to 1 percent slopes	136.6	2.3%
PaB	Parleys loam, 1 to 3 percent slopes	57.5	0.9%
PaC	Parleys loam, 3 to 6 percent slopes	3.5	0.1%
PxB	Preston fine sand, 1 to 10 percent slopes	49.7	0.8%
PxE	Preston fine sand, 10 to 20 percent slopes	4.2	0.1%
So	Syracuse loamy fine sand, 0 to 2 percent slopes	119.4	2.0%
Sy	Syracuse loamy fine sand, moderately saline, sodic, 0 to 2 percent slopes	3.1	0.1%
TbA	Timpanogos loam, 0 to 1 percent slopes	6.5	0.1%
TbC	Timpanogos loam, 3 to 6 percent slopes	15.2	0.2%
TbD2	Timpanogos loam, 6 to 10 percent slopes, eroded	3.6	0.1%
WaA	Warm Springs fine sandy loam, 0 to 1 percent slopes	965.1	15.9%
WaB	Warm Springs fine sandy loam, 1 to 3 percent slopes	7.4	0.1%

Davis-Weber Area, Utah (UT607)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
WgA	Warm Springs fine sandy loam, saline, sodic, 0 to 1 percent slopes	38.7	0.6%
WhA	Warm Springs fine sandy loam, saline, sodic, 0 to 1 percent slopes, channeled	75.7	1.2%
WlA	Warm Springs fine sandy loam, shallow water table, 0 to 1 percent slopes	25.6	0.4%
Totals for Area of Interest		**6,070.7**	**100.0%**

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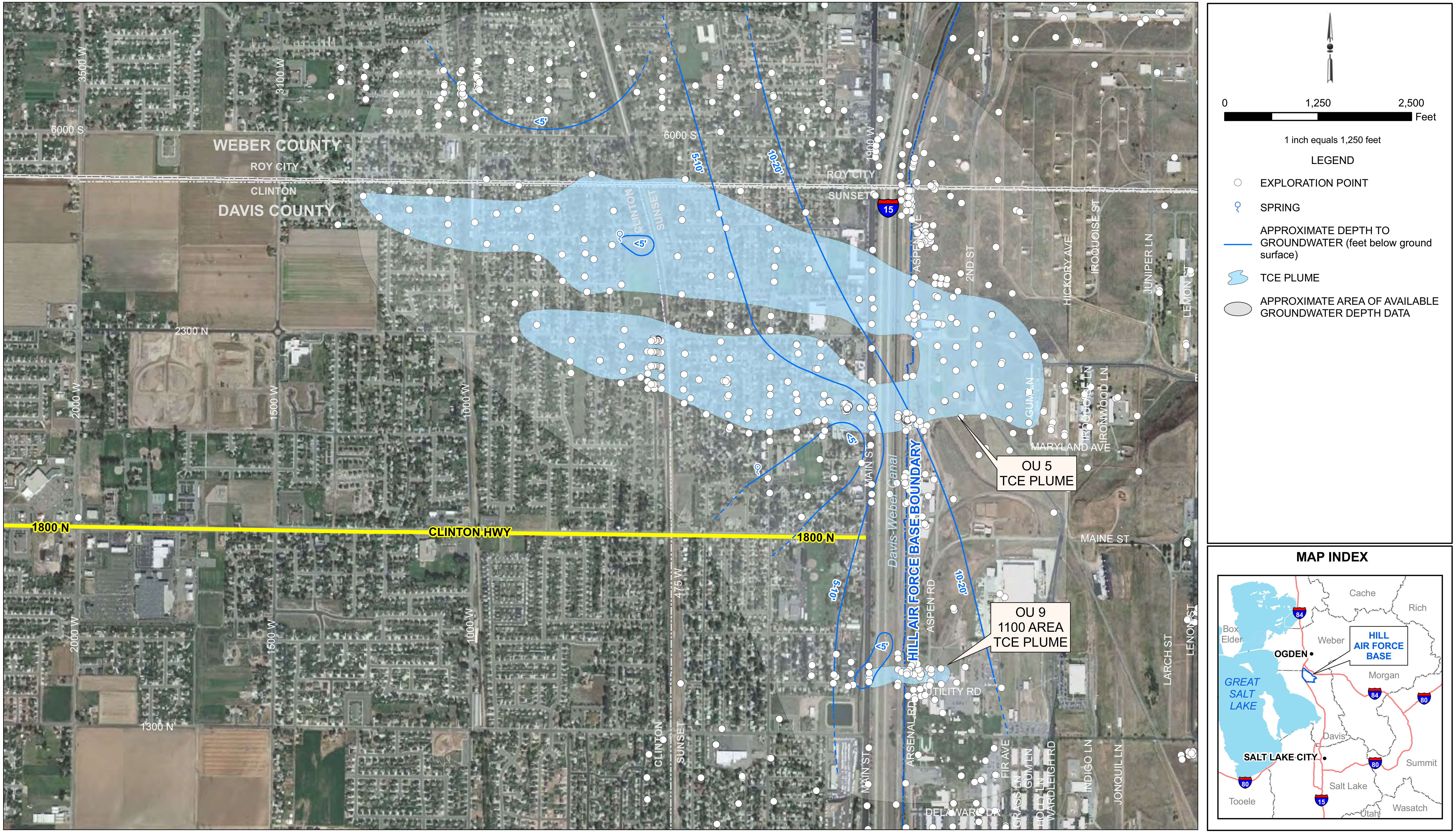

FIGURE 2

DEPTH TO GROUNDWATER AND KNOWN GROUNDWATER CONTAMINATION

PRELIMINARY GEOLOGICAL ASSESSMENT FOR THE 1800 NORTH PROJECT

Aerial Source:
ESRI I3 Imagery Prime World 2D, September 1, 2006.

APPENDIX F

1800 North (SR-37) 2000 W. to Main Street Environmental Study Technical Report for Traffic Conditions and Travel Demand Model Report

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1800 NORTH (SR-37)
2000 W. TO MAIN STREET
ENVIRONMENTAL STUDY
TECHNICAL REPORT

Existing Conditions

UDOT Project No. F-0037(4)0

First Draft – February 26, 2010

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Purpose of this Technical Report

The purpose of this technical report is to present the current conditions of the 1800 North corridor between 2000 West and Main Street. This includes a safety analysis, description of existing trails, description of existing transit, summary of traffic count data, and a traffic operations analysis.

Project Overview

The Federal Highway Administration (FHWA), in cooperation with the Utah Department of Transportation (UDOT), is in the process of preparing a study on a proposed action to address projected transportation demand in the Clinton and Sunset municipalities along 1800 North (SR-37).

The study process will be phased, with Phase I including tasks relative to initial Public Involvement, traffic analyses, and key stakeholder coordination. At the conclusion of Phase I activities, when traffic analyses are completed, UDOT and FHWA will determine the scope of the project, appropriate project area to be further evaluated, and potential alternatives to meet the project needs.

Safety Analysis

The crash history for 1800 North was analyzed for the segment between Main Street (1900 West) in Sunset and 0.4 miles west of 2000 West, which is in Clinton. The crash history was reviewed for the years from 2006 to 2008 using information supplied by Utah DOT which is obtained from the UDOT safety management system.

The analysis covered the segment from mile point 0 to 2.4. The 2.4 mile corridor had a total of 100 crashes for the 3-year period with an average of 33 crashes per year. The overall crash rate was 2.95 which is less than the expected value of 4.56 crashes per million vehicle miles traveled through the corridor. The overall severity index of the crashes that occurred during the study period was 1.73 which is above the expected severity index of 1.51. The expected values used for comparison are based on information generated by UDOT and represent an average of the crashes that occurred statewide for roads with the same functional classification and volume group. This facility was considered an Urban - Minor Arterial within a small urban area with a population between 5,000 and 49,999. **Table 1** shows a summary of the crash study results.

Table 1: Operational Safety Report

SR-37 MP 0.0 to 2.4 Length = 2.4 miles

Years 2006 to 2008

Year	Num of Acc	Acc. Rate	# of Fatal	Fatal Rate	ADT	Severity
2006	40	3.54	0	0.00	12,537	1.60
2007	34	3.01	0	0.00	12,701	1.85
2008	26	2.30	0	0.00	13,435	1.73

				Expected
Total Acc.	100	3 Year Average # Acc. =	33	
		3 Year Average Severity =	1.73	1.51
3 Year Average ADT =	12,891	3 Year Average Rate =	2.95	4.56

The 100 crashes are distributed as follows among collision types:

- Single Vehicle 16
- Rear End 33
- Side Swipe 5
- Head On 2
- Angle 40
- Other 4

In addition to the total 2.4 mile crash analysis above, the safety study reviewed the crash history for the segment broken down into 0.4 mile increments. The 0.4 mile increment analysis is used to identify any areas that are experiencing any higher than expected accident rate and severity index. **Table 2** shows segments from mile posts 0.4-0.8, 0.8-1.2, 1.6-2.0 as having crash rates higher than the expected value during one of the study years. However, in 2008, crash rates at all segments were lower than the expected value. All segments had a severity index higher than the expected value.

Table 2: Operational Safety Report Broken Into 0.4 Mile Segments

	Year	Num of Crashes	Crash Rate	# of Fatal	Fatal Rate	ADT	Severity
MP 0.0 To MP 0.4	2006	8	4.23	0	0.00	13,060	**2.00**
	2007	6	3.17	0	0.00	13,243	**1.67**
	2008	6	3.17	0	0.00	12,594	1.50
MP 0.4 To MP 0.8	2006	7	3.79	0	0.00	12,621	**1.57**
	2007	11	**5.96**	0	0.00	12,732	1.45
	2008	6	3.25	0	0.00	12,594	**1.67**
MP 0.8 To MP 1.2	2006	10	**5.40**	0	0.00	12445	**2.10**
	2007	6	3.24	0	0.00	12619	1.33
	2008	4	2.16	0	0.00	13003	**2.00**
MP 1.2 To MP 1.6	2006	2	1.05	0	0.00	12445	**2.00**
	2007	1	0.52	0	0.00	12619	1.00
	2008	5	2.61	0	0.00	14229	1.40
MP 1.6 To MP 2.0	2006	10	**5.23**	0	0.00	12445	0.70
	2007	6	3.14	0	0.00	12619	**3.17**
	2008	4	2.09	0	0.00	14229	**2.50**
MP 2.0 To MP 2.4	2006	3	1.60	0	0.00	12205	**1.67**
	2007	4	2.13	0	0.00	12376	**2.25**
	2008	1	0.53	0	0.00	13960	1.00

Existing Trails System

Figure 1 shows the existing trails within the study area as provided by Wasatch Front Regional Council (WFRC). It is apparent from the map that this is not an all inclusive list of trails and is limited to those trails specifically assigned as bikeways. These are broken in to three types: class 1 – shared use path, class 2 – signed shared roadway, and class 3 – shared roadway (no bikeway designation).

The major class 1 trails within the study area are as follows:

- D&RG Railroad Trail running adjacent to the Rio Grande Railroad tracks from 800 North in Clearfield to 500 West in Ogden.
- Davis-Weber Canal Trail follows the Davis-Weber canal from 1200 West to 800 North in Clearfield.

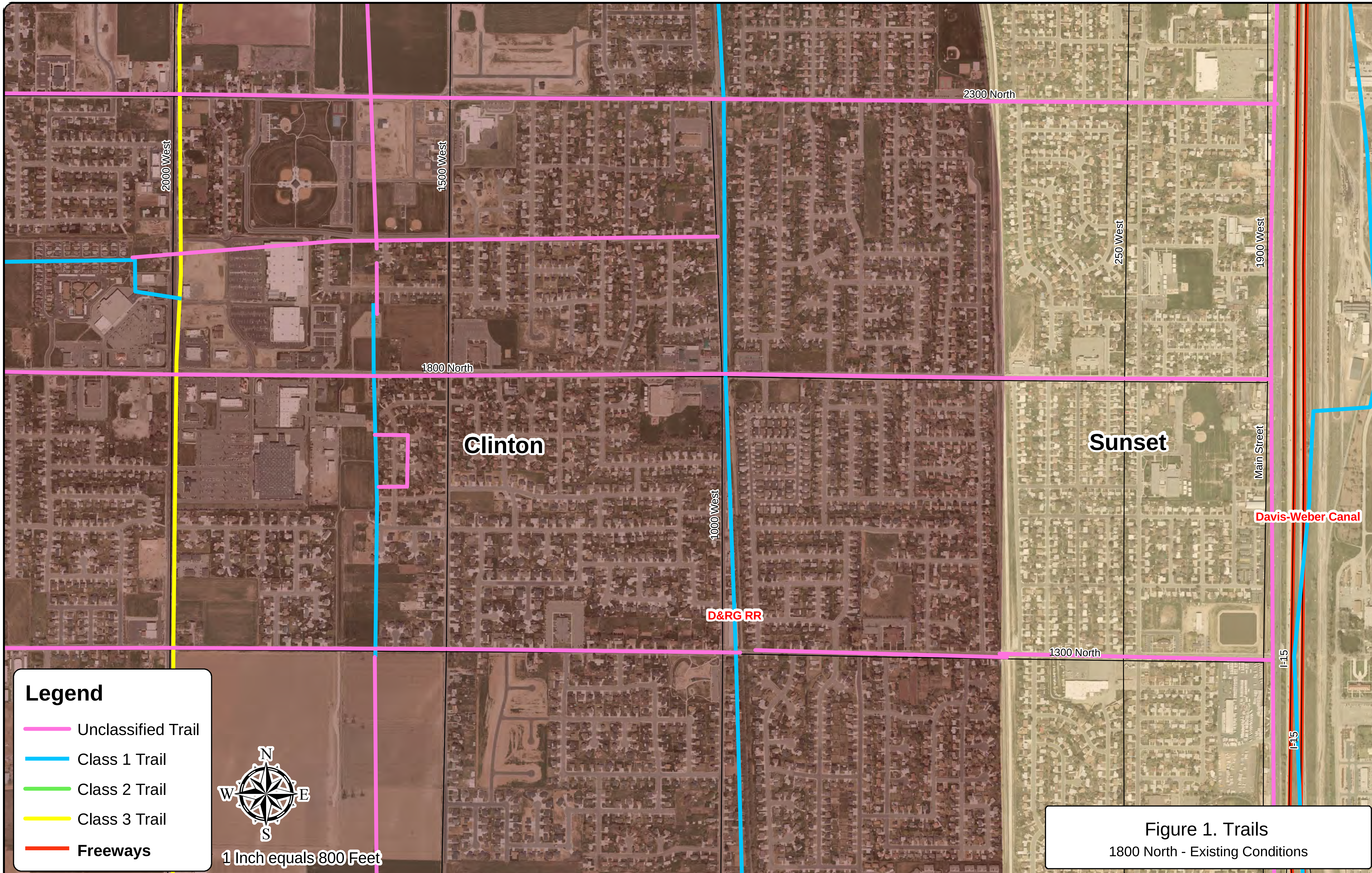


Figure 1. Trails
1800 North - Existing Conditions

Existing Transit System

Figure 2 displays the existing transit lines within the study area acquired from the Utah Automated Geographic Reference Center (AGRC). **Table 3** provides a list of transit routes that run in or near the study area including the number of weekday round trips and average time between trips. Routes 456, 472, 474, and 476 run north and south on I-15 on the east side of the study area. Route 470 runs north and south on Main Street (1900 West). Route 640 enters the study area northbound on 1000 West, turns right onto 1800 North, continues eastbound on 1800 North until it reaches Main St (1900 West) where it turns left and continues northbound. The return route follows the same path in the reverse. UTA's Frontrunner commuter rail line, route 750, runs through the study area with stops to the north, Roy, and south, Clearfield, but none within the study area. Maps of all these routes are provided in the Appendix A.

Table 3: UTA Route List

ROUTE NUMBER	ROUTE NAME	Weekday Round Trips	Average Time Between Trips
456	OGDEN/IUNISYS/ROCKY MTN. EXPRESS	1	Once Daily
470	OGDEN - SALT LAKE CITY INTERCITY	42	28 min
472	OGDEN - SALT LAKE EXPRESS	6	30 min
474	OGDEN/ROY/SALT LAKE EXPRESS	2	30 min
476	OGDEN/CLEARFIELD/SLC EXPRESS	3	30 min
640	WEST DAVIS COUNTY - WEBER STATE	27	33 min
750	FRONTRUNNER	35	30 min

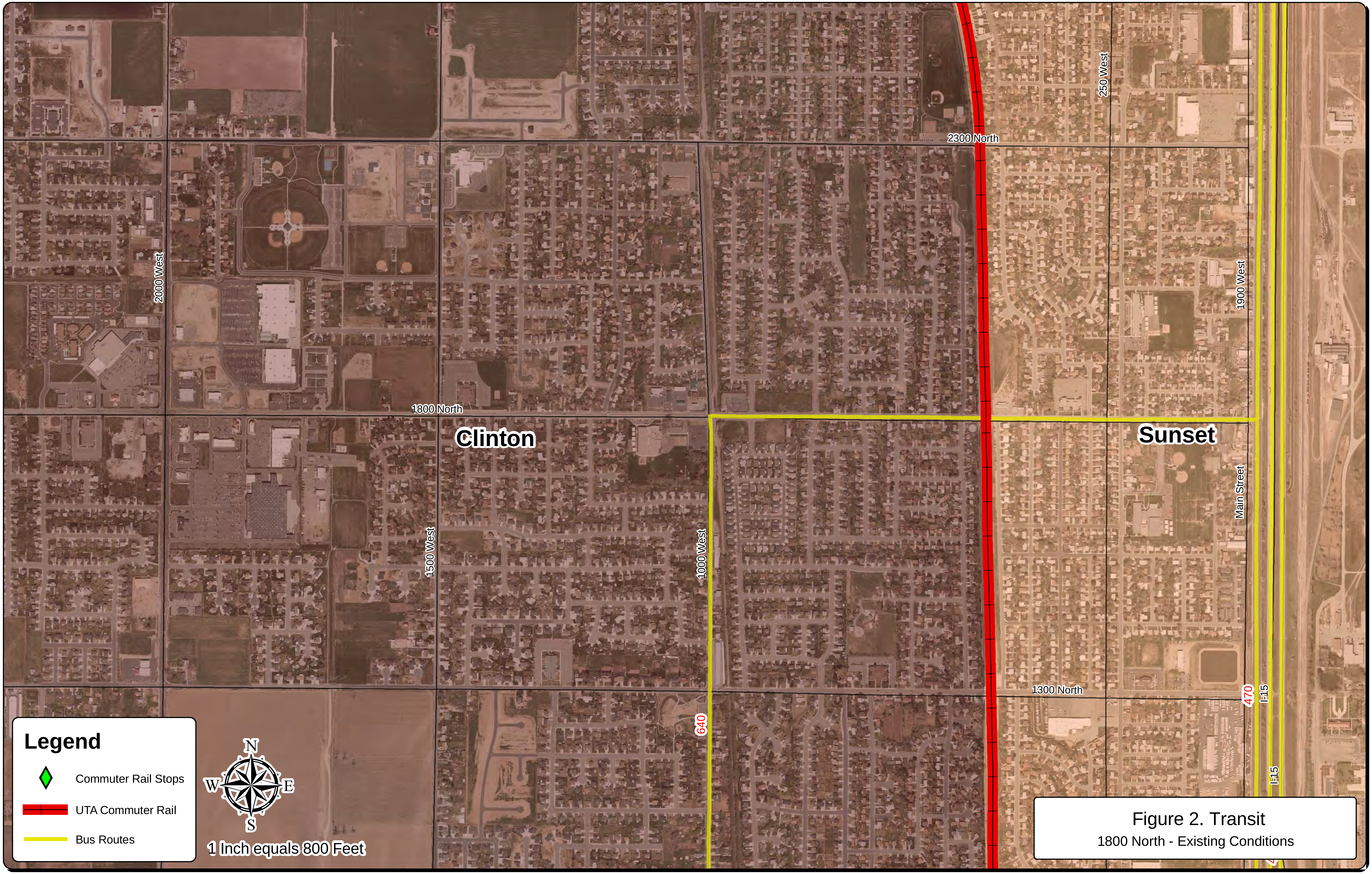


Figure 2. Transit

1800 North - Existing Conditions

Traffic Data Collection

A rigorous traffic data collection effort was made in connection with the Clinton 1800 North Environmental Study. The purposes of this section are to 1) describe data collection methodologies used and 2) present the actual data. Three basic types of traffic data were collected: pedestrian movement counts, vehicle turning movement counts, and pneumatic tube counts. These data are provided in Appendix B, Appendix C, and Appendix D, respectively.

Intersection Locations

A total of 24 AM and PM peak hour turning movement counts were collected between November 17, 2009 and December 17, 2009 using JAMAR counting boards. **Table 4** provides a list of turning movement counts completed for the Clinton 1800 North EIS. Pedestrian movement data was also collected at each of these intersections. Additional pedestrian counts were collected beginning at 3:00 PM at four locations to account for school age pedestrians from the nearby elementary schools and junior high.

Table 4: Turning Movement Count Data Collection Locations

Count	North/South Street	East/West Street
1	Main Street	1800 North
2	75 West	1800 North
3	200 West	1800 North
4	250 West	1800 North
5	300 West	1800 North
6	350 West	1800 North
7	400 West	1800 North
8	475 West	1800 North
9	550 West	1800 North
10	630 West	1800 North
11	670 West	1800 North
12	725 West	1800 North
13	810 West	1800 North
14	925 West	1800 North
15	1000 West	1800 North
16	1200 West	1800 North
17	1220 West	1800 North
18	1300 West	1800 North
19	1400 West	1800 North
20	1500 West	1800 North
21	1750 West	1800 North
22	East Walmart Access	1800 North
23	West Walmart Access	1800 North
24	2000 West	1800 North

Seasonal Adjustments to Turning Movement Count Data

Seasonal adjustments were made to the turning movements counts based on annual data collected by the Utah Department of Transportation (UDOT). Traffic counts were collected within two different months in the year 2009. The seasonal adjustment factor at UDOT Station 348 for both November and December is 1.06.

Pneumatic Tube Counts

At the time of this report, the pneumatic tube counts were in the process of being collected. A total of six locations will be counted to verify the daily traffic profiles. Once the data collection is complete, a supplemental report will be provided to summarize the results.

Traffic Operational Analysis

An operational analysis was performed at 24 intersections within the study area using Synchro, SimTraffic, and VISSIM software. Five SimTraffic runs were completed and the results averaged. The methodologies used to determine intersection operation levels are based on a Level of Service (LOS) grade. Level of Service is a term used by the *Highway Capacity Manual* (HCM) to describe the traffic operations of an intersection, based on congestion and average vehicle delay. LOS ranges from "A" (almost no congestion or delay) to "F" (traffic demand is above capacity and the intersection experiences long queues and delay). LOS C or better is generally considered acceptable for rural intersections. LOS D or better is generally acceptable for urbanized intersections. LOS E is the threshold when the intersection approaches maximum capacity. The following tables summarize LOS delay criteria for signalized and unsignalized intersections. At unsignalized intersections the delay is reported for the worst approach of the intersection. At signalized intersections, the delay is generally reported for the entire intersection.

Table 5 and **Table 6** summarize LOS delay criteria for unsignalized and signalized intersections, respectively.

Table 5: Unsignalized Intersection Level of Service Criteria

Level of Service	Average Control delay (s/veh)
A	≤ 10
B	> 10 – 15
C	> 15 – 25
D	> 25 – 35
E	> 35 – 50
F	> 50

Table 6: Signalized Intersection Level of Service Criteria

Level of Service	Average Control delay (s/veh)
A	< 10
B	> 10 – 20
C	> 20 – 35
D	> 35- 55
E	> 55 – 80
F	> 80

Intersection Data Collection

Intersection lane configurations, including number and length of turning lanes, were observed and measured in the field.

Pedestrian Data Collection

Pedestrian data was also collected at each of the study intersections during both the AM and PM time periods and is included in the Synchro analysis. This data is provided in Appendix B.

Analysis Results

Table 7 provides the results of the analysis with the intersections arranged running from East to West. The approach with the highest delay is reported for stop-controlled intersections.

Table 7: Level of Service/Delay Results

Node Number	North/South Street	AM Peak Hour			PM Peak Hour		
		Synchro LOS/Delay (sec/veh)	SimTraffic Delay (sec/veh)	VISSIM Delay (sec/veh)	Synchro LOS/Delay (sec/veh)	SimTraffic Delay (sec/veh)	VISSIM Delay (sec/veh)
1	Main Street	C/24.7	24.7	23.4	C/25.9	28.4	26.0
2	75 West	SB C/16.0	SB 11.6	SB 28.1	SB D/30.6	SB 23.2	SB 20.1
3	200 West	SB B/10.8	SB 4.5	SB 4.9	SB C/18.8	SB 10.1	SB 7.3
4	250 West	NB D/25.9	SB 14.0	NB 21.7	NB E/46.6	NB 18.1	NB 19.2
5	300 West	SB C/17.9	SB 7.8	SB 28.7	SB D/34.8	SB 12.0	SB 11.5
6	350 West	NB C/16.6	NB 8.3	NB 13.7	NB C/25.3	NB 10.6	NB 9.8
7	400 West	NB C/17.0	NB 8.2	NB 8.1	NB C/24.0	NB 9.4	NB 28.1
8	475 West	NB C/15.3	NB 7.1	NB 8.6	NB C/19.3	NB 6.6	NB 6.6
9	550 West	SB C/24.8	SB 13.4	NB 14.0	SB D/34.6	SB 15.6	SB 27.4
10	630 West	SB C/17.7	SB 9.0	SB 24.6	SB D/26.1	SB 13.0	SB 16.3
11	670 West	NB B/13.9	NB 6.3	NB 7.6	NB D/27.5	NB 13.4	NB 12.6
12	725 West	SB C/19.2	SB 8.1	SB 29.8	SB D/33.3	SB 14.2	SB 16.6
13	810 West	SB C/21.4	SB 9.7	NB 9.8	NB E/45.0	NB 14.8	NB 9.6
14	925 West	NB/SB C/17.4	NB 7.8	NB 10.6	SB F/51.1	SB 18.1	SB 12.1
15	1000 West	A/8.9	11.6	16.7	B/11.4	17.8	18.9
161	1200 West	SB B/11.8	SB 6.8	SB 6.9	SB C/19.0	SB 18.4	SB 9.6
162	1220 West	NB B/12.6	NB 6.8	NB 5.4	NB B/15.0	NB 7.6	NB 7.8
17	1300 West	NB B/11.9	NB 4.5	NB 6.2	NB C/15.6	NB 9.1	NB 7.9
18	1400 West	NB B/12.0	NB 6.4	NB 7.5	NB C/16.5	NB 11.7	NB 8.2
19	1500 West	NB B/12.4	NB 8.9	SB 8.2	NB D/27.8	SB 31.3	SB 14.6
20	1750 West	NB B/12.3	NB 5.8	NB 7.5	NB C/21.1	NB 18.1	NB 9.5
21	East Walmart Access	SB C/15.2	NB 13.3	NB 8.6	SB F/>80	SB >80	SB/NB 12.9
22	West Walmart Access	NB B/11.0	NB 9.3	NB 6.7	NB B/14.9	NB >80	NB 7.9
23	2000 West	C/24.1	23.6	21.7	E/59.9	>80	49.2

The majority of the intersections in the study area operate at LOS D or better with only a few exceptions including 250 West, 810 West, 925 West, the East and West Walmart Accesses, and 2000 West. The Synchro report sheets are available in Appendix E in the order of their node numbers.

Poor operations with the SimTraffic results at 2000 West and good operations to the east prompted additional analysis. Traffic was bottlenecked in the model at 2000 West which caused intersections to the east to operate better than they really do. The intersection of 2000 West/1800 North was deleted from the SimTraffic Model and five simulations runs were completed and averaged. **Table 8** provides the results, which tend to show higher SimTraffic delay than reported in **Table 7**.

Table 8 SimTraffic Delay Results with 2000 West/1800 North Removed

Node Number	North/South Street	AM Peak Hour	PM Peak Hour
		SimTraffic Delay (sec/veh)	SimTraffic Delay (sec/veh)
1	Main Street	15.0	29.45
2	75 West	SB 9.8	SB 29.3
3	200 West	SB 4.8	SB 8.6
4	250 West	NB 16.5	NB 16.1
5	300 West	SB 7.9	SB 13.4
6	350 West	NB 9.2	NB 14.4
7	400 West	NB 8.2	NB 9.6
8	475 West	NB 7.5	NB 9.4
9	550 West	SB 11.6	SB 11.2
10	630 West	SB 10.6	SB 10.2
11	670 West	NB 6.1	NB 13.1
12	725 West	SB 8.7	SB 19.8
13	810 West	SB 8.9	NB 15.0
14	925 West	SB 9.0	SB 22.0
15	1000 West	11.6	17.4
161	1200 West	SB 6.8	SB 23.0
162	1220 West	NB 5.4	NB 8.1
17	1300 West	NB 5.4	NB 10.7
18	1400 West	NB 6.5	NB 16.0
19	1500 West	NB 8.6	SB 32.3
20	1750 West	NB 6.4	NB 22.1
21	East Walmart Access	NB 11.8	SB >80
22	West Walmart Access	NB 9.5	NB 16.0
23	2000 West	NA	NA

Roadway Data

Existing Functional Classification

Figure 3 shows the existing (2009) functional classification of all the major roadways within the study area. The functional classification for each roadway shown is based on the Wasatch Front Regional Council (WFRC) travel demand model. The roadway functional classifications identified include freeways, ramps, arterials, collectors, expressways, and rural highways.

Existing Number of Lanes

Figure 4 shows the existing (2009) number of through lanes in each direction for all the major roadways within the study area. The number of lanes for each roadway shown reflects the WFRC travel demand model.

Existing Daily Traffic Volumes

Figure 5 shows the existing (2009) Average Daily Traffic (ADT) volumes for all the major roadways within the study area. These volumes are based on recent traffic counts that were factored based on the time of year during which the counts were obtained.

Existing Road Segment Level of Service

Figure 6 and 7 show the existing (2009) V/C ratios and estimated Level of Service (LOS) during both the a.m. and p.m. peak periods (3 hours) for all the major roadways within the study area. The V/C ratios shown on each map were determined using the Wasatch Front Regional Council (WFRC) travel demand model. Again, since the socioeconomic data used by the travel demand model to estimate travel demands throughout the system is still being reviewed by local municipalities, these results are preliminary and will be refined as the input data is updated accordingly and the model is better calibrated to match existing conditions.

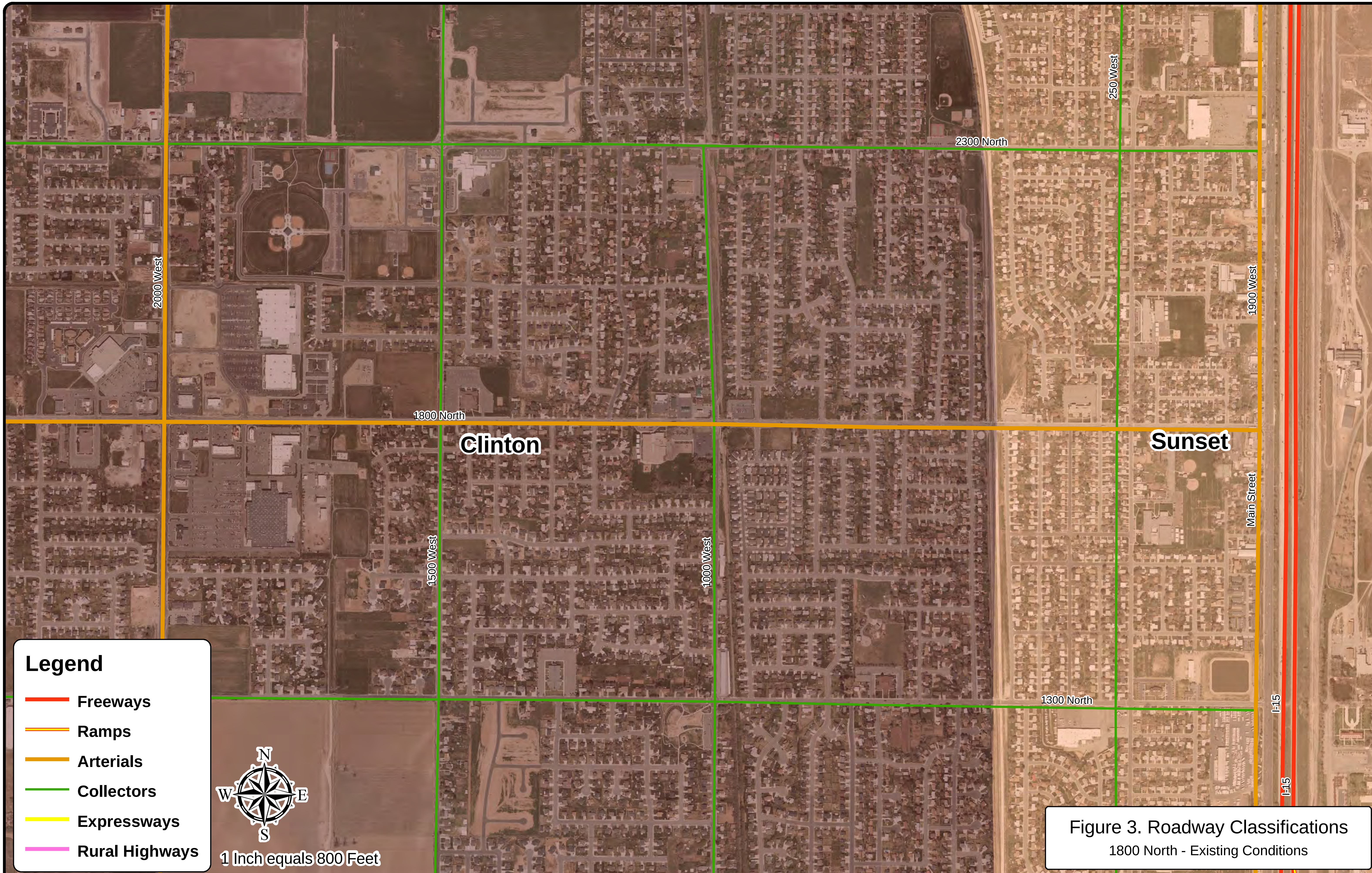


Figure 3. Roadway Classifications
1800 North - Existing Conditions

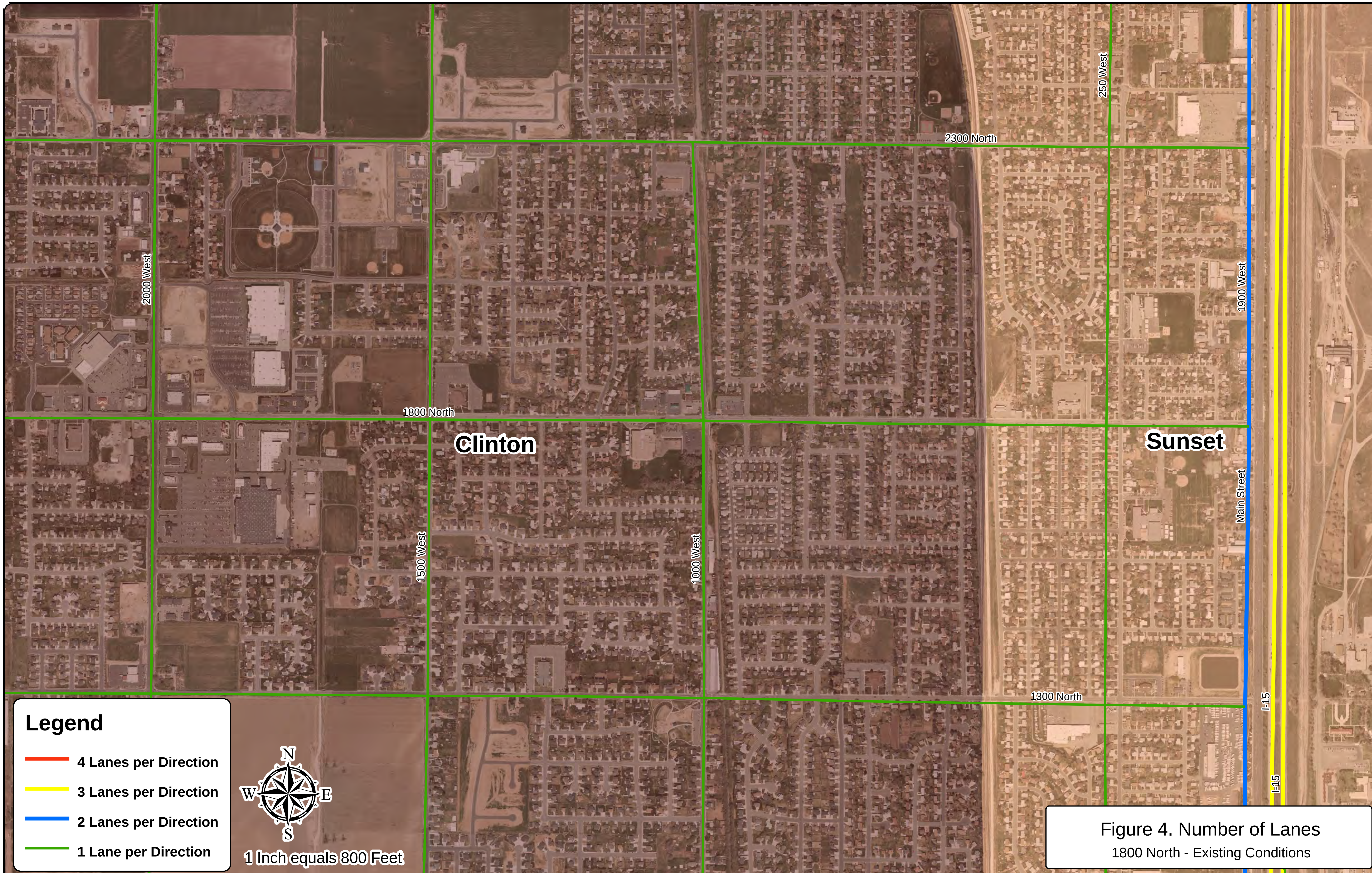


Figure 4. Number of Lanes
1800 North - Existing Conditions

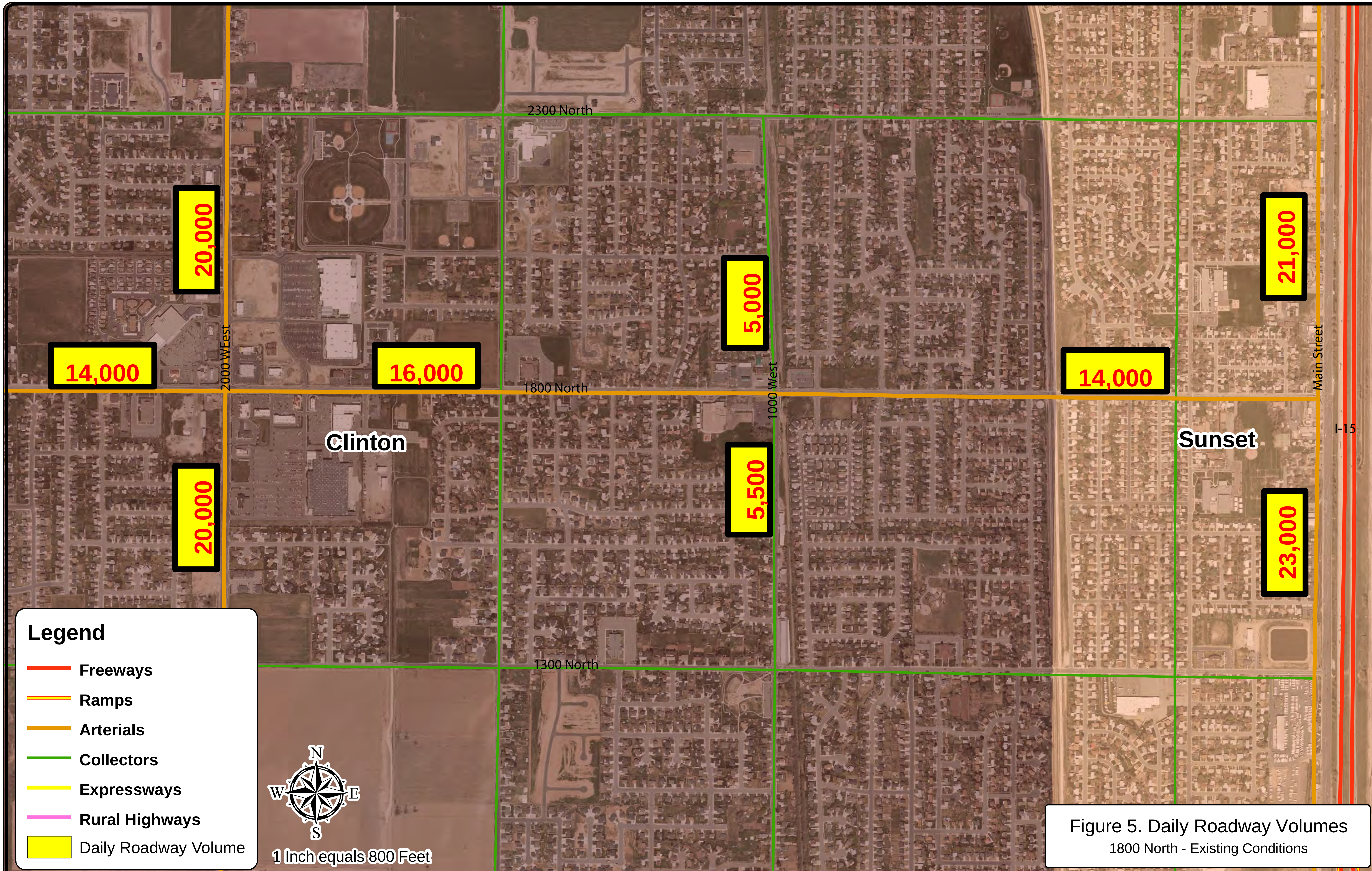


Figure 5. Daily Roadway Volumes
1800 North - Existing Conditions

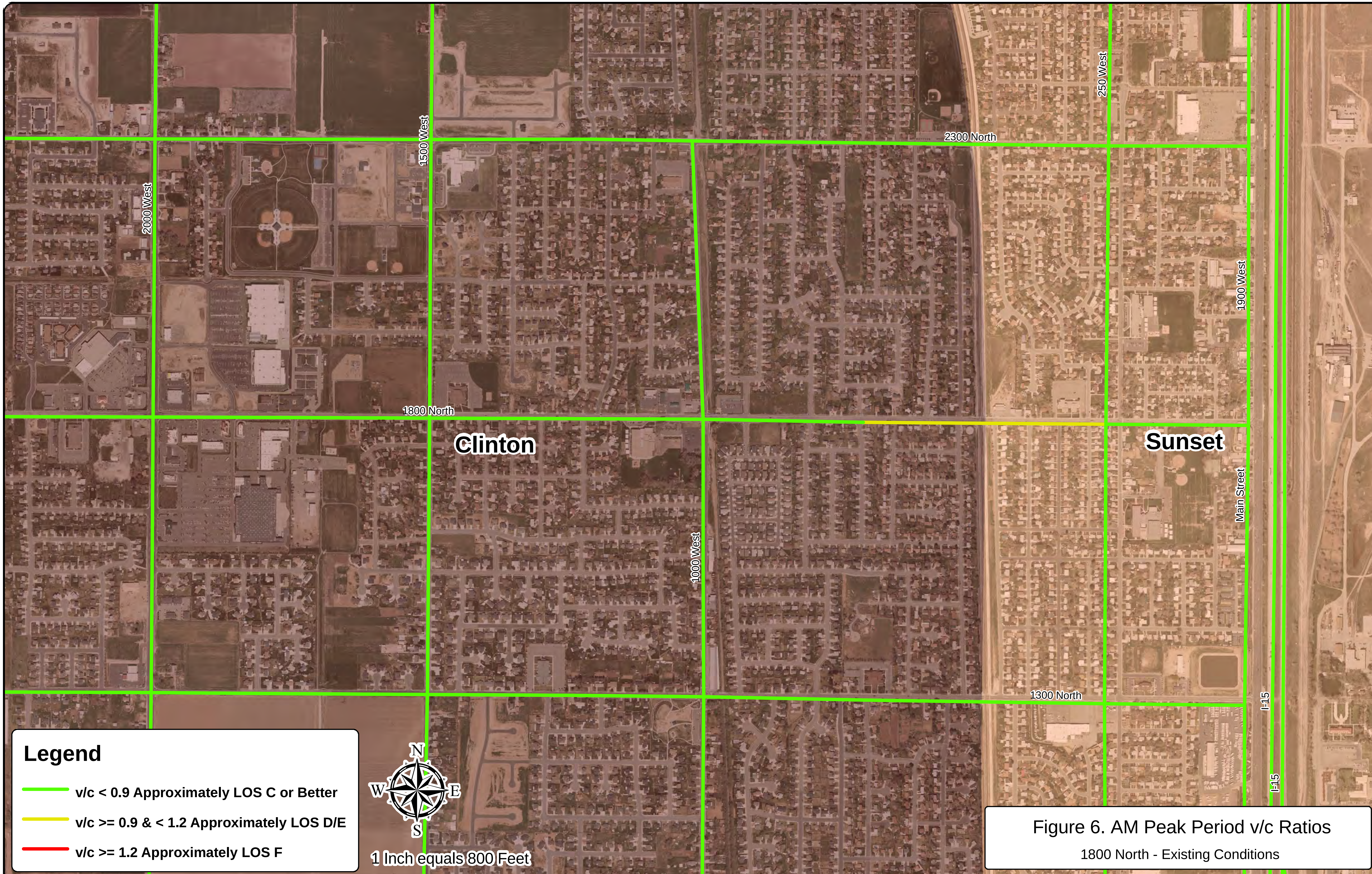


Figure 6. AM Peak Period v/c Ratios

1800 North - Existing Conditions

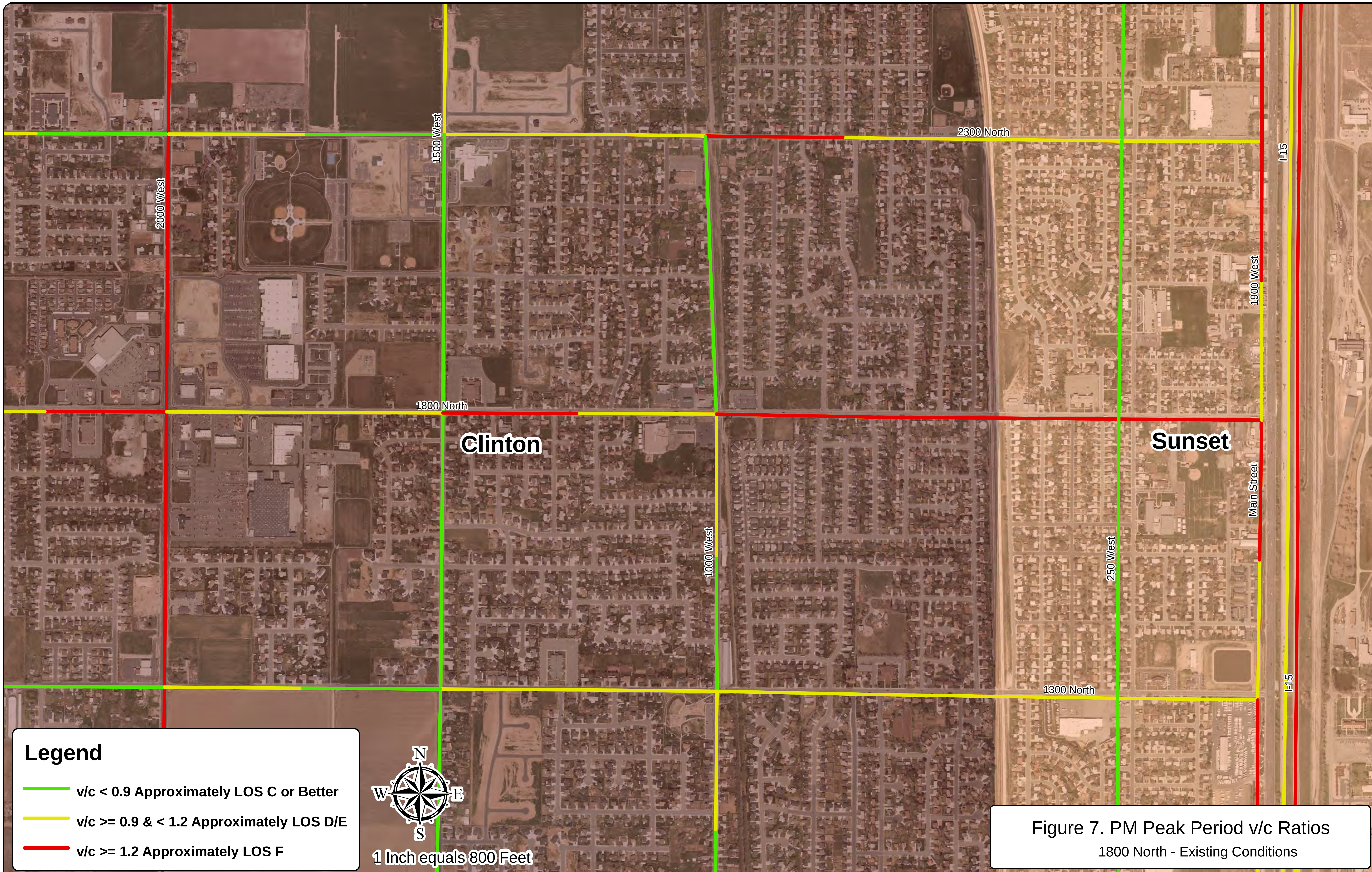
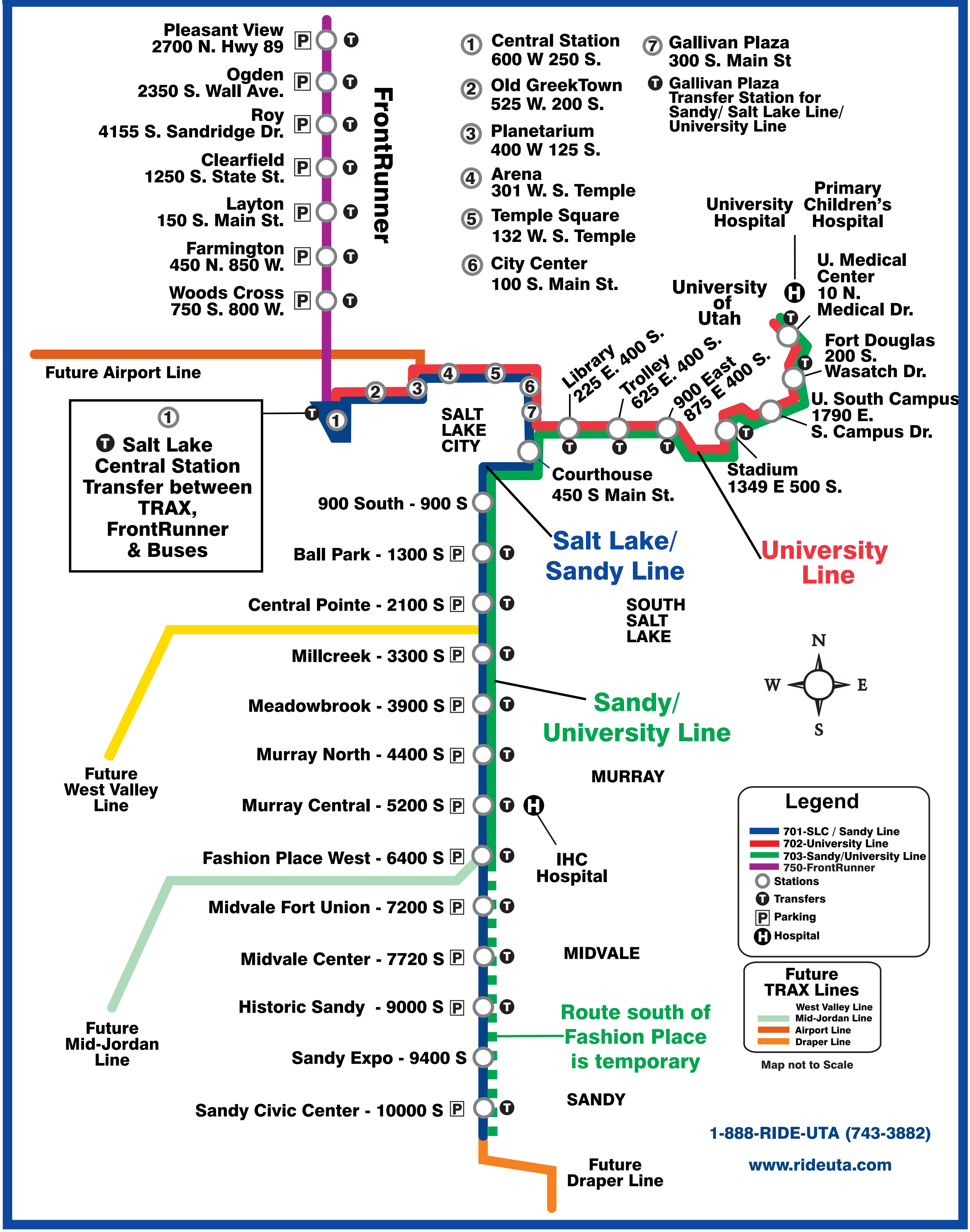
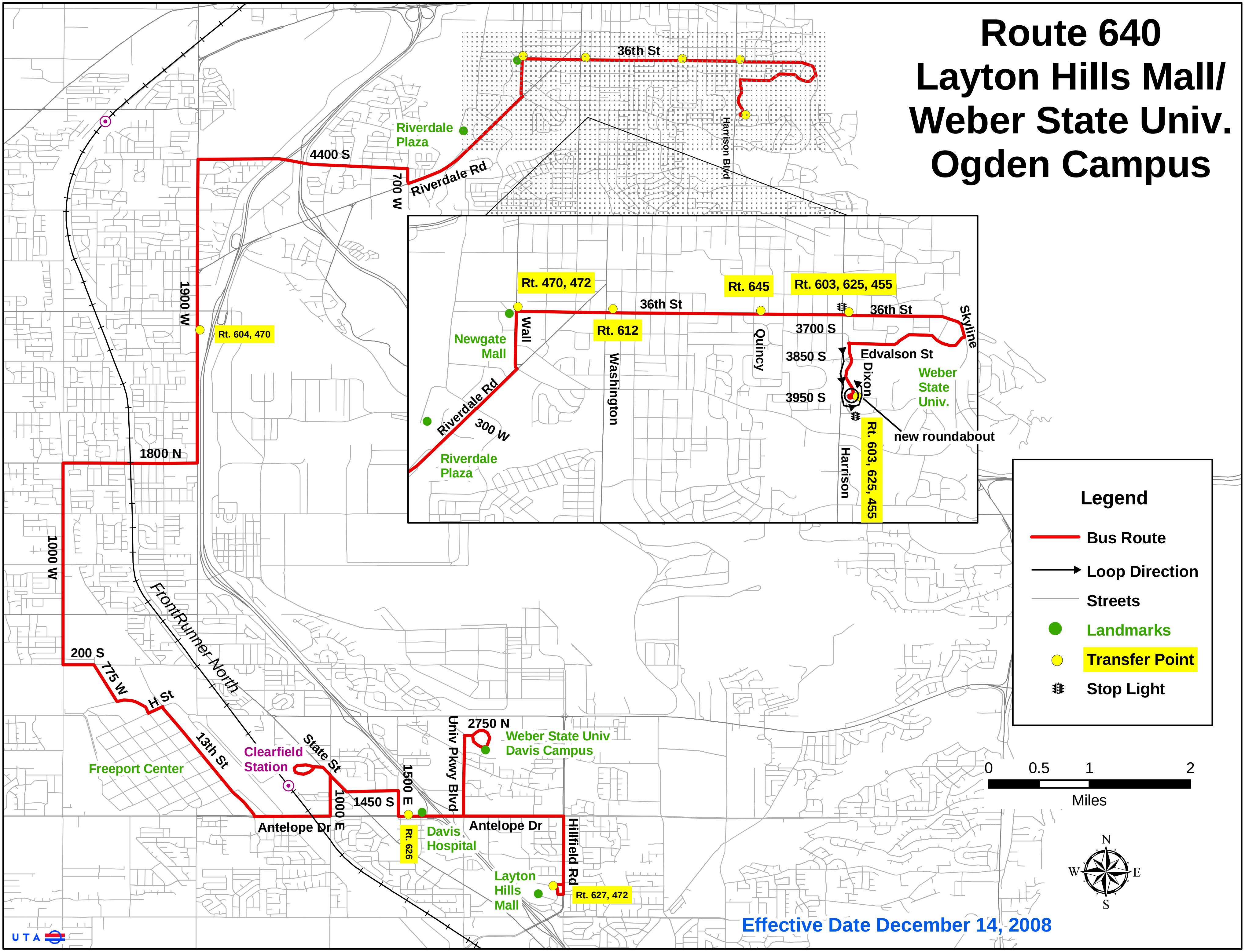


Figure 7. PM Peak Period v/c Ratios
1800 North - Existing Conditions

Appendix A Transit Routes

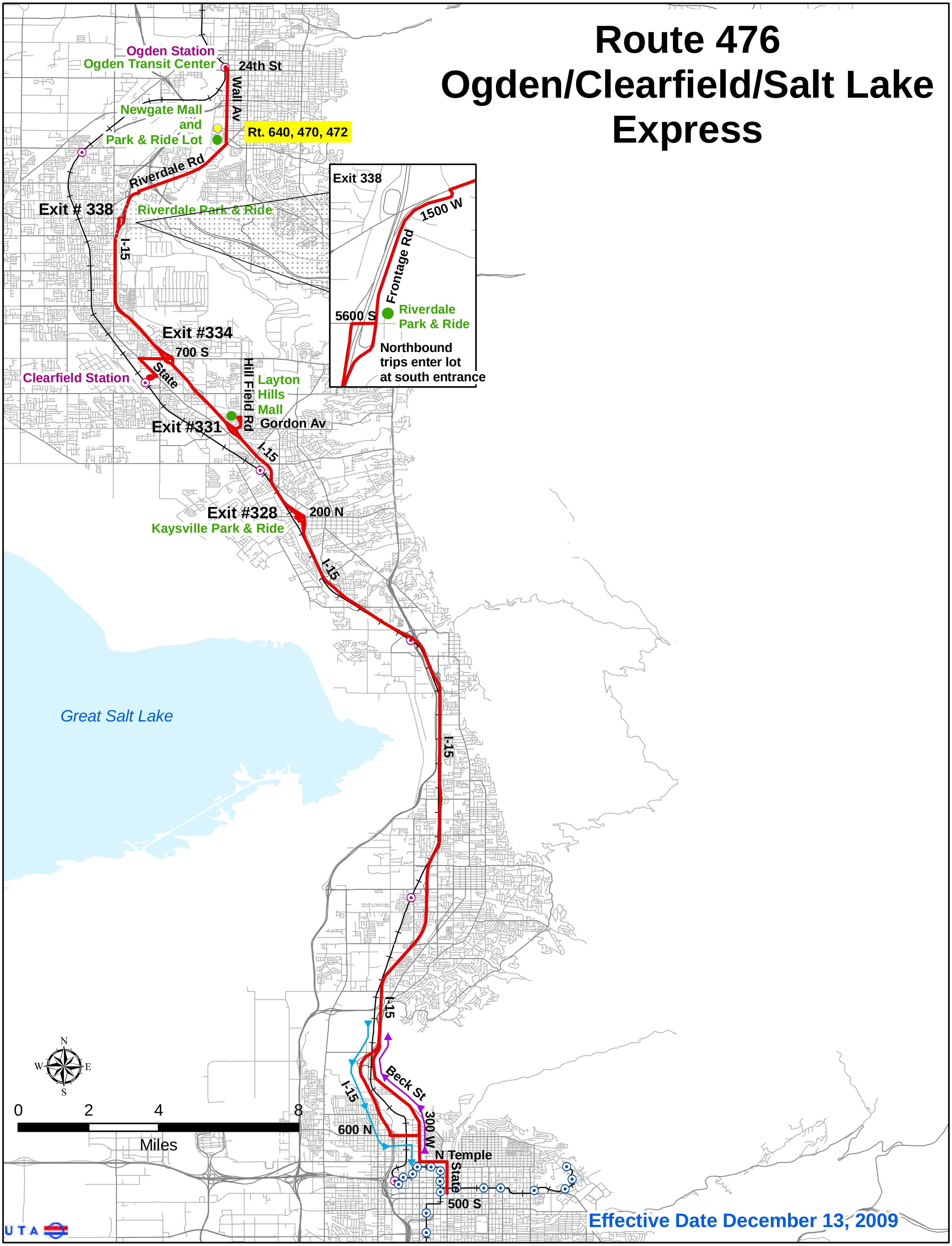
U T A TRAX & FrontRunner Map





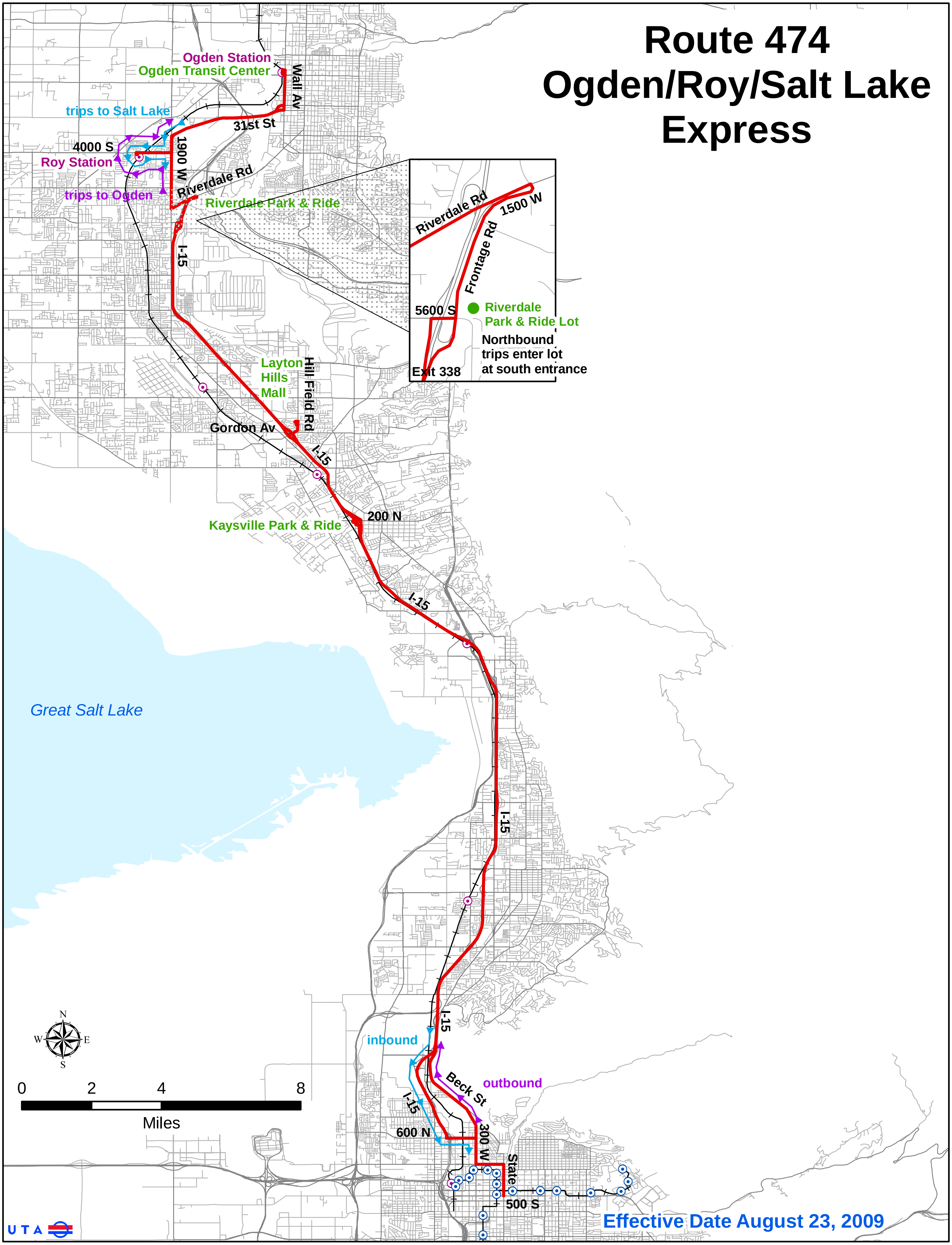
Route 640
Layton Hills Mall/
Weber State Univ.
Ogden Campus
36th St
Riverdale
Plaza
4400 S
700 W
Riverdale Rd
Harrison Blvd
1900 W
Rt. 604, 470
1800 N
1000 W
200 S
775 W
H St
FrontRunner North
13th St
Freeport Center
Clearfield
Station
State St
1000 E
1450 S
1500 E
Univ Pkwy Blvd
2750 N
Weber State Univ
Davis Campus
Antelope Dr
Antelope Dr
Rt. 626
Davis
Hospital
Hillfield Rd
Layton
Hills
Mall
Rt. 627, 472
Rt. 470, 472
Rt. 645
Rt. 603, 625, 455
36th St
36th St
Skyline
Wall
Rt. 612
Newgate
Mall
Quincy
Washington
3700 S
3850 S
Edvalson St
Dixon
Weber
State
Univ.
3950 S
Riverdale Rd
300 W
Riverdale
Plaza
new roundabout
Harrison
Rt. 603, 625, 455
Legend
Bus Route
Loop Direction
Streets
Landmarks
Transfer Point
Stop Light
0
0.5
1
2
Miles
N
W
E
S
Effective Date December 14, 2008
UTA

Route 476
Ogden/Clearfield/Salt Lake Express



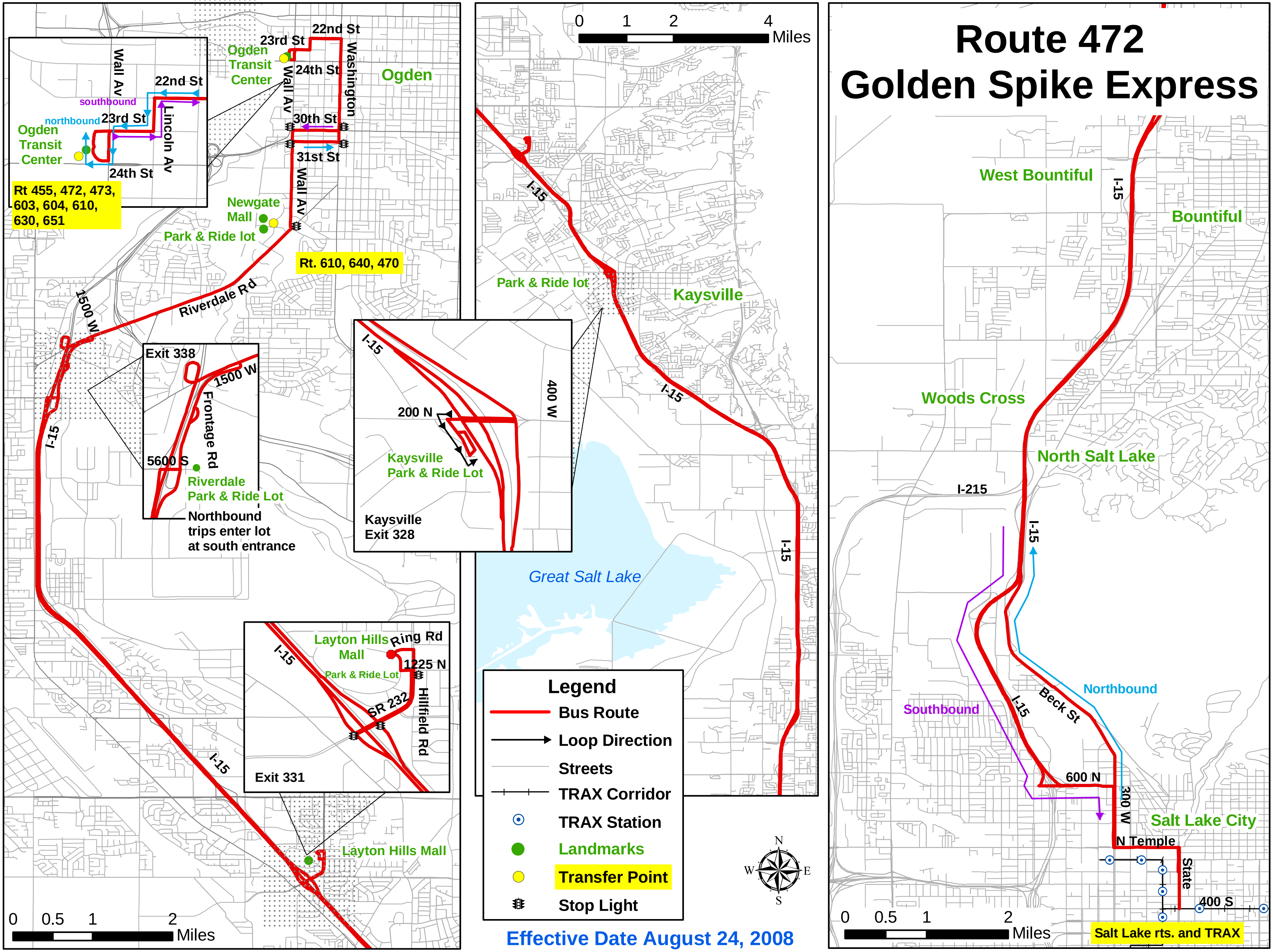
Effective Date December 13, 2009

Route 474
Ogden/Roy/Salt Lake Express

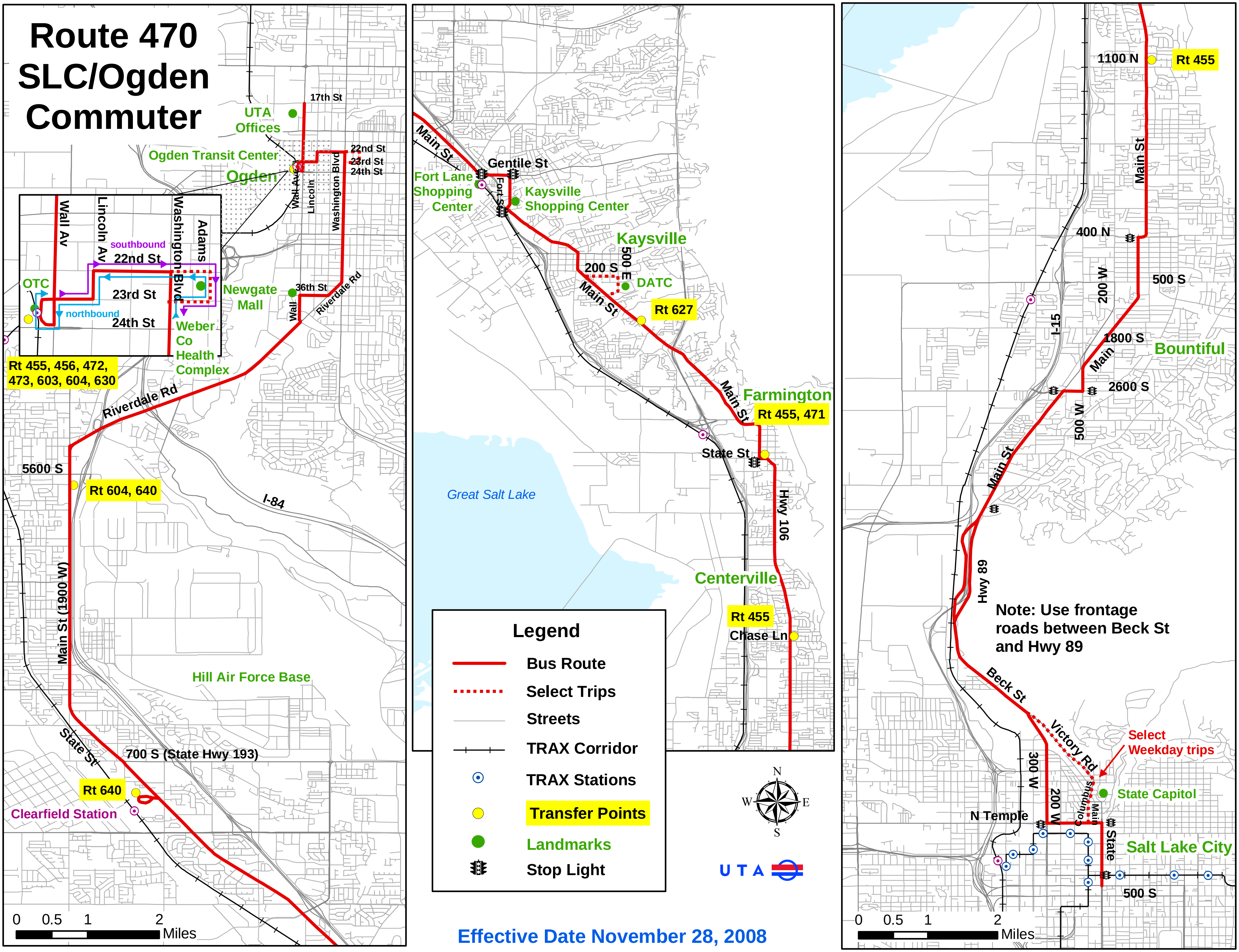


Effective Date August 23, 2009

Route 472
Golden Spike Express

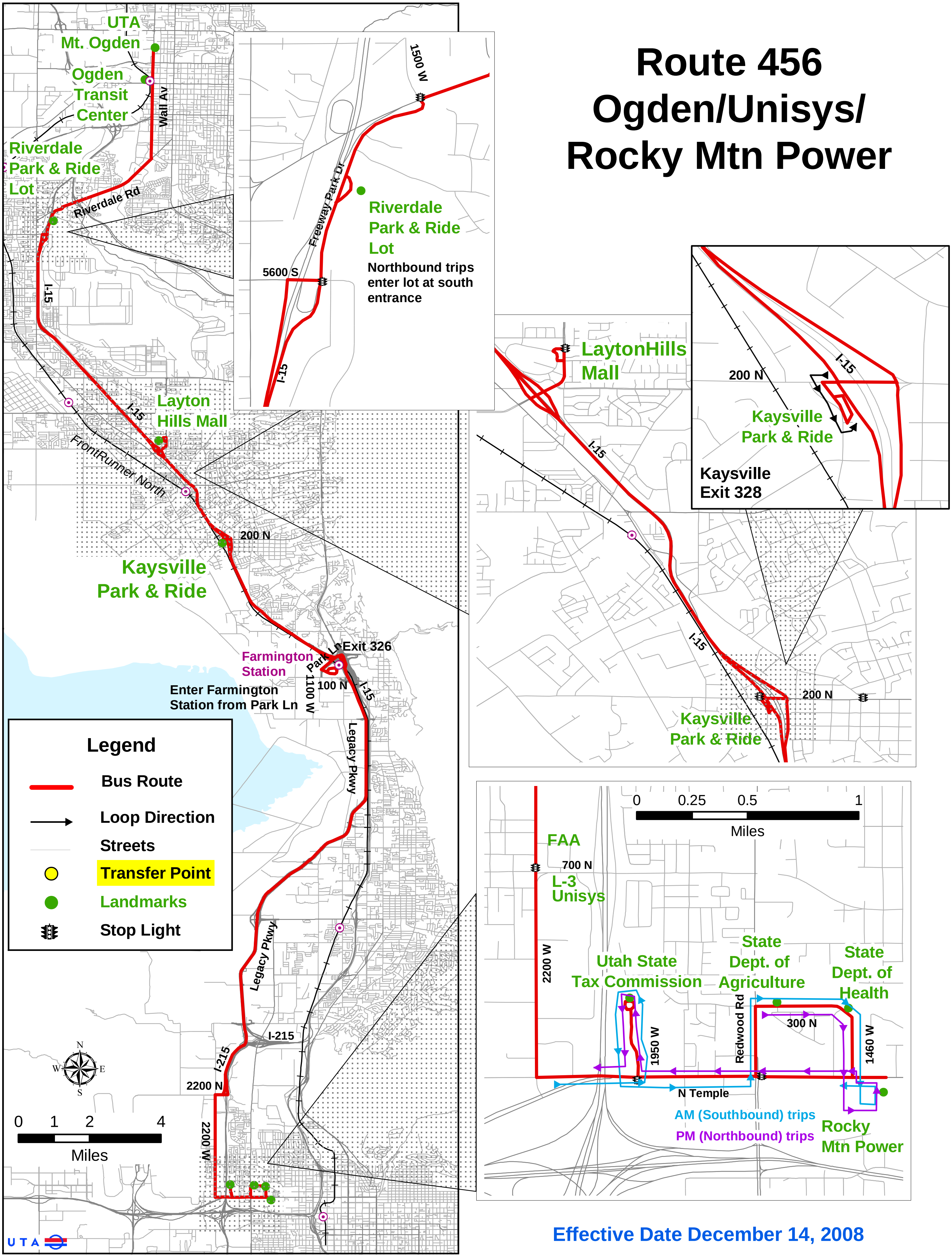


Effective Date August 24, 2008
(modified 10/27/08)



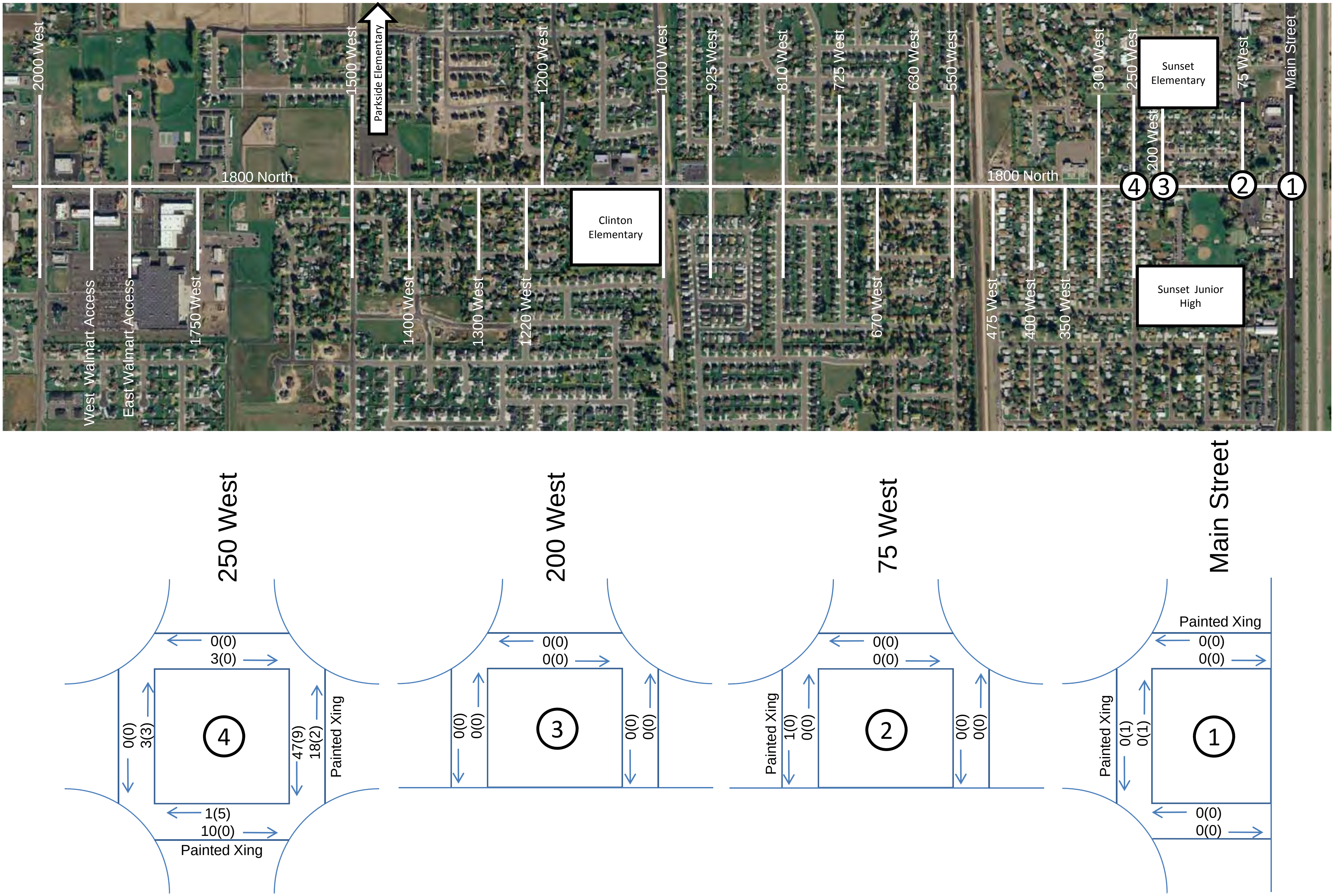
Effective Date November 28, 2008

Route 456
Ogden/Unisys/
Rocky Mtn Power

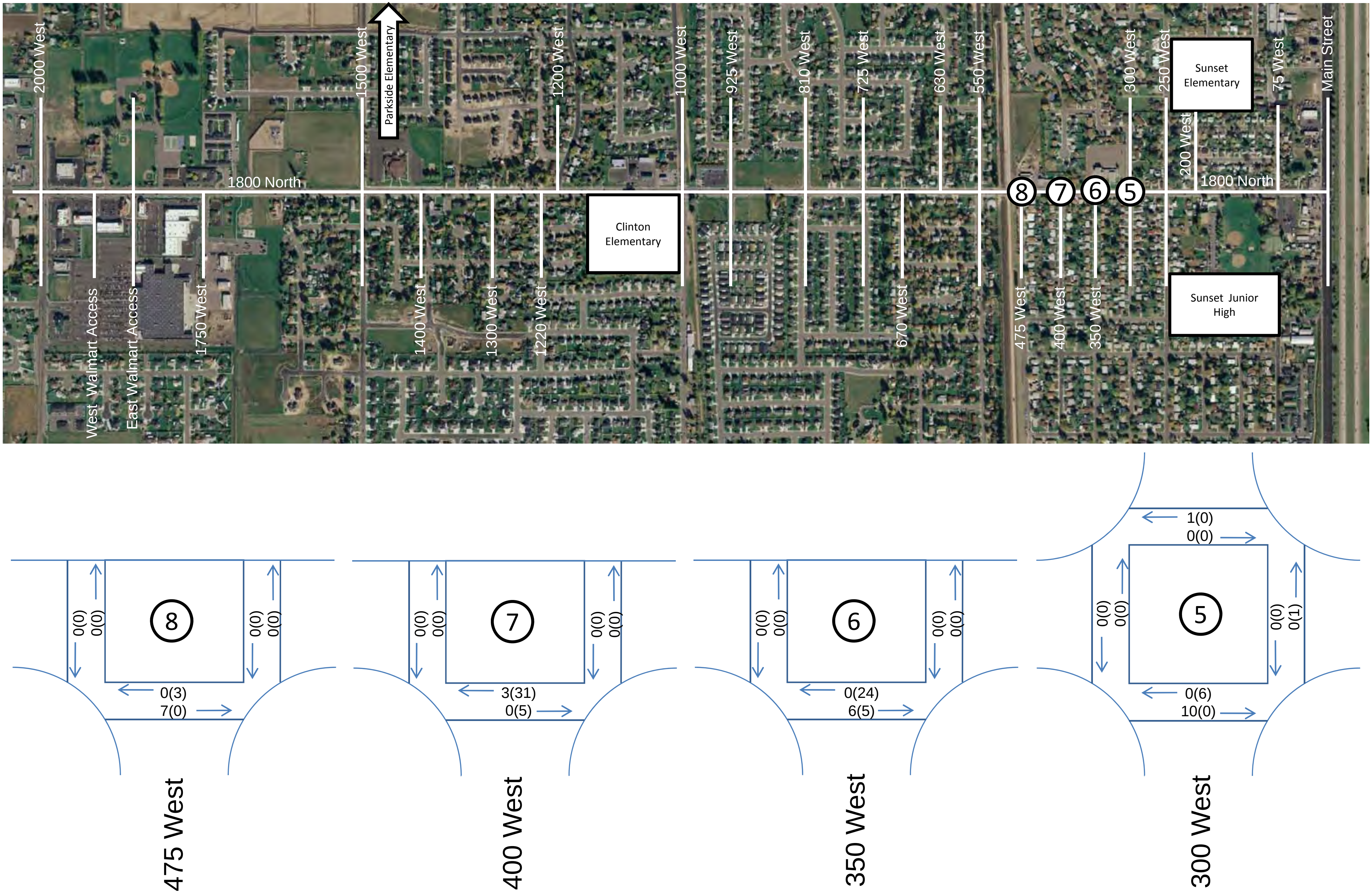


Effective Date December 14, 2008

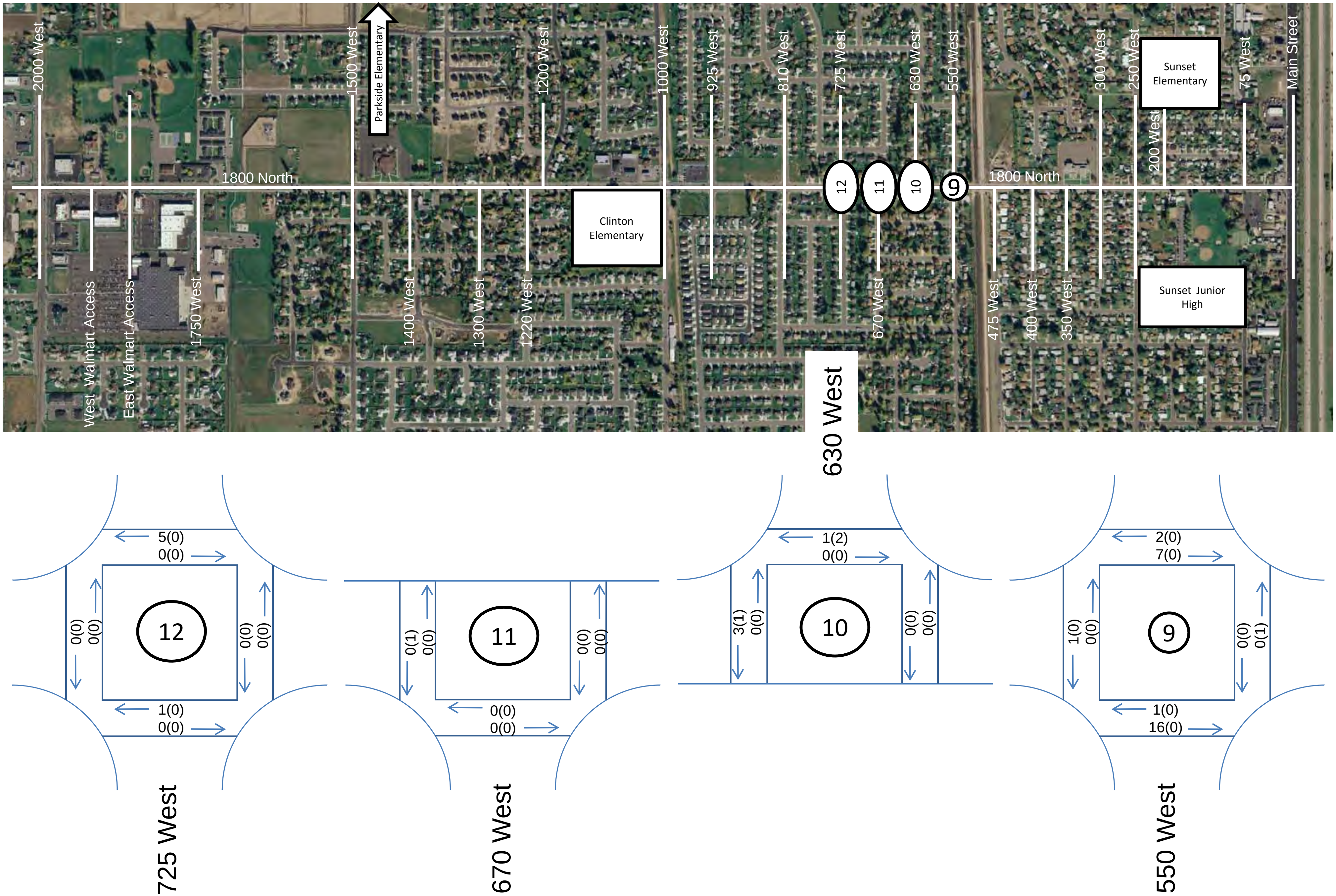
Appendix B Pedestrian Counts



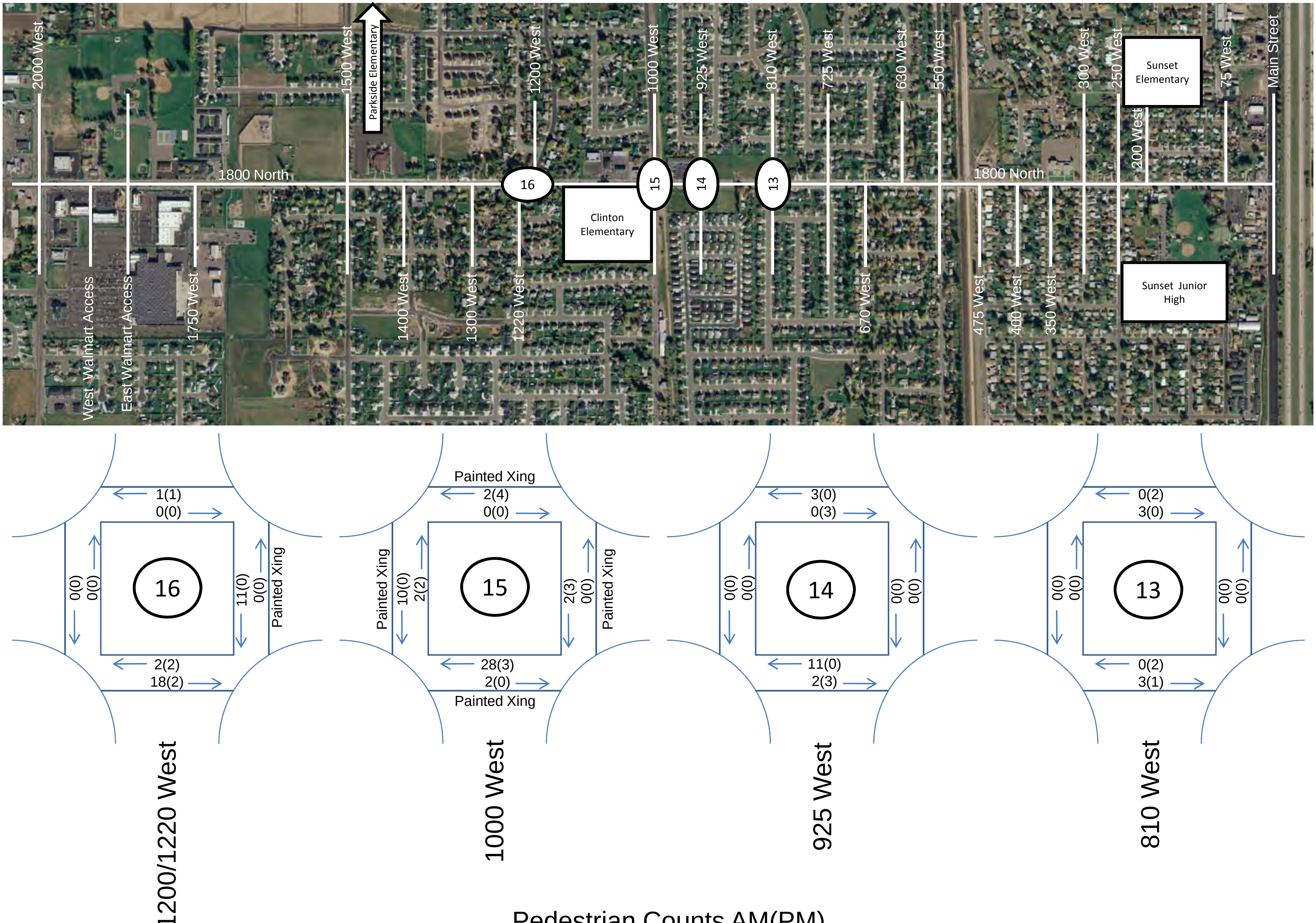
Pedestrian Counts AM(PM)
Within the Vehicle Peak Hour



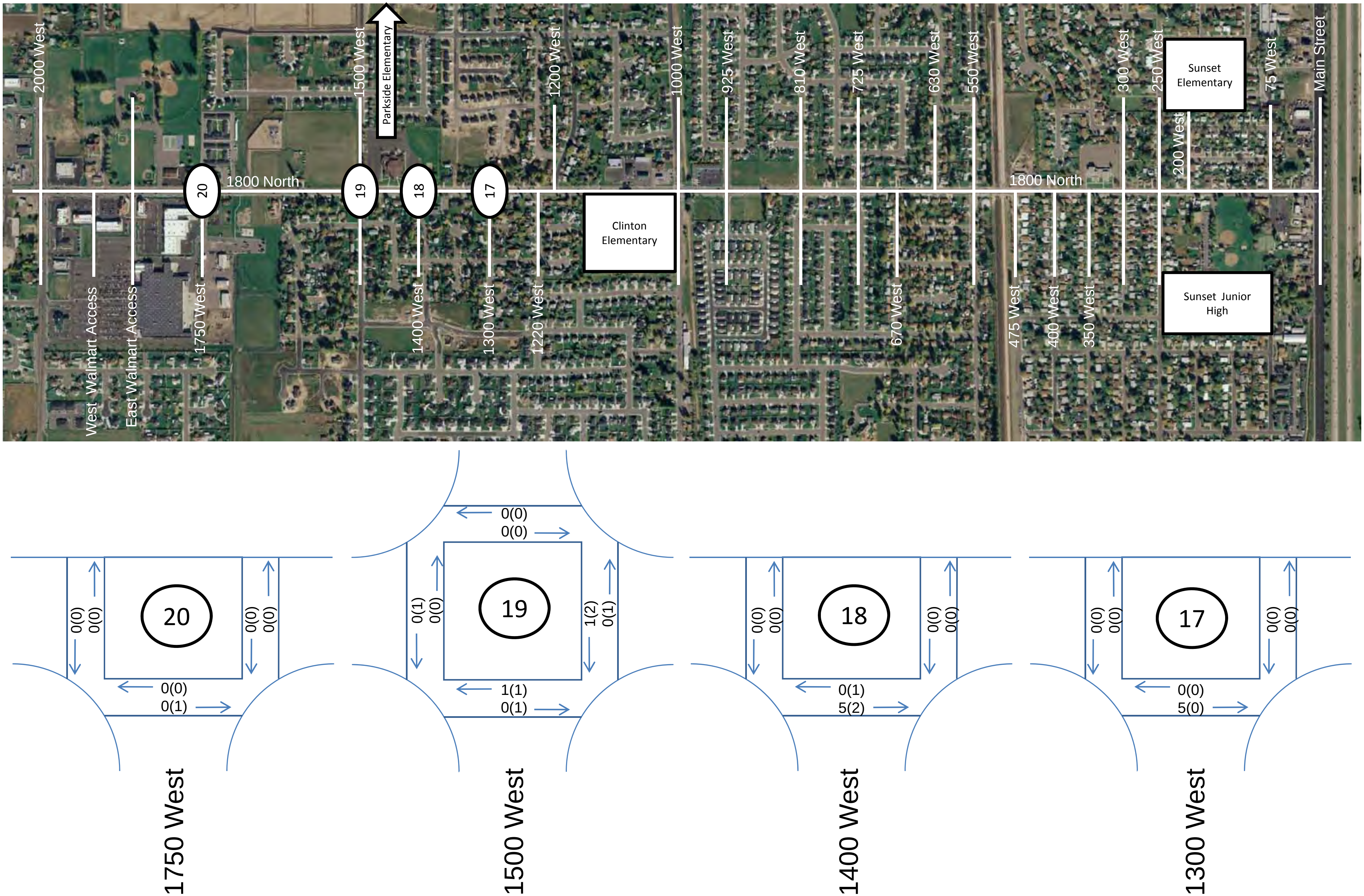
Pedestrian Counts AM(PM)
Within the Vehicle Peak Hour



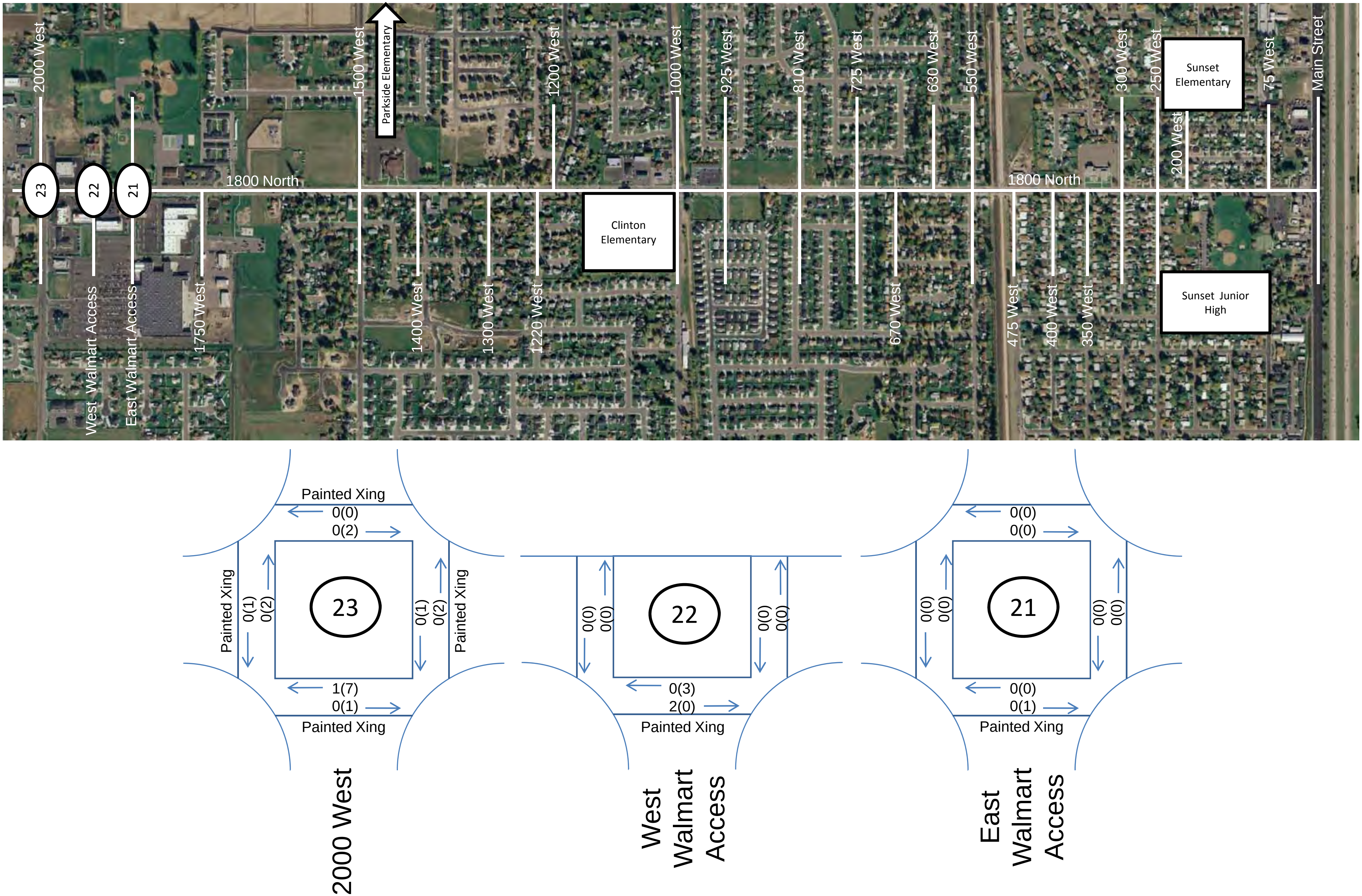
Pedestrian Counts AM(PM)
Within the Vehicle Peak Hour



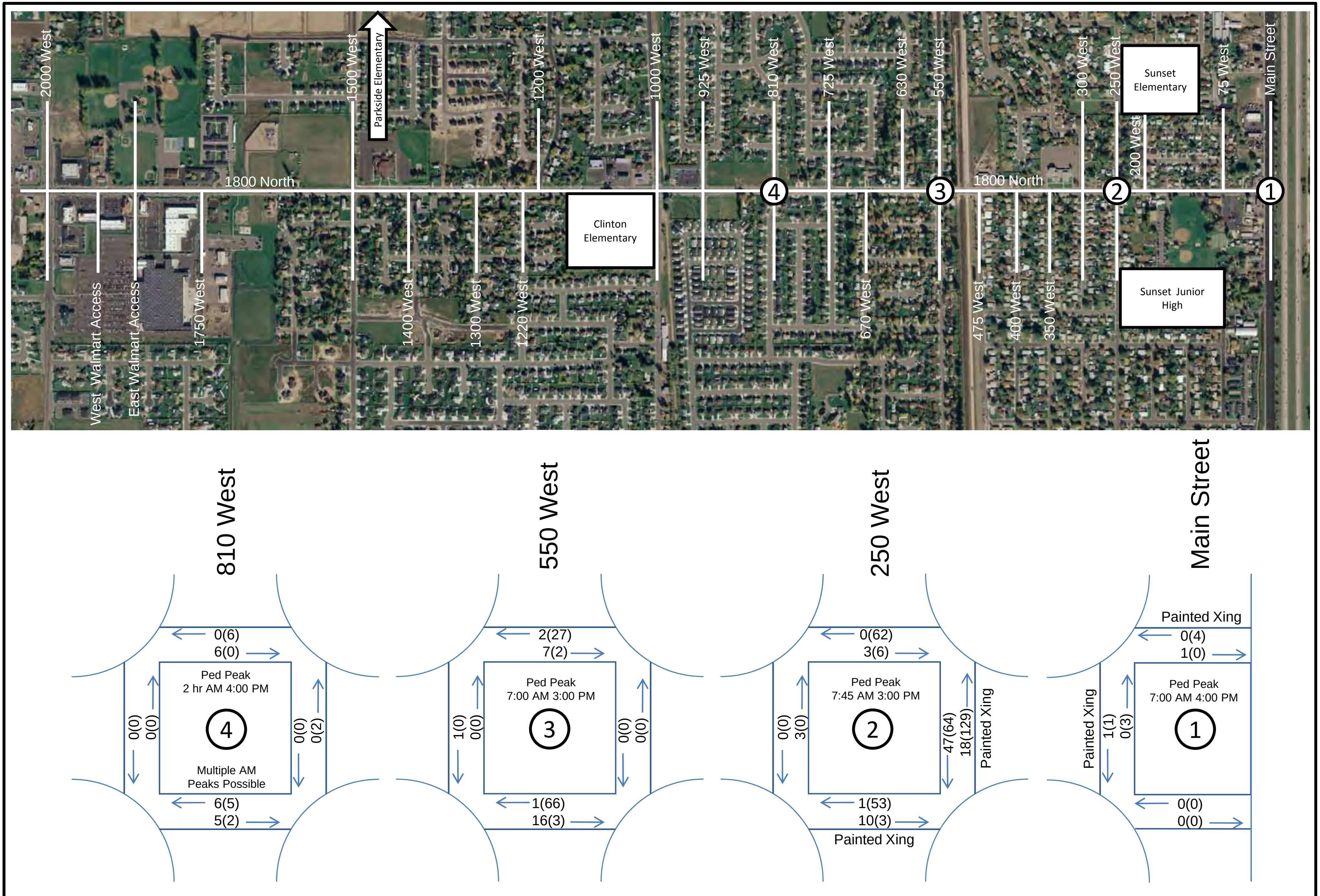
Pedestrian Counts AM(PM)
Within the Vehicle Peak Hour



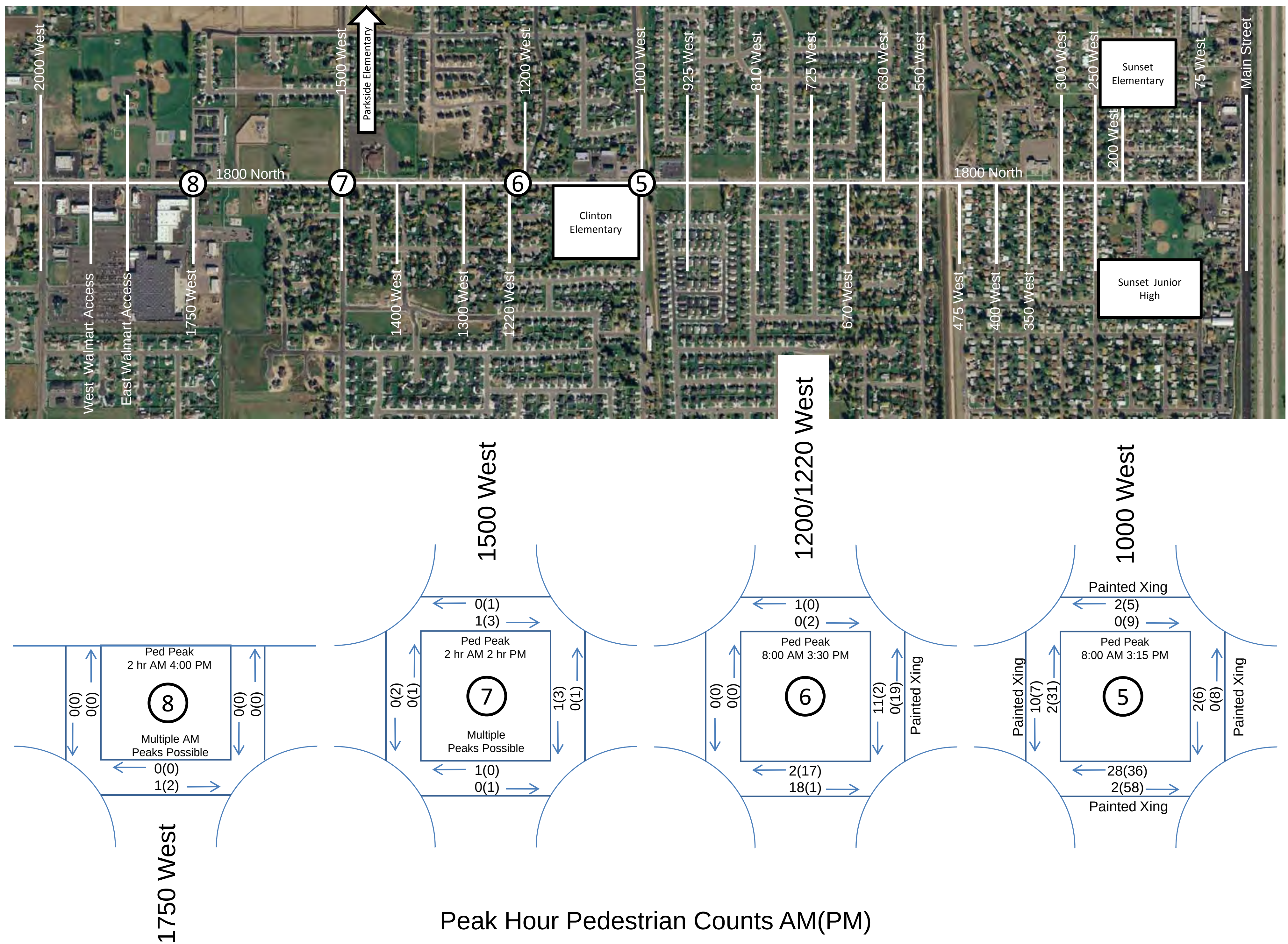
Pedestrian Counts AM(PM)
Within the Vehicle Peak Hour



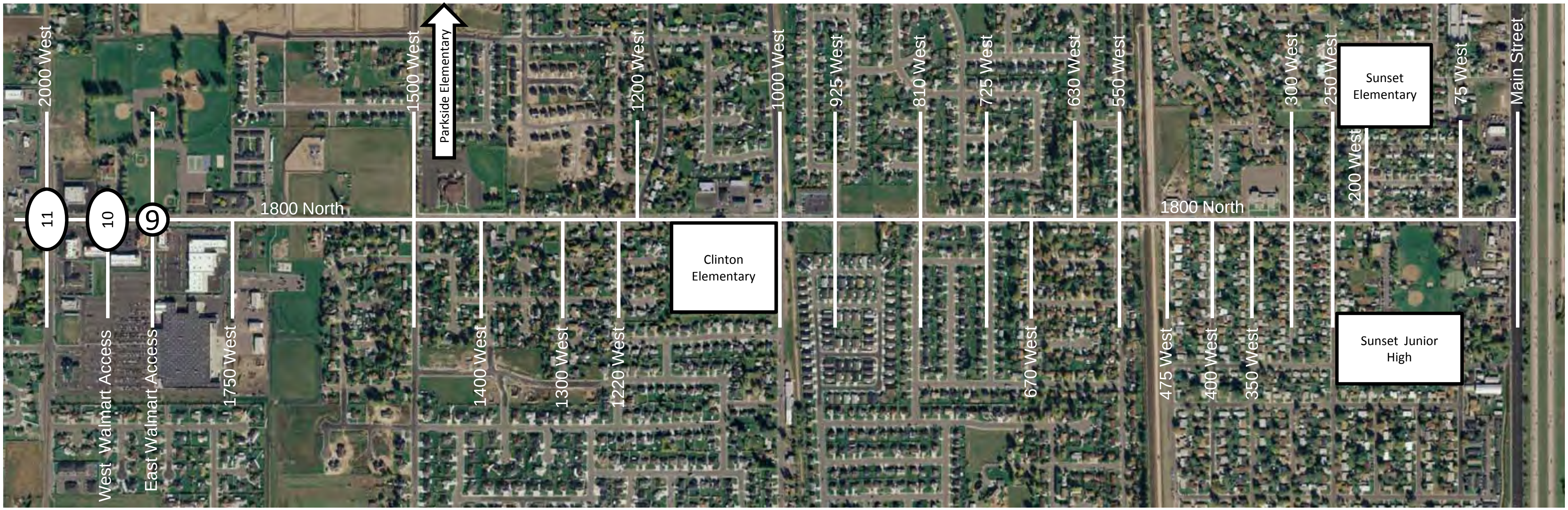
Pedestrian Counts AM(PM)
Within the Vehicle Peak Hour

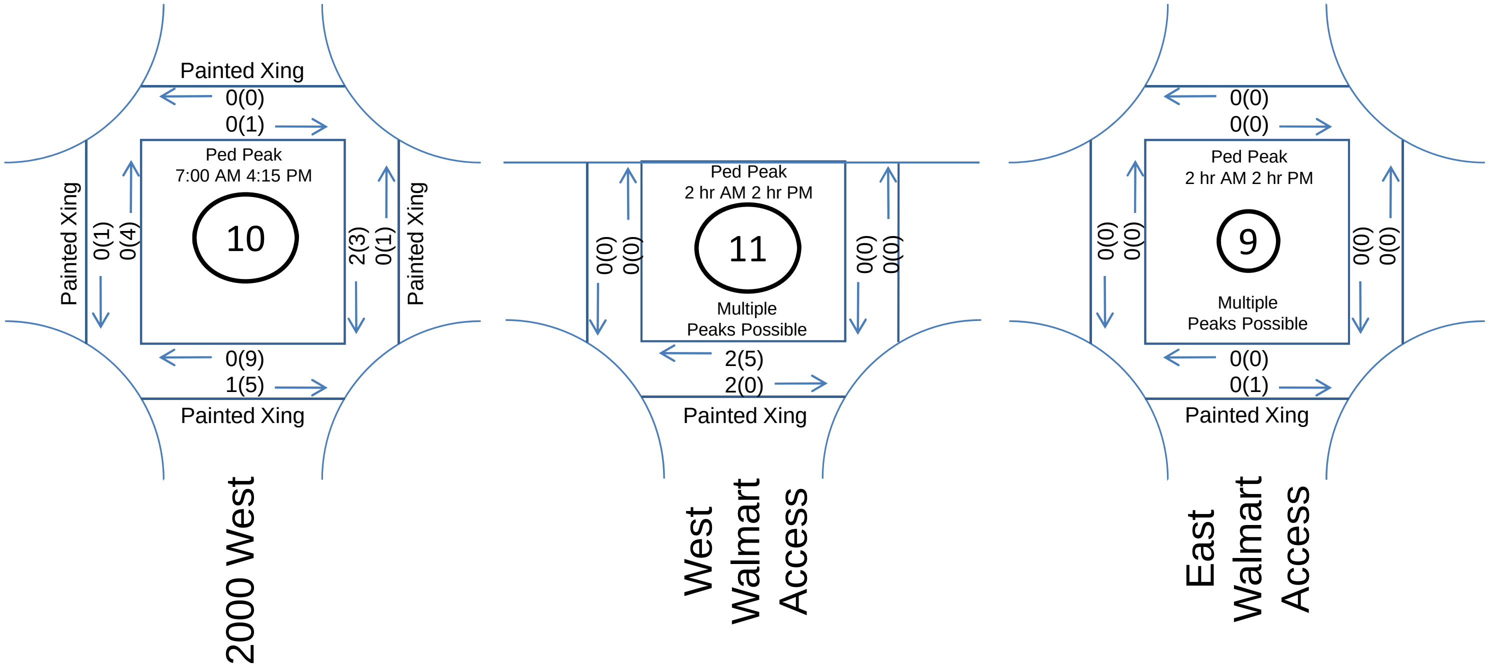


Peak Hour Pedestrian Counts AM(PM)



Peak Hour Pedestrian Counts AM(PM)





Peak Hour Pedestrian Counts AM(PM)

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	1
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

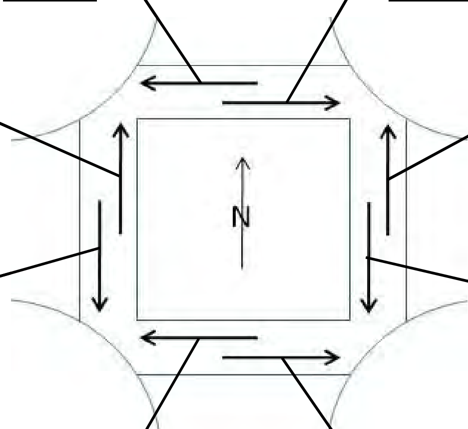
1

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	1
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

1



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Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

Ped Peak Hour
07:00 AM to 08:00 AM

City: **Sunset**
N-S Street: **Main Street**
E-W Street: **1800 North**
Date: **Wednesday, November 18, 2009**
Begin Time: **7:00 AM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

4

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	1
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

3

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

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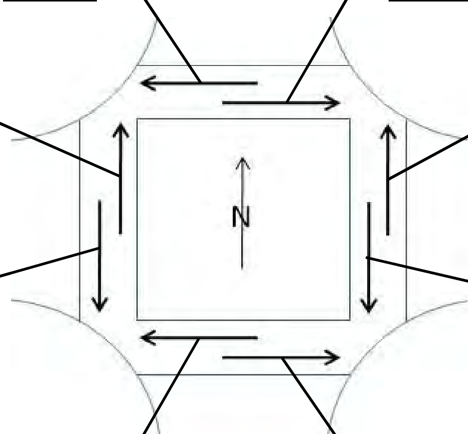

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	1
5:45 PM	6:00 PM	

1

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
04:00 PM to 05:00 PM

City: **Sunset**
N-S Street: **Main Street**
E-W Street: **1800 North**
Date: **Tuesday, November 17, 2009**
Begin Time: **4:00 PM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	3
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

3

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	2
7:45 AM	8:00 AM	3
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

3

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	3
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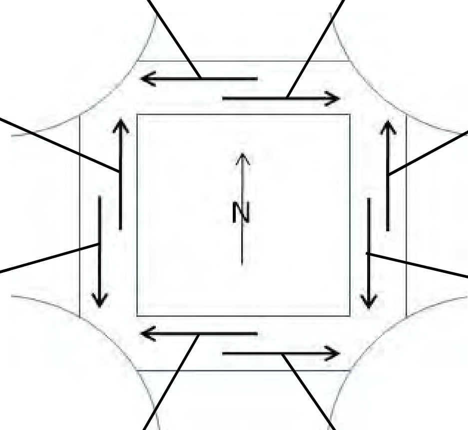
8:30 AM	8:45 AM	10
8:45 AM	9:00 AM	

18



Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	4
8:00 AM	8:15 AM	23
8:15 AM	8:30 AM	18
8:30 AM	8:45 AM	2
8:45 AM	9:00 AM	

47

1

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	1
8:45 AM	9:00 AM	

10

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	1
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	3
8:15 AM	8:30 AM	7
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	6

Ped Peak Hour
07:45 AM to 08:45 AM

City: **Sunset**
N-S Street: **250 West**
E-W Street: **1800 North**
Date: **Thursday, November 19, 2009**
Begin Time: **7:00 AM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

Time Intervals		Peds
3:00 PM	3:15 PM	53
3:15 PM	3:30 PM	5
3:30 PM	3:45 PM	4
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

62

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	2
3:45 PM	4:00 PM	4
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

6

HORROCKS ENGINEERS

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	3
5:15 PM	5:30 PM	2
5:30 PM	5:45 PM	1
5:45 PM	6:00 PM	

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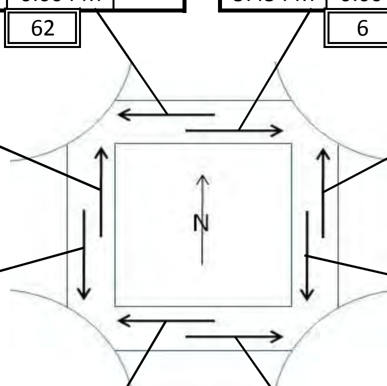


129

Time Intervals		Peds
3:00 PM	3:15 PM	96
3:15 PM	3:30 PM	23
3:30 PM	3:45 PM	7
3:45 PM	4:00 PM	3
4:00 PM	4:15 PM	6
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	1
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

64

Time Intervals		Peds
3:00 PM	3:15 PM	1
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	58
3:45 PM	4:00 PM	5
4:00 PM	4:15 PM	7
4:15 PM	4:30 PM	9
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	2
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

53

Time Intervals		Peds
3:00 PM	3:15 PM	10
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	35
3:45 PM	4:00 PM	8
4:00 PM	4:15 PM	4
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	2
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

3

Time Intervals		Peds
3:00 PM	3:15 PM	3
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	1
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
03:00 PM to 04:00 PM

City: **Sunset**
N-S Street: **250 West**
E-W Street: **1800 North**
Date: **Wednesday, November 18, 2009**
Begin Time: **3:00 PM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	2
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

2

Time Intervals		Peds
7:00 AM	7:15 AM	3
7:15 AM	7:30 AM	2
7:30 AM	7:45 AM	2
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

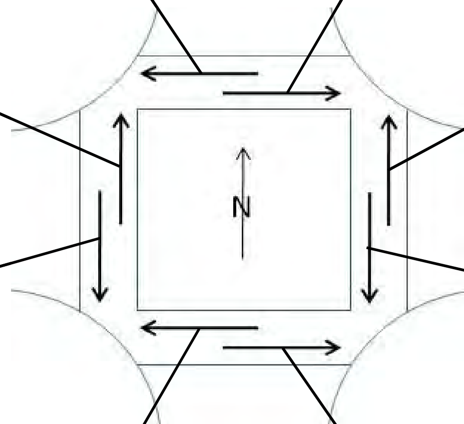
7

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0



Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	1
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

1

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

1

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	1
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

16

Time Intervals		Peds
7:00 AM	7:15 AM	6
7:15 AM	7:30 AM	7
7:30 AM	7:45 AM	3
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	2
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

Ped Peak Hour
07:00 AM to 08:00 AM

City: **Clinton**
N-S Street: **550 West**
E-W Street: **1800 North**
Date: **Friday, November 20, 2009**
Begin Time: **7:00 AM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
3:00 PM	3:15 PM	8
3:15 PM	3:30 PM	7
3:30 PM	3:45 PM	9
3:45 PM	4:00 PM	3
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

27

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	1
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	1
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

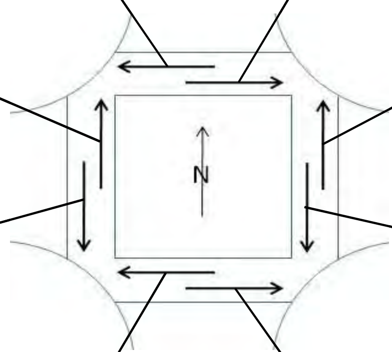
2

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	1
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0



Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

66

Time Intervals		Peds
3:00 PM	3:15 PM	35
3:15 PM	3:30 PM	17
3:30 PM	3:45 PM	2
3:45 PM	4:00 PM	12
4:00 PM	4:15 PM	4
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

3

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	2
3:45 PM	4:00 PM	1
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
03:00 PM to 04:00 PM

City: **Clinton**
N-S Street: **550 West**
E-W Street: **1800 North**
Date: **Wednesday, November 18, 2009**
Begin Time: **3:00 PM**
Counted By: **Hrvoje & Courtney**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	3
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	2
8:15 AM	8:30 AM	1
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

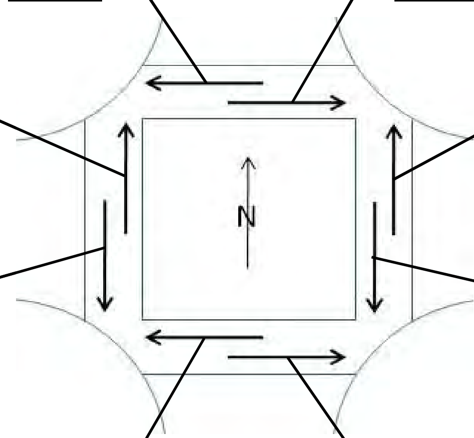
ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR



Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	6
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	2
7:30 AM	7:45 AM	1
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	1
8:30 AM	8:45 AM	1
8:45 AM	9:00 AM	

Multiple Peaks Possible
ERROR ERROR

City: **Clinton**
N-S Street: **810 West**
E-W Street: **1800 North**
Date: **Tuesday, November 24, 2009**
Begin Time: **7:00 AM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	3
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	1
5:45 PM	6:00 PM	

6

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

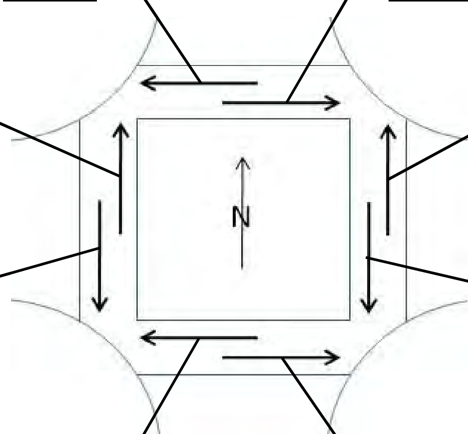
0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

2



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Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

5

Time Intervals		Peds
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	1
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	1
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

2

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
04:00 PM to 05:00 PM

City: **Clinton**
N-S Street: **810 West**
E-W Street: **1800 North**
Date: **Thursday, November 19, 2009**
Begin Time: **4:00 PM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	1
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	2
7:45 AM	8:00 AM	1
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	1
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	1

2

Time Intervals		Peds
7:00 AM	7:15 AM	2
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	1
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	2
8:45 AM	9:00 AM	

2

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	3
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

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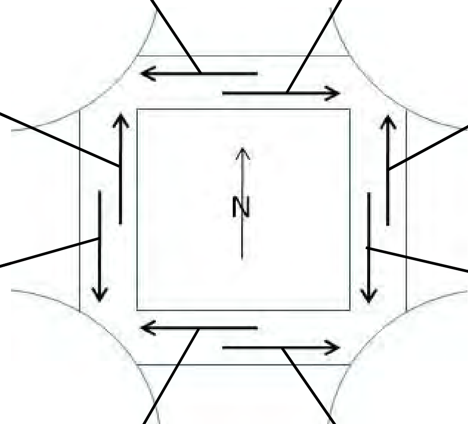


Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	1
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	1
8:00 AM	8:15 AM	2
8:15 AM	8:30 AM	1
8:30 AM	8:45 AM	7
8:45 AM	9:00 AM	

10

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	2
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	1
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	2

2

28

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	3
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	3
8:30 AM	8:45 AM	10
8:45 AM	9:00 AM	15

2

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	3
7:30 AM	7:45 AM	3
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	1
8:30 AM	8:45 AM	1
8:45 AM	9:00 AM	

Ped Peak Hour
08:00 AM to 09:00 AM

City: **Clinton**
N-S Street: **1000 West**
E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **7:00 AM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	5
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	3
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	4
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

5

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	9
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	3
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

9

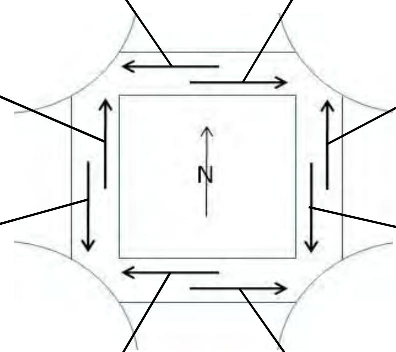
HORROCKS ENGINEERS

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	3
3:30 PM	3:45 PM	26
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	1
5:45 PM	6:00 PM	

31

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	3
3:30 PM	3:45 PM	3
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	1
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

8



Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	4
3:45 PM	4:00 PM	3
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

7

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	2
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	2
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	1
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

6

36

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	20
3:30 PM	3:45 PM	16
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	2
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

58

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	4
3:30 PM	3:45 PM	44
3:45 PM	4:00 PM	9
4:00 PM	4:15 PM	1
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
03:15 PM to 04:15 PM

City: **Clinton**
N-S Street: **1000 West**
E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **3:00 PM**
Counted By: **Sandra & Courtney**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	1
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

1

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

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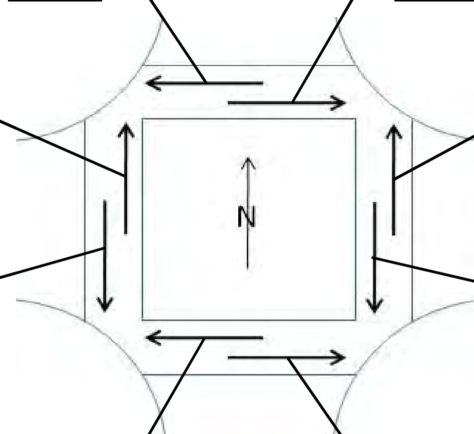


Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	2
8:15 AM	8:30 AM	3
8:30 AM	8:45 AM	4
8:45 AM	9:00 AM	2

11

2

Time Intervals		Peds
7:00 AM	7:15 AM	1
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	2

18

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	1
7:30 AM	7:45 AM	1
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	1
8:15 AM	8:30 AM	1
8:30 AM	8:45 AM	1
8:45 AM	9:00 AM	15

Ped Peak Hour
08:00 AM to 09:00 AM

City: **Clinton**
N-S Street: **1200/1220 West**
E-W Street: **1800 North**
Date: **Thursday, December 03, 2009**
Begin Time: **7:00 AM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	1
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

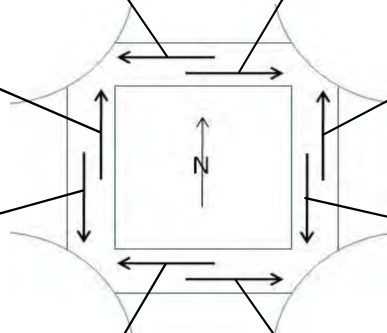
2

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	1
3:30 PM	3:45 PM	19
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

19



Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

2

17

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	
3:30 PM	3:45 PM	15
3:45 PM	4:00 PM	
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	1
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	1
5:45 PM	6:00 PM	2

1

Time Intervals		Peds
3:00 PM	3:15 PM	
3:15 PM	3:30 PM	1
3:30 PM	3:45 PM	
3:45 PM	4:00 PM	1
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	2
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	1
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
03:30 PM to 04:30 PM

City: **Clinton**
N-S Street: **1200/1220 West**
E-W Street: **1800 North**
Date: **Thursday, December 03, 2009**
Begin Time: **3:00 PM**
Counted By: **Sandra & Courtney**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	1
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

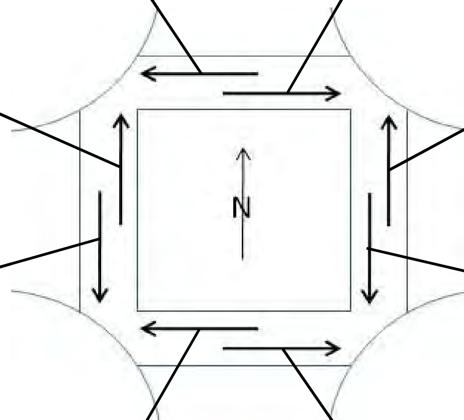
ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR



ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	1
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

Multiple Peaks Possible

ERROR ERROR

City: **Clinton**

N-S Street: **1500 West**

E-W Street: **1800 North**

Date: **Wednesday, November 25, 2009**

Begin Time: **7:00 AM**

Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

HORROCKS
ENGINEERS

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

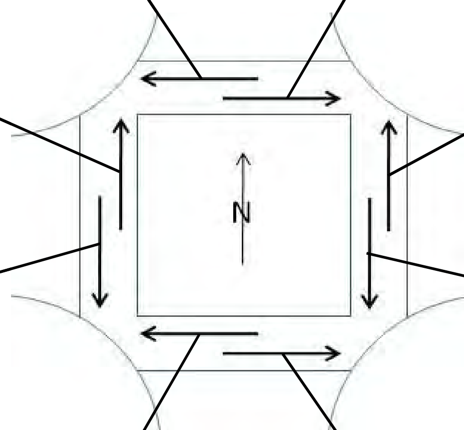
ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	1
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR



ERR

Time Intervals		Peds
4:00 PM	4:15 PM	2
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	2
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	1
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Multiple Peaks Possible
ERROR ERROR

City: **Clinton**
N-S Street: **1500 West**
E-W Street: **1800 North**
Date: **Tuesday, November 24, 2009**
Begin Time: **4:00 PM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

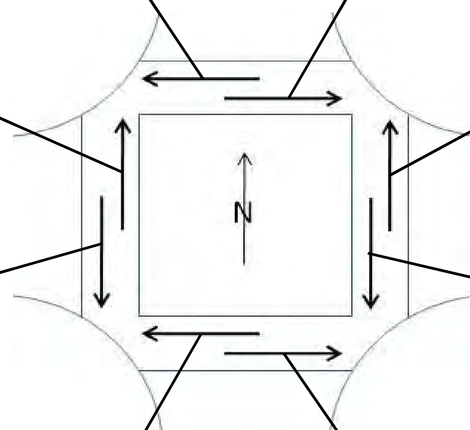
ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR



Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	1
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

Multiple Peaks Possible
ERROR ERROR

City: **Clinton**
N-S Street: **1750 West**
E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **7:00 AM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

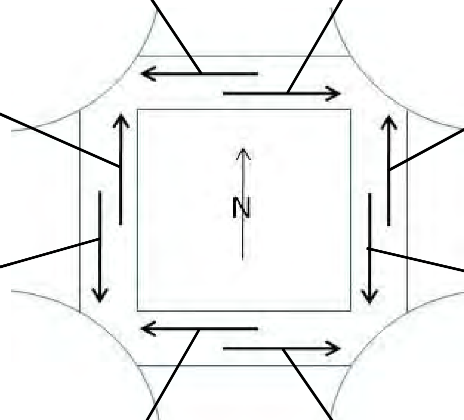
0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0



Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

2

Time Intervals		Peds
4:00 PM	4:15 PM	1
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
04:00 PM to 05:00 PM

City: **Clinton**
N-S Street: **1750 West**
E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **4:00 PM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

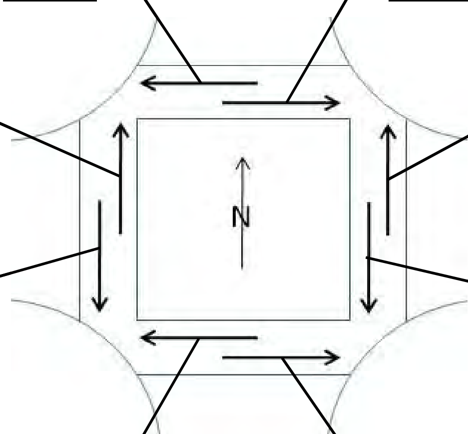
ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR



Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

Multiple Peaks Possible
ERROR ERROR

City: **Clinton**
N-S Street: **East Walmart Access**
E-W Street: **1800 North**
Date: **Thursday, December 17, 2009**
Begin Time: **7:00 AM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

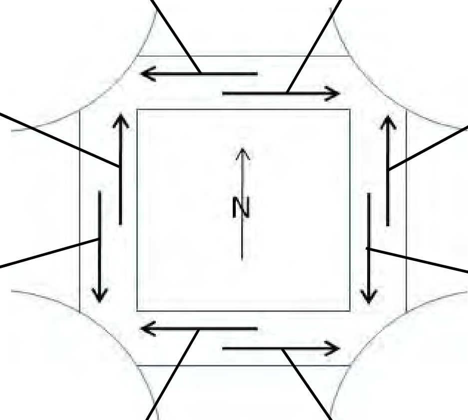
HORROCKS ENGINEERS

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR



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Time Intervals		Peds
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4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Multiple Peaks Possible
ERROR ERROR

City: **Clinton**
N-S Street: **East Walmart Access**
E-W Street: **1800 North**
Date: **Tuesday, December 08, 2009**
Begin Time: **4:00 PM**
Counted By: **Hrvoje**

PEDESTRIAN COUNT SUMMARY

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

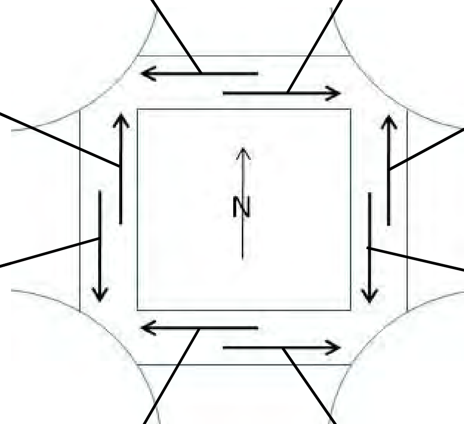
HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR



Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
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8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

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ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
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8:30 AM	8:45 AM	
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ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	1
7:45 AM	8:00 AM	1
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

ERR

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	1
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	1
8:45 AM	9:00 AM	

Multiple Peaks Possible
ERROR ERROR

City: **Clinton**
N-S Street: **West Walmart Access**
E-W Street: **1800 North**
Date: **Tuesday, November 24, 2009**
Begin Time: **7:00 AM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
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5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

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Time Intervals		Peds
4:00 PM	4:15 PM	
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5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

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Time Intervals		Peds
4:00 PM	4:15 PM	
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4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
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5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
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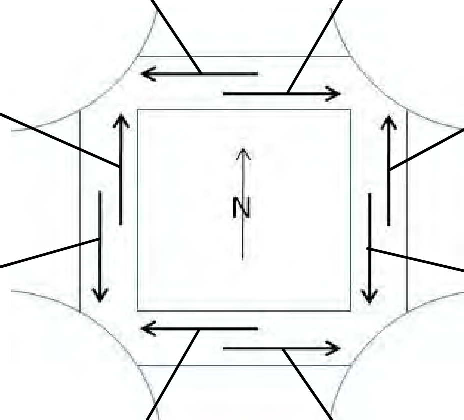

Time Intervals		Peds
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4:15 PM	4:30 PM	
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5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

ERR

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	2
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	3
5:45 PM	6:00 PM	

ERR

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Multiple Peaks Possible
ERROR ERROR

City: **Clinton**
N-S Street: **West Walmart Access**
E-W Street: **1800 North**
Date: **Tuesday, November 24, 2009**
Begin Time: **4:00 PM**
Counted By: **Sandra**

PEDESTRIAN COUNT SUMMARY

HORROCKS ENGINEERS

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

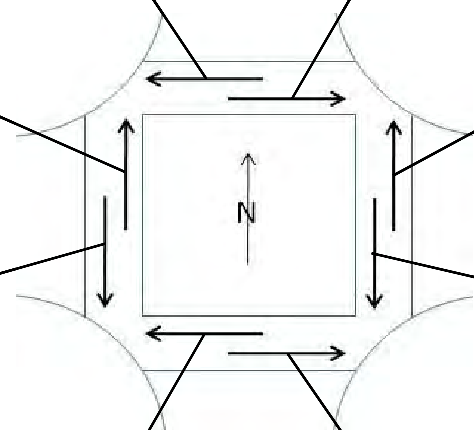
0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0



Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

0

Time Intervals		Peds
7:00 AM	7:15 AM	2
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

2

0

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	1

1

Time Intervals		Peds
7:00 AM	7:15 AM	
7:15 AM	7:30 AM	
7:30 AM	7:45 AM	
7:45 AM	8:00 AM	1
8:00 AM	8:15 AM	
8:15 AM	8:30 AM	
8:30 AM	8:45 AM	
8:45 AM	9:00 AM	

Ped Peak Hour
07:00 AM to 08:00 AM

City: **Clinton**
N-S Street: **2000 West**
E-W Street: **1800 North**
Date: **Tuesday, December 01, 2009**
Begin Time: **7:00 AM**
Counted By: **Hrvoje and Sandra**

PEDESTRIAN COUNT SUMMARY

HORROCKS
ENGINEERS

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

0

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	1
5:45 PM	6:00 PM	

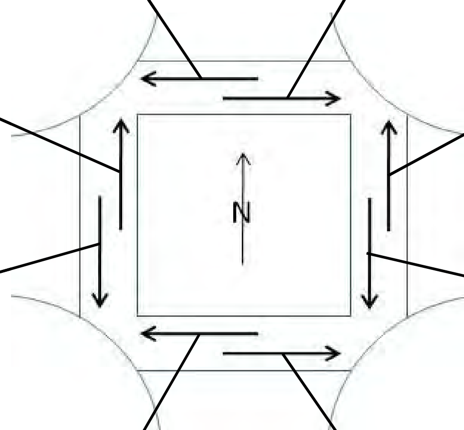
1

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	2
4:45 PM	5:00 PM	2
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

4

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	1
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	2
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

1



Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

1

Time Intervals		Peds
4:00 PM	4:15 PM	1
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	
4:45 PM	5:00 PM	
5:00 PM	5:15 PM	1
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

3

9

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	
4:30 PM	4:45 PM	2
4:45 PM	5:00 PM	5
5:00 PM	5:15 PM	2
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

5

Time Intervals		Peds
4:00 PM	4:15 PM	
4:15 PM	4:30 PM	2
4:30 PM	4:45 PM	2
4:45 PM	5:00 PM	1
5:00 PM	5:15 PM	
5:15 PM	5:30 PM	
5:30 PM	5:45 PM	
5:45 PM	6:00 PM	

Ped Peak Hour
04:15 PM to 05:15 PM

City: **Clinton**
N-S Street: **2000 West**
E-W Street: **1800 North**
Date: **Tuesday, December 01, 2009**
Begin Time: **4:00 PM**
Counted By: **Hrvoje and Sandra**

Appendix C Vehicle Turning Movement Counts

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Sunset**
N-S Street: **Main (1900 W)** E-W Street: **1800 North (SR-37)**
Date: **Wednesday, November 18, 2009**
Begin Time: **07:00 AM** Counted by: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Total	Hourly
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13	All Moves	Totals
07:00 AM	07:15 AM	6	79	0	0	0	0	0	0	0	37	11	0	80	0	24	0	237	
07:15 AM	07:30 AM	5	100	0	1	0	0	0	0	0	54	14	2	96	0	48	0	319	
07:30 AM	07:45 AM	12	116	0	0	0	0	0	0	0	45	17	0	100	0	60	1	351	
07:45 AM	08:00 AM	12	102	0	0	0	0	0	0	0	64	17	0	107	0	66	1	369	1276
08:00 AM	08:15 AM	20	125	0	1	0	0	0	0	0	82	27	1	98	0	65	0	418	1457
08:15 AM	08:30 AM	24	108	0	0	0	0	0	0	0	89	33	2	101	0	83	1	441	1579
08:30 AM	08:45 AM	28	137	0	0	0	0	0	0	0	105	29	0	93	0	72	0	464	1692
08:45 AM	09:00 AM	23	92	0	0	0	0	0	0	0	68	37	1	59	0	69	0	349	1672

Main (1900 W)

Southbound

North Leg Total Volume:	Right	Thru	Left	
		589		663
1252	89	500	0	

East Leg **Total Volume:** 0 — **Westbound**

0	Right	
0	Thru	0
0	Left	

201

1800 North (SR-37)

Eastbound

	Left	303
726	Thru	0
	Right	423

West Leg **Total Volume:** 927

923

0

	Left	Thru	Right	South Leg Total Volume:
	112	360	0	
923		472		1395

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	500	89	0	0	0	112	360	0	303	0	423
	589			0			472			726	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		1%	**Trucks:**		0%
Peak Hour:	07:45 AM to 8:45 AM					**Peak Vol:**		1787	**PHF:**		0.91

TRAFFIC COUNT SUMMARY

City: **Sunset**
N-S Street: **Main (1900 W)** E-W Street: **1800 North (SR-37)**
Date: **Tuesday, November 17, 2009**
Begin Time: **04:00 PM** Counted by: **Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	73	176	0	0	0	0	0	0	0	209	103	0	64	0	58	1	684	
04:15 PM	04:30 PM	67	170	0	0	0	0	0	0	0	180	107	0	53	0	74	3	654	
04:30 PM	04:45 PM	75	195	0	0	0	0	0	0	0	168	111	0	49	0	59	1	658	
04:45 PM	05:00 PM	63	156	0	0	0	0	0	0	0	182	109	0	65	0	50	0	625	2621
05:00 PM	05:15 PM	86	199	0	0	0	0	0	0	0	185	118	0	41	0	46	0	675	2612
05:15 PM	05:30 PM	78	175	0	0	0	0	0	0	0	200	128	1	61	0	68	0	711	2669
05:30 PM	05:45 PM	103	175	0	0	0	0	0	0	0	172	117	2	71	0	67	0	707	2718
05:45 PM	06:00 PM	77	124	0	1	0	0	0	0	0	166	121	0	34	0	63	0	585	2678

Main (1900 W)

Southbound

North Leg Total Volume:	Right	Thru	Left	
2125	350	747	0	1028
		1097		

East Leg Total Volume: 0			**Westbound**
0	Right		
0	Thru	0	
0	Left		

850

1800 North (SR-37)

Eastbound

	Movement	Volume
	Left	245
497	Thru	0
	Right	252

West Leg Total Volume: 1347

999

0

Left	Thru	Right	South Leg Total Volume:
500	783	0	2282
	1283		

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	747	350	0	0	0	500	783	0	245	0	252
	1097			0			1283			497	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:	04:45 PM to 5:45 PM					Peak Vol:		2877	PHF:		0.95

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **75 West** E-W Street: **1800 North**
Date: **Thursday, December 03, 2009**
Begin Time: **07:45 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:45 AM	08:00 AM	2	0	4	0	1	64	0	2	0	0	0	0	0	130	1	3	207	
08:00 AM	08:15 AM	1	0	2	0	1	66	0	2	0	0	0	0	0	99	2	0	173	
08:15 AM	08:30 AM	2	0	4	0	2	76	0	2	0	0	0	0	0	146	1	1	234	
08:30 AM	08:45 AM	0	0	6	0	1	59	0	2	0	0	0	0	0	137	1	3	209	823
08:45 AM	09:00 AM																	0	616
09:00 AM	09:15 AM																	0	443
09:15 AM	09:30 AM																	0	209
09:30 AM	09:45 AM																	0	0

75 West

Southbound: Right 5, Thru 0, Left 17; total 22; 10

North Leg Total Volume: 32

286

Westbound — **East Leg Total Volume:** 846
5	Right	
281	Thru	286
0	Left	

1800 North

Eastbound
	Left	5
548	Thru	543
	Right	0

West Leg Total Volume: 834

0

560

Northbound: Left 0, Thru 0, Right 0; 0

South Leg Total Volume: 0

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
17	0	5	0	281	5	0	0	0	5	543	0
22			286			0			548		
Trucks:		0%	Trucks:		3%	Trucks:		0%	Trucks:		1%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		856	PHF:		0.86

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **75 West** E-W Street: **1800 North**
Date: **Thursday, December 03, 2009**
Begin Time: **04:15 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:15 PM	04:30 PM	0	0	0	0	2	194	0	1	0	0	0	0	0	116	2	1	316	
04:30 PM	04:45 PM	1	0	0	0	4	177	0	0	0	0	0	0	0	124	1	0	307	
04:45 PM	05:00 PM	0	0	2	0	5	204	0	1	0	0	0	0	0	133	0	1	346	
05:00 PM	05:15 PM	0	0	3	0	3	229	0	1	1	0	0	0	0	114	1	0	352	1321
05:15 PM	05:30 PM																	0	1005
05:30 PM	05:45 PM																	0	698
05:45 PM	06:00 PM																	0	352
06:00 PM	06:15 PM																	0	0

75 West

Southbound: Right 1, Thru 0, Left 5; 6 — 19

North Leg Total Volume: 25 — 853

East Leg Total Volume: 1389 — **Westbound**
15 **Right**
852 **Thru** 867
0 **Left**

1800 North

Eastbound
Left 4
520 **Thru** 516
Right 0

West Leg Total Volume: 1373 — 0

522

Northbound: Left 0, Thru 0, Right 1; 1

South Leg Total Volume: 1

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
5	0	1	0	852	15	0	0	1	4	516	0
	6			867			1			520	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		04:15 PM to 5:15 PM				**Peak Vol:**		1394	**PHF:**		0.93

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Sunset**
N-S Street: **200 West** E-W Street: **1800 North**
Date: **Wednesday, December 09, 2009**
Begin Time: **07:45 AM** Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:45 AM	08:00 AM	2	0	0	0	0	48	0	1	0	0	0	0	0	139	0	1	191	
08:00 AM	08:15 AM	1	0	1	0	1	70	0	0	0	0	0	0	0	124	2	0	199	
08:15 AM	08:30 AM	0	0	0	0	0	56	0	1	0	0	0	0	0	123	0	0	180	
08:30 AM	08:45 AM	1	0	0	0	2	51	0	1	0	0	0	0	0	92	1	3	151	721
08:45 AM	09:00 AM																	0	530
09:00 AM	09:15 AM																	0	331
09:15 AM	09:30 AM																	0	151
09:30 AM	09:45 AM																	0	0

200 West

Southbound

North Leg Total Volume:	Right	Thru	Left
		5	
11	4	0	1

6

East Leg Total Volume: 750		Westbound
3	Right	
239	Thru	242
0	Left	

243

1800 North

Eastbound		
	Left	3
510	Thru	507
	Right	0

West Leg Total Volume: 753

0

Left	Thru	Right
0	0	0
	0	

Northbound

South Leg Total Volume: 0

508

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	0	4	0	239	3	0	0	0	3	507	0
5			242			0			510		
Trucks:		0%	Trucks:		1%	Trucks:		0%	Trucks:		1%
Peak Hour:			07:45 AM to 8:45 AM			Peak Vol:		757	PHF:		0.90

TRAFFIC COUNT SUMMARY

City: **Sunset**
N-S Street: **200 West** E-W Street: **1800 North**
Date: **Wednesday, December 09, 2009**
Begin Time: **04:15 PM** Counted By: **Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:15 PM	04:30 PM	0	0	0	0	0	191	0	2	0	0	0	0	0	107	1	1	302	
04:30 PM	04:45 PM	1	0	0	0	2	200	0	0	0	0	0	0	0	134	2	2	341	
04:45 PM	05:00 PM	4	0	1	0	0	188	0	0	0	0	0	0	0	114	0	1	308	
05:00 PM	05:15 PM	0	0	0	0	1	210	0	1	0	0	0	0	0	121	6	0	339	1290
05:15 PM	05:30 PM																	0	988
05:30 PM	05:45 PM																	0	647
05:45 PM	06:00 PM																	0	339
06:00 PM	06:15 PM																	0	0

200 West

Southbound

North Leg Total Volume: 19

Right	Thru	Left
	6	
5	0	1

13

East Leg Total Volume: 1345 **Westbound**

3	Right	
836	Thru	839
0	Left	

841

1800 North

Eastbound

	Left	10
515	Thru	505
	Right	0

506

West Leg Total Volume: 1356

0

Left	Thru	Right
0	0	0
	0	

Northbound

South Leg Total Volume: 0

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
1	0	5	0	836	3	0	0	0	10	505	0
	6			839			0			515	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		1%
Peak Hour:			04:15 PM to 5:15 PM			Peak Vol:		1360	PHF:		0.94

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Sunset**
N-S Street: **250 West** E-W Street: **1800 North (SR-37)**
Date: **Thursday, November 19, 2009**
Begin Time: **07:00 AM** Counted by: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	0	1	0	0	0	19	0	0	2	2	0	0	0	143	3	1	171	
07:15 AM	07:30 AM	0	6	1	0	0	33	0	1	5	5	1	0	5	148	5	0	210	
07:30 AM	07:45 AM	2	3	1	0	2	27	0	0	2	3	3	0	6	161	3	1	214	
07:45 AM	08:00 AM	2	3	1	0	1	40	2	1	4	3	4	0	10	142	3	0	216	811
08:00 AM	08:15 AM	3	3	1	0	0	43	3	3	4	4	3	0	27	147	8	0	249	889
08:15 AM	08:30 AM	1	6	1	0	4	60	9	0	17	1	6	0	39	144	7	2	297	976
08:30 AM	08:45 AM	3	3	0	0	4	58	2	0	7	4	3	0	21	120	6	0	231	993
08:45 AM	09:00 AM	6	1	2	1	4	41	2	2	7	7	2	0	3	110	11	2	200	977

250 West

Southbound

North Leg Total Volume:	Right	Thru	Left	
77	10	16	3	
		29		48

East Leg Total Volume: 863 — **Westbound**

10	Right	
213	Thru	240
17	Left	

240

1800 North (SR-37)

Eastbound

	Left	25
714	Thru	586
	Right	103

West Leg Total Volume: 954

136

623

Left	Thru	Right	South Leg Total Volume:
17	13	34	200
	64		

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3	16	10	17	213	10	17	13	34	25	586	103
	29			240			64			714	
Trucks:		0%	**Trucks:**		2%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:	07:45 AM to 8:45 AM					**Peak Vol:**		1047	**PHF:**		0.83

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Sunset**
N-S Street: **250 West** E-W Street: **1800 North (SR-37)**
Date: **Wednesday, November 18, 2009**
Begin Time: **04:00 PM** Counted by: **Sandra**
Interval Length: **15 min**

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	10	5	1	0	3	147	1	2	9	1	6	0	4	127	6	0	322	
04:15 PM	04:30 PM	11	3	1	0	3	188	4	1	10	6	6	0	6	94	9	0	342	
04:30 PM	04:45 PM	7	2	2	0	3	189	4	1	6	1	5	1	5	101	8	2	337	
04:45 PM	05:00 PM	3	1	2	0	5	184	4	0	11	7	1	0	4	103	10	0	335	1336
05:00 PM	05:15 PM	7	5	0	0	1	179	2	0	3	4	3	0	6	104	9	0	323	1337
05:15 PM	05:30 PM	13	2	1	0	3	178	2	0	4	4	1	0	5	90	5	1	309	1304
05:30 PM	05:45 PM	9	2	1	0	6	190	3	0	8	6	2	0	3	114	7	0	351	1318
05:45 PM	06:00 PM	10	4	3	0	5	168	4	1	6	3	2	0	5	109	6	0	326	1309

250 West

Southbound

North Leg Total Volume: 117

Right	Thru	Left
	47	
30	12	5

70

East Leg Total Volume: 1275 — **Westbound**

13	Right	
784	Thru	812
15	Left	

830

1800 North (SR-37)

Eastbound

	Left	38
486	Thru	426
	Right	22

West Leg Total Volume: 1316

463

49

Left	Thru	Right
16	19	32
	67	

Northbound

South Leg Total Volume: 116

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
5	12	30	15	784	13	16	19	32	38	426	22
	47			812			67			486	
Trucks:		0%	Trucks:		0%	Trucks:		2%	Trucks:		0%
Peak Hour:		04:15 PM to 5:15 PM				Peak Vol:		1412	PHF:		0.97

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Sunset**
N-S Street: **300 West** E-W Street: **1800 North**
Date: **Wednesday, December 09, 2009**
Begin Time: **07:45 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB					
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Total	Hourly
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13	All Moves	Totals
07:45 AM	08:00 AM	2	0	4	1	4	52	4	1	2	0	1	0	3	142	3	1	219	
08:00 AM	08:15 AM	1	1	3	0	0	59	1	2	1	0	0	0	1	116	1	2	188	
08:15 AM	08:30 AM	1	0	0	0	1	70	3	2	3	0	0	0	0	130	3	1	214	
08:30 AM	08:45 AM	3	0	2	0	2	96	4	2	3	0	0	0	0	127	0	0	239	860
08:45 AM	09:00 AM																	0	641
09:00 AM	09:15 AM																	0	453
09:15 AM	09:30 AM																	0	239
09:30 AM	09:45 AM																	0	0

300 West

Southbound

North Leg Total Volume:	Right	Thru	Left
		18	
32	7	1	10

14

East Leg Total Volume: 880 — **Westbound**

7	**Right**	
294	**Thru**	314
13	**Left**	

302

1800 North

Eastbound

	Left	7
557	**Thru**	546
	Right	4

566

West Leg Total Volume: 859

18

Left	Thru	Right
1	0	10
	11	

Northbound

South Leg Total Volume: 29

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
10	1	7	13	294	7	1	0	10	7	546	4
	18			314			11			557	
Trucks:		6%	**Trucks:**		2%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:			07:45 AM to 8:45 AM			**Peak Vol:**		900	**PHF:**		0.89

TRAFFIC COUNT SUMMARY

City: **Sunset**
N-S Street: **300 West** E-W Street: **1800 North**
Date: **Wednesday, December 09, 2009**
Begin Time: **04:15 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
04:15 PM	04:30 PM	2	0	3	0	5	207	2	2	0	0	0	0	0	120	3	1	345	
04:30 PM	04:45 PM	2	0	5	0	4	179	3	0	2	0	1	0	3	131	0	1	331	
04:45 PM	05:00 PM	3	0	0	0	3	202	0	0	1	0	0	0	1	107	5	1	323	
05:00 PM	05:15 PM	4	1	1	0	2	215	1	1	0	0	2	0	2	140	0	1	370	1369
05:15 PM	05:30 PM																	0	1024
05:30 PM	05:45 PM																	0	693
05:45 PM	06:00 PM																	0	370
06:00 PM	06:15 PM																	0	0

300 West

Southbound

North Leg Total Volume: 46

Right	Thru	Left
	23	
12	1	10

23

Westbound

East Leg Total Volume: 1413

15	Right	
851	Thru	872
6	Left	

866

1800 North

Eastbound

	Left	8
542	Thru	528
	Right	6

West Leg Total Volume: 1408

541

13

Northbound

Left	Thru	Right
3	0	3
	6	

South Leg Total Volume: 19

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
10	1	12	6	851	15	3	0	3	8	528	6
	23			872			6			542	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		1%
Peak Hour:			04:15 PM to 5:15 PM			Peak Vol:		1443	PHF:		0.92

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Sunset**
N-S Street: **350 West**
E-W Street: **1800 North**
Date: **Thursday, December 10, 2009**
Begin Time: **07:45 AM**
Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:45 AM	08:00 AM	0	0	0	0	0	24	0	0	0	0	0	0	0	134	0	0	158	
08:00 AM	08:15 AM	0	0	0	0	0	53	2	2	4	0	1	0	3	168	0	0	233	
08:15 AM	08:30 AM	0	0	0	0	0	54	1	1	3	0	4	0	4	182	0	1	250	
08:30 AM	08:45 AM	0	0	0	0	0	63	0	0	2	0	5	0	2	138	0	1	211	852
08:45 AM	09:00 AM																	0	694
09:00 AM	09:15 AM																	0	461
09:15 AM	09:30 AM																	0	211
09:30 AM	09:45 AM																	0	0

350 West

Southbound: Right 0, Thru 0, Left 0; 0 (total) — 0

North Leg Total Volume: 0

East Leg Total Volume: 878 — **Westbound**: Right 0; Thru 206 (209); Left 3

217

1800 North

Eastbound: Left 0; Thru 659 (669); Right 10

West Leg Total Volume: 886

669

13

Northbound: Left 11, Thru 0, Right 10; 21

South Leg Total Volume: 34

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

	Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
Volume	0	0	0	3	206	0	11	0	10	0	659	10
Total	0			209			21			669		
Trucks:	0%			2%			0%			0%		

Peak Hour: 07:45 AM to 8:45 AM
Peak Vol: 899
PHF: 0.85

TRAFFIC COUNT SUMMARY

City: **Sunset**
N-S Street: **350 West** E-W Street: **1800 North**
Date: **Thursday, December 10, 2009**
Begin Time: **04:15 PM** Counted By: **Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:15 PM	04:30 PM	0	0	0	0	0	184	2	0	1	0	0	0	1	129	0	1	318	
04:30 PM	04:45 PM	0	0	0	0	0	166	2	1	1	0	2	0	0	151	0	1	324	
04:45 PM	05:00 PM	0	0	0	0	0	185	2	0	4	0	5	0	1	107	0	0	304	
05:00 PM	05:15 PM	0	0	0	0	0	173	4	0	0	0	1	0	1	132	0	0	311	1257
05:15 PM	05:30 PM																	0	939
05:30 PM	05:45 PM																	0	615
05:45 PM	06:00 PM																	0	311
06:00 PM	06:15 PM																	0	0

350 West

Southbound

	Right	Thru	Left
		0	
North Leg Total Volume: 0	0	0	0

0

East Leg Total Volume: 1317 — **Westbound**

0	**Right**	
750	**Thru**	761
11	**Left**	

758

1800 North

Eastbound

	Left	0
553	**Thru**	550
	Right	3

West Leg Total Volume: 1311

556

14

Left	Thru	Right
8	0	6
	14	

Northbound

South Leg Total Volume: 28

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	0	11	750	0	8	0	6	0	550	3
	0			761			14			553	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		04:15 PM to 5:15 PM				**Peak Vol:**		1328	**PHF:**		0.97

TRAFFIC COUNT SUMMARY

City: **Sunset**
N-S Street: **400 West** E-W Street: **1800 North**
Date: **Thursday, December 10, 2009**
Begin Time: **07:00 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:00 AM	07:15 AM	0	0	0	0	0	60	3	5	11	0	0	0	1	167	0	5	252	
07:15 AM	07:30 AM	0	0	0	0	0	95	3	1	4	0	3	0	1	168	0	2	277	
07:30 AM	07:45 AM	0	0	0	0	0	77	2	0	3	0	1	0	2	128	0	0	213	
07:45 AM	08:00 AM	0	0	0	0	0	106	4	2	12	0	4	0	3	180	0	4	315	1057
08:00 AM	08:15 AM																	0	805
08:15 AM	08:30 AM																	0	528
08:30 AM	08:45 AM																	0	315
08:45 AM	09:00 AM																	0	0

400 West

Southbound

North Leg Total Volume: 0

Right	Thru	Left
	0	
0	0	0

0

Westbound

East Leg Total Volume: 1085

0	**Right**	
358	**Thru**	371
13	**Left**	

366

1800 North

Eastbound

	Left	0
689	**Thru**	682
	Right	7

West Leg Total Volume: 1055

714

20

Northbound

Left	Thru	Right
8	0	32
	40	

South Leg Total Volume: 60

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	13	358	0	8	0	32	0	682	7
	0			371			40			689	
Trucks:		0%	**Trucks:**		2%	**Trucks:**		0%	**Trucks:**		2%
Peak Hour:			07:00 AM to 8:00 AM			**Peak Vol:**		1100	**PHF:**		0.82

TRAFFIC COUNT SUMMARY

City: **Sunset**
N-S Street: **400 West** E-W Street: **1800 North**
Date: **Thursday, December 10, 2009**
Begin Time: **04:30 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
04:30 PM	04:45 PM	0	0	0	0	0	171	3	1	1	0	0	0	2	154	0	1	333	
04:45 PM	05:00 PM	0	0	0	0	0	207	2	0	4	0	4	0	2	117	0	1	337	
05:00 PM	05:15 PM	0	0	0	0	0	187	2	0	3	0	1	0	3	133	0	0	329	
05:15 PM	05:30 PM	0	0	0	0	0	187	5	0	0	0	1	0	0	122	0	0	315	1314
05:30 PM	05:45 PM																	0	981
05:45 PM	06:00 PM																	0	644
06:00 PM	06:15 PM																	0	315
06:15 PM	06:30 PM																	0	0

400 West

Southbound

North Leg Total Volume:	Right	Thru	Left	
0	0	0	0	0 (entering: 0)

East Leg Total Volume: 1376 — **Westbound**

0	**Right**	
797	**Thru**	810
13	**Left**	

803

1800 North

Eastbound

	Left	0
565	**Thru**	558
	Right	7

West Leg Total Volume: 1368

20

Left	Thru	Right
6	0	8
	14	

Northbound

South Leg Total Volume: 34

566

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	0	13	797	0	6	0	8	0	558	7
	0			810			14			565	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		04:30 PM to 5:30 PM				**Peak Vol:**		1389	**PHF:**		0.97

TRAFFIC COUNT SUMMARY

City: **Sunset**
N-S Street: **475 West** E-W Street: **1800 North**
Date: **Tuesday, December 15, 2009**
Begin Time: **07:00 AM** Counted By: **Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:00 AM	07:15 AM	0	0	0	0	0	40	1	0	5	0	0	0	3	139	0	0	188	
07:15 AM	07:30 AM	0	0	0	0	0	35	0	1	5	0	0	0	0	160	0	1	202	
07:30 AM	07:45 AM	0	0	0	0	0	40	1	1	4	0	0	0	1	142	0	1	190	
07:45 AM	08:00 AM	0	0	0	0	0	57	1	1	5	0	7	0	6	172	0	2	251	831
08:00 AM	08:15 AM																	0	643
08:15 AM	08:30 AM																	0	441
08:30 AM	08:45 AM																	0	251
08:45 AM	09:00 AM																	0	0

475 West

Southbound

	Right	Thru	Left
		0	
	0	0	0

0

North Leg Total Volume: 0

East Leg Total Volume: 855 — **Westbound**

0	Right	
182	Thru	185
3	Left	

189

1800 North

Eastbound

	Left	0
661	Thru	650
	Right	11

670

West Leg Total Volume: 850

14

Left	Thru	Right
7	0	20
	27	

Northbound

South Leg Total Volume: 41

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	3	182	0	7	0	20	0	650	11
	0			185			27			661	
Trucks:		0%	**Trucks:**		2%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:		07:00 AM to 8:00 AM				**Peak Vol:**		873	**PHF:**		0.82

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Sunset**
N-S Street: **475 West**   E-W Street: **1800 North**
Date: **Tuesday, December 15, 2009**
Begin Time: **04:30 PM**   Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	0	0	0	0	0	206	2	0	4	0	0	0	1	156	0	1	370	
04:45 PM	05:00 PM	0	0	0	0	0	203	0	0	2	0	1	0	3	128	0	0	337	
05:00 PM	05:15 PM	0	0	0	0	2	194	1	1	1	0	2	0	2	109	0	0	312	
05:15 PM	05:30 PM	0	0	0	0	1	201	1	0	2	0	1	0	2	131	0	0	339.6667	1358.667
05:30 PM	05:45 PM																	0	988.6667
05:45 PM	06:00 PM																	0	651.6667
06:00 PM	06:15 PM																	0	339.6667
06:15 PM	06:30 PM																	0	0

475 West

Southbound
North Leg Total Volume: 3
Right 0 | Thru 0 | Left 0 (Thru column header value: 0)
3

East Leg Total Volume: 1424
Westbound
3 **Right**
852 **Thru** 859
4 **Left**

856

1800 North
Eastbound
Left 0
563 **Thru** 555
Right 8
West Leg Total Volume: 1419

565

12

4 **Left** | 0 **Thru** 14 | 10 **Right**
Northbound
South Leg Total Volume: 26

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	4	852	3	4	0	10	0	555	8
	0			859			14			563	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:	04:30 PM to 5:30 PM					**Peak Vol:**		1436	**PHF:**		0.92

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **550 West** E-W Street: **1800 North (SR-37)**
Date: **Thursday, November 19, 2009**
Begin Time: **07:00 AM** Counted by: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	0	1	1	0	2	58	2	2	9	0	0	1	1	183	0	2	262	
07:15 AM	07:30 AM	1	0	2	0	3	71	2	4	3	0	1	0	2	206	0	1	296	
07:30 AM	07:45 AM	0	0	1	0	1	86	2	1	6	1	2	0	3	157	0	0	260	
07:45 AM	08:00 AM	0	1	0	0	0	48	1	1	4	0	3	0	0	118	1	3	180	998
08:00 AM	08:15 AM	1	1	1	0	0	67	6	2	12	0	2	0	0	140	0	0	232	968
08:15 AM	08:30 AM	0	0	1	0	4	83	13	0	13	2	2	0	1	160	2	3	284	956
08:30 AM	08:45 AM	1	0	0	0	0	75	1	1	6	1	0	0	3	105	1	1	195	891
08:45 AM	09:00 AM	0	0	3	0	0	60	0	1	1	1	3	0	0	97	0	1	167	878

550 West

Southbound

North Leg Total Volume: 15

	Right	Thru	Left
Southbound (total 7)	1	2	4

8

East Leg Total Volume: 1023

Westbound

6	Right	
279	Thru	292
7	Left	

286

1800 North (SR-37)

Eastbound

	Left	1
711	Thru	704
	Right	6

731

West Leg Total Volume: 997

15

	Left	Thru	Right
Northbound (total 30)	6	1	23

Northbound

South Leg Total Volume: 45

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
4	2	1	7	279	6	6	1	23	1	704	6
7			292			30			711		
Trucks: 0%			**Trucks:** 3%			**Trucks:** 3%			**Trucks:** 1%		
Peak Hour: 07:00 AM to 8:00 AM						**Peak Vol:** 1040			**PHF:** 0.83		

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **550 West** E-W Street: **1800 North (SR-37)**
Date: **Wednesday, November 18, 2009**
Begin Time: **04:00 PM** Counted by: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	0	0	2	0	5	185	7	1	6	0	5	0	5	93	2	1	312	
04:15 PM	04:30 PM	1	0	1	0	5	159	2	1	4	1	3	0	5	130	1	1	314	
04:30 PM	04:45 PM	2	0	1	0	2	194	5	0	2	1	2	1	3	128	0	0	341	
04:45 PM	05:00 PM	0	1	1	0	4	213	6	0	3	1	1	0	2	120	0	1	353	1320
05:00 PM	05:15 PM	1	0	0	0	13	187	3	0	4	0	2	0	2	112	1	1	326	1334
05:15 PM	05:30 PM	0	1	1	0	4	190	5	1	7	0	1	0	9	118	1	0	338	1358
05:30 PM	05:45 PM	3	0	3	0	2	163	2	1	4	0	1	0	3	118	1	1	302	1319
05:45 PM	06:00 PM	1	0	3	0	2	132	7	0	9	1	1	0	17	64	0	0	237	1203

550 West

Southbound

North Leg Total Volume: 36

	Right	Thru	Left
		8	
Southbound	3	2	3

28

East Leg Total Volume: 1402 — **Westbound**

24	**Right**	
831	**Thru**	875
20	**Left**	

840

1800 North (SR-37)

Eastbound

	Left	2
526	**Thru**	507
	Right	17

West Leg Total Volume: 1366

39

527

	Left	Thru	Right
Northbound	6	2	17
		25	

South Leg Total Volume: 64

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
3	2	3	20	831	24	6	2	17	2	507	17
	8			875			25			526	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		4%	**Trucks:**		0%
Peak Hour:			04:30 PM to 5:30 PM			**Peak Vol:**		1434	**PHF:**		0.96

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **630 West** E-W Street: **1800 North**
Date: **Tuesday, December 15, 2009**
Begin Time: **07:00 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	0	0	5	0	1	46	0	1	0	0	0	0	0	150	1	1	205	
07:15 AM	07:30 AM	1	0	4	0	0	43	0	1	0	0	0	0	0	132	5	2	188	
07:30 AM	07:45 AM	3	0	10	0	3	55	0	2	0	0	0	0	0	149	2	1	225	
07:45 AM	08:00 AM	0	0	4	0	6	67	0	0	0	0	0	0	0	164	0	2	243	861
08:00 AM	08:15 AM																	0	656
08:15 AM	08:30 AM																	0	468
08:30 AM	08:45 AM																	0	243
08:45 AM	09:00 AM																	0	0

630 West

Southbound

North Leg Total Volume:	Right	Thru	Left		East Leg Total Volume:
47	4	0	24	19	890
		28			

East Leg (Westbound): 11 Right; 224 Thru 235; 0 Left

228

1800 North

Eastbound: Left 8; 639 Thru 631; Right 0

655

West Leg Total Volume:		Left	Thru	Right	South Leg Total Volume:
		0	0	0	
867	0		0		0

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
24	0	4	0	224	11	0	0	0	8	631	0
28			235			0			639		
Trucks: 0%			**Trucks:** 2%			**Trucks:** 0%			**Trucks:** 1%		
Peak Hour: 07:00 AM to 8:00 AM						**Peak Vol:** 902			**PHF:** 0.87		

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **630 West** E-W Street: **1800 North**
Date: **Tuesday, December 15, 2009**
Begin Time: **04:30 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	4	0	1	0	4	184	0	2	0	0	0	0	0	110	2	0	307	
04:45 PM	05:00 PM	2	0	1	0	1	203	0	0	0	0	0	0	0	120	7	1	335	
05:00 PM	05:15 PM	3	0	4	0	2	177	0	1	0	0	0	0	0	125	2	1	315	
05:15 PM	05:30 PM	3	0	6	0	2	177	0	0	0	0	0	0	0	144	2	0	334	1291
05:30 PM	05:45 PM																	0	984
05:45 PM	06:00 PM																	0	649
06:00 PM	06:15 PM																	0	334
06:15 PM	06:30 PM																	0	0

630 West

Southbound

North Leg Total Volume:	Right	Thru	Left	
50	13	0	13	24
		26		

East Leg Total Volume: 1337 — **Westbound**

10	Right	
785	Thru	795
0	Left	

798

1800 North

Eastbound

	Left	14
543	Thru	529
	Right	0

West Leg Total Volume: 1341

0

542

Left	Thru	Right
0	0	0
	0	

Northbound

South Leg Total Volume: 0

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
13	0	13	0	785	10	0	0	0	14	529	0
	26			795			0			543	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:			04:30 PM to 5:30 PM			**Peak Vol:**		1364	**PHF:**		0.96

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **670 West** E-W Street: **1800 North**
Date: **Wednesday, December 16, 2009**
Begin Time: **07:00 AM** Counted By: **Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:00 AM	07:15 AM	0	0	0	0	0	44	1	0	2	0	2	0	2	132	0	1	184	
07:15 AM	07:30 AM	0	0	0	0	0	31	1	0	3	0	1	0	0	148	0	0	184	
07:30 AM	07:45 AM	0	0	0	0	0	43	0	0	1	0	0	0	0	139	0	0	183	
07:45 AM	08:00 AM	0	0	0	0	0	50	1	0	3	0	0	0	1	158	0	0	213	764
08:00 AM	08:15 AM																	0	580
08:15 AM	08:30 AM																	0	396
08:30 AM	08:45 AM																	0	213
08:45 AM	09:00 AM																	0	0

670 West

Southbound

North Leg Total Volume:	Right	Thru	Left		East Leg Total Volume:	
0	0	0	0	0	803	**Westbound**

181

East Leg		
0	**Right**	
178	**Thru**	181
3	**Left**	

1800 North

Eastbound

West Leg		
	Left	0
615	**Thru**	612
	Right	3

622

West Leg Total Volume:		Left	Thru	Right	South Leg Total Volume:
796	6	3	0	10	19
			13		

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	3	178	0	3	0	10	0	612	3
	0			181			13			615	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		07:00 AM to 8:00 AM				**Peak Vol:**		809	**PHF:**		0.89

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **670 West** E-W Street: **1800 North**
Date: **Wednesday, December 16, 2009**
Begin Time: **04:30 PM** Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	0	0	0	0	0	188	3	0	0	0	0	0	2	121	0	1	315	
04:45 PM	05:00 PM	0	0	0	0	0	183	3	0	2	0	7	0	1	133	0	0	329	
05:00 PM	05:15 PM	0	0	0	0	0	199	2	1	0	0	2	0	1	137	0	0	342	
05:15 PM	05:30 PM	0	0	0	0	0	171	1	0	2	0	0	0	2	118	0	0	294	1280
05:30 PM	05:45 PM																	0	965
05:45 PM	06:00 PM																	0	636
06:00 PM	06:15 PM																	0	294
06:15 PM	06:30 PM																	0	0

670 West

Southbound

North Leg Total Volume:	Right	Thru	Left	
0	0	0	0	0

(SB Thru column header value: 0)

East Leg Total Volume: 1339 — **Westbound**

WB	Movement	
0	Right	
785	Thru	795
10	Left	

795

1800 North

Eastbound

	Movement	EB
	Left	0
546	Thru	540
	Right	6

West Leg Total Volume: 1341

544

16

Left	Thru	Right
10	0	4
	14	

Northbound

South Leg Total Volume: 30

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	0	10	785	0	10	0	4	0	540	6
	0			795			14			546	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		1355	PHF:		0.93

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **725 West** E-W Street: **1800 North**
Date: **Tuesday, December 15, 2009**
Begin Time: **07:00 AM** Counted By: **Courtney**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	2	0	6	1	0	41	1	2	3	0	0	0	0	124	1	0	180	
07:15 AM	07:30 AM	0	0	6	4	0	40	0	1	2	0	1	0	1	133	0	0	184	
07:30 AM	07:45 AM	0	0	6	2	1	44	0	2	2	0	1	0	0	127	1	0	184	
07:45 AM	08:00 AM	2	0	8	2	3	55	0	1	4	0	0	0	1	160	0	0	234	782
08:00 AM	08:15 AM																	0	602
08:15 AM	08:30 AM																	0	418
08:30 AM	08:45 AM																	0	234
08:45 AM	09:00 AM																	0	0

725 West

Southbound

North Leg Total Volume: 38

Right	Thru	Left
	32	
4	0	28

6

197

East Leg Total Volume: 813

Westbound

4	Right	
191	Thru	196
1	Left	

1800 North

Eastbound

	Left	2
581	Thru	577
	Right	2

617

West Leg Total Volume: 778

3

Left	Thru	Right
2	0	12
	14	

Northbound

South Leg Total Volume: 17

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
28	0	4	1	191	4	2	0	12	2	577	2
	32			196			14			581	
Trucks:		30%	**Trucks:**		3%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		07:00 AM to 8:00 AM				**Peak Vol:**		823	**PHF:**		0.83

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **725 West** E-W Street: **1800 North**
Date: **Tuesday, December 15, 2009**
Begin Time: **04:45 PM** Counted By: **Courtney**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:45 PM	05:00 PM	1	1	3	0	5	195	4	1	2	0	1	0	2	133	3	0	351	
05:00 PM	05:15 PM	4	0	1	1	3	181	5	2	5	0	2	0	4	117	2	0	326	
05:15 PM	05:30 PM	2	0	1	2	5	197	6	0	2	0	0	0	1	122	1	0	337	
05:30 PM	05:45 PM	1	0	3	0	2	165	4	1	2	0	1	0	1	131	1	0	312	1326
05:45 PM	06:00 PM																	0	975
06:00 PM	06:15 PM																	0	649
06:15 PM	06:30 PM																	0	312
06:30 PM	06:45 PM																	0	0

725 West

Southbound

North Leg Total Volume:	Right	Thru	Left
40		17	
	8	1	8

23

East Leg Total Volume: 1371			Westbound
16	Right		
782	Thru	818	
20	Left		

794

1800 North

Eastbound	Left	7
548	Thru	533
	Right	8

West Leg Total Volume: 1342

29

553

Left	Thru	Right
4	0	12
	16	

Northbound

South Leg Total Volume: 45

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8	1	8	20	782	16	4	0	12	7	533	8
	17			818			16			548	
Trucks:		18%	Trucks:		1%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:45 PM to 5:45 PM				Peak Vol:		1399	PHF:		0.94

TRAFFIC COUNT SUMMARY

HORRCKS ENGINEERS

City: **Clinton**
N-S Street: **810 West** E-W Street: **1800 North**
Date: **Tuesday, November 24, 2009**
Begin Time: **07:00 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:00 AM	07:15 AM	4	1	5	0	1	32	1	0	5	0	0	0	2	164	6	4	225	
07:15 AM	07:30 AM	0	0	7	0	1	49	1	0	5	0	0	0	0	135	1	0	199	
07:30 AM	07:45 AM	4	0	7	0	2	63	0	2	4	1	4	0	2	162	0	0	251	
07:45 AM	08:00 AM	2	0	6	0	3	80	0	1	1	1	0	0	0	143	0	0	237	912
08:00 AM	08:15 AM	3	0	3	0	3	50	0	0	0	0	9	0	2	114	2	2	188	875
08:15 AM	08:30 AM	3	0	5	0	1	53	0	0	5	0	4	1	4	116	5	0	197	873
08:30 AM	08:45 AM	4	0	0	0	2	90	1	1	4	0	12	0	4	136	5	0	259	881
08:45 AM	09:00 AM	2	1	2	0	0	67	1	1	0	1	2	0	2	102	1	0	182	826

810 West

Southbound: Right 11, Thru 1, Left 27; total 39
16

North Leg Total Volume: 55

East Leg Total Volume: 929
Westbound: Right 7; Thru 237; Left 2; total 246

252

1800 North

Eastbound: Left 7; Thru 640; Right 4; total 651

683

West Leg Total Volume: 903

7

Northbound: Left 4, Thru 2, Right 16; total 22

South Leg Total Volume: 29

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
27	1	11	2	237	7	4	2	16	7	640	4
	39			246			22			651	
Trucks:		0%	**Trucks:**		1%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:			07:00 AM to 8:00 AM			**Peak Vol:**		958	**PHF:**		0.90

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **810 West**　　E-W Street: **1800 North**
Date: **Thursday, November 19, 2009**
Begin Time: **04:00 PM**　　Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	6	0	5	0	3	187	3	1	3	0	4	0	2	125	7	1	347	
04:15 PM	04:30 PM	8	0	2	0	6	156	3	1	4	0	1	0	5	108	2	0	296	
04:30 PM	04:45 PM	2	0	0	0	5	164	1	1	2	1	4	0	4	131	7	1	323	
04:45 PM	05:00 PM	10	0	1	0	6	190	4	1	0	1	1	0	3	112	5	0	334	1300
05:00 PM	05:15 PM	7	0	0	0	5	159	2	0	1	0	3	0	5	139	8	2	331	1284
05:15 PM	05:30 PM	4	1	4	0	9	186	3	4	1	1	4	0	5	115	2	0	339	1327
05:30 PM	05:45 PM	5	0	2	0	2	202	3	1	3	1	3	0	8	107	4	1	342	1346
05:45 PM	06:00 PM	10	1	3	0	5	168	5	0	5	0	2	0	3	115	2	0	319	1331

810 West

Southbound

North Leg Total Volume:	Right	Thru	Left	
		36		46
82	28	1	7	

821

East Leg Total Volume: 1330　**Westbound**

23	Right	
781	Thru	817
13	Left	

1800 North

Eastbound

	Left	20
543	Thru	501
	Right	22

West Leg Total Volume: 1364

513

	Left	Thru	Right
36	12	3	5
		20	

Northbound

South Leg Total Volume: 56

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7	1	28	13	781	23	12	3	5	20	501	22
	36			817			20			543	
Trucks:		0%	Trucks:		1%	Trucks:		0%	Trucks:		1%
Peak Hour:		04:45 PM to 5:45 PM				Peak Vol:		1416	PHF:		0.98

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **925 West** E-W Street: **1800 North**
Date: **Thursday, December 17, 2009**
Begin Time: **08:00 AM** Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
08:00 AM	08:15 AM	3	1	10	0	7	57	0	1	1	0	0	0	1	150	2	1	234	
08:15 AM	08:30 AM	6	0	4	0	2	71	0	1	0	1	0	0	0	123	1	2	211	
08:30 AM	08:45 AM	2	1	4	0	3	66	0	0	2	0	4	0	1	95	4	1	183	
08:45 AM	09:00 AM	4	0	0	0	1	80	0	2	6	1	5	0	3	108	4	0	214	842
09:00 AM	09:15 AM																	0	608
09:15 AM	09:30 AM																	0	397
09:30 AM	09:45 AM																	0	214
09:45 AM	10:00 AM																	0	0

925 West

Southbound

North Leg Total Volume: 65
Right 16 | Thru 2 (37) | Left 19
28

East Leg Total Volume: 838 — **Westbound**
14 Right
290 Thru 304
0 Left

316

1800 North

Eastbound
Left 12
522 Thru 505
Right 5
West Leg Total Volume: 838

534

7

Left 10 | Thru 2 | Right 10
22
Northbound
South Leg Total Volume: 29

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
19	2	16	0	290	14	10	2	10	12	505	5
	37			304			22			522	
Trucks:		0%	**Trucks:**		1%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:		08:00 AM to 9:00 AM				**Peak Vol:**		885	**PHF:**		0.89

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **925 West** E-W Street: **1800 North**
Date: **Thursday, December 17, 2009**
Begin Time: **04:45 PM** Counted By: **Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
04:45 PM	05:00 PM	6	1	6	0	2	186	2	1	2	0	4	0	4	133	8	4	359	
05:00 PM	05:15 PM	3	0	2	0	1	192	0	0	1	0	1	0	3	153	4	0	360	
05:15 PM	05:30 PM	5	0	4	0	6	159	0	1	6	0	0	0	2	158	9	0	350	
05:30 PM	05:45 PM	1	0	1	0	12	194	2	0	4	0	2	0	2	133	3	0	354	1423
05:45 PM	06:00 PM																	0	1064
06:00 PM	06:15 PM																	0	704
06:15 PM	06:30 PM																	0	354
06:30 PM	06:45 PM																	0	0

925 West

Southbound: Right 16, Thru 1, Left 14; total 31
North Leg Total Volume: 78
47
798

East Leg Total Volume: 1441
Westbound: Right 22; Thru 775 (801); Left 4

1800 North
Eastbound: Left 25; Thru 612 (649); Right 12
West Leg Total Volume: 1447
17

Northbound: Left 7, Thru 0, Right 14; total 21
South Leg Total Volume: 38
640

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
14	1	16	4	775	22	7	0	14	25	612	12
	31			801			21			649	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		1%
Peak Hour:		04:45 PM to 5:45 PM				Peak Vol:		1502	PHF:		0.98

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1000 West** E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **07:00 AM** Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:00 AM	07:15 AM	9	19	13	0	3	40	8	1	12	9	11	0	7	103	0	0	235	
07:15 AM	07:30 AM	5	11	26	0	2	31	7	1	9	18	3	0	9	100	0	0	222	
07:30 AM	07:45 AM	3	8	26	0	12	43	6	1	10	15	14	0	9	107	5	1	260	
07:45 AM	08:00 AM	4	25	33	0	13	41	6	1	16	20	16	0	5	112	4	0	296	1013
08:00 AM	08:15 AM	3	20	26	0	13	70	6	2	19	20	14	0	15	99	4	2	313	1091
08:15 AM	08:30 AM	7	12	9	0	8	64	3	1	8	13	12	0	7	79	3	0	226	1095
08:30 AM	08:45 AM	10	14	13	0	5	67	11	0	14	25	20	0	9	78	6	1	273	1108
08:45 AM	09:00 AM	13	14	19	0	5	87	15	1	40	27	26	0	29	92	7	0	375	1187

1000 West

Southbound
North Leg Total Volume: 314
Right 35 | Thru 64 (170) | Left 71
144

Westbound
East Leg Total Volume: 901
33 Right
305 Thru 375
37 Left

416

1800 North
Eastbound
Left 21
454 Thru 369
Right 64
West Leg Total Volume: 870

526

165

76 Left | 90 Thru (252) | 86 Right
Northbound
South Leg Total Volume: 417

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
71	64	35	37	305	33	76	90	86	21	369	64
	170			375			252			454	
Trucks:		0%	**Trucks:**		1%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:			08:00 AM to 9:00 AM			**Peak Vol:**		1251	**PHF:**		0.79

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1000 West** E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **04:00 PM** Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	18	23	11	0	13	161	13	1	10	38	29	0	16	107	14	1	455	
04:15 PM	04:30 PM	13	15	10	0	11	152	19	0	13	41	28	0	19	112	6	0	439	
04:30 PM	04:45 PM	14	21	12	0	14	147	11	0	16	38	35	0	15	99	10	0	432	
04:45 PM	05:00 PM	14	21	17	0	21	198	9	2	12	39	24	0	18	114	15	1	505	1831
05:00 PM	05:15 PM	11	21	12	0	18	161	7	0	19	48	36	0	12	101	13	1	460	1836
05:15 PM	05:30 PM	14	25	12	0	11	176	15	1	13	28	36	0	22	113	10	0	476	1873
05:30 PM	05:45 PM	14	23	11	0	15	171	17	0	12	29	14	0	22	102	13	1	444	1885
05:45 PM	06:00 PM	15	17	11	0	8	121	8	0	14	18	19	0	22	104	7	0	364	1744

1000 West

Southbound

North Leg Total Volume: 482	Right	Thru	Left		276
		206			
	56	95	55		

921

East Leg **Total Volume:** 1438 — **Westbound**

69	Right	
748	Thru	868
51	Left	

1800 North

Eastbound

	Left	54
588	Thru	456
	Right	78

West Leg **Total Volume:** 1509

224

570

Left	Thru	Right
117	153	59
	329	

Northbound

South Leg **Total Volume:** 553

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
55	95	56	51	748	69	117	153	59	54	456	78
	206			868			329			588	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:	04:45 PM to 5:45 PM					**Peak Vol:**		1991	**PHF:**		0.93

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1200 and 1220 West** E-W Street: **1800 North**
Date: **Thursday, December 03, 2009**
Begin Time: **07:00 AM** Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:00 AM	07:15 AM	4	0	3	0	1	47	0	0	5	0	0	0	1	90	0	0	151	
07:15 AM	07:30 AM	3	0	3	0	0	43	0	1	5	0	0	0	0	141	1	0	197	
07:30 AM	07:45 AM	1	0	1	0	1	48	0	3	0	0	2	0	1	124	2	1	184	
07:45 AM	08:00 AM	2	0	5	0	1	51	2	1	4	0	0	0	0	131	0	0	197	729
08:00 AM	08:15 AM	3	0	5	0	2	74	2	1	1	0	0	0	0	108	1	2	199	777
08:15 AM	08:30 AM	4	0	1	0	0	75	0	2	2	0	0	0	0	98	1	3	186	766
08:30 AM	08:45 AM	1	0	4	0	1	67	1	1	5	0	0	0	0	115	3	0	198	780
08:45 AM	09:00 AM	4	0	1	0	0	106	0	1	13	0	2	0	1	147	0	2	277	860

1200 and 1220 West

Southbound
North Leg Total Volume: 33
Right 13 | Thru 0 | Left 12
25
8

East Leg Total Volume: 877
Westbound
3 **Right**
341 **Thru** 347
3 **Left**

356

1800 North

Eastbound
Left 5
502 **Thru** 496
Right 1
West Leg Total Volume: 858

530

4

2 Left | 0 Thru | 22 Right
24
Northbound
South Leg Total Volume: 28

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
12	0	13	3	341	3	2	0	22	5	496	1
25			347			24			502		
Trucks:		0%	**Trucks:**		2%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:	08:00 AM to 9:00 AM					**Peak Vol:**		898	**PHF:**		0.76

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1200 and 1220 West**   E-W Street: **1800 North**
Date: **Thursday, December 03, 2009**
Begin Time: **04:00 PM**   Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Total	Hourly
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13	All Moves	Totals
04:00 PM	04:15 PM	2	0	0	0	9	192	1	1	2	0	0	0	1	136	7	1	352	
04:15 PM	04:30 PM	3	0	2	0	4	175	4	1	3	0	2	0	1	135	4	0	334	
04:30 PM	04:45 PM	4	0	3	0	2	169	1	0	1	0	1	0	1	131	2	0	315	
04:45 PM	05:00 PM	3	0	1	0	6	213	1	1	4	0	1	0	2	119	3	1	355	1356
05:00 PM	05:15 PM	1	0	3	0	1	186	0	0	3	0	1	0	0	149	2	1	347	1351
05:15 PM	05:30 PM	0	0	0	0	1	196	7	1	1	0	1	0	1	127	1	0	336	1353
05:30 PM	05:45 PM	1	0	5	0	6	243	2	0	0	0	1	0	1	153	5	0	417	1455
05:45 PM	06:00 PM																	0	1100

1200 and 1220 West

Southbound

North Leg Total Volume: 42

	Right	Thru	Left
		15	
Southbound	5	0	10

27

East Leg Total Volume: 1513

Westbound

15	Right	
888	Thru	914
11	Left	

897

1800 North

Eastbound

	Left	12
597	Thru	581
	Right	4

599

West Leg Total Volume: 1494

15

	Left	Thru	Right
Northbound	4	0	8
		12	

Northbound

South Leg Total Volume: 27

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
10	0	5	11	888	15	4	0	8	12	581	4
	15			914			12			597	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:	04:45 PM to 5:45 PM					**Peak Vol:**		1538	**PHF:**		0.87

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **1300 West** E-W Street: **1800 North**
Date: **Wednesday, December 16, 2009**
Begin Time: **08:00 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
08:00 AM	08:15 AM	0	0	0	0	0	62	0	1	1	0	0	0	0	121	0	0	185	
08:15 AM	08:30 AM	0	0	0	0	0	83	2	0	7	0	0	0	0	101	0	0	193	
08:30 AM	08:45 AM	0	0	0	0	0	91	1	1	9	0	1	0	0	122	0	1	226	
08:45 AM	09:00 AM	0	0	0	0	0	82	1	3	0	0	0	0	0	106	0	2	194	798
09:00 AM	09:15 AM																	0	613
09:15 AM	09:30 AM																	0	420
09:30 AM	09:45 AM																	0	194
09:45 AM	10:00 AM																	0	0

1300 West

Southbound

North Leg Total Volume: 0

Right	Thru	Left
	0	
0	0	0

0

East Leg Total Volume: 836 — **Westbound**

0	Right	
337	Thru	341
4	Left	

338

1800 North

Eastbound

	Left	0
477	Thru	477
	Right	0

West Leg Total Volume: 815

495

4

Left	Thru	Right
1	0	18
	19	

Northbound

South Leg Total Volume: 23

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	4	337	0	1	0	18	0	477	0
	0			341			19			477	
Trucks:		0%	**Trucks:**		2%	**Trucks:**		0%	**Trucks:**		1%
Peak Hour:			08:00 AM to 9:00 AM			**Peak Vol:**		837	**PHF:**		0.87

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **1300 West** E-W Street: **1800 North**
Date: **Wednesday, December 16, 2009**
Begin Time: **04:45 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
04:45 PM	05:00 PM	0	0	0	0	0	202	4	1	1	0	1	0	0	170	0	0	379	
05:00 PM	05:15 PM	0	0	0	0	0	224	5	0	1	0	1	0	0	162	0	1	394	
05:15 PM	05:30 PM	0	0	0	0	0	196	6	0	2	0	0	0	5	165	0	2	376	
05:30 PM	05:45 PM	0	0	0	0	0	245	4	1	4	0	2	0	0	153	0	0	409	1558
05:45 PM	06:00 PM																	0	1179
06:00 PM	06:15 PM																	0	785
06:15 PM	06:30 PM																	0	409
06:30 PM	06:45 PM																	0	0

1300 West

Southbound

North Leg Total Volume:	Right	Thru	Left
0	0	0	0

Southbound total: 0 / 0

East Leg Total Volume: 1636 — **Westbound**

0	Right	
919	Thru	939
20	Left	

923

1800 North

Eastbound

	Left	0
694	Thru	689
	Right	5

West Leg Total Volume: 1617

25

697

Northbound

Left	Thru	Right
4	0	8
	12	

South Leg Total Volume: 37

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	20	919	0	4	0	8	0	689	5
	0			939			12			694	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:			04:45 PM to 5:45 PM			Peak Vol:		1645	PHF:		0.95

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1400 West** E-W Street: **1800 North**
Date: **Wednesday, December 16, 2009**
Begin Time: **08:00 AM** Counted By: **Courtney**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
08:00 AM	08:15 AM	0	0	0	0	0	88	3	0	1	0	2	1	1	117	0	0	213	
08:15 AM	08:30 AM	0	0	0	0	0	62	0	0	1	0	1	0	1	113	0	0	178	
08:30 AM	08:45 AM	0	0	0	0	0	88	0	0	2	0	1	0	1	102	0	1	195	
08:45 AM	09:00 AM	0	0	0	0	0	90	0	0	3	0	1	2	0	117	0	0	213	799
09:00 AM	09:15 AM																	0	586
09:15 AM	09:30 AM																	0	408
09:30 AM	09:45 AM																	0	213
09:45 AM	10:00 AM																	0	0

1400 West

Southbound

North Leg Total Volume: 0

Right	**Thru**	**Left**
	0	
0	0	0

0

East Leg Total Volume: 834 **Westbound**

0	**Right**	
348	**Thru**	351
3	**Left**	

353

1800 North

Eastbound

	Left	0
479	**Thru**	476
	Right	3

West Leg Total Volume: 832

483

6

Left	**Thru**	**Right**
5	0	7
	12	

Northbound

South Leg Total Volume: 18

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	0	3	348	0	5	0	7	0	476	3
	0			351			12			479	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		25%	**Trucks:**		0%
Peak Hour:	08:00 AM to 9:00 AM					**Peak Vol:**		842	**PHF:**		0.93

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1400 West**
E-W Street: **1800 North**
Date: **Wednesday, December 16, 2009**
Begin Time: **04:45 PM**
Counted By: **Courtney**
Interval Length: **15 min**

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
04:45 PM	05:00 PM	0	0	0	0	0	218	2	0	3	0	2	0	0	163	0	0	388	
05:00 PM	05:15 PM	0	0	0	0	0	199	1	0	1	0	2	1	2	177	0	0	383	
05:15 PM	05:30 PM	0	0	0	0	0	242	1	0	1	0	0	0	0	152	0	1	397	
05:30 PM	05:45 PM	0	0	0	0	0	182	0	0	1	0	4	0	0	170	0	0	357	1525
05:45 PM	06:00 PM																	0	1137
06:00 PM	06:15 PM																	0	754
06:15 PM	06:30 PM																	0	357
06:30 PM	06:45 PM																	0	0

1400 West

Southbound
North Leg Total Volume: 0
Right 0 | Thru 0 (0) | Left 0
0

East Leg Total Volume: 1603
Westbound
0 Right
891 Thru 895
4 Left

899

1800 North
Eastbound
Left 0
704 Thru 702
Right 2
West Leg Total Volume: 1603

708

6

8 Left | 0 Thru 14 | 6 Right
Northbound
South Leg Total Volume: 20

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	4	891	0	8	0	6	0	702	2
	0			895			14			704	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		7%	**Trucks:**		0%
Peak Hour:		04:45 PM to 5:45 PM				**Peak Vol:**		1613	**PHF:**		0.96

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1500 West** E-W Street: **1800 North**
Date: **Wednesday, November 25, 2009**
Begin Time: **07:00 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB					
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	7	2	2	0	2	35	1	1	7	2	2	0	1	94	2	0	158	
07:15 AM	07:30 AM	5	4	3	0	2	40	3	1	4	2	1	0	2	83	6	2	158	
07:30 AM	07:45 AM	12	3	4	0	3	51	1	3	5	4	4	0	5	73	4	1	173	
07:45 AM	08:00 AM	3	4	5	0	4	53	1	1	5	1	4	0	2	71	3	2	159	648
08:00 AM	08:15 AM	5	4	7	0	0	41	0	1	4	1	7	0	3	81	4	1	159	649
08:15 AM	08:30 AM	11	3	3	0	2	71	0	0	5	2	3	0	5	86	5	2	198	689
08:30 AM	08:45 AM	8	1	2	0	3	61	2	0	3	0	2	0	6	123	5	2	218	734
08:45 AM	09:00 AM	10	3	1	0	3	93	1	2	1	3	2	0	5	86	5	2	217	792

1500 West

Southbound

North Leg Total Volume: 96

Right	Thru	Left
	62	
36	12	14

34

East Leg Total Volume: 720

Westbound

8	Right	
282	Thru	293
3	Left	

333

1800 North

Eastbound

	Left	20
439	Thru	399
	Right	20

West Leg Total Volume: 772

427

35

Left	Thru	Right
15	6	14
	35	

South Leg Total Volume: 70

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
14	12	36	3	282	8	15	6	14	20	399	20
	62			293			35			439	
Trucks:		0%	**Trucks:**		1%	**Trucks:**		0%	**Trucks:**		2%
Peak Hour:		08:00 AM to 9:00 AM				**Peak Vol:**		829	**PHF:**		0.90

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1500 West** E-W Street: **1800 North**
Date: **Wednesday, November 25, 2009**
Begin Time: **04:00 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	21	5	6	0	22	174	3	1	5	3	4	0	15	146	18	1	424	
04:15 PM	04:30 PM	23	2	3	0	12	176	7	1	8	4	3	0	21	133	17	1	411	
04:30 PM	04:45 PM	20	1	3	0	9	146	10	0	8	4	3	0	17	140	12	0	373	
04:45 PM	05:00 PM	25	3	2	0	10	192	7	0	8	1	2	0	19	145	23	0	437	1645
05:00 PM	05:15 PM	16	3	3	0	9	184	10	0	8	5	2	0	16	119	20	0	395	1616
05:15 PM	05:30 PM	23	1	3	0	14	218	8	1	3	2	0	0	13	158	23	0	467	1672
05:30 PM	05:45 PM	18	6	3	0	7	188	3	0	7	3	5	0	17	143	23	0	423	1722
05:45 PM	06:00 PM	25	4	1	0	7	190	7	0	7	0	1	1	21	141	16	0	421	1706

1500 West

Southbound

North Leg Total Volume: 261

	Right	Thru	Left
		113	
Southbound	87	14	12

148

East Leg Total Volume: 1540

Westbound

42	Right	
829	Thru	901
30	Left	

926

1800 North

Eastbound

	Left	94
762	Thru	599
	Right	69

West Leg Total Volume: 1688

113

639

	Left	Thru	Right
	10	12	28
Northbound		50	

South Leg Total Volume: 163

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
12	14	87	30	829	42	10	12	28	94	599	69
	113			901			50			762	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		04:45 PM to 5:45 PM				**Peak Vol:**		1826	**PHF:**		0.92

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1750 West** E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **07:00 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	0	0	0	0	0	46	6	2	8	0	5	1	3	99	0	0	170	
07:15 AM	07:30 AM	0	0	0	0	0	51	8	0	5	0	2	0	0	100	0	0	166	
07:30 AM	07:45 AM	0	0	0	0	0	54	8	2	6	0	3	0	3	119	0	0	195	
07:45 AM	08:00 AM	0	0	0	0	0	64	8	2	12	0	3	0	0	112	0	2	203	734
08:00 AM	08:15 AM	0	0	0	0	0	60	8	0	11	0	0	1	4	104	0	0	188	752
08:15 AM	08:30 AM	0	0	0	0	0	75	8	1	13	0	4	1	7	79	0	1	189	775
08:30 AM	08:45 AM	0	0	0	0	0	79	10	1	13	0	4	0	11	126	0	0	244	824
08:45 AM	09:00 AM	0	0	0	0	0	96	7	0	8	0	6	2	5	98	0	0	222	843

1750 West

Southbound
North Leg Total Volume: 0
Right 0 | 0 **Thru** 0 | **Left** 0
0

East Leg Total Volume: 843
Westbound
0 **Right**
329 **Thru** 364
35 **Left**

344

1800 North

Eastbound
Left 0
460 **Thru** 431
Right 29
West Leg Total Volume: 804

479

64

15 **Left** | 0 **Thru** 63 | 48 **Right**
Northbound
South Leg Total Volume: 127

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
0	0	0	35	329	0	15	0	48	0	431	29
	0			364			63			460	
Trucks:		0%	**Trucks:**		1%	**Trucks:**		7%	**Trucks:**		0%
Peak Hour:			08:00 AM to 9:00 AM			**Peak Vol:**		887	**PHF:**		0.86

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **1750 West** E-W Street: **1800 North**
Date: **Wednesday, December 02, 2009**
Begin Time: **04:00 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	0	0	0	0	0	182	10	1	21	0	7	1	2	177	1	1	403	
04:15 PM	04:30 PM	0	0	0	0	0	187	4	0	12	0	9	0	4	148	0	0	364	
04:30 PM	04:45 PM	0	0	0	0	0	172	13	0	21	0	6	0	2	163	0	0	377	
04:45 PM	05:00 PM	0	0	0	0	0	219	14	2	14	0	7	1	6	191	0	0	454	1598
05:00 PM	05:15 PM	0	0	0	0	0	198	15	0	16	0	8	1	5	174	0	0	417	1612
05:15 PM	05:30 PM	0	0	0	0	0	199	4	1	19	0	6	0	4	181	0	0	414	1662
05:30 PM	05:45 PM	0	0	0	0	0	216	6	0	10	0	6	1	6	169	0	0	414	1699
05:45 PM	06:00 PM	0	0	0	0	0	149	7	0	16	0	9	0	4	141	0	0	326	1571

1750 West

Southbound

North Leg Total Volume:	Right	Thru	Left	
		0		0
0	0	0	0	

911

East Leg Total Volume: 1744		
0	Right	
882	Thru	923
41	Left	

Westbound

1800 North

Eastbound

	Left	0
780	Thru	758
	Right	22

West Leg Total Volume: 1691

821

63

29	0	63
Left	Thru	Right
	92	

Northbound

South Leg Total Volume: 155

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	0	41	882	0	29	0	63	0	758	22
	0			923			92			780	
Trucks:		0%	Trucks:		0%	Trucks:		3%	Trucks:		0%
Peak Hour:		04:45 PM to 5:45 PM				Peak Vol:		1795	PHF:		0.93

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **East Walmart Access** E-W Street: **1800 North**
Date: **Thursday, December 17, 2009**
Begin Time: **07:00 AM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	0	0	3	0	0	29	10	1	12	0	5	0	8	93	1	0	162	
07:15 AM	07:30 AM	1	0	3	0	3	42	7	2	13	0	1	0	7	87	2	2	170	
07:30 AM	07:45 AM	1	0	3	1	5	47	12	1	9	0	5	0	10	84	1	0	178	
07:45 AM	08:00 AM	4	0	3	1	4	49	8	1	12	0	4	0	10	90	1	1	187	697
08:00 AM	08:15 AM	4	2	3	0	2	55	12	1	14	0	9	0	8	101	3	0	214	749
08:15 AM	08:30 AM	1	0	3	0	8	69	16	3	10	1	6	0	19	109	6	0	251	830
08:30 AM	08:45 AM	4	3	4	0	8	93	41	5	16	1	3	0	21	109	4	0	312	964
08:45 AM	09:00 AM	4	3	4	0	2	71	29	2	13	1	8	0	25	79	5	2	248	1025

East Walmart Access

Southbound

North Leg Total Volume:	Right	Thru	Left		
80	14	8	15		
		37		43	

East Leg Total Volume: 923		**Westbound**
21	Right	
305	Thru	430
104	Left	

347

1800 North

Eastbound

	Left	19
518	Thru	422
	Right	77

West Leg Total Volume: 865

189

493

28	3	56
Left	Thru	Right
	87	

Northbound

South Leg Total Volume: 276

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
15	8	14	104	305	21	28	3	56	19	422	77
	37			430			87			518	
Trucks:		0%	**Trucks:**		3%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		08:00 AM to 9:00 AM				**Peak Vol:**		1072	**PHF:**		0.81

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **East Walmart Access** E-W Street: **1800 North**
Date: **Tuesday, December 08, 2009**
Begin Time: **04:00 PM** Counted By: **Hrvoje**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	17	2	2	0	14	128	44	0	59	1	13	0	32	91	14	0	417	
04:15 PM	04:30 PM	23	6	3	0	17	112	65	0	42	1	14	0	24	106	9	1	423	
04:30 PM	04:45 PM	26	3	3	0	23	108	63	0	58	2	5	0	31	83	17	0	422	
04:45 PM	05:00 PM	29	4	3	0	20	131	54	0	66	1	17	0	30	119	14	0	488	1750
05:00 PM	05:15 PM	29	0	9	0	13	154	66	1	50	2	15	0	33	104	11	2	489	1822
05:15 PM	05:30 PM	21	0	6	0	23	162	44	0	56	3	13	0	30	103	4	0	465	1864
05:30 PM	05:45 PM	18	2	5	0	14	146	48	1	66	1	15	0	26	111	18	0	471	1913
05:45 PM	06:00 PM	23	3	12	0	19	130	49	1	52	0	10	0	27	115	9	1	451	1876

East Walmart Access

Southbound: Right 103, Thru 6, Left 24; total 133; 131

North Leg Total Volume: 264

796

East Leg Total Volume: 1667

Westbound: Right 74, Thru 629, Left 225; 928

1800 North

Eastbound: Left 50, Thru 463, Right 126; 639

West Leg Total Volume: 1435

357

739

Northbound: Left 64, Thru 7, Right 252; 323

South Leg Total Volume: 680

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
24	6	103	225	629	74	64	7	252	50	463	126
	133			928			323			639	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		04:45 PM to 5:45 PM				**Peak Vol:**		2023	**PHF:**		0.98

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **West Walmart Access** E-W Street: **1800 North**
Date: **Tuesday, November 24, 2009**
Begin Time: **07:00 AM** Counted By: **Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	0	0	0	0	0	18	1	0	1	0	0	0	0	91	0	1	112	
07:15 AM	07:30 AM	0	0	0	0	1	40	1	0	0	0	0	0	2	101	0	0	145	
07:30 AM	07:45 AM	0	0	0	0	0	46	3	0	0	0	0	0	0	109	0	0	158	
07:45 AM	08:00 AM	0	0	0	0	0	51	0	0	0	0	0	0	3	97	0	0	151	566
08:00 AM	08:15 AM	0	0	0	0	0	53	0	0	1	0	0	0	2	114	0	0	170	624
08:15 AM	08:30 AM	0	0	0	0	0	66	1	0	0	0	1	0	2	109	0	0	179	658
08:30 AM	08:45 AM	0	0	0	0	0	49	4	1	2	0	1	0	3	83	0	0	143	643
08:45 AM	09:00 AM	0	0	0	0	0	65	3	0	5	0	0	0	7	116	0	0	196	688

West Walmart Access

Southbound

North Leg Total Volume:	**Right**	**Thru**	**Left**
0	0	0	0

SB total: 0 (Thru header shows 0); exiting north: 0

East Leg Total Volume: 710		**Westbound**
0	**Right**	
247	**Thru**	255
8	**Left**	

249

1800 North

Eastbound		
	Left	0
462	**Thru**	447
	Right	15

West Leg Total Volume: 711

455

23

2	0	8
Left	**Thru**	**Right**
	10	

Northbound

South Leg Total Volume: 33

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			**Westbound**			**Northbound**			**Eastbound**		
Left	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**
0	0	0	8	247	0	2	0	8	0	447	15
	0			255			10			462	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:	08:00 AM to 9:00 AM					**Peak Vol:**		727	**PHF:**		0.87

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **West Walmart Access** E-W Street: **1800 North**
Date: **Tuesday, November 24, 2009**
Begin Time: **04:00 PM** Counted By: **Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	0	0	0	0	0	148	14	1	16	0	8	0	11	121	0	0	319	
04:15 PM	04:30 PM	0	0	0	0	0	135	11	0	19	0	10	0	9	148	0	0	332	
04:30 PM	04:45 PM	0	0	0	0	0	157	12	0	16	0	7	0	19	121	0	0	332	
04:45 PM	05:00 PM	0	0	0	0	0	156	12	0	10	0	5	0	14	121	0	0	318	1301
05:00 PM	05:15 PM	0	0	0	0	0	183	17	0	12	0	5	0	14	144	0	0	375	1357
05:15 PM	05:30 PM	0	0	0	0	0	157	9	0	18	0	9	0	11	137	0	0	341	1366
05:30 PM	05:45 PM	0	0	0	0	0	173	10	0	17	0	4	0	16	149	0	1	370	1404
05:45 PM	06:00 PM	0	0	0	0	0	167	12	0	11	0	4	0	18	118	0	0	330	1416

West Walmart Access

Southbound

North Leg Total Volume: 0

Right	Thru	Left
	0	
0	0	0

0

East Leg Total Volume: 1414 **Westbound**

0	Right	
721	Thru	772
51	Left	

744

1800 North

Eastbound

	Left	0
644	Thru	581
	Right	63

642

West Leg Total Volume: 1388

114

Left	Thru	Right
23	0	61
	84	

Northbound

South Leg Total Volume: 198

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	0	51	721	0	23	0	61	0	581	63
	0			772			84			644	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		05:00 PM to 6:00 PM				Peak Vol:		1500	PHF:		0.94

TRAFFIC COUNT SUMMARY

City: **Clinton**
N-S Street: **2000 West**
E-W Street: **1800 North**
Date: **Tuesday, December 01, 2009**
Begin Time: **07:00 AM**
Counted By: **Hrvoje and Sandra**
Interval Length: **15 min**

HORROCKS ENGINEERS

Time Interval		SB Right 2	SB Thru 3	SB Left 4	SB Trucks 1	WB Right 6	WB Thru 7	WB Left 8	WB Trucks 5	NB Right 10	NB Thru 11	NB Left 12	NB Trucks 9	EB Right 14	EB Thru 15	EB Left 16	EB Trucks 13	Total All Moves	Hourly Totals
07:00 AM	07:15 AM	10	59	22	0	10	14	8	0	11	47	5	1	35	70	26	0	318	
07:15 AM	07:30 AM	11	84	19	0	16	15	5	0	14	67	10	0	28	72	30	0	371	
07:30 AM	07:45 AM	9	64	26	1	16	12	7	2	19	89	12	5	24	40	31	0	356	
07:45 AM	08:00 AM	13	102	36	1	15	16	14	0	18	86	12	0	19	63	34	1	429	1474
08:00 AM	08:15 AM	18	71	31	0	17	38	14	0	18	82	15	1	13	53	29	0	400	1556
08:15 AM	08:30 AM	6	74	35	3	16	21	12	0	17	53	17	1	10	57	25	1	345	1530
08:30 AM	08:45 AM	14	88	38	0	9	44	15	0	26	62	14	1	20	59	36	0	426	1600
08:45 AM	09:00 AM	10	77	36	0	33	40	19	3	27	88	23	2	38	85	44	1	526	1697

2000 West

Southbound
528
Right 51 | Thru 329 | Left 148

North Leg Total Volume: 1052

524

East Leg Total Volume: 806

Westbound
80 Right
152 Thru 296
64 Left

276

1800 North

Eastbound
Left 142
497 Thru 269
Right 86

West Leg Total Volume: 773

510

479

73 Left | 302 Thru 468 | 93 Right
Northbound

South Leg Total Volume: 947

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
148	329	51	64	152	80	73	302	93	142	269	86
	528			296			468			497	
Trucks:		1%	**Trucks:**		1%	**Trucks:**		1%	**Trucks:**		0%
Peak Hour:		08:00 AM to 9:00 AM				**Peak Vol:**		1789	**PHF:**		0.80

TRAFFIC COUNT SUMMARY

HORROCKS ENGINEERS

City: **Clinton**
N-S Street: **2000 West** E-W Street: **1800 North**
Date: **Tuesday, December 01, 2009**
Begin Time: **04:00 PM** Counted By: **Hrvoje and Sandra**
Interval Length: **15 min**

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	18	113	48	0	38	96	24	1	38	142	63	2	34	95	46	3	761	
04:15 PM	04:30 PM	39	97	36	0	31	76	27	0	40	153	56	0	31	56	32	0	674	
04:30 PM	04:45 PM	43	107	52	2	51	78	25	0	39	115	65	1	29	69	49	0	723	
04:45 PM	05:00 PM	41	128	43	1	41	95	18	0	40	180	68	0	28	51	47	2	782	2940
05:00 PM	05:15 PM	45	150	59	0	55	98	24	0	39	162	59	0	44	62	45	0	842	3021
05:15 PM	05:30 PM	29	122	47	0	47	96	26	2	56	166	61	2	42	60	40	0	796	3143
05:30 PM	05:45 PM	33	136	66	0	40	96	24	0	57	142	49	8	42	67	45	0	805	3225
05:45 PM	06:00 PM	31	110	51	1	38	96	28	0	34	152	69	1	31	64	53	0	758	3201

2000 West

Southbound

North Leg Total Volume: 2024

Right	**Thru**	**Left**
	953	
157	568	228

1071

East Leg Total Volume: 1386

Westbound

194	**Right**	
408	**Thru**	700
98	**Left**	

816

1800 North

Eastbound

	Left	188
607	**Thru**	254
	Right	165

West Leg Total Volume: 1423

831

686

Left	**Thru**	**Right**
251	689	204
	1144	

Northbound

South Leg Total Volume: 1975

OPTIONAL Adjustment Factors	
Monthly:	1.06
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1.06

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
228	568	157	98	408	194	251	689	204	188	254	165
	953			700			1144			607	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		1%	**Trucks:**		0%
Peak Hour:	04:45 PM to 5:45 PM					**Peak Vol:**		3404	**PHF:**		0.95

Appendix D Synchro Report Sheets

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	303	423	112	360	500	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.0	5.0	6.5	6.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.40	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	741	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	329	460	122	391	543	97
RTOR Reduction (vph)	0	337	0	0	0	43
Lane Group Flow (vph)	329	123	122	391	543	54
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	27.8	27.8	81.4	81.4	67.3	67.3
Effective Green, g (s)	27.8	27.8	81.4	81.4	67.3	67.3
Actuated g/C Ratio	0.23	0.23	0.68	0.68	0.56	0.56
Clearance Time (s)	5.8	5.8	5.0	5.0	6.5	6.5
Vehicle Extension (s)	2.5	2.5	2.0	3.0	3.0	3.0
Lane Grp Cap (vph)	410	367	568	2401	1985	888
v/s Ratio Prot	c0.19		c0.01	0.11	c0.15	
v/s Ratio Perm		0.08	0.13			0.03
v/c Ratio	0.80	0.34	0.21	0.16	0.27	0.06
Uniform Delay, d1	43.5	38.4	7.0	7.0	13.7	12.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.5	0.4	0.1	0.1	0.3	0.1
Delay (s)	54.0	38.8	7.1	7.1	14.0	12.1
Level of Service	D	D	A	A	B	B
Approach Delay (s)	45.2			7.1	13.7	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	543	281	5	17	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	590	305	5	18	5
Pedestrians		1				
Lane Width (ft)		12.0				
Walking Speed (ft/s)		4.0				
Percent Blockage		0				
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	311				909	309
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311				909	309
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	99
cM capacity (veh/h)	1250				304	730

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	596	311	24
Volume Left	5	0	18
Volume Right	0	5	5
cSH	1250	1700	350
Volume to Capacity	0.00	0.18	0.07
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.1	0.0	16.0
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	16.0
Approach LOS			C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	507	239	3	1	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	551	260	3	1	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			1075			
pX, platoon unblocked						
vC, conflicting volume	263				819	261
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	263				819	261
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1301				344	777

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	554	263	5
Volume Left	3	0	1
Volume Right	0	3	4
cSH	1301	1700	621
Volume to Capacity	0.00	0.15	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	10.8
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	10.8
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	586	103	17	213	10	17	13	34	3	16	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	637	112	18	232	11	18	14	37	3	17	11
Pedestrians		6			75			14			68	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			6			1			6	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1315							
pX, platoon unblocked												
vC, conflicting volume	310			763			1061	1109	782	1208	1159	311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	310			763			1061	1109	782	1208	1159	311
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			89	92	90	97	90	98
cM capacity (veh/h)	1179			840			165	187	365	110	174	684

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	776	261	70	32
Volume Left	27	18	18	3
Volume Right	112	11	37	11
cSH	1179	840	241	217
Volume to Capacity	0.02	0.02	0.29	0.15
Queue Length 95th (ft)	2	2	29	12
Control Delay (s)	0.6	0.9	25.9	24.4
Lane LOS	A	A	D	C
Approach Delay (s)	0.6	0.9	25.9	24.4
Approach LOS			D	C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	546	4	13	294	7	1	0	10	10	1	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	593	4	14	320	8	1	0	11	11	1	8
Pedestrians		1			10			10			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	328			608			982	977	616	984	976	325
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	328			608			982	977	616	984	976	325
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	98	95	100	99
cM capacity (veh/h)	1230			962			218	243	483	215	244	715

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	605	341	12	20
Volume Left	8	14	1	11
Volume Right	4	8	11	8
cSH	1230	962	435	298
Volume to Capacity	0.01	0.01	0.03	0.07
Queue Length 95th (ft)	0	1	2	5
Control Delay (s)	0.2	0.5	13.5	17.9
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.5	13.5	17.9
Approach LOS			B	C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	659	10	3	206	11	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	716	11	3	224	12	11
Pedestrians				6	6	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			733		958	734
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			733		958	734
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	97
cM capacity (veh/h)			867		283	416

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	727	227	23
Volume Left	0	3	12
Volume Right	11	0	11
cSH	1700	867	334
Volume to Capacity	0.43	0.00	0.07
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.2	16.6
Lane LOS		A	C
Approach Delay (s)	0.0	0.2	16.6
Approach LOS			C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	682	7	13	358	8	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	741	8	14	389	9	35
Pedestrians				3	3	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			752		1166	751
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			752		1166	751
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		96	91
cM capacity (veh/h)			856		210	409

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	749	403	43
Volume Left	0	14	9
Volume Right	8	0	35
cSH	1700	856	344
Volume to Capacity	0.44	0.02	0.13
Queue Length 95th (ft)	0	1	11
Control Delay (s)	0.0	0.5	17.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.5	17.0
Approach LOS			C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	650	11	3	182	7	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	707	12	3	198	8	22
Pedestrians				7	7	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			725		924	726
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			725		924	726
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	95
cM capacity (veh/h)			872		296	419

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	718	201	29
Volume Left	0	3	8
Volume Right	12	0	22
cSH	1700	872	379
Volume to Capacity	0.42	0.00	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.2	15.3
Lane LOS		A	C
Approach Delay (s)	0.0	0.2	15.3
Approach LOS			C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	704	6	7	279	6	6	1	23	4	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	765	7	8	303	7	7	1	25	4	2	1
Pedestrians		10			17			18			9	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	319			790			1123	1123	803	1144	1123	326
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	319			790			1123	1123	803	1144	1123	326
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			96	99	93	97	99	100
cM capacity (veh/h)	1232			818			173	199	372	157	199	704

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	773	317	33	8
Volume Left	1	8	7	4
Volume Right	7	7	25	1
cSH	1232	818	295	189
Volume to Capacity	0.00	0.01	0.11	0.04
Queue Length 95th (ft)	0	1	9	3
Control Delay (s)	0.0	0.3	18.7	24.8
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.3	18.7	24.8
Approach LOS			C	C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	8	631	224	11	24	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	686	243	12	26	4
Pedestrians		4			1	
Lane Width (ft)		12.0			12.0	
Walking Speed (ft/s)		4.0			4.0	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	256				954	254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256				954	254
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				91	99
cM capacity (veh/h)	1307				285	781

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	695	255	30
Volume Left	9	0	26
Volume Right	0	12	4
cSH	1307	1700	313
Volume to Capacity	0.01	0.15	0.10
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.2	0.0	17.7
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	17.7
Approach LOS			C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	612	3	3	178	3	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	665	3	3	193	3	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			668		867	667
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			668		867	667
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	98
cM capacity (veh/h)			921		322	459

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	668	197	14
Volume Left	0	3	3
Volume Right	3	0	11
cSH	1700	921	418
Volume to Capacity	0.39	0.00	0.03
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.2	13.9
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	13.9
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	577	2	1	191	4	2	0	12	28	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	627	2	1	208	4	2	0	13	30	0	4
Pedestrians		5			1			1			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	217			630			855	853	630	864	852	220
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217			630			855	853	630	864	852	220
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	97	88	100	99
cM capacity (veh/h)	1347			951			274	294	481	264	295	813

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	632	213	15	35
Volume Left	2	1	2	30
Volume Right	2	4	13	4
cSH	1347	951	434	289
Volume to Capacity	0.00	0.00	0.04	0.12
Queue Length 95th (ft)	0	0	3	10
Control Delay (s)	0.0	0.1	13.6	19.2
Lane LOS	A	A	B	C
Approach Delay (s)	0.0	0.1	13.6	19.2
Approach LOS			B	C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	640	4	2	237	7	4	2	16	27	1	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	696	4	2	258	8	4	2	17	29	1	12
Pedestrians		3			3			3			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1005										
pX, platoon unblocked												
vC, conflicting volume	268			703			997	989	704	1003	987	267
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	268			703			997	989	704	1003	987	267
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			98	99	96	86	100	98
cM capacity (veh/h)	1292			892			215	244	435	207	244	767

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	708	267	24	42
Volume Left	8	2	4	29
Volume Right	4	8	17	12
cSH	1292	892	346	262
Volume to Capacity	0.01	0.00	0.07	0.16
Queue Length 95th (ft)	0	0	6	14
Control Delay (s)	0.2	0.1	16.2	21.4
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.1	16.2	21.4
Approach LOS			C	C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	505	5	0	290	14	10	2	10	19	2	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	549	5	0	315	15	11	2	11	21	2	17
Pedestrians		3			13			13			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		413										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	333			567			935	924	578	928	919	329
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	333			380			822	809	393	814	803	329
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			95	99	98	91	99	98
cM capacity (veh/h)	1223			971			229	256	535	233	258	709

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	567	330	24	40
Volume Left	13	0	11	21
Volume Right	5	15	11	17
cSH	1223	971	314	331
Volume to Capacity	0.01	0.00	0.08	0.12
Queue Length 95th (ft)	1	0	6	10
Control Delay (s)	0.3	0.0	17.4	17.4
Lane LOS	A		C	C
Approach Delay (s)	0.3	0.0	17.4	17.4
Approach LOS			C	C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	369	64	37	305	33	76	90	86	71	64	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.98	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1768	1863	1496	1744	1863	1546	1754	1863	1509	1767	1745	
Flt Permitted	0.56	1.00	1.00	0.53	1.00	1.00	0.69	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	1043	1863	1496	965	1863	1546	1269	1863	1509	1290	1745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	401	70	40	332	36	83	98	93	77	70	38
RTOR Reduction (vph)	0	0	47	0	0	24	0	0	71	0	29	0
Lane Group Flow (vph)	23	401	23	40	332	12	83	98	22	77	79	0
Confl. Peds. (#/hr)	2		42	30		4	12		32	2		14
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	9.0	9.0	9.0	9.0	9.0	9.0	6.4	6.4	6.4	6.4	6.4	
Effective Green, g (s)	9.0	9.0	9.0	9.0	9.0	9.0	6.4	6.4	6.4	6.4	6.4	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	343	612	491	317	612	508	296	435	352	301	408	
v/s Ratio Prot		c0.22			0.18			0.05			0.05	
v/s Ratio Perm	0.02		0.02	0.04		0.01	c0.07		0.01	0.06		
v/c Ratio	0.07	0.66	0.05	0.13	0.54	0.02	0.28	0.23	0.06	0.26	0.19	
Uniform Delay, d1	6.3	7.9	6.3	6.4	7.5	6.2	8.6	8.5	8.2	8.6	8.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	2.5	0.0	0.2	1.0	0.0	0.5	0.3	0.1	0.5	0.2	
Delay (s)	6.4	10.4	6.3	6.6	8.5	6.2	9.1	8.8	8.2	9.0	8.7	
Level of Service	A	B	A	A	A	A	A	A	A	A	A	
Approach Delay (s)		9.6			8.1			8.7			8.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	27.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	513	341	3	12	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	558	371	3	13	14
Pedestrians		1	11		12	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	1		1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1017			
pX, platoon unblocked						
vC, conflicting volume	386				964	385
vC1, stage 1 conf vol					384	
vC2, stage 2 conf vol					579	
vCu, unblocked vol	386				964	385
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1161				481	655

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	558	374	27
Volume Left	5	0	0	13
Volume Right	0	0	3	14
cSH	1161	1700	1700	558
Volume to Capacity	0.00	0.33	0.22	0.05
Queue Length 95th (ft)	0	0	0	4
Control Delay (s)	8.1	0.0	0.0	11.8
Lane LOS	A			B
Approach Delay (s)	0.1		0.0	11.8
Approach LOS				B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	496	1	3	351	2	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	539	1	3	382	2	24
Pedestrians				20	20	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				2	2	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				1157		
pX, platoon unblocked						
vC, conflicting volume			560		948	580
vC1, stage 1 conf vol					560	
vC2, stage 2 conf vol					388	
vCu, unblocked vol			560		948	580
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			994		489	497

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	540	3	382	26
Volume Left	0	3	0	2
Volume Right	1	0	0	24
cSH	1700	994	1700	497
Volume to Capacity	0.32	0.00	0.22	0.05
Queue Length 95th (ft)	0	0	0	4
Control Delay (s)	0.0	8.6	0.0	12.6
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		12.6
Approach LOS				B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	477	0	4	337	1	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	518	0	4	366	1	20
Pedestrians				5	5	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			523		898	528
vC1, stage 1 conf vol					523	
vC2, stage 2 conf vol					375	
vCu, unblocked vol			523		898	528
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1039		511	545

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	518	4	366	21
Volume Left	0	4	0	1
Volume Right	0	0	0	20
cSH	1700	1039	1700	544
Volume to Capacity	0.30	0.00	0.22	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	8.5	0.0	11.9
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.9
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	476	3	3	348	5	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	517	3	3	378	5	8
Pedestrians				5	5	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			526		909	529
vC1, stage 1 conf vol					524	
vC2, stage 2 conf vol					385	
vCu, unblocked vol			526		909	529
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1037		509	545

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	521	3	378	13
Volume Left	0	3	0	5
Volume Right	3	0	0	8
cSH	1700	1037	1700	529
Volume to Capacity	0.31	0.00	0.22	0.02
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.0	8.5	0.0	12.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		12.0
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	399	20	3	282	8	15	6	14	14	12	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	434	22	3	307	9	16	7	15	15	13	39
Pedestrians					2			1			1	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)									4			
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	316			456			848	812	448	808	818	312
vC1, stage 1 conf vol							489	489		318	318	
vC2, stage 2 conf vol							359	323		490	500	
vCu, unblocked vol	316			456			848	812	448	808	818	312
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			96	99	98	97	97	95
cM capacity (veh/h)	1243			1103			453	473	610	470	472	728

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	22	455	3	315	38	67
Volume Left	22	0	3	0	16	15
Volume Right	0	22	0	9	15	39
cSH	1243	1700	1103	1700	764	592
Volume to Capacity	0.02	0.27	0.00	0.19	0.05	0.11
Queue Length 95th (ft)	1	0	0	0	4	10
Control Delay (s)	7.9	0.0	8.3	0.0	12.4	11.9
Lane LOS	A		A		B	B
Approach Delay (s)	0.4		0.1		12.4	11.9
Approach LOS					B	B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	431	29	35	329	15	48
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	468	32	38	358	16	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			500		918	484
vC1, stage 1 conf vol					484	
vC2, stage 2 conf vol					434	
vCu, unblocked vol			500		918	484
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		97	91
cM capacity (veh/h)			1064		501	583

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	500	38	358	68
Volume Left	0	38	0	16
Volume Right	32	0	0	52
cSH	1700	1064	1700	561
Volume to Capacity	0.29	0.04	0.21	0.12
Queue Length 95th (ft)	0	3	0	10
Control Delay (s)	0.0	8.5	0.0	12.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.8		12.3
Approach LOS				B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	422	77	104	305	21	28	3	56	15	8	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	459	84	113	332	23	30	3	61	16	9	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		760										
pX, platoon unblocked				0.88			0.88	0.88	0.88	0.88	0.88	
vC, conflicting volume	354			542			1119	1122	501	1101	1153	343
vC1, stage 1 conf vol							542	542		569	569	
vC2, stage 2 conf vol							577	580		532	584	
vCu, unblocked vol	354			413			1068	1071	366	1047	1106	343
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			89			91	99	90	95	97	98
cM capacity (veh/h)	1204			1010			345	354	599	309	317	700

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	21	542	113	354	95	40
Volume Left	21	0	113	0	30	16
Volume Right	0	84	0	23	61	15
cSH	1204	1700	1010	1700	930	395
Volume to Capacity	0.02	0.32	0.11	0.21	0.10	0.10
Queue Length 95th (ft)	1	0	9	0	8	8
Control Delay (s)	8.0	0.0	9.0	0.0	13.4	15.2
Lane LOS	A		A		B	C
Approach Delay (s)	0.3		2.2		13.4	15.2
Approach LOS					B	C

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	447	15	8	247	2	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	486	16	9	268	2	9
Pedestrians				2	2	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	440					
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			504		782	498
vC1, stage 1 conf vol					496	
vC2, stage 2 conf vol					286	
vCu, unblocked vol			278		618	270
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1045		561	624

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	502	9	268	11
Volume Left	0	9	0	2
Volume Right	16	0	0	9
cSH	1700	1045	1700	780
Volume to Capacity	0.30	0.01	0.16	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.5	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.3		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	269	86	64	152	80	73	302	93	148	329	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. 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
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1548	1769	1863	1583	1770	1863	1548	1770	1863	1583
Flt Permitted	0.65	1.00	1.00	0.42	1.00	1.00	0.34	1.00	1.00	0.39	1.00	1.00
Satd. Flow (perm)	1216	1863	1548	773	1863	1583	641	1863	1548	735	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	154	292	93	70	165	87	79	328	101	161	358	55
RTOR Reduction (vph)	0	0	73	0	0	68	0	0	75	0	0	41
Lane Group Flow (vph)	154	292	20	70	165	19	79	328	26	161	358	14
Confl. Peds. (#/hr)			1	1					1			
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	20.5	14.8	14.8	20.5	14.8	14.8	23.1	17.4	17.4	23.1	17.4	17.4
Effective Green, g (s)	20.5	14.8	14.8	20.5	14.8	14.8	23.1	17.4	17.4	23.1	17.4	17.4
Actuated g/C Ratio	0.30	0.22	0.22	0.30	0.22	0.22	0.34	0.26	0.26	0.34	0.26	0.26
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	415	408	339	318	408	347	314	480	398	338	480	407
v/s Ratio Prot	c0.03	c0.16		0.02	0.09		0.02	0.18		c0.04	c0.19	
v/s Ratio Perm	0.08		0.01	0.05		0.01	0.06		0.02	0.12		0.01
v/c Ratio	0.37	0.72	0.06	0.22	0.40	0.05	0.25	0.68	0.07	0.48	0.75	0.03
Uniform Delay, d1	18.0	24.5	20.9	17.2	22.6	20.9	15.7	22.6	19.0	16.3	23.1	18.8
Progression 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
Incremental Delay, d2	0.6	5.9	0.1	0.4	0.7	0.1	0.4	4.0	0.1	1.1	6.2	0.0
Delay (s)	18.5	30.3	21.0	17.6	23.3	20.9	16.1	26.6	19.0	17.4	29.3	18.8
Level of Service	B	C	C	B	C	C	B	C	B	B	C	B
Approach Delay (s)		25.3			21.4			23.5			25.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	24.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	245	252	500	783	747	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.0	5.0	6.5	6.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1560	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.22	1.00	1.00	1.00
Satd. Flow (perm)	1770	1560	409	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	266	274	543	851	812	380
RTOR Reduction (vph)	0	224	0	0	0	158
Lane Group Flow (vph)	266	50	543	851	812	222
Confl. Peds. (#/hr)		2				
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	22.1	22.1	87.1	87.1	49.6	49.6
Effective Green, g (s)	22.1	22.1	87.1	87.1	49.6	49.6
Actuated g/C Ratio	0.18	0.18	0.73	0.73	0.41	0.41
Clearance Time (s)	5.8	5.8	5.0	5.0	6.5	6.5
Vehicle Extension (s)	2.5	2.5	2.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	287	648	2569	1463	654
v/s Ratio Prot	c0.15		c0.22	0.24	0.23	
v/s Ratio Perm		0.03	c0.39			0.14
v/c Ratio	0.82	0.18	0.84	0.33	0.56	0.34
Uniform Delay, d1	47.0	41.3	19.2	5.9	26.8	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.2	0.2	8.9	0.3	1.5	1.4
Delay (s)	61.2	41.5	28.1	6.3	28.3	25.4
Level of Service	E	D	C	A	C	C
Approach Delay (s)	51.2			14.8	27.4	
Approach LOS	D			B	C	

Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	4	516	852	15	5	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	561	926	16	5	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	942				1504	934
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	942				1504	934
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	100
cM capacity (veh/h)	728				133	322

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	565	942	7
Volume Left	4	0	5
Volume Right	0	16	1
cSH	728	1700	147
Volume to Capacity	0.01	0.55	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.2	0.0	30.6
Lane LOS	A		D
Approach Delay (s)	0.2	0.0	30.6
Approach LOS			D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	505	836	3	1	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	549	909	3	1	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			1075			
pX, platoon unblocked						
vC, conflicting volume	912				1481	910
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	912				1481	910
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	747				136	333

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	560	912	7
Volume Left	11	0	1
Volume Right	0	3	5
cSH	747	1700	268
Volume to Capacity	0.01	0.54	0.02
Queue Length 95th (ft)	1	0	2
Control Delay (s)	0.4	0.0	18.8
Lane LOS	A		C
Approach Delay (s)	0.4	0.0	18.8
Approach LOS			C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Volume (veh/h)	38	426	22	15	784	13	16	19	32	5	12	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	463	24	16	852	14	17	21	35	5	13	33
Pedestrians		3			11			8			11	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1315							
pX, platoon unblocked												
vC, conflicting volume	877			495			1500	1476	494	1517	1480	873
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	877			495			1500	1476	494	1517	1480	873
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			98			77	82	94	93	89	91
cM capacity (veh/h)	763			1062			77	116	566	73	115	345

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	528	883	73	51
Volume Left	41	16	17	5
Volume Right	24	14	35	33
cSH	763	1062	157	181
Volume to Capacity	0.05	0.02	0.47	0.28
Queue Length 95th (ft)	4	1	54	28
Control Delay (s)	1.5	0.4	46.6	32.6
Lane LOS	A	A	E	D
Approach Delay (s)	1.5	0.4	46.6	32.6
Approach LOS			E	D

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	528	6	6	851	15	3	0	3	10	1	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	574	7	7	925	16	3	0	3	11	1	13
Pedestrians					7			6			1	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	942			586			1560	1556	590	1552	1551	934
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	942			586			1560	1556	590	1552	1551	934
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			96	100	99	88	99	96
cM capacity (veh/h)	727			984			85	110	502	89	111	322

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	589	948	7	25
Volume Left	9	7	3	11
Volume Right	7	16	3	13
cSH	727	984	145	145
Volume to Capacity	0.01	0.01	0.04	0.17
Queue Length 95th (ft)	1	1	4	15
Control Delay (s)	0.3	0.2	31.0	34.8
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.2	31.0	34.8
Approach LOS			D	D

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	550	3	11	750	8	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	598	3	12	815	9	7
Pedestrians				29	29	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				2	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			630		1468	657
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			630		1468	657
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		94	99
cM capacity (veh/h)			929		136	442

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	601	827	15
Volume Left	0	12	9
Volume Right	3	0	7
cSH	1700	929	193
Volume to Capacity	0.35	0.01	0.08
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.3	25.3
Lane LOS		A	D
Approach Delay (s)	0.0	0.3	25.3
Approach LOS			D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	558	7	13	797	6	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	607	8	14	866	7	9
Pedestrians				36	36	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				3	3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			650		1541	682
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			650		1541	682
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	98
cM capacity (veh/h)			908		121	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	614	880	15
Volume Left	0	14	7
Volume Right	8	0	9
cSH	1700	908	205
Volume to Capacity	0.36	0.02	0.07
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.4	24.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.4	24.0
Approach LOS			C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	555	8	4	852	4	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	603	9	4	926	4	11
Pedestrians				3	3	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			615		1545	614
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			615		1545	614
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	98
cM capacity (veh/h)			962		125	490

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	612	930	15
Volume Left	0	4	4
Volume Right	9	0	11
cSH	1700	962	267
Volume to Capacity	0.36	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	19.3
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	19.3
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	507	17	20	831	24	6	2	17	3	2	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	551	18	22	903	26	7	2	18	3	2	3
Pedestrians					1						1	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	930			570			1529	1538	561	1546	1535	917
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	930			570			1529	1538	561	1546	1535	917
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			93	98	96	96	98	99
cM capacity (veh/h)	735			1003			92	113	526	87	113	329

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	572	951	27	9
Volume Left	2	22	7	3
Volume Right	18	26	18	3
cSH	735	1003	217	130
Volume to Capacity	0.00	0.02	0.13	0.07
Queue Length 95th (ft)	0	2	11	5
Control Delay (s)	0.1	0.6	24.0	34.6
Lane LOS	A	A	C	D
Approach Delay (s)	0.1	0.6	24.0	34.6
Approach LOS			C	D

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	14	529	785	10	13	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	575	853	11	14	14
Pedestrians		1			2	
Lane Width (ft)		12.0			12.0	
Walking Speed (ft/s)		4.0			4.0	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	866				1466	862
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	866				1466	862
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				90	96
cM capacity (veh/h)	776				138	354

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	590	864	28
Volume Left	15	0	14
Volume Right	0	11	14
cSH	776	1700	199
Volume to Capacity	0.02	0.51	0.14
Queue Length 95th (ft)	1	0	12
Control Delay (s)	0.5	0.0	26.1
Lane LOS	A		D
Approach Delay (s)	0.5	0.0	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	540	6	10	785	10	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	587	7	11	853	11	4
Pedestrians	1				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			594		1467	591
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			594		1467	591
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	99
cM capacity (veh/h)			981		139	506

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	593	864	15
Volume Left	0	11	11
Volume Right	7	0	4
cSH	1700	981	175
Volume to Capacity	0.35	0.01	0.09
Queue Length 95th (ft)	0	1	7
Control Delay (s)	0.0	0.3	27.5
Lane LOS		A	D
Approach Delay (s)	0.0	0.3	27.5
Approach LOS			D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	533	8	20	782	16	4	0	12	8	1	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	579	9	22	850	17	4	0	13	9	1	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	867			588			1510	1510	584	1514	1505	859
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	867			588			1510	1510	584	1514	1505	859
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			95	100	97	91	99	98
cM capacity (veh/h)	776			987			93	117	512	93	117	356

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	596	889	17	18
Volume Left	8	22	4	9
Volume Right	9	17	13	9
cSH	776	987	241	146
Volume to Capacity	0.01	0.02	0.07	0.13
Queue Length 95th (ft)	1	2	6	11
Control Delay (s)	0.3	0.6	21.1	33.3
Lane LOS	A	A	C	D
Approach Delay (s)	0.3	0.6	21.1	33.3
Approach LOS			C	D

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	501	22	13	781	23	12	3	5	7	1	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	545	24	14	849	25	13	3	5	8	1	30
Pedestrians		2			3			3			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1005										
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	876			571			1526	1507	563	1502	1507	865
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	876			566			1526	1507	557	1502	1507	865
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			84	97	99	92	99	91
cM capacity (veh/h)	769			998			83	115	524	93	115	352

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	590	888	22	39
Volume Left	22	14	13	8
Volume Right	24	25	5	30
cSH	769	998	111	220
Volume to Capacity	0.03	0.01	0.20	0.18
Queue Length 95th (ft)	2	1	17	16
Control Delay (s)	0.8	0.4	45.0	24.9
Lane LOS	A	A	E	C
Approach Delay (s)	0.8	0.4	45.0	24.9
Approach LOS			E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	612	12	4	775	22	7	0	14	14	1	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	665	13	4	842	24	8	0	15	15	1	17
Pedestrians		3			3			3			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		413										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	869			681			1613	1607	678	1610	1602	860
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	869			519			1636	1628	514	1632	1622	860
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			88	100	97	76	99	95
cM capacity (veh/h)	773			872			61	81	465	63	82	354

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	705	871	23	34
Volume Left	27	4	8	15
Volume Right	13	24	15	17
cSH	773	872	145	111
Volume to Capacity	0.04	0.00	0.16	0.30
Queue Length 95th (ft)	3	0	14	29
Control Delay (s)	0.9	0.1	34.5	51.1
Lane LOS	A	A	D	F
Approach Delay (s)	0.9	0.1	34.5	51.1
Approach LOS			D	F

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	456	78	51	748	69	117	153	59	55	95	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1767	1863	1540	1766	1863	1536	1766	1863	1538	1763	1740	
Flt Permitted	0.21	1.00	1.00	0.45	1.00	1.00	0.65	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	392	1863	1540	836	1863	1536	1214	1863	1538	1210	1740	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	496	85	55	813	75	127	166	64	60	103	61
RTOR Reduction (vph)	0	0	37	0	0	33	0	0	52	0	39	0
Lane Group Flow (vph)	59	496	48	55	813	42	127	166	12	60	125	0
Confl. Peds. (#/hr)	4		5	3		7	2		6	3		6
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	26.2	26.2	26.2	26.2	26.2	26.2	8.4	8.4	8.4	8.4	8.4	
Effective Green, g (s)	26.2	26.2	26.2	26.2	26.2	26.2	8.4	8.4	8.4	8.4	8.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.56	0.56	0.18	0.18	0.18	0.18	0.18	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	220	1047	866	470	1047	864	219	336	277	218	314	
v/s Ratio Prot		0.27			c0.44			0.09			0.07	
v/s Ratio Perm	0.15		0.03	0.07		0.03	c0.10		0.01	0.05		
v/c Ratio	0.27	0.47	0.06	0.12	0.78	0.05	0.58	0.49	0.04	0.28	0.40	
Uniform Delay, d1	5.3	6.1	4.6	4.8	7.9	4.6	17.5	17.2	15.8	16.5	16.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.3	0.0	0.1	3.7	0.0	3.7	1.1	0.1	0.7	0.8	
Delay (s)	5.9	6.4	4.6	4.9	11.6	4.6	21.2	18.3	15.8	17.2	17.7	
Level of Service	A	A	A	A	B	A	C	B	B	B	B	
Approach Delay (s)		6.1			10.7			18.9			17.5	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	46.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	12	577	888	15	10	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	627	965	16	11	5
Pedestrians		1			1	
Lane Width (ft)		12.0			12.0	
Walking Speed (ft/s)		4.0			4.0	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1017			
pX, platoon unblocked	0.58				0.58	0.58
vC, conflicting volume	983				1628	975
vC1, stage 1 conf vol					974	
vC2, stage 2 conf vol					653	
vCu, unblocked vol	602				1721	590
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				96	98
cM capacity (veh/h)	562				266	292

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	13	627	982	16
Volume Left	13	0	0	11
Volume Right	0	0	16	5
cSH	562	1700	1700	274
Volume to Capacity	0.02	0.37	0.58	0.06
Queue Length 95th (ft)	2	0	0	5
Control Delay (s)	11.6	0.0	0.0	19.0
Lane LOS	B			C
Approach Delay (s)	0.2		0.0	19.0
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	581	4	11	882	4	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	632	4	12	959	4	9
Pedestrians				4	4	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				1157		
pX, platoon unblocked					0.59	
vC, conflicting volume			640		1620	642
vC1, stage 1 conf vol					638	
vC2, stage 2 conf vol					983	
vCu, unblocked vol			640		1703	642
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			941		265	471

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	636	12	959	13
Volume Left	0	12	0	4
Volume Right	4	0	0	9
cSH	1700	941	1700	374
Volume to Capacity	0.37	0.01	0.56	0.03
Queue Length 95th (ft)	0	1	0	3
Control Delay (s)	0.0	8.9	0.0	15.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		15.0
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	689	5	20	919	4	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	749	5	22	999	4	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			754		1794	752
vC1, stage 1 conf vol					752	
vC2, stage 2 conf vol					1042	
vCu, unblocked vol			754		1794	752
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	98
cM capacity (veh/h)			856		275	410

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	754	22	999	13
Volume Left	0	22	0	4
Volume Right	5	0	0	9
cSH	1700	856	1700	353
Volume to Capacity	0.44	0.03	0.59	0.04
Queue Length 95th (ft)	0	2	0	3
Control Delay (s)	0.0	9.3	0.0	15.6
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		15.6
Approach LOS				C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	702	2	4	891	8	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	763	2	4	968	9	7
Pedestrians				3	3	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			768		1744	770
vC1, stage 1 conf vol					767	
vC2, stage 2 conf vol					977	
vCu, unblocked vol			768		1744	770
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	98
cM capacity (veh/h)			844		291	398

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	765	4	968	15
Volume Left	0	4	0	9
Volume Right	2	0	0	7
cSH	1700	844	1700	329
Volume to Capacity	0.45	0.01	0.57	0.05
Queue Length 95th (ft)	0	0	0	4
Control Delay (s)	0.0	9.3	0.0	16.5
Lane LOS		A		C
Approach Delay (s)	0.0	0.0		16.5
Approach LOS				C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	94	599	69	30	829	42	10	12	28	12	14	87
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	651	75	33	901	46	11	13	30	13	15	95
Pedestrians		1			5			3			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)									4			
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	950			729			1965	1911	697	1874	1926	928
vC1, stage 1 conf vol							896	896		992	992	
vC2, stage 2 conf vol							1069	1015		882	933	
vCu, unblocked vol	950			729			1965	1911	697	1874	1926	928
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			96			84	92	93	93	92	71
cM capacity (veh/h)	721			873			69	172	438	176	202	324

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	102	726	33	947	54	123
Volume Left	102	0	33	0	11	13
Volume Right	0	75	0	46	30	95
cSH	721	1700	873	1700	283	278
Volume to Capacity	0.14	0.43	0.04	0.56	0.19	0.44
Queue Length 95th (ft)	12	0	3	0	17	53
Control Delay (s)	10.8	0.0	9.3	0.0	25.6	27.8
Lane LOS	B		A		D	D
Approach Delay (s)	1.3		0.3		25.6	27.8
Approach LOS					D	D

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	758	22	41	882	29	63
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	824	24	45	959	32	68
Pedestrians				1	1	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			849		1885	838
vC1, stage 1 conf vol					837	
vC2, stage 2 conf vol					1048	
vCu, unblocked vol			849		1885	838
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		88	81
cM capacity (veh/h)			788		258	366

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	848	45	959	100
Volume Left	0	45	0	32
Volume Right	24	0	0	68
cSH	1700	788	1700	323
Volume to Capacity	0.50	0.06	0.56	0.31
Queue Length 95th (ft)	0	4	0	32
Control Delay (s)	0.0	9.8	0.0	21.1
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		21.1
Approach LOS				C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	463	126	225	629	74	64	7	252	24	6	103
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	503	137	245	684	80	70	8	274	26	7	112
Pedestrians					1			1				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			0				
Right turn flare (veh)									4			
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		760										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	764			641			1969	1935	574	1967	1963	724
vC1, stage 1 conf vol							681	681		1213	1213	
vC2, stage 2 conf vol							1288	1253		754	750	
vCu, unblocked vol	764			465			2066	2024	384	2062	2058	724
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			73			0	93	50	0	94	74
cM capacity (veh/h)	849			909			49	117	550	12	111	426

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	54	640	245	764	351	145
Volume Left	54	0	245	0	70	26
Volume Right	0	137	0	80	274	112
cSH	849	1700	909	1700	211	58
Volume to Capacity	0.06	0.38	0.27	0.45	1.67	2.49
Queue Length 95th (ft)	5	0	27	0	580	363
Control Delay (s)	9.5	0.0	10.4	0.0	359.4	826.6
Lane LOS	A		B		F	F
Approach Delay (s)	0.7		2.5		359.4	826.6
Approach LOS					F	F

Intersection Summary			
Average Delay	113.1		
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	581	63	51	721	23	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	632	68	55	784	25	66
Pedestrians				3	3	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	440					
pX, platoon unblocked			0.78		0.78	0.78
vC, conflicting volume			703		1563	672
vC1, stage 1 conf vol					669	
vC2, stage 2 conf vol					895	
vCu, unblocked vol			476		1581	436
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			93		92	86
cM capacity (veh/h)			843		304	480

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	700	55	784	91
Volume Left	0	55	0	25
Volume Right	68	0	0	66
cSH	1700	843	1700	662
Volume to Capacity	0.41	0.07	0.46	0.14
Queue Length 95th (ft)	0	5	0	12
Control Delay (s)	0.0	9.6	0.0	14.8
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		14.8
Approach LOS				B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	254	165	98	408	194	251	689	204	228	568	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	4.5	4.5	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. 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
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.96	1.00	1.00	0.94	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1488	1762	1863	1523	1770	1863	1488	1770	1863	1523
Flt Permitted	0.15	1.00	1.00	0.37	1.00	1.00	0.15	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	276	1863	1488	683	1863	1523	280	1863	1488	155	1863	1523
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	204	276	179	107	443	211	273	749	222	248	617	171
RTOR Reduction (vph)	0	0	138	0	0	151	0	0	106	0	0	102
Lane Group Flow (vph)	204	276	41	107	443	60	273	749	116	248	617	69
Confl. Peds. (#/hr)	2		11	8		5	3		11	3		5
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	35.0	27.0	27.0	36.5	28.5	28.5	61.2	49.2	49.2	59.2	48.2	48.2
Effective Green, g (s)	35.0	27.0	27.0	36.5	28.5	28.5	61.2	49.2	49.2	59.2	48.2	48.2
Actuated g/C Ratio	0.29	0.23	0.23	0.31	0.24	0.24	0.51	0.41	0.41	0.50	0.40	0.40
Clearance Time (s)	6.0	6.0	6.0	6.0	4.5	4.5	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	422	337	282	445	364	294	769	614	226	753	616
v/s Ratio Prot	c0.08	0.15		0.03	0.24		0.09	0.40		c0.10	0.33	
v/s Ratio Perm	c0.25		0.03	0.09		0.04	0.38		0.08	c0.44		0.05
v/c Ratio	1.13	0.65	0.12	0.38	1.00	0.16	0.93	0.97	0.19	1.10	0.82	0.11
Uniform Delay, d1	38.6	41.9	36.7	31.1	45.3	35.9	23.2	34.4	22.3	35.3	31.6	22.2
Progression 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
Incremental Delay, d2	105.2	3.6	0.2	0.9	41.2	0.2	33.8	25.9	0.2	88.3	7.0	0.1
Delay (s)	143.7	45.5	36.8	31.9	86.5	36.1	57.0	60.3	22.4	123.6	38.6	22.2
Level of Service	F	D	D	C	F	D	E	E	C	F	D	C
Approach Delay (s)		73.5			64.9			52.8			56.2	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM Average Control Delay	59.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	24.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX F

1800 North (SR-37) 2000 W. to Main Street Environmental Study Technical Report for Traffic Conditions and Travel Demand Model Report

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1800 North Environmental Study
Technical Report

Travel Demand Model
First Draft – February 18, 2010

Revision Dates: None

Purpose

The purpose of this technical report is to explain the travel demand modeling methodologies and results for the 1800 North Environmental Study. The proposed 1800 North (State Route 37) widening is included in Phase 1 of the Regional Transportation Plan (RTP) which is scheduled to be completed by 2015. This study will determine when 1800 North widening will be required and how many lanes will be needed. In conjunction with this, the study will also look at the need for the proposed 1800 North interchange at Interstate-15. The West Davis Corridor Environmental Impact Statement (EIS) is being performed concurrently with the 1800 North Environmental Study. As such, most model adjustments and modifications will be the same for both studies so they will not be in conflict.

Travel Demand Modeling Methodology

The Wasatch Front Regional Council (WFRC) and the Mountainland Association of Governments (MAG) jointly maintain a travel demand forecasting model for the four-county metropolitan region (Weber, Davis, Salt Lake, and Utah Counties). The travel demand model (TDM) predicts future travel demand based on projections of land use, socioeconomic patterns, and transportation system characteristics. The model is based on the TP+/Cube software (currently version 5.0.2). References to “the model” in this report refer to the scripts and data maintained by WFRC and MAG, not to the Cube software.

Model Version and Study Years

The current WFRC/MAG official version of the TDM is v6.0, which is calibrated to 2005 and uses 2030 as the forecast year. This version of the model will be used to perform the analysis and traffic projections for the 1800 North Environmental Study. The study years will include 2009, 2020, 2030, and 2040 so some modifications to the official version of the TDM will be required. WFRC is expecting to release its next version of the model, with associated 2040 socioeconomic data, by the summer of 2010. When the new version is released, a check may be performed to verify any results or conclusions that were obtained from the v6.0 model as described in the “Model Checks and Verification” section below.

As an “existing”-year condition, 2009 will be modeled to provide a comparison with the traffic count data that are being collected in the study area. This will be necessary for calculating intersection turn volumes as described in the UDOT document “Utah Travel Demand Forecasting,” which follows Chapter 8 of the National Cooperative Highway Research Program’s (NCHRP) Report 255. Also, the 2009 model will be used to perform a root mean squared error analysis as described in the “Model Checks and Verification” section below.

Traffic Analysis Zones

The traffic analysis zones (TAZ) for the v6.0 model are relatively large through the study area. This is suitable for regional traffic forecasts but does not provide adequate detail for a smaller-scale study. Therefore, the TAZ were split into smaller zones which make the model more sensitive for a corridor-level study. Figure 1 shows the TAZ splits compared with the original v6.0 TAZ structure.

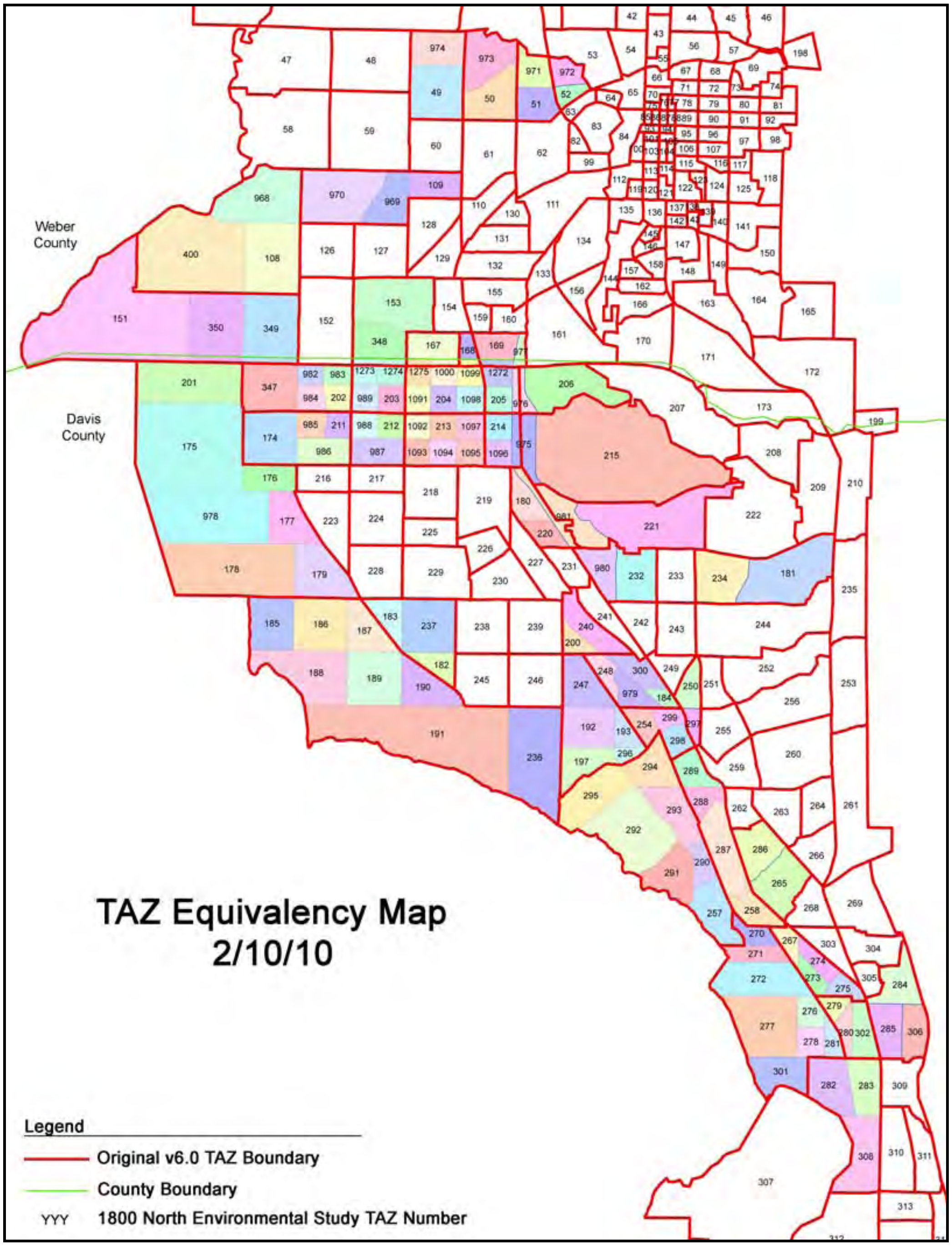

Figure 1: TAZ Equivalency Map

WFRC is also generating smaller TAZ for their next version of the model; however, the TAZ splits for the 1800 North study are based on the v6.0 TAZ structure. In most cases, the TAZ were split along barriers such as roads, rivers, railroads, or major land-use changes. The same TAZ structure will be used for all study years. The socioeconomic data from the original TAZ were distributed into the new zones based on TAZ developable area estimates and land use estimates.

Land Use

Land use data in the model includes population, dwelling units, household size, retail employees, industrial employees, and other employees. The v6.0 model includes these socioeconomic inputs for each year between 2005 and 2030 inclusive. WFRC has recently completed a draft version of the 2040 socioeconomic data for their next version of the model. They converted this data into the v6.0 TAZ structure and provided the data for use in the West Davis Corridor EIS and 1800 North studies. The 2009 socioeconomic data were obtained from the v6.0 model input files. The years 2020 and 2030 were interpolated between the 2009 and 2040 data sets based on 2020 and 2030 county projections for population and employment from the Governor's Office of Planning and Budget (GOPB). County-wide summaries of the population and employment projections are shown in Tables 1 and 2.

Table 1: Travel Demand Model County Population Projections

	Population			
County	2009	2020	2030	2040
Weber	221,000	266,200	304,600	349,900
Davis	296,300	351,700	372,300	389,300
Salt Lake	1,019,000	1,227,200	1,415,600	1,612,000
Utah	503,800	695,600	878,300	1,066,800
Totals	2,040,100	2,540,700	2,970,800	3,418,000

Table 2: Travel Demand Model County Employment Projections

	Employment			
County	2009	2020	2030	2040
Weber	109,400	138,900	162,800	190,500
Davis	130,900	181,700	195,500	202,700
Salt Lake	679,900	792,900	881,500	986,400
Utah	231,800	324,300	401,200	487,900
Totals	1,152,000	1,437,800	1,641,000	1,867,500

Model Roadway Network

The regional TDM generally includes the large collector and arterial-type facilities in its roadway network. The 1800 North Environmental Study used this same network as a base but added additional existing roads as appropriate for the TAZ splits and for existing conditions. Also, a thorough review of each link in the 1800 North and West Davis Corridor study areas was performed to ensure appropriate representation of the existing roadway network. Complete lists of roadways that were added to the network and all geometric changes to the network are included in the appendix. The future 2040 roadway network assumed that all current Regional Transportation Plan (RTP) improvements outside the study area are implemented. However, the RTP has only a 2030 timeframe, so to account for additional roads that are likely to be constructed between 2030 and 2040, the “unfunded” roadways were assumed to be completed by 2040. This assumption was approved by WFRC. The 2030 network included all “funded” projects on the RTP, and the 2020 network included all projects to be completed at the end of Phase 2 of the RTP.

In some instances, modifications to speed, capacity, area type, and/or functional type were made to the network links. These were done using best engineering judgment in cases where the 2009 model results were substantially different from the 2009 traffic count data. As appropriate, turn penalties were also used to prevent illegal turn movements such as a left turn into a right-in/right-out intersection. Complete lists of the modifications to link speed, capacity, area type, and/or functional type are included in the appendix.

Transit Network

The 2009 transit network used in the travel demand model was updated to match the Utah Transit Authority’s (UTA) 2009 transit routes. Table 3 describes these updates.

Table 3: 2009 Transit Line Modifications to the TDM

Transit Line Modification Descriptions
Modified S55 to match UTA Route 455
Added UTA Route 456
Added FrontRunner Commuter Rail
Modified S70 to match UTA Route 470
Added UTA Route 474
Added UTA Route 476
Added UTA Route 477
Added UTA Route 606
Added UTA Route 608
Delete UTA Route 610 (No longer scheduled by UTA)
Modified O613 to match UTA Route 613
Added UTA Route 632
Modified O640 to match UTA Route 640
Added UTA Route 685

The 2020 network assumed the WRFC End of Phase 2 transit network, and the 2030 and 2040 networks assumed the End of Phase 3 transit network. Minor adjustments to the transit lines were required to accommodate link splits or other network changes.

Model Verification

The changes that were made to the base WFRC model were done in an effort to increase its accuracy within the study area. A Root Mean Squared Error (RMSE) analysis within the surrounding area for the updated 2009 model and 2009 count data was performed to verify that the updated model remains a valid tool. The WFRC/MAG documentation for v6.0 states, "The RMSE is used to calculate the effectiveness of individual link and node modifications, as well as general changes in trip generation and distribution and assignment parameters. RMSE should generally be less than 40%." Table 4 contains a comparison of the RMSE values from the base 2009 unmodified model with the modified model in which all the updates described previously have been applied.

Table 4: Root Mean Squared Error within the Area for 2009

Roadway Volume	Number of Data Locations	Unmodified Model RMSE	Modified Model RMSE
Less Than 15,000 Daily Traffic	99	56%	32%
15,000 to 30,000 Daily Traffic	55	35%	19%
Over 30,000 Daily Traffic	19	31%	13%
All Daily Traffic Volumes	173	44%	22%

Table 4 shows significant improvement for the modified 2009 model compared with the original unmodified model. The volume categories show that the model may be performing better for roadways with larger volumes than for roadways with lower volumes. However, in all cases the modified model appears to more accurately reflect the count data within the study area. This should provide a higher degree of confidence for future year traffic volume projections.

Travel Demand Modeling Results

The purpose of the 1800 North Environmental Study is to determine when 1800 North will require widening and how many lanes will be needed. In conjunction with this, the study also included looking at the need for the proposed 1800 North interchange at Interstate-15. The travel demand model was run to determine actual travel demand volumes on 1800 North. The following sections will present the results of the travel demand model.

Level of Service

Level of Service (LOS) is a term used by the Highway Capacity Manual (HCM) to describe the traffic operations of an intersection or roadway. It is generally based on congestion and average vehicle delay. LOS ranges from "A" (almost no congestion or delay) to "F" (traffic demand is above capacity and the intersection experiences long queues and delay). LOS C or better is generally considered acceptable for rural areas and LOS D or better is generally acceptable for urbanized areas. LOS E is when the traffic volumes at the intersection or roadway approach maximum physical capacity. The following table summarizes roadway volume thresholds for LOS on a suburban arterial street, which is the functional classification of 1800 North.

Table 5: Suburban Arterial Level of Service Thresholds

	Maximum Volume Threshold			
Level of Service	2-Lane Roadway	3-Lane Roadway	5-Lane Roadway	7-Lane Roadway
LOS C or Better	11,000	12,000	28,000	43,000
LOS D	14,000	15,000	33,000	50,000
LOS E	16,000	17,000	40,000	63,000
LOS F	Over 17,000	Over 17,000	Over 40,000	Over 63,000

1800 North is a 2-lane facility from Main Street to 1000 West and a 3-lane facility between 1000 West and 2000 West. The respective values in Table 5 apply to each section.

1800 North Projected Daily Traffic

The travel demand model was run to analyze the travel demand for 1800 North. Scenarios were modeled for the years 2009, 2020, 2030, and 2040. The 1800 North Interchange is currently on the Regional Transportation Plan, so it was included in all scenarios to show actual travel demand for 1800 North. Because of the cross-section change of 1800 North (i.e. 3-lane to 2-lane) the results are divided between the section from Main Street to 1000 West and from 1000 West to 2000 West. Tables 6 and 7 and Figures 2 and 3 show the results.

Table 6: 1800 North Travel Demand Projections (Main Street to 1000 West)

Year	Actual Travel Demand	Level of Service
2009	21,100	LOS F
2020	30,100	LOS F
2030	30,000	LOS F
2040	31,800	LOS F

Table 7: 1800 North Travel Demand Projections (1000 West to 2000 West)

Year	Actual Travel Demand	Level of Service
2009	21,700	LOS E
2020	29,200	LOS F
2030	29,100	LOS F
2040	31,100	LOS F

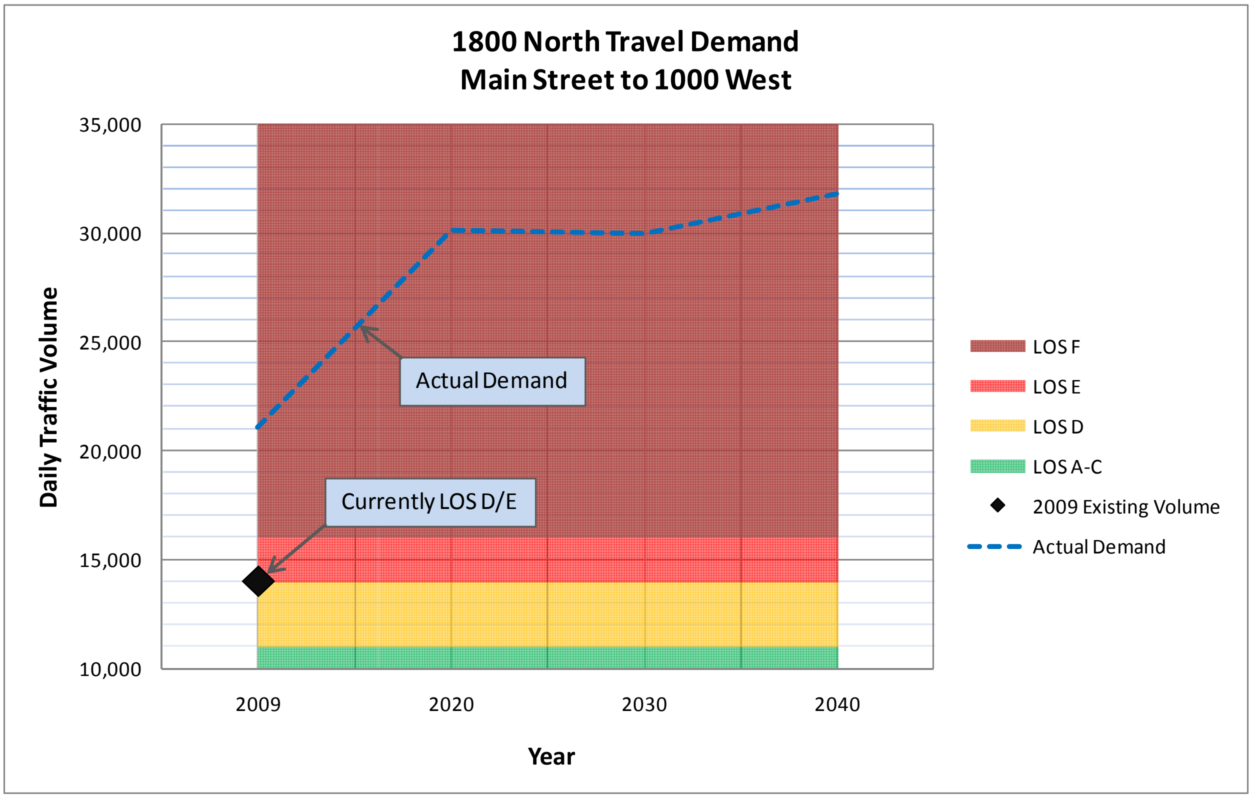

Figure 2: 1800 North Projected Travel Demand from Main Street to 1000 West

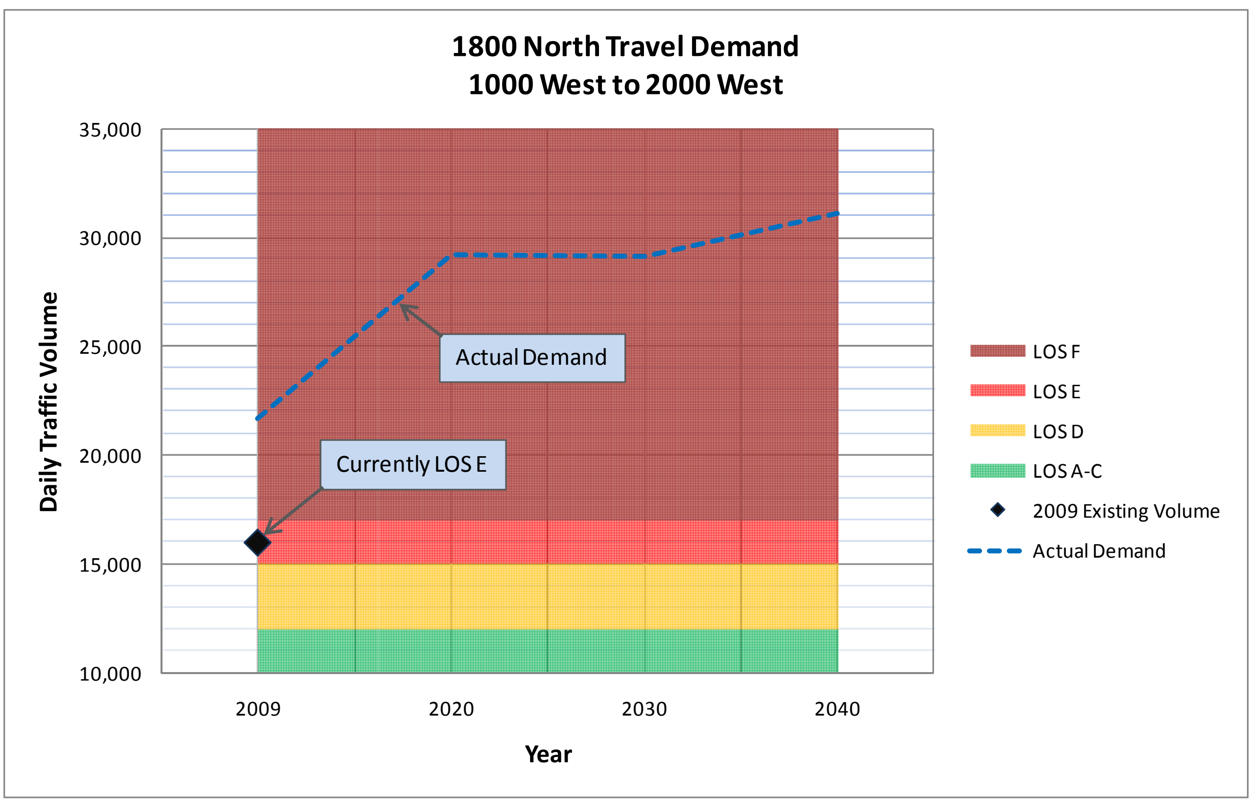

Figure 3: 1800 North Projected Travel Demand from 1000 West to 2000 West

Figure 2 shows that 1800 North between Main Street and 1000 West is currently operating on the boundary of LOS D and E. Figure 3 shows that 1800 North between 1000 West and 2000 West is currently operating at LOS E. All scenarios with actual travel demand indicate that 1800 North will operate at LOS F unless it is widened to a 5-lane cross-section. A 5-lane section will operate at LOS D or better through 2040.

Need for 1800 North Interchange

In order to determine the need for the 1800 North interchange, the two adjacent interchanges north and south of 1800 North were analyzed to estimate the impact without the proposed interchange on their respective traffic operations. The interchange to the north is 5600 South and the interchange to the south is 650 North. The travel demand model was run for conditions without the 1800 North interchange for the years 2009, 2020, 2030, and 2040. The results are shown in Tables 8 and 9 and Figures 4 and 5.

Table 8: 5600 South Interchange Travel Demand

Year	Without 1800 N Interchange	Level of Service
2009	29,800	LOS D
2020	35,100	LOS E
2030	42,200	LOS F
2040	45,600	LOS F

Table 9: 650 North Interchange Travel Demand

Year	Without 1800 N Interchange	Level of Service
2009	27,300	LOS C
2020	29,600	LOS D
2030	31,900	LOS D
2040	33,300	LOS E

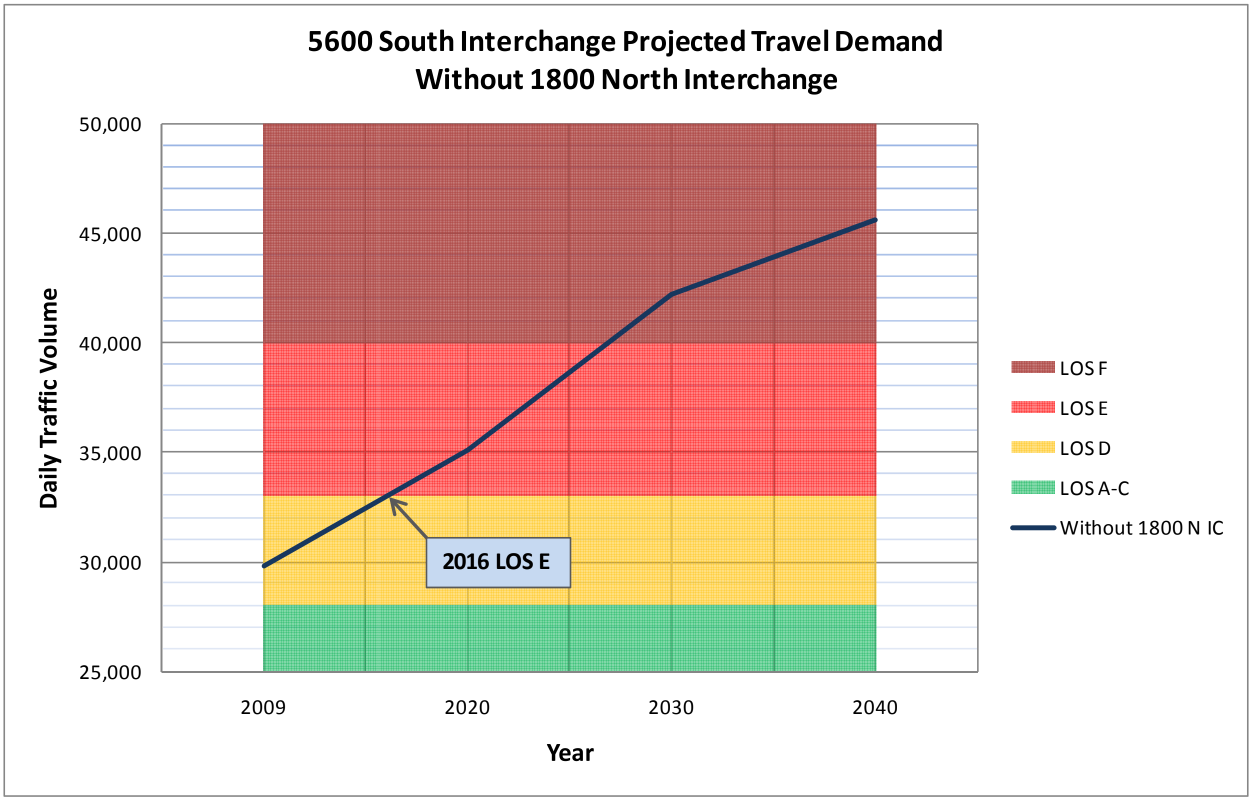

Figure 4: 5600 South Interchange Travel Demand without 1800 North Interchange

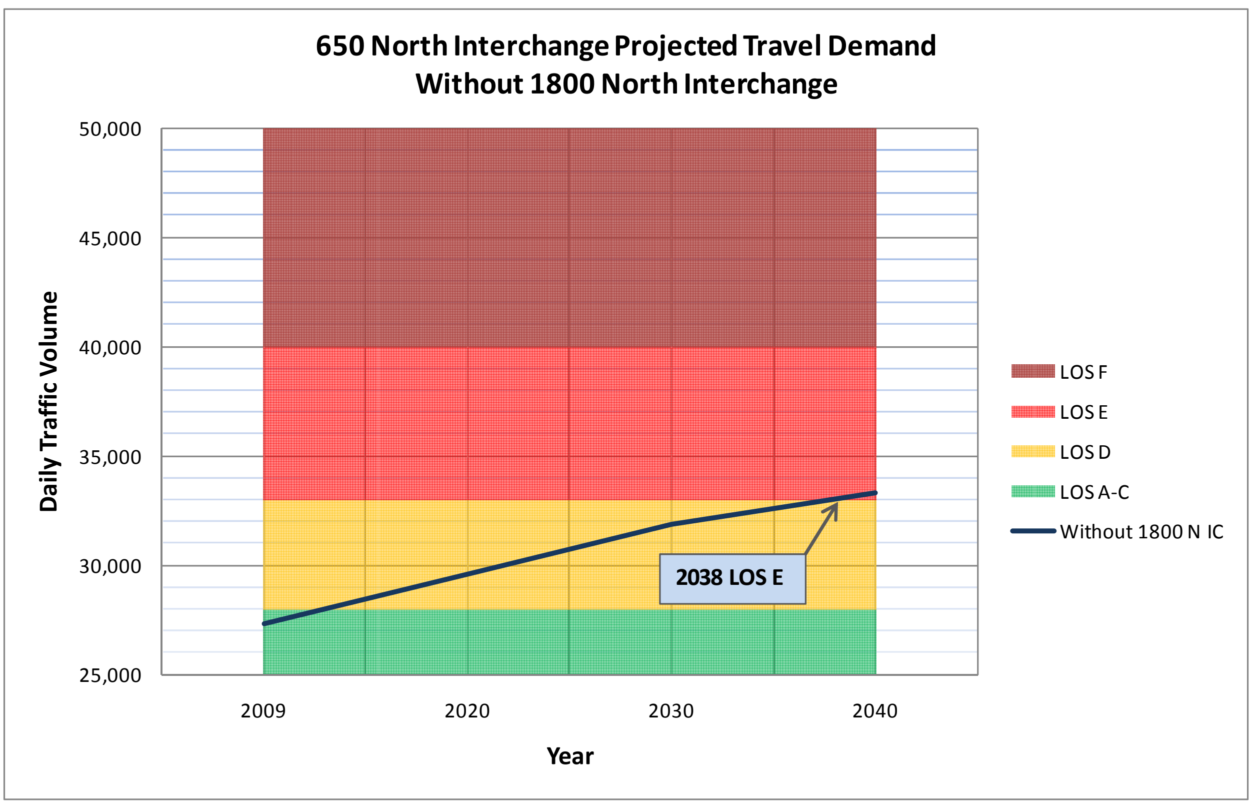

Figure 5: 650 North Interchange Travel Demand without 1800 North Interchange

As indicated in the tables and figures above, without the 1800 North interchange, the 5600 South interchange crosses into LOS E around 2016. The 650 North interchange crosses into LOS E approximately in 2038. It should be noted that some of the traffic growth at 5600 South is due to the proposed Falcon Hill development and other developments in the area east of I-15. Depending on how these developments occur, the timing of any required improvements at 5600 South may change; however, these results represent the best data to date for projected population and employment growth in the area.

Conclusions

The WFRC v6.0 travel demand model has been modified to improve results in the 1800 North study area. These modifications include splitting Traffic Analysis Zones, adding existing roadways, modifying transit lines to reflect existing routes, ensuring current functional type and geometries are reflected in the roadway network, and adjusting some links for speed and capacity based on traffic count data. A Root Mean Squared Error analysis showed that these modifications significantly improved the results of the model. Although WFRC is planning to release their next version of the travel demand model this summer, the 1800 North Environmental Study has used the most current 2040 socioeconomic data from WFRC. This should help ensure that the results of this study will be compatible with results from the next release of the travel demand model.

Based on current traffic volumes, 1800 North between 1000 West and 2000 West is already operating at LOS E and requires improvements. In addition, the travel demand model was run for the years 2009, 2020, 2030, and 2040 to determine the actual travel demand for the corridor. The results of the model runs indicates that 1800 North requires a 5-lane cross-section in order to serve the traffic volumes within acceptable Levels of Service through 2040.

The study also looked at the need for the proposed 1800 North interchange at I-15. Without the 1800 North interchange, the 5600 South interchange is expected to operate at LOS E by 2016. The 650 North interchange is expected to operate at LOS E by 2038.

Links (Existing Roadways) Added to Master Network
2/10/2010

Roadway Added	From	To
Unincorporated (Near West Haven)		
4300 West	1200 South	3300 South
2200 South	4700 West	3500 West
1800 South	3500 West	2700 West
2900 West	1200 South	1800 South
2550 South	5100 West	4700 West
Hooper		
5100 West	2550 South	5500 South
5500 West	4000 South	1800 South
4800 South	5100 West	4300 West
4700 West	5100 South	5500 South
4600 south	6300 West	5100 West
6300 West	4600 South	2425 North
5100 South	7100 West	5900 West
5500 South	7100 West	5900 West
2425 North	7100 West	5900 West
7100 West	5100 South	2425 North
West Haven		
4300 West	4000 South	4800 South
3600 South	3500 West	Midland Drive
Roy		
4300 West	5100 South	6000 South
3100 West	Midland Drive	6000 South
2700 West	5600 South	6000 South
2675 West	4000 South	5600 South
5200 South	3500 West	2700 West
6000 South	4300 West	3500 West
West Point		
5000 West	1800 North	300 North
1300 North	5000 West	3000 West
800 North	5000 West	3000 West
300 North	5000 West	4500 South
4000 West	1300 North	300 North
3000 West	800 North	300 North
700 South	4500 West	3000 West
1660 West	300 North	200 South
Clinton		
2425 North	5000 West	3500 West
1500 West	6000 South	300 North
1000 West	2300 North	1800 North
1300 North	3000 West	1900 West
3000 West	2300 North	800 North
800 North	3000 West	2000 West
250 West	2300 North	800 North

Links (Existing Roadways) Added to Master Network
2/10/2010

Roadway Added	From	To
Riverdale		
1150 West	4400 South	Riverdale Road
900 West	4400 South	Riverdale Road
Clearfield		
200 South	1660 West	1000 West
Barlow Street	800 North	300 North
500 West	300 North	200 South
200 West	800 North	300 North
Universtiy Park Blvd	700 South	Antelope Drive
Hill Air Force Base		
Cottonwood Street	5600 South	Aspen Avenue
Wardleigh Road	Aspen Avenue	South Gate Avenue
South Gate Avenue	Wardleigh Road	SR-193
11th Street	6th Street	South Gate Avenue
6th Street	1000 East	11th Street
Syracue		
4000 West	700 South	2700 South
2700 South	4000 West	Bluff Road
3000 West	Bluff Road	Gentile Street
Gentile Street	3000 West	2000 West
Layton		
Marshall Way	1000 North	Sugar Street
King Street	Main Street	Gentile Street
2200 West	Gentile Street	Just south
Kaysville		
Old Mill Road	Flint Street	Deseret Drive
Deseret Drive	Old Mill Road	Burton Lane
Western Drive	Smith Lane	Sunset Drive
50 West	Main Street	Burton Lane
600 West	Old Mill Road	200 North
Frontage Road	Burton Lane	Shepard Lane
Laurelwood Drive	Main Street	Just east
Farmington		
2000 West/1875 West	Shepard Lane	675 North
675 North	1875 West	1300 West
1525 West	675 North	Clark Lane
1100 West	Clark Lane	500 South
500 South	1100 West	650 West
Centerville		
400 West	Chase Lane	Parrish Lane

Geometric Changes to Master Network
2/10/2010

Roadway	From	To	Comment
Parish Lane NB and SB On-Ramps	1 Lane	2 Lanes	Match Existing Geometry
US-89 and Frontage Roads: I-15 to Main Street	Without Frontage Roads	With Frontage Roads	Match Existing Geometry
I-15 NB: State Street to Park Lane	4 Lanes	3 Lanes + HOV	Match Existing Geometry
I-15 NB: Park Lane to 200 North	3 Lanes	3 Lanes + HOV	Match Existing Geometry
Hillfield Road: SB Off-Ramp	1 Lane	2 Lanes	Match Existing Geometry
I-15 SB: Layton SB On-Ramp to 200 North	3 Lanes	4 Lanes	Match Existing Geometry
I-15 SB: 200 North to Park Lane	3 Lanes	3 Lanes + HOV	Match Existing Geometry
I-15 SB: Park Lane to Lagoon Drive	4 Lanes	3 Lanes + HOV	Match Existing Geometry
Park Lane I-15 SB Off-Ramp	2 Lanes	1 Lane	Match Existing Geometry
Park Lane I-15 NB On-Ramp	2 Lanes	1 Lane	Match Existing Geometry
Legacy Parkway SB Ramp at Park Ln (From I-15)	1 Lane	2 Lanes	Match Existing Geometry
Legacy Parkway NB Ramp at Park Ln (To I-15)	1 Lane	2 Lanes	Match Existing Geometry
Legacy Parkway NB Ramp at Park Ln (To I-89)	1 Lane	2 Lanes	Match Existing Geometry
I-15 SB: Off-Ramp at Park Lane	NB	SB	Coded Wrong Direction
Riverdale Road: 1900 West to I-15	3 Lanes	2 Lanes	Match Existing Geometry
I-84 Ramps at Riverdale Road	1 Lane	2 Lanes	Reflect Higher Capacity of SPUI
1200 South (Marriott-Slaterville) Interchange	Jug Handle Interchange	Diamond Interchange	Match Existing Geometry
Hinckley Dr. Interchange	Clover	Diamond Interchange	Match Existing Geometry
4700 West: 5500 South to 1800 North	1 Lane	0 Lanes	Does not exist yet.
Hillfield Road: 2200 West to Marshall Way	--	Realign	Match Existing Alignment
Gordon Avenue: Connection with US-89	1 Lane	0 Lanes	Match Existing Geometry
Antelope Drive: Connection with US-89	1 Lane	0 Lanes	Match Existing Geometry
650 West (Farmington)	0 Lanes	1 Lanes	Match Existing Geometry
Porter Lane	0 Lanes	1 Lanes	Match Existing Geometry

Functional Type Changes to Master Network
2/10/2010

Roadway	From	To	Comment
12th Street: west of SR-126	FT 4 (Collector)	FT 2 (Principal Arterial)	Update to UDOT Classification
12th Street: SR-126 to 1200 West	FT 3 (Minor Arterial)	FT 2 (Principal Arterial)	Update to UDOT Classification
I-15: 12th Street to Hill Field Road	FT 31 (Fwy: Lower Cap.)	FT 32 (Fwy: Higher Cap.)	I-15 Improvements and/or Functional Type consistency with 2040
I-15: Park Lane to Parrish Lane	FT 31 (Fwy: Lower Cap.)	FT 32 (Fwy: Higher Cap.)	Functional Type consistency with 2040
5600 South: NB On-Ramp	FT 36 (On/Off Ramp)	FT 37 (Loop Ramp)	Match geometry
4700 West: North of 12th Street	FT 4 (Collector)	FT 3 (Minor Arterial)	Update to UDOT Classification
4000 South	FT 4 (Collector) In some locations	FT 3 (Minor Arterial)	Update per UDOT comments
21st Street: SR-126 to 1100 West	FT 4 (Collector)	FT 3 (Minor Arterial)	21st Street is five lanes and posted 40 mph
1800 North	FT 4 (Collector)	FT 3 (Minor Arterial)	Update to UDOT Classification
5500 South: West of 3500 West	FT 4 (Collector)	FT 3 (Minor Arterial)	Update to UDOT Classification

Exception Changes to Master Network
2/10/2010

Roadway	From	To	Comment
1750 West: 4800 South to 4400 South	0	31999	Area exception to decrease speed and capacity
Riverdale Road: East of 1900 West	0	31999	Capacity exception to decrease capacity
Riverdale Road: East of I-84	41996	31999	Area exception to decrease speed and capacity
Riverdale Road: 1900 West to 1750 West	0	31999	Area exception to decrease speed and capacity
Riverdale Road: I-15 to 40th Street	0	-7	Speed exception to better match existing count data
Bluff Road	0	8	Speed exception to reflect 40 mph speed limit
Gentile Street: Bluff Road to Sugar Street	0	8	Speed exception to reflect 40 mph speed limit
1200 South (Marriott-Slaterville)	11999	31999	Capacity exception to decrease capacity
1200 South (Marriott-Slaterville) East of 1200 West and West of 3500 West	21999	0	Removed area exception because of FT change
1200 South (Marriott-Slaterville) Between 3500 West and SR-126	21999	0	Remove area exception that increased speed and capacity
SR-126: 700 South to 1800 South	21999	31999	Area exception to decrease speed and capacity
2100 South: SR-126 to 1200 West	Various	21999	Area exception to increase speed and capacity
Pennsylvania Avenue	0	11999	Capacity exception to increase capacity
Pennsylvania Avenue: I-15 to Exchange Road	0	21999	Area exception to increase speed and capacity
2550 South: 2700 West to I-15	0	21999	Area exception to increase speed and capacity
Hinckley Drive: East of I-15	0	11999	Area exception to decrease speed and capacity
Hinckley Drive: East of I-15	0	-5	Speed exception
Hinckley Drive: West of I-15	0	5	Speed exception
5600 South: 2700 West to I-15	0	31999	Capacity exception to decrease capacity
1900 West: 300 North to Riverdale Road	21999	0	Remove area exception that increased speed and capacity
650 North	0	31999	Capacity exception to decrease capacity
650 North	0	-14	Speed exception
Antelope Drive	21999	31999	Area exception to decrease speed and capacity
1000 West: 2300 North to 300 North	0	21999	Area exception to increase speed and capacity
1000 North (Layton): 1000 West to Main Street	0	21999	Area exception to increase speed and capacity
Hillfield Road near I-15 Interchange	0	31999	Capacity exception to decrease capacity
Hillfield Road near I-15 Interchange	0	-9	Speed exception
Main Street (Layton): 1200 West to 700 South	21999	31999	Area exception to decrease speed and capacity
Main Street (Layton): Hillfield Rd to Gentile St	0	various	Speed exceptions to make more consistent speeds
US-89: Main Street to SR-193	0	-5	Subtract 5 mph from free-flow speed
Parrish Lane near Legacy Parkway	0	31999	Capacity exception to decrease capacity
1800 North Clinton	0	various	Speed exceptions to make both directions consistent 38 mph
1800 North Sunset: 250 West to 1900 West	0	-4	Speed exception
200 North (Kaysville): Angel to Fairfield	0	21999	Area exception to increase speed and capacity
1000 East: 2200 South to 700 South	0	31999	Area exception to decrease speed and capacity
1000 East: Gentile Street to 2200 South	0	21999	Area exception to increase speed and capacity
700 South: Main Street to I-15 (Clearfield)	0	11999	Capacity exception to increase capacity
Legacy Parkway	0	-4	Subtract 4 mph to free-flow speed

APPENDIX F

1800 North (SR-37) 2000 W. to Main Street Environmental Study Technical Report for Traffic Conditions and Travel Demand Model Report

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1800 NORTH (SR-37)
2000 W. TO MAIN STREET
PNEUMATIC TUBE COUNT
SUPPLEMENTAL REPORT

Existing Conditions

UDOT Project No. F-0037(4)0

First Draft – March 8, 2010

Table of Contents

List of Tables

Revision Dates: n/a

Purpose of this Technical Report

The purpose of this supplemental report is to present daily traffic count or tube count data collected on and around the 1800 North corridor between 2000 West and Main Street.

Project Overview

The Federal Highway Administration (FHWA), in cooperation with the Utah Department of Transportation (UDOT), is in the process of preparing a study on a proposed action to address projected transportation demand in the Clinton and Sunset municipalities along 1800 North (SR-37).

The study process will be phased, with Phase I including tasks relative to initial Public Involvement, traffic analyses, and key stakeholder coordination. At the conclusion of Phase I activities, when traffic analyses are completed, UDOT and FHWA will determine the scope of the project, appropriate project area to be further evaluated, and potential alternatives to meet the project needs.

Pneumatic Tube Counts

Pneumatic tube count data were collected at six locations. These are provided in **Table 1** with the length and the beginning and ending date of the counts.

Table 1: Daily Traffic Count Locations

Location	Length (hrs)	Beginning Date	Ending Date	Municipality
Main Street Just South of 1800 North	24	3/3/2010	3/4/2010	Sunset
1800 North (East) Just West of 350 West	25	3/2/2010	3/3/2010	Sunset
1000 West Just South of 1800 North	28	2/10/2010	2/11/2010	Clinton
1800 North (Mid) Just East of 1750 West	24	3/3/2010	3/4/2010	Clinton
2000 West Just North of 1800 North	25	3/2/2010	3/3/2010	Clinton
1800 North (West) Just East of 2225 West	25	3/2/2010	3/2/2010	Clinton

Seasonal Adjustments to the Tube Count Data

Seasonal adjustments were made to the tube count data. Seasonal factors of 1.09 and 1.03 were applied to the counts collected in February and March, respectively. These were determined based on annual data collected at nearby UDOT Station 348.

Truck Percentages

Truck data were only obtained at two count locations. Truck percentages were calculated based on the daily road segment count classification data using the Federal Highway Administrations (FHWA) 13 vehicle classifications. **Table 2** provides the average daily truck percentage at the count locations using vehicle classes 6 through 13 as trucks.

Table 2: Truck Percentages Based on Tube Count Data

Location	Average Daily Truck Percentage (Class 6 to 13)
1000 West Just South of 1800 North	3%
1800 North (Mid) Just East of 1750 West	1%

Peak Hour Analysis of Tube Count Data

Table 3 provides the results of a peak hour analysis taken from the average daily road segment counts. The average regional peak hour is also provided.

Table 3: Peak Hour Based on Tube Count Data

Location	AM Peak Hour Begins	PM Peak Hour Begins
Main Street Just South of 1800 North	7:00 AM	4:00 PM
1800 North (East) Just West of 350 West	7:15 AM	4:15 PM
1000 West Just South of 1800 North	7:45 AM	4:45 PM
1800 North (Mid) Just East of 1750 West	8:00 AM	4:45 PM
2000 West Just North of 1800 North	7:45 AM	5:00 PM
1800 North (West) Just East of 2225 West	8:00 AM	5:00 PM

In addition, the Average Weekday Traffic (AWDT) was compared against the peak hour data using the road segment traffic counts (see **Table 4**). The average a.m. and p.m. peak hours of the day account for 5.5% and 9.5% of the daily traffic, respectively.

Table 4: Pneumatic Tube Count Data Summary

Location	AWDT	AM Peak	PM Peak	AM Peak as % AWDT	PM Peak as % AWDT
Main Street Just South of 1800 North	23,682	1,124	2,259	4.7%	9.5%
1800 North (East) Just West of 350 West	15,336	929	1,320	6.1%	8.6%
1000 West Just South of 1800 North	5,355	368	583	6.9%	10.9%
1800 North (Mid) Just East of 1750 West	16,691	794	1,494	4.8%	8.9%
2000 West Just North of 1800 North	21,520	1,074	1,998	5.0%	9.3%
1800 North (West) Just East of 2225 West	13,683	744	1,336	5.4%	9.8%
Average				5.5%	9.5%

Appendix A: Pneumatic Tube Counts

Start Date: 2/8/2010
Start Time: 11:45:00 AM
Site Code: 1800 N MID
Station ID: 1600 W (Walmart)

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	11:45:00 AM	0	137	34	3	8	0	0	9	1	1	0	0	3
2/8/2010	12:00:00 PM	0	172	43	4	17	1	1	11	0	0	1	0	0
2/8/2010	12:15:00 PM	0	140	45	5	7	0	1	12	0	0	0	0	2
2/8/2010	12:30:00 PM	0	125	40	3	11	0	0	7	0	1	0	1	1
2/8/2010	12:45:00 PM	0	22	8	0	1	0	0	2	0	0	0	0	1
2/8/2010	1:00:00 PM	1	165	37	4	8	0	0	3	1	0	0	0	5
2/8/2010	1:15:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	1:30:00 PM	1	144	50	4	9	1	0	9	0	2	0	0	3
2/8/2010	1:45:00 PM	0	149	39	2	15	1	0	16	0	2	0	0	1
2/8/2010	2:00:00 PM	0	126	27	3	11	0	0	10	0	0	0	0	5
2/8/2010	2:15:00 PM	0	109	23	3	4	0	0	7	2	0	0	0	2
2/8/2010	2:30:00 PM	0	108	26	1	13	0	0	8	0	0	0	0	4
2/8/2010	2:45:00 PM	1	157	32	8	8	0	0	10	1	1	0	2	3
2/8/2010	3:00:00 PM	0	111	29	3	5	0	2	5	0	0	0	0	4
2/8/2010	3:15:00 PM	0	118	28	4	7	1	0	13	0	1	0	2	4
2/8/2010	3:30:00 PM	0	78	14	2	2	0	0	7	0	0	0	0	1
2/8/2010	3:45:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	4:00:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	4:15:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	4:30:00 PM	0	109	31	2	3	0	1	9	0	1	0	0	3
2/8/2010	4:45:00 PM	1	36	11	0	1	1	0	2	0	0	0	0	0
2/8/2010	5:00:00 PM	1	72	12	4	3	0	0	5	0	0	0	0	2
2/8/2010	5:15:00 PM	0	5	4	0	2	0	0	1	0	0	0	0	3
2/8/2010	5:30:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	5:45:00 PM	0	50	24	1	1	0	0	2	0	0	0	0	2
2/8/2010	6:00:00 PM	1	17	2	0	1	0	0	2	0	0	0	0	0
2/8/2010	6:15:00 PM	0	70	10	1	4	0	0	1	0	0	0	1	1
2/8/2010	6:30:00 PM	0	28	7	0	0	0	0	2	0	1	0	0	0
2/8/2010	6:45:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	7:00:00 PM	0	70	20	1	3	1	0	1	0	0	0	1	3
2/8/2010	7:15:00 PM	1	153	47	3	12	0	1	19	0	1	0	0	2
2/8/2010	7:30:00 PM	0	33	8	0	0	0	0	1	0	1	0	0	2
2/8/2010	7:45:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	8:00:00 PM	0	113	25	1	3	1	0	2	0	0	0	0	2

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	8:15:00 PM	2	99	19	2	4	0	0	3	0	0	0	0	1
2/8/2010	8:30:00 PM	0	87	17	2	1	0	1	5	1	0	0	0	0
2/8/2010	8:45:00 PM	0	55	14	3	5	0	0	1	0	0	0	0	3
2/8/2010	9:00:00 PM	0	118	19	0	0	0	0	4	0	0	0	0	0
2/8/2010	9:15:00 PM	0	90	23	2	4	0	0	0	0	0	0	0	1
2/8/2010	9:30:00 PM	0	92	12	1	10	0	0	4	0	0	0	0	0
2/8/2010	9:45:00 PM	0	84	14	0	1	0	0	2	0	0	0	0	0
2/8/2010	10:00:00 PM	0	71	16	0	2	0	0	2	0	0	0	0	0
2/8/2010	10:15:00 PM	0	52	15	0	2	0	0	0	0	0	0	0	1
2/8/2010	10:30:00 PM	0	49	8	0	2	0	0	1	0	0	0	0	0
2/8/2010	10:45:00 PM	1	49	5	0	0	0	0	0	0	0	0	0	1
2/8/2010	11:00:00 PM	0	32	4	1	0	0	0	2	1	0	0	0	0
2/8/2010	11:15:00 PM	0	27	10	0	4	0	0	0	0	0	0	0	0
2/8/2010	11:30:00 PM	0	24	7	0	4	0	0	0	0	0	0	0	0
2/8/2010	11:45:00 PM	0	16	9	0	2	0	0	0	0	0	0	0	0
2/9/2010	12:00:00 AM	0	22	7	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:15:00 AM	0	21	10	0	2	0	0	0	1	0	0	0	0
2/9/2010	12:30:00 AM	0	14	3	0	1	0	0	0	0	0	0	0	0
2/9/2010	12:45:00 AM	0	13	3	0	2	0	0	0	0	0	0	0	0
2/9/2010	1:00:00 AM	0	23	7	0	0	0	0	0	0	0	0	0	0
2/9/2010	1:15:00 AM	0	33	8	0	0	0	0	0	0	0	0	0	0
2/9/2010	1:30:00 AM	0	17	3	0	0	0	0	0	0	0	0	0	0
2/9/2010	1:45:00 AM	0	12	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	2:00:00 AM	0	7	3	0	1	0	0	0	0	0	0	0	0
2/9/2010	2:15:00 AM	0	11	1	0	0	0	0	0	1	0	0	0	0
2/9/2010	2:30:00 AM	0	7	3	0	0	0	0	0	0	0	0	0	0
2/9/2010	2:45:00 AM	0	3	1	0	0	0	0	0	1	0	0	0	0
2/9/2010	3:00:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	3:15:00 AM	0	8	3	0	2	1	0	0	0	0	0	0	0
2/9/2010	3:30:00 AM	0	9	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	3:45:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	4:00:00 AM	0	16	0	0	1	1	0	0	0	0	0	0	0
2/9/2010	4:15:00 AM	0	12	11	0	2	0	0	0	0	0	0	0	0
2/9/2010	4:30:00 AM	0	21	7	0	2	0	0	0	0	0	0	0	0
2/9/2010	4:45:00 AM	0	28	15	0	1	1	0	1	0	0	0	0	0
2/9/2010	5:00:00 AM	0	39	12	1	4	0	0	1	2	0	0	0	0
2/9/2010	5:15:00 AM	0	27	17	1	1	0	0	0	1	0	0	0	0
2/9/2010	5:30:00 AM	0	52	25	0	8	0	0	0	1	0	0	0	0
2/9/2010	5:45:00 AM	0	71	19	2	3	0	0	1	1	0	0	0	0
2/9/2010	6:00:00 AM	0	49	20	2	9	0	0	3	1	0	0	0	1

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/9/2010	6:15:00 AM	0	68	19	0	10	0	0	2	0	1	0	0	0
2/9/2010	6:30:00 AM	0	69	17	3	9	0	0	2	0	0	0	0	0
2/9/2010	6:45:00 AM	0	89	27	0	11	0	0	0	0	0	0	0	0

Combined
Start Date: 2/10/2010
Start Time: 12:00:00 PM
Site Code: 1800 North East
Station ID:

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 12:00 PM	0	116	49	1	5	2	1	5	0	2	0	2	4
2/10/2010 12:15 PM	0	137	47	4	10	1	0	2	1	0	1	0	2
2/10/2010 12:30 PM	0	133	34	2	7	0	0	8	0	3	0	0	1
2/10/2010 12:45 PM	4	129	43	5	7	2	2	11	0	2	0	1	2
2/10/2010 01:00 PM	0	56	19	2	2	0	0	3	1	2	0	0	2
2/10/2010 01:15 PM	0	111	28	2	3	1	1	3	0	0	0	0	3
2/10/2010 01:30 PM	0	104	28	1	4	0	0	5	1	0	0	0	4
2/10/2010 01:45 PM	0	116	33	1	7	0	2	8	1	0	0	1	7
2/10/2010 02:00 PM	0	129	43	2	8	0	0	8	1	1	0	0	1
2/10/2010 02:15 PM	1	137	46	0	8	1	0	8	1	0	0	0	3
2/10/2010 02:30 PM	0	109	29	4	12	1	1	8	0	2	0	0	2
2/10/2010 02:45 PM	0	125	37	5	15	1	0	13	1	5	0	0	2
2/10/2010 03:00 PM	0	165	37	7	14	0	1	14	0	3	1	0	4
2/10/2010 03:15 PM	0	37	15	2	0	0	2	1	0	2	0	1	2
2/10/2010 03:30 PM	1	69	21	3	7	0	0	8	0	1	0	0	1
2/10/2010 03:45 PM	0	32	4	0	2	0	0	0	1	1	0	1	4
2/10/2010 04:00 PM	0	29	7	0	0	0	0	0	0	0	0	0	1
2/10/2010 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 04:30 PM	0	88	24	1	4	0	0	3	0	3	0	2	3
2/10/2010 04:45 PM	1	171	51	5	13	0	1	20	0	2	0	1	4
2/10/2010 05:00 PM	0	118	19	2	8	1	0	17	0	0	0	0	4
2/10/2010 05:15 PM	0	65	32	2	3	0	0	10	0	1	0	0	5
2/10/2010 05:30 PM	0	132	32	1	11	0	0	10	0	1	1	1	8
2/10/2010 05:45 PM	2	159	49	3	7	1	0	9	0	2	0	2	4
2/10/2010 06:00 PM	1	208	40	5	4	0	1	16	0	1	0	1	2
2/10/2010 06:15 PM	1	154	39	1	10	0	2	5	1	1	0	1	5
2/10/2010 06:30 PM	2	147	26	3	5	0	0	9	1	2	0	0	1
2/10/2010 06:45 PM	0	146	32	3	12	0	1	9	0	1	0	1	4
2/10/2010 07:00 PM	0	148	26	1	9	0	1	5	0	2	0	0	4
2/10/2010 07:15 PM	0	156	27	3	8	0	0	3	0	0	0	4	1
2/10/2010 07:30 PM	0	94	25	0	2	0	1	5	0	0	0	0	3
2/10/2010 07:45 PM	1	111	23	1	4	0	0	2	0	0	0	0	2
2/10/2010 08:00 PM	0	69	22	1	3	0	0	3	0	2	0	0	4
2/10/2010 08:15 PM	0	77	16	0	0	0	0	2	0	1	0	0	0
2/10/2010 08:30 PM	0	75	13	1	2	0	0	3	0	0	0	1	1
2/10/2010 08:45 PM	0	110	14	2	3	0	0	4	0	0	0	0	1
2/10/2010 09:00 PM	0	106	17	0	1	0	0	2	0	0	0	0	0
2/10/2010 09:15 PM	0	90	26	1	3	0	0	3	0	0	0	0	0
2/10/2010 09:30 PM	0	80	16	1	7	0	0	1	0	0	0	0	0

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 09:45 PM	0	69	22	0	5	0	0	0	1	0	0	0	0
2/10/2010 10:00 PM	0	83	13	2	0	0	1	0	1	0	0	0	1
2/10/2010 10:15 PM	0	75	10	0	2	0	1	0	0	0	0	0	0
2/10/2010 10:30 PM	0	70	13	0	1	0	0	2	0	0	0	0	0
2/10/2010 10:45 PM	0	61	10	0	1	0	0	0	0	0	0	0	1
2/10/2010 11:00 PM	0	38	8	0	1	0	0	0	0	0	0	0	0
2/10/2010 11:15 PM	0	33	8	0	1	0	0	1	0	0	0	0	0
2/10/2010 11:30 PM	0	29	1	0	1	0	0	1	0	0	0	0	0
2/10/2010 11:45 PM	0	26	7	0	1	0	0	0	0	0	0	0	0
2/11/2010 12:00 AM	0	20	10	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:15 AM	0	17	5	0	2	0	0	0	1	0	0	0	0
2/11/2010 12:30 AM	1	16	5	0	1	1	0	0	1	0	0	0	0
2/11/2010 12:45 AM	0	23	3	1	2	0	0	0	0	0	0	0	0
2/11/2010 01:00 AM	0	13	5	0	1	0	0	0	0	0	0	0	0
2/11/2010 01:15 AM	0	17	1	0	3	0	0	0	0	0	0	0	0
2/11/2010 01:30 AM	0	13	3	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:45 AM	0	8	3	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:00 AM	0	5	4	0	0	0	0	0	1	0	0	0	0
2/11/2010 02:15 AM	0	8	4	0	0	0	0	1	0	0	0	0	0
2/11/2010 02:30 AM	0	8	3	0	0	0	0	0	1	0	0	0	0
2/11/2010 02:45 AM	0	9	4	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:00 AM	0	4	1	0	1	0	0	0	0	0	0	0	0
2/11/2010 03:15 AM	0	11	7	0	1	0	0	0	0	0	0	0	0
2/11/2010 03:30 AM	0	11	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:45 AM	0	13	5	0	0	0	0	0	0	0	0	0	0
2/11/2010 04:00 AM	0	16	2	0	0	0	0	0	0	0	0	0	0
2/11/2010 04:15 AM	0	13	5	0	2	0	0	1	1	0	0	0	0
2/11/2010 04:30 AM	0	31	8	0	3	0	0	0	0	0	0	0	0
2/11/2010 04:45 AM	0	41	12	0	3	0	0	0	1	0	0	0	0
2/11/2010 05:00 AM	0	64	12	0	0	0	0	1	0	0	0	0	0
2/11/2010 05:15 AM	0	68	13	1	2	0	0	0	0	1	0	0	0
2/11/2010 05:30 AM	0	61	25	0	5	0	0	2	0	0	1	0	0
2/11/2010 05:45 AM	1	78	24	1	8	0	0	1	0	1	0	1	1
2/11/2010 06:00 AM	0	84	36	1	4	0	0	2	2	0	0	0	0
2/11/2010 06:15 AM	0	78	23	2	5	0	0	4	0	0	0	1	0

Combined
Start Date: 2/8/2010
Start Time: 11:30:00 AM
Site Code: 1800 North West
Station ID:

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	11:30 AM	0	39	11	1	2	1	0	3	0	0	0	0	0
2/8/2010	11:45 AM	0	67	15	2	6	0	1	4	0	1	1	0	0
2/8/2010	12:00 PM	1	43	17	0	6	1	0	4	0	0	0	0	1
2/8/2010	12:15 PM	0	65	12	2	7	0	1	6	0	0	0	1	1
2/8/2010	12:30 PM	0	38	18	1	2	0	0	2	0	0	1	0	1
2/8/2010	12:45 PM	2	38	15	0	4	0	0	4	0	0	0	0	0
2/8/2010	01:00 PM	0	54	14	1	3	0	0	3	0	0	0	0	0
2/8/2010	01:15 PM	0	46	17	1	4	0	0	3	0	0	0	0	0
2/8/2010	01:30 PM	0	45	10	1	2	0	0	2	0	0	0	0	0
2/8/2010	01:45 PM	1	53	13	0	5	0	0	0	0	0	0	0	1
2/8/2010	02:00 PM	0	51	12	2	7	0	0	1	0	0	0	0	0
2/8/2010	02:15 PM	0	40	15	0	5	0	1	1	0	0	0	0	0
2/8/2010	02:30 PM	0	29	11	1	3	0	0	3	0	0	0	0	0
2/8/2010	02:45 PM	0	39	11	1	5	1	0	3	0	0	0	0	1
2/8/2010	03:00 PM	0	27	10	1	2	0	1	3	0	0	0	0	1
2/8/2010	03:15 PM	0	24	9	0	3	0	0	4	0	0	0	0	1
2/8/2010	03:30 PM	0	64	13	3	3	0	1	9	1	0	0	1	0
2/8/2010	03:45 PM	1	54	16	1	7	0	0	3	0	0	0	0	2
2/8/2010	04:00 PM	0	60	16	2	3	0	0	6	1	1	0	0	2
2/8/2010	04:15 PM	0	16	5	0	1	0	0	0	0	0	0	0	0
2/8/2010	04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	05:45 PM	0	15	5	0	4	0	1	3	0	0	0	0	0
2/8/2010	06:00 PM	0	61	4	0	5	0	2	2	0	0	0	1	0
2/8/2010	06:15 PM	0	32	15	1	2	0	1	3	0	0	0	0	1
2/8/2010	06:30 PM	0	45	16	0	2	0	0	7	0	1	0	0	0
2/8/2010	06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	07:00 PM	0	35	6	0	0	0	0	1	0	0	0	0	2
2/8/2010	07:15 PM	0	5	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	07:30 PM	0	25	7	0	1	0	1	1	0	0	0	0	2
2/8/2010	07:45 PM	0	30	9	1	2	1	1	5	0	0	1	1	1
2/8/2010	08:00 PM	0	33	7	1	3	1	0	4	1	0	0	0	1
2/8/2010	08:15 PM	0	37	13	1	4	0	0	0	0	0	0	0	0
2/8/2010	08:30 PM	1	38	7	0	2	0	0	2	0	0	0	0	0
2/8/2010	08:45 PM	0	26	8	1	3	0	0	0	0	0	0	0	0
2/8/2010	09:00 PM	0	19	7	0	3	0	1	0	0	0	0	0	0
2/8/2010	09:15 PM	0	31	4	0	2	0	0	0	0	0	0	0	0

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	09:30 PM	0	24	7	0	2	0	0	0	0	0	0	0	0
2/8/2010	09:45 PM	0	31	9	0	2	0	0	3	0	0	0	0	1
2/8/2010	10:00 PM	0	16	2	0	0	0	0	0	0	0	0	0	0
2/8/2010	10:15 PM	0	13	2	0	0	0	0	1	0	0	0	0	0
2/8/2010	10:30 PM	0	7	0	0	1	0	0	0	0	0	0	0	0
2/8/2010	10:45 PM	0	12	0	0	1	0	0	0	0	0	0	0	0
2/8/2010	11:00 PM	0	17	1	0	0	0	0	0	0	0	0	0	0
2/8/2010	11:15 PM	0	8	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	11:30 PM	0	6	0	0	3	0	0	0	0	0	0	0	0
2/8/2010	11:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:15 AM	0	2	2	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:30 AM	0	5	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:00 AM	0	5	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:15 AM	0	3	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:30 AM	0	3	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:15 AM	0	2	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:45 AM	0	3	2	0	0	0	0	0	0	0	0	0	0
2/9/2010	03:00 AM	0	4	0	0	2	0	0	0	0	0	0	0	0
2/9/2010	03:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	03:30 AM	0	5	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	03:45 AM	0	3	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:00 AM	0	6	1	0	1	0	0	0	0	0	0	0	0
2/9/2010	04:15 AM	0	15	1	0	1	1	0	0	0	0	0	0	0
2/9/2010	04:30 AM	0	15	7	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:45 AM	0	24	10	0	2	0	0	1	0	0	0	0	0
2/9/2010	05:00 AM	0	30	11	0	4	0	0	0	0	0	0	0	0
2/9/2010	05:15 AM	0	31	16	0	1	0	0	0	0	0	0	0	0
2/9/2010	05:30 AM	0	43	18	0	4	0	0	0	0	0	0	0	0
2/9/2010	05:45 AM	0	70	20	0	7	0	0	1	0	0	0	0	0
2/9/2010	06:00 AM	0	48	13	0	9	0	0	2	0	0	0	0	0
2/9/2010	06:15 AM	0	43	17	0	8	0	0	1	0	0	0	0	0
2/9/2010	06:30 AM	0	74	15	0	10	0	0	1	0	0	0	0	0
2/9/2010	06:45 AM	0	94	35	0	9	0	0	2	0	0	0	0	0
2/9/2010	07:00 AM	0	73	26	6	3	0	0	0	0	0	0	0	0
2/9/2010	07:15 AM	0	51	14	0	5	0	0	2	0	0	0	0	1
2/9/2010	07:30 AM	0	81	23	0	9	0	0	1	0	0	0	0	0
2/9/2010	07:45 AM	0	79	19	1	3	0	0	2	0	0	0	0	0
2/9/2010	08:00 AM	0	59	18	1	3	0	0	5	0	0	0	1	0
2/9/2010	08:15 AM	0	79	16	1	5	0	0	2	0	0	0	0	0
2/9/2010	08:30 AM	0	47	14	2	6	0	0	2	0	0	0	0	0

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/9/2010	08:45 AM	0	64	10	0	5	0	0	2	0	0	0	0	0
2/9/2010	09:00 AM	0	60	19	1	4	0	1	3	0	0	0	0	0
2/9/2010	09:15 AM	0	48	18	0	7	0	0	0	0	0	0	0	0
2/9/2010	09:30 AM	0	40	18	0	2	0	0	3	0	0	0	0	0
2/9/2010	09:45 AM	0	42	17	1	3	1	1	4	0	0	0	0	0
2/9/2010	10:00 AM	0	60	19	0	2	0	0	2	0	0	0	1	0
2/9/2010	10:15 AM	0	38	15	0	5	1	0	3	0	0	0	0	0
2/9/2010	10:30 AM	0	53	14	1	3	0	0	3	0	0	0	0	1
2/9/2010	10:45 AM	0	49	14	2	2	0	0	2	0	0	0	0	0
2/9/2010	11:00 AM	0	35	21	0	1	0	0	4	0	0	0	0	0
2/9/2010	11:15 AM	0	47	19	1	3	0	0	3	0	0	0	0	1
2/9/2010	11:30 AM	0	32	13	0	3	0	0	2	0	0	0	0	1
2/9/2010	11:45 AM	0	49	25	0	5	0	1	5	0	0	0	0	1
2/9/2010	12:00 PM	1	48	18	0	2	0	1	4	0	0	0	0	1
2/9/2010	12:15 PM	0	49	20	2	3	0	0	1	0	0	0	1	0
2/9/2010	12:30 PM	1	57	7	0	6	1	0	3	0	0	0	0	1
2/9/2010	12:45 PM	0	43	26	1	4	0	0	8	0	0	0	0	1
2/9/2010	01:00 PM	0	47	18	1	4	1	1	1	0	0	1	0	0
2/9/2010	01:15 PM	0	53	18	0	4	0	0	1	0	0	0	0	2
2/9/2010	01:30 PM	0	43	9	1	9	0	0	2	0	0	0	0	0
2/9/2010	01:45 PM	0	54	21	2	6	0	0	2	0	1	0	0	2
2/9/2010	02:00 PM	0	36	14	0	3	0	0	0	0	0	0	0	2
2/9/2010	02:15 PM	0	48	15	0	4	0	0	3	0	0	0	0	0
2/9/2010	02:30 PM	0	39	11	1	3	0	1	1	0	0	0	0	1
2/9/2010	02:45 PM	0	46	10	2	3	0	1	3	0	0	0	0	2
2/9/2010	03:00 PM	0	62	18	3	2	0	0	2	1	0	0	0	0
2/9/2010	03:15 PM	0	35	19	1	4	0	0	2	0	0	0	0	0
2/9/2010	03:30 PM	0	42	8	3	2	0	0	9	1	0	0	0	2
2/9/2010	03:45 PM	0	7	2	0	1	0	0	3	0	0	0	0	0
2/9/2010	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:45 PM	0	42	9	1	2	0	0	2	0	0	0	0	0
2/9/2010	05:00 PM	1	40	7	0	6	0	0	1	0	0	0	1	0
2/9/2010	05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	05:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	1
2/9/2010	06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	06:30 PM	0	17	3	0	0	0	0	2	0	0	0	0	1
2/9/2010	06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	07:00 PM	0	63	18	0	1	0	2	2	0	0	0	0	0
2/9/2010	07:15 PM	0	23	7	0	3	0	0	1	0	0	0	0	1
2/9/2010	07:30 PM	0	19	9	0	3	0	0	1	0	0	0	0	0
2/9/2010	07:45 PM	0	17	6	0	0	0	0	0	0	0	0	0	0
2/9/2010	08:00 PM	0	35	6	1	3	0	1	3	0	0	0	0	0

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/9/2010	08:15 PM	0	30	12	0	2	0	0	1	0	0	0	0	0
2/9/2010	08:30 PM	0	33	11	0	0	0	0	1	0	2	0	0	0
2/9/2010	08:45 PM	0	22	4	0	3	0	0	1	0	1	0	0	0
2/9/2010	09:00 PM	0	41	8	0	2	0	0	1	0	0	0	0	0
2/9/2010	09:15 PM	0	30	6	1	3	0	1	4	0	0	0	0	1
2/9/2010	09:30 PM	0	35	8	1	6	0	0	1	0	0	0	0	0
2/9/2010	09:45 PM	0	26	6	0	1	0	0	0	0	0	0	0	0
2/9/2010	10:00 PM	0	13	2	0	2	0	0	0	0	0	0	0	0
2/9/2010	10:15 PM	0	13	1	0	1	0	0	0	0	0	0	0	0
2/9/2010	10:30 PM	0	15	4	0	1	0	0	0	0	0	0	0	0
2/9/2010	10:45 PM	0	16	1	0	1	0	0	1	0	0	0	0	0
2/9/2010	11:00 PM	0	15	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	11:15 PM	0	11	0	0	1	0	0	0	0	0	0	0	0
2/9/2010	11:30 PM	0	9	1	0	0	0	0	1	0	0	0	0	0
2/9/2010	11:45 PM	0	9	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	12:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	12:15 AM	0	4	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	12:30 AM	0	4	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	12:45 AM	0	4	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	01:00 AM	0	5	1	0	0	0	0	1	0	0	0	0	0
2/10/2010	01:15 AM	0	3	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	01:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	01:45 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	02:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	02:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	02:30 AM	0	1	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	02:45 AM	0	2	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	03:00 AM	0	3	2	0	0	0	0	0	0	0	0	0	0
2/10/2010	03:15 AM	0	5	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	03:30 AM	0	6	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	03:45 AM	0	7	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	04:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	04:15 AM	0	10	2	0	1	0	0	0	0	0	0	0	0
2/10/2010	04:30 AM	0	17	11	0	1	0	0	0	0	0	0	0	0
2/10/2010	04:45 AM	0	21	9	0	3	1	0	0	0	0	0	0	0
2/10/2010	05:00 AM	0	29	7	0	2	0	0	0	0	0	0	0	0
2/10/2010	05:15 AM	0	32	10	0	1	0	0	0	0	0	0	0	0
2/10/2010	05:30 AM	0	46	21	0	3	0	0	0	0	0	0	0	0
2/10/2010	05:45 AM	0	70	15	0	10	0	0	0	0	0	0	0	0
2/10/2010	06:00 AM	0	50	15	0	8	0	1	2	0	0	0	0	0
2/10/2010	06:15 AM	0	53	16	0	5	0	0	1	0	0	0	0	0
2/10/2010	06:30 AM	0	67	22	0	7	0	0	3	0	0	0	0	0
2/10/2010	06:45 AM	0	76	29	0	4	0	0	1	0	0	0	0	1
2/10/2010	07:00 AM	0	81	22	4	8	0	0	0	0	0	0	0	0
2/10/2010	07:15 AM	0	105	26	1	8	0	0	2	0	0	0	0	0
2/10/2010	07:30 AM	0	61	24	0	4	0	0	1	0	0	0	0	0

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 07:45 AM	0	89	16	0	6	0	1	1	0	0	0	0	0
2/10/2010 08:00 AM	0	62	15	3	5	0	1	3	0	0	0	0	0
2/10/2010 08:15 AM	0	66	16	2	3	0	0	2	0	0	0	0	0
2/10/2010 08:30 AM	0	82	24	2	4	0	0	3	0	0	0	0	0
2/10/2010 08:45 AM	0	33	12	1	3	1	0	1	0	0	0	0	1
2/10/2010 09:00 AM	0	45	12	0	1	0	1	0	0	0	0	0	1
2/10/2010 09:15 AM	0	33	12	0	7	0	0	1	0	0	0	0	1
2/10/2010 09:30 AM	0	48	17	0	2	0	0	1	0	0	0	0	0
2/10/2010 09:45 AM	0	49	12	0	5	1	0	3	0	0	0	0	0
2/10/2010 10:00 AM	0	45	13	0	3	0	0	1	0	0	0	0	0

Combined
Start Date: 2/8/2010
Start Time: 11:15:00 AM
Site Code: 2000 West North
Station ID:

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	11:15 AM	0	144	48	8	19	1	0	22	1	0	0	1	3
2/8/2010	11:30 AM	0	148	57	5	12	0	0	14	0	0	0	0	4
2/8/2010	11:45 AM	0	131	36	5	11	0	3	13	1	0	0	0	2
2/8/2010	12:00 PM	0	93	25	3	7	1	0	10	0	1	0	0	2
2/8/2010	12:15 PM	0	95	35	2	11	1	1	4	0	0	0	0	4
2/8/2010	12:30 PM	1	186	61	5	28	0	0	12	0	3	0	1	2
2/8/2010	12:45 PM	0	121	52	5	13	0	2	2	0	1	0	0	7
2/8/2010	01:00 PM	1	169	59	2	14	0	0	17	1	2	0	2	3
2/8/2010	01:15 PM	0	155	49	5	14	0	0	19	1	0	0	0	3
2/8/2010	01:30 PM	0	159	53	0	8	1	0	12	0	0	2	0	1
2/8/2010	01:45 PM	0	142	37	5	10	0	1	7	0	0	0	0	8
2/8/2010	02:00 PM	2	82	24	0	9	0	0	5	1	2	0	0	3
2/8/2010	02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	03:00 PM	0	83	20	2	5	0	0	9	0	1	0	1	3
2/8/2010	03:15 PM	1	183	76	5	20	0	0	33	1	2	0	2	3
2/8/2010	03:30 PM	1	207	61	13	19	0	3	28	1	4	0	1	5
2/8/2010	03:45 PM	0	89	27	4	12	1	0	14	1	2	0	1	7
2/8/2010	04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	04:45 PM	0	24	5	0	1	0	0	0	0	0	0	0	8
2/8/2010	05:00 PM	0	95	27	2	4	0	0	9	0	1	1	1	3
2/8/2010	05:15 PM	1	93	32	0	5	0	2	16	2	2	0	2	8
2/8/2010	05:30 PM	0	48	12	1	5	0	1	2	0	0	0	0	2
2/8/2010	05:45 PM	1	43	17	1	7	0	0	10	1	0	0	0	2
2/8/2010	06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/8/2010	07:15 PM	0	29	7	1	3	0	0	3	0	0	0	0	2
2/8/2010	07:30 PM	0	131	27	1	3	0	0	13	0	1	0	1	4
2/8/2010	07:45 PM	0	184	46	2	10	0	0	14	0	1	0	2	1
2/8/2010	08:00 PM	0	174	39	1	12	0	2	9	0	3	0	0	1
2/8/2010	08:15 PM	0	150	32	2	5	0	1	8	0	0	0	0	3
2/8/2010	08:30 PM	0	147	39	1	13	0	1	5	0	1	0	1	1
2/8/2010	08:45 PM	0	83	25	1	4	0	0	2	0	0	0	0	1

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	09:00 PM	1	124	36	1	9	0	0	3	0	0	0	0	1
2/8/2010	09:15 PM	0	131	32	2	9	0	0	5	0	0	0	0	1
2/8/2010	09:30 PM	0	111	22	0	9	0	0	0	0	0	0	1	1
2/8/2010	09:45 PM	1	101	21	0	4	0	0	2	0	0	0	0	0
2/8/2010	10:00 PM	0	86	22	0	4	0	0	1	0	0	0	0	1
2/8/2010	10:15 PM	0	90	12	0	2	0	0	4	0	0	0	0	0
2/8/2010	10:30 PM	0	71	10	0	5	0	0	1	0	0	0	0	0
2/8/2010	10:45 PM	0	45	10	0	1	0	0	1	0	0	0	0	1
2/8/2010	11:00 PM	0	41	5	0	1	0	0	1	0	0	0	0	0
2/8/2010	11:15 PM	0	44	13	0	1	0	0	0	0	0	0	0	0
2/8/2010	11:30 PM	0	32	8	0	1	0	0	1	0	0	0	0	0
2/8/2010	11:45 PM	0	26	10	0	0	0	0	0	1	0	0	0	0
2/9/2010	12:00 AM	0	31	8	0	1	0	0	0	0	0	0	0	0
2/9/2010	12:15 AM	0	28	7	0	1	0	0	0	0	0	0	0	0
2/9/2010	12:30 AM	0	23	7	0	1	0	0	0	0	0	0	0	0
2/9/2010	12:45 AM	0	17	1	0	1	0	0	0	0	0	0	0	0
2/9/2010	01:00 AM	0	23	9	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:15 AM	0	22	2	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:30 AM	0	12	1	0	1	0	0	0	0	0	0	0	0
2/9/2010	01:45 AM	0	11	4	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:00 AM	0	7	4	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:15 AM	0	17	2	0	1	0	0	0	0	0	0	0	0
2/9/2010	02:30 AM	0	8	4	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:45 AM	0	8	4	0	1	0	0	0	0	0	0	0	0
2/9/2010	03:00 AM	0	10	3	0	1	0	0	0	0	0	0	0	0
2/9/2010	03:15 AM	0	8	3	0	0	0	0	0	1	0	0	0	0
2/9/2010	03:30 AM	0	14	4	0	0	0	0	0	0	0	0	0	0
2/9/2010	03:45 AM	0	16	3	0	1	0	0	0	0	0	0	0	0
2/9/2010	04:00 AM	0	11	8	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:15 AM	0	12	7	0	3	0	0	0	0	0	0	0	0
2/9/2010	04:30 AM	0	25	10	0	1	0	0	0	0	0	0	0	0
2/9/2010	04:45 AM	0	36	17	1	1	0	0	1	0	0	0	0	0
2/9/2010	05:00 AM	0	33	12	0	1	1	0	1	0	0	0	0	0
2/9/2010	05:15 AM	0	50	21	0	8	2	0	0	0	0	0	0	0
2/9/2010	05:30 AM	0	64	26	0	7	0	0	2	0	0	0	0	0
2/9/2010	05:45 AM	0	83	41	1	14	0	0	5	0	0	0	0	0
2/9/2010	06:00 AM	0	98	34	2	11	0	0	5	0	0	0	0	0
2/9/2010	06:15 AM	0	110	33	3	12	0	0	3	0	0	0	0	0
2/9/2010	06:30 AM	0	101	34	1	15	0	2	4	1	0	0	0	0
2/9/2010	06:45 AM	0	124	49	3	15	0	0	10	1	1	0	1	3
2/9/2010	07:00 AM	0	130	45	8	12	0	1	8	0	0	0	1	0
2/9/2010	07:15 AM	0	135	39	4	12	1	0	11	0	0	0	0	0
2/9/2010	07:30 AM	0	132	39	3	17	0	1	8	0	0	0	0	0
2/9/2010	07:45 AM	0	164	47	7	17	0	0	9	1	2	0	2	2
2/9/2010	08:00 AM	1	147	39	2	8	0	0	15	0	0	0	1	3
2/9/2010	08:15 AM	1	106	41	5	15	1	1	8	2	2	1	0	5

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/9/2010	08:30 AM	0	136	41	7	13	2	0	8	0	1	0	0	2
2/9/2010	08:45 AM	0	159	66	2	9	0	0	14	1	0	0	2	2
2/9/2010	09:00 AM	0	130	60	2	15	1	1	10	2	1	0	0	3
2/9/2010	09:15 AM	0	119	58	5	12	2	2	9	0	3	0	0	1
2/9/2010	09:30 AM	0	110	47	3	16	2	0	7	2	2	0	0	2
2/9/2010	09:45 AM	2	113	39	2	15	0	0	1	3	1	0	1	2
2/9/2010	10:00 AM	0	117	51	1	9	1	0	11	1	1	0	0	1
2/9/2010	10:15 AM	0	147	52	2	14	0	1	11	1	0	0	0	1
2/9/2010	10:30 AM	0	144	50	2	10	0	0	11	0	2	0	1	2
2/9/2010	10:45 AM	1	138	45	5	13	1	2	12	0	4	0	0	0
2/9/2010	11:00 AM	1	100	36	4	7	0	0	11	0	1	0	0	2
2/9/2010	11:15 AM	0	138	52	1	11	0	1	13	1	1	0	2	2
2/9/2010	11:30 AM	0	135	71	7	20	1	3	11	1	0	0	1	5
2/9/2010	11:45 AM	1	120	46	2	24	0	0	15	2	2	1	3	4
2/9/2010	12:00 PM	0	183	66	2	17	1	0	25	1	1	0	0	3
2/9/2010	12:15 PM	0	147	56	5	9	0	1	19	1	1	0	3	3
2/9/2010	12:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:45 PM	0	80	26	0	9	0	1	13	0	2	0	2	2
2/9/2010	01:00 PM	0	106	37	3	8	2	0	9	0	1	0	0	2
2/9/2010	01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:30 PM	0	110	32	1	10	0	0	4	0	1	0	0	1
2/9/2010	01:45 PM	0	122	35	0	12	0	1	17	1	0	0	0	4
2/9/2010	02:00 PM	0	70	13	0	1	1	0	8	0	1	0	0	4
2/9/2010	02:15 PM	0	15	12	0	1	0	0	4	0	1	0	0	0
2/9/2010	02:30 PM	1	81	24	2	5	0	1	5	0	0	1	0	4
2/9/2010	02:45 PM	0	95	34	2	12	0	1	19	1	4	0	0	5
2/9/2010	03:00 PM	1	138	27	1	5	0	2	8	0	0	0	0	7
2/9/2010	03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:00 PM	0	57	24	2	3	0	0	8	0	2	1	0	2
2/9/2010	04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:30 PM	0	111	36	0	9	0	0	11	0	1	0	1	7
2/9/2010	04:45 PM	0	87	28	0	5	0	1	15	0	3	0	0	7
2/9/2010	05:00 PM	0	100	40	3	10	0	1	25	0	0	0	1	5
2/9/2010	05:15 PM	4	178	44	5	16	1	1	21	2	2	0	2	5
2/9/2010	05:30 PM	3	140	35	3	9	0	2	26	0	3	0	1	10
2/9/2010	05:45 PM	1	119	33	2	10	0	0	17	0	2	1	1	4
2/9/2010	06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	06:15 PM	0	7	0	0	0	0	0	0	0	0	0	0	1
2/9/2010	06:30 PM	1	190	55	4	11	0	3	25	1	1	0	2	5
2/9/2010	06:45 PM	0	74	16	5	3	0	0	3	0	1	0	2	1
2/9/2010	07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	07:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	07:30 PM	0	148	38	3	15	0	1	11	0	1	0	0	4

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/9/2010	07:45 PM	0	102	33	2	9	0	0	9	0	1	0	0	4
2/9/2010	08:00 PM	2	154	50	3	11	0	0	10	0	0	0	0	2
2/9/2010	08:15 PM	0	98	27	0	10	0	0	7	0	0	0	0	1
2/9/2010	08:30 PM	0	146	36	3	13	0	0	2	0	1	0	1	1
2/9/2010	08:45 PM	0	140	29	3	10	0	0	5	0	1	0	0	1
2/9/2010	09:00 PM	0	106	28	2	4	0	1	3	0	1	0	0	3
2/9/2010	09:15 PM	0	108	39	0	8	1	0	2	0	0	0	0	1
2/9/2010	09:30 PM	0	111	27	1	9	0	0	3	0	0	0	0	0
2/9/2010	09:45 PM	0	101	23	1	5	0	1	0	1	0	0	0	1
2/9/2010	10:00 PM	0	83	14	0	3	0	0	2	0	0	0	0	0
2/9/2010	10:15 PM	0	74	14	0	3	0	0	1	0	0	0	0	0
2/9/2010	10:30 PM	0	60	13	0	3	0	0	1	0	0	0	0	0
2/9/2010	10:45 PM	0	60	13	1	3	0	0	2	0	0	0	0	0
2/9/2010	11:00 PM	0	43	11	1	1	0	0	1	0	0	0	0	0
2/9/2010	11:15 PM	0	49	10	0	1	0	0	0	0	0	0	0	0
2/9/2010	11:30 PM	0	35	13	0	1	0	0	0	0	0	0	0	0
2/9/2010	11:45 PM	0	33	2	0	1	0	0	0	0	0	0	0	0
2/10/2010	12:00 AM	0	29	10	0	1	0	0	0	0	0	0	0	0
2/10/2010	12:15 AM	0	26	4	0	0	0	0	0	0	0	0	0	0
2/10/2010	12:30 AM	0	28	7	0	3	0	0	0	0	0	0	0	0
2/10/2010	12:45 AM	0	27	5	0	1	0	0	0	0	0	0	0	0
2/10/2010	01:00 AM	0	22	5	0	2	0	0	0	0	0	0	0	0
2/10/2010	01:15 AM	0	22	5	0	0	0	0	0	0	0	0	0	0
2/10/2010	01:30 AM	0	9	3	0	1	0	0	0	0	0	0	0	0
2/10/2010	01:45 AM	0	11	2	0	0	0	0	0	0	0	0	0	0
2/10/2010	02:00 AM	0	13	0	0	1	0	0	0	0	0	0	0	0
2/10/2010	02:15 AM	0	16	5	0	1	0	0	0	0	0	0	0	0
2/10/2010	02:30 AM	0	15	1	1	2	0	0	0	0	0	0	0	0
2/10/2010	02:45 AM	0	10	3	0	1	0	0	0	0	0	0	0	0
2/10/2010	03:00 AM	0	15	2	0	1	0	0	0	0	0	0	0	0
2/10/2010	03:15 AM	0	9	0	0	0	0	0	0	0	0	0	0	0
2/10/2010	03:30 AM	0	15	5	0	0	0	0	0	0	0	0	0	0
2/10/2010	03:45 AM	0	11	4	0	0	0	0	0	0	0	0	0	0
2/10/2010	04:00 AM	0	11	2	0	0	0	0	1	0	0	0	0	0
2/10/2010	04:15 AM	0	17	4	0	1	0	0	0	0	0	0	0	0
2/10/2010	04:30 AM	0	29	11	1	1	0	0	0	1	0	0	0	0
2/10/2010	04:45 AM	0	39	13	0	1	0	0	0	0	0	0	0	0
2/10/2010	05:00 AM	0	36	12	0	3	0	0	0	0	0	0	0	0
2/10/2010	05:15 AM	0	37	12	0	8	0	0	2	0	0	0	0	0
2/10/2010	05:30 AM	0	58	27	1	12	0	1	0	0	0	0	0	0
2/10/2010	05:45 AM	0	97	40	2	10	0	0	4	0	0	0	0	0
2/10/2010	06:00 AM	0	97	36	0	9	1	0	1	0	0	0	0	0
2/10/2010	06:15 AM	0	109	29	2	9	0	0	3	0	0	0	0	0
2/10/2010	06:30 AM	0	74	40	1	10	0	0	5	0	0	0	0	1
2/10/2010	06:45 AM	0	106	38	2	10	0	0	5	1	1	0	0	1
2/10/2010	07:00 AM	0	140	37	7	5	0	0	3	0	0	0	0	0

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 07:15 AM	0	114	44	1	22	0	0	12	0	0	0	0	1
2/10/2010 07:30 AM	0	122	36	0	17	0	0	5	0	1	0	1	1
2/10/2010 07:45 AM	0	101	33	4	12	2	0	12	0	0	0	1	4
2/10/2010 08:00 AM	0	153	34	1	12	3	1	13	1	0	0	1	1
2/10/2010 08:15 AM	1	124	43	4	13	0	0	4	0	0	0	0	1
2/10/2010 08:30 AM	0	97	41	4	13	1	0	7	0	0	0	0	3
2/10/2010 08:45 AM	0	173	61	4	7	0	1	11	0	2	2	1	1
2/10/2010 09:00 AM	0	118	43	1	15	1	1	3	0	0	0	0	4
2/10/2010 09:15 AM	0	116	48	4	15	0	3	8	1	1	0	0	2
2/10/2010 09:30 AM	2	109	40	4	16	2	0	12	0	0	0	1	0
2/10/2010 09:45 AM	0	124	43	3	8	2	1	17	0	0	0	0	0
2/10/2010 10:00 AM	0	129	32	4	20	0	1	10	0	2	1	1	1
2/10/2010 10:15 AM	0	124	40	5	16	1	0	7	0	1	0	1	3

Combined
Start Date: 2/10/2010
Start Time: 11:15:00 AM
Site Code: 2000 West South
Station ID:

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 11:15 AM	0	92	33	5	11	1	0	10	0	1	0	2	2
2/10/2010 11:30 AM	0	52	22	1	3	0	0	4	0	2	0	0	3
2/10/2010 11:45 AM	0	40	16	2	8	1	0	7	0	0	0	0	1
2/10/2010 12:00 PM	0	2	1	0	0	0	0	1	0	0	0	0	1
2/10/2010 12:15 PM	2	114	56	3	13	0	0	15	0	3	0	1	7
2/10/2010 12:30 PM	1	113	52	4	8	1	1	12	2	1	0	2	2
2/10/2010 12:45 PM	1	60	25	3	10	0	2	11	0	0	0	0	9
2/10/2010 01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 04:45 PM	0	68	19	7	3	0	1	8	0	3	0	1	8
2/10/2010 05:00 PM	0	71	34	7	5	0	2	8	1	1	0	2	12
2/10/2010 05:15 PM	1	38	4	0	0	0	0	7	0	0	0	0	7
2/10/2010 05:30 PM	0	25	3	0	3	0	1	1	0	1	0	1	2
2/10/2010 05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 06:00 PM	1	119	34	4	11	0	1	11	1	3	0	1	10
2/10/2010 06:15 PM	0	11	5	0	1	0	1	0	0	0	0	1	0
2/10/2010 06:30 PM	0	59	20	4	1	1	0	3	0	0	0	0	3
2/10/2010 06:45 PM	0	118	27	1	9	0	2	13	0	1	0	1	7
2/10/2010 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 07:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 07:30 PM	0	38	12	1	3	0	0	2	0	1	0	0	1
2/10/2010 07:45 PM	0	100	34	0	7	0	1	12	0	1	0	0	1
2/10/2010 08:00 PM	0	126	36	2	7	0	1	5	0	0	0	1	2
2/10/2010 08:15 PM	0	132	47	1	11	0	1	9	1	0	0	0	1
2/10/2010 08:30 PM	0	148	34	1	9	1	1	5	0	0	0	0	3
2/10/2010 08:45 PM	1	107	34	0	8	0	2	3	1	1	0	0	2

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 09:00 PM	0	102	22	1	1	0	0	10	0	0	0	0	1
2/10/2010 09:15 PM	0	110	40	1	7	0	0	4	1	4	0	1	1
2/10/2010 09:30 PM	0	102	17	0	1	0	0	1	0	0	0	0	2
2/10/2010 09:45 PM	0	107	23	0	4	0	0	4	0	0	1	0	0
2/10/2010 10:00 PM	1	89	26	0	5	0	0	1	0	0	0	0	0
2/10/2010 10:15 PM	0	66	15	0	5	0	0	0	0	0	0	0	1
2/10/2010 10:30 PM	0	77	24	1	3	0	0	2	0	0	0	0	0
2/10/2010 10:45 PM	0	62	12	0	4	0	0	1	0	0	0	0	0
2/10/2010 11:00 PM	0	40	8	0	4	0	0	0	0	0	0	0	1
2/10/2010 11:15 PM	0	49	16	1	0	0	0	1	0	0	0	0	0
2/10/2010 11:30 PM	0	33	5	0	0	0	0	2	1	0	0	0	0
2/10/2010 11:45 PM	0	41	10	1	0	0	0	0	0	0	0	0	0
2/11/2010 12:00 AM	0	26	7	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:15 AM	0	19	3	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:30 AM	0	13	3	0	4	0	0	0	0	0	0	0	0
2/11/2010 12:45 AM	0	12	4	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:00 AM	0	26	7	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:15 AM	0	22	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:30 AM	0	15	0	1	0	0	0	0	0	0	0	0	0
2/11/2010 01:45 AM	0	10	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:00 AM	0	7	3	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:15 AM	0	12	4	0	1	0	0	0	0	0	0	0	0
2/11/2010 02:30 AM	0	8	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:45 AM	0	5	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:00 AM	0	4	0	0	1	0	0	0	0	0	0	0	0
2/11/2010 03:15 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:30 AM	0	11	2	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:45 AM	0	22	4	0	0	0	0	0	0	0	0	0	0
2/11/2010 04:00 AM	0	9	4	0	1	0	0	0	0	0	0	0	0
2/11/2010 04:15 AM	0	14	8	0	1	0	0	0	0	0	0	0	0
2/11/2010 04:30 AM	0	19	5	1	3	0	0	0	0	0	0	0	0
2/11/2010 04:45 AM	0	21	8	0	3	0	0	0	0	0	0	0	0
2/11/2010 05:00 AM	1	20	10	0	3	1	0	0	0	0	0	0	0
2/11/2010 05:15 AM	0	28	5	1	7	2	0	0	0	0	0	0	0
2/11/2010 05:30 AM	0	46	15	0	11	0	0	0	0	0	0	0	0
2/11/2010 05:45 AM	0	81	36	1	8	0	0	2	0	0	0	0	1
2/11/2010 06:00 AM	0	73	25	0	12	0	0	2	0	0	0	0	0
2/11/2010 06:15 AM	0	88	33	3	9	0	0	4	0	0	0	0	0
2/11/2010 06:30 AM	0	63	33	0	13	0	0	4	1	0	0	0	0
2/11/2010 06:45 AM	1	96	36	1	23	0	1	5	0	0	0	0	1
2/11/2010 07:00 AM	1	118	43	4	11	0	2	5	0	1	0	0	2
2/11/2010 07:15 AM	3	123	38	5	10	1	0	7	0	0	0	1	1
2/11/2010 07:30 AM	0	92	24	4	19	1	0	4	0	0	0	2	2
2/11/2010 07:45 AM	1	65	20	3	12	1	0	3	0	0	1	1	2
2/11/2010 08:00 AM	0	34	14	2	3	0	0	1	0	0	0	0	2

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/11/2010 08:15 AM	0	102	55	3	16	0	0	10	0	0	0	0	0
2/11/2010 08:30 AM	0	77	46	4	9	0	1	7	1	0	0	0	3
2/11/2010 08:45 AM	1	0	2	0	0	0	0	1	0	0	0	0	1
2/11/2010 09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

Combined
Start Date: 2/10/2010
Start Time: 12:30:00 PM
Site Code: Main North

Date	Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010	12:30 PM	0	180	55	3	7	0	1	3	0	0	0	0	1
2/10/2010	12:45 PM	0	147	33	8	13	0	0	7	0	0	1	0	1
2/10/2010	01:00 PM	2	156	31	2	12	1	0	4	2	0	0	2	0
2/10/2010	01:15 PM	0	132	47	5	16	1	0	5	2	1	1	0	0
2/10/2010	01:30 PM	2	166	43	3	13	0	0	8	0	0	0	1	0
2/10/2010	01:45 PM	0	158	36	4	8	0	0	5	0	0	0	1	1
2/10/2010	02:00 PM	1	156	32	2	14	0	0	5	1	0	1	0	2
2/10/2010	02:15 PM	0	174	45	4	11	0	0	11	1	0	1	1	1
2/10/2010	02:30 PM	1	169	44	3	14	1	0	9	1	0	1	1	0
2/10/2010	02:45 PM	0	166	39	4	15	2	0	11	1	0	0	0	1
2/10/2010	03:00 PM	0	167	45	4	11	0	0	13	0	0	0	0	0
2/10/2010	03:15 PM	3	195	46	3	14	2	0	14	0	1	1	0	1
2/10/2010	03:30 PM	0	225	50	7	15	1	1	10	0	1	2	1	1
2/10/2010	03:45 PM	1	199	56	3	13	0	1	7	1	0	0	0	3
2/10/2010	04:00 PM	1	251	53	1	10	0	1	5	0	1	0	1	0
2/10/2010	04:15 PM	0	219	46	3	12	0	0	12	0	0	1	0	2
2/10/2010	04:30 PM	0	206	48	3	12	1	0	8	2	3	1	1	2
2/10/2010	04:45 PM	0	177	45	3	14	0	0	7	0	0	0	0	1
2/10/2010	05:00 PM	1	229	32	5	12	2	0	12	0	0	2	0	3
2/10/2010	05:15 PM	0	201	44	4	8	1	0	11	0	2	0	1	2
2/10/2010	05:30 PM	0	123	28	1	2	0	0	4	0	0	0	0	1
2/10/2010	05:45 PM	1	214	41	3	11	0	0	9	0	2	0	2	1
2/10/2010	06:00 PM	0	182	36	5	13	0	0	8	0	0	1	0	1
2/10/2010	06:15 PM	0	191	44	3	14	1	0	3	1	0	1	0	0
2/10/2010	06:30 PM	0	141	35	0	13	1	0	2	0	0	0	0	2
2/10/2010	06:45 PM	0	166	28	9	9	0	0	2	0	0	0	0	0
2/10/2010	07:00 PM	0	124	27	4	7	0	0	5	0	0	1	0	0
2/10/2010	07:15 PM	0	112	31	2	3	0	0	1	0	0	0	0	0
2/10/2010	07:30 PM	0	99	29	3	7	0	0	4	0	0	0	0	1
2/10/2010	07:45 PM	0	110	21	2	3	0	0	1	0	0	0	0	1
2/10/2010	08:00 PM	0	109	19	1	3	0	0	1	0	0	0	0	0
2/10/2010	08:15 PM	1	112	27	1	4	1	1	2	0	0	0	0	1
2/10/2010	08:30 PM	0	95	26	3	3	0	0	4	0	0	0	1	0
2/10/2010	08:45 PM	0	90	22	1	10	0	0	1	0	0	0	0	0
2/10/2010	09:00 PM	0	92	12	3	4	1	0	0	0	0	0	0	0
2/10/2010	09:15 PM	0	86	13	2	0	0	0	2	0	0	0	0	0
2/10/2010	09:30 PM	0	72	9	1	2	0	0	1	0	0	0	0	0
2/10/2010	09:45 PM	0	51	9	2	1	0	0	0	0	0	0	0	0
2/10/2010	10:00 PM	0	71	10	0	4	0	0	1	1	0	0	0	0
2/10/2010	10:15 PM	0	45	8	0	2	0	0	0	0	0	0	0	0

Date	Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010	10:30 PM	0	48	11	1	1	0	0	0	0	0	0	0	0
2/10/2010	10:45 PM	0	24	8	1	2	0	0	0	0	0	0	0	0
2/10/2010	11:00 PM	0	31	7	0	1	0	1	0	0	0	0	0	0
2/10/2010	11:15 PM	0	31	4	1	0	1	0	0	0	0	0	0	0
2/10/2010	11:30 PM	0	33	3	0	0	0	0	0	0	0	0	0	0
2/10/2010	11:45 PM	0	21	0	1	0	0	0	0	0	0	0	0	0
2/11/2010	12:00 AM	0	22	3	1	1	0	0	0	0	0	0	0	0
2/11/2010	12:15 AM	0	20	5	0	0	0	0	0	0	0	0	0	0
2/11/2010	12:30 AM	0	14	3	1	3	0	0	0	0	0	0	0	0
2/11/2010	12:45 AM	0	13	0	1	2	0	0	0	0	0	0	0	0
2/11/2010	01:00 AM	0	17	1	0	0	0	0	0	0	0	0	0	0
2/11/2010	01:15 AM	0	5	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	01:30 AM	0	11	2	0	0	0	0	0	0	0	0	0	0
2/11/2010	01:45 AM	0	5	2	0	0	0	0	0	0	0	0	0	0
2/11/2010	02:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	02:15 AM	0	15	3	0	0	0	0	0	0	0	0	0	0
2/11/2010	02:30 AM	0	5	2	0	0	0	0	0	1	0	0	0	0
2/11/2010	02:45 AM	0	8	4	0	0	0	0	0	0	0	0	0	0
2/11/2010	03:00 AM	0	14	4	0	1	0	0	0	0	0	0	0	0
2/11/2010	03:15 AM	0	8	7	0	3	0	0	0	0	0	0	0	0
2/11/2010	03:30 AM	0	15	4	0	2	0	0	0	0	0	0	0	0
2/11/2010	03:45 AM	0	19	3	0	0	0	0	0	0	0	0	0	0
2/11/2010	04:00 AM	0	20	10	1	1	1	0	0	0	0	0	0	0
2/11/2010	04:15 AM	0	26	7	0	3	1	0	0	0	0	0	0	0
2/11/2010	04:30 AM	0	41	10	1	4	0	0	1	0	0	0	0	0
2/11/2010	04:45 AM	0	50	10	1	2	0	0	0	0	0	0	0	0
2/11/2010	05:00 AM	1	46	17	3	0	1	0	0	0	0	0	0	0
2/11/2010	05:15 AM	0	106	29	2	9	1	0	0	1	0	0	0	0
2/11/2010	05:30 AM	0	90	34	4	2	1	1	7	0	0	0	0	0
2/11/2010	05:45 AM	1	108	36	3	7	0	1	7	0	0	1	0	0
2/11/2010	06:00 AM	0	80	25	1	5	0	0	2	0	1	0	0	0
2/11/2010	06:15 AM	0	119	41	2	8	2	1	4	0	0	0	0	0
2/11/2010	06:30 AM	0	26	4	1	3	0	0	0	0	0	0	0	0
2/11/2010	06:45 AM	0	31	8	1	1	0	0	0	1	0	0	0	2
2/11/2010	07:00 AM	0	32	8	2	2	0	0	1	0	0	0	0	4
2/11/2010	07:15 AM	0	9	2	0	0	0	0	0	0	0	0	0	1
2/11/2010	07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0

Date	Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/11/2010	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2010	02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

Combined
Start Date: 2/8/2010
Start Time: 12:00:00 PM
Site Code: Main South
Station ID:

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	12:00 PM	0	150	32	2	12	0	1	3	1	0	0	1	1
2/8/2010	12:15 PM	0	156	38	2	13	2	1	2	1	0	0	1	0
2/8/2010	12:30 PM	0	171	37	0	10	0	0	3	1	1	1	1	1
2/8/2010	12:45 PM	0	190	35	2	10	0	0	7	0	2	0	2	2
2/8/2010	01:00 PM	0	158	33	2	15	1	1	3	0	0	0	0	0
2/8/2010	01:15 PM	1	184	36	2	5	3	0	4	1	0	0	2	0
2/8/2010	01:30 PM	1	172	32	3	16	2	1	7	0	0	0	0	0
2/8/2010	01:45 PM	0	179	35	2	13	1	1	8	0	1	1	0	0
2/8/2010	02:00 PM	1	158	45	2	10	0	0	11	0	1	0	1	1
2/8/2010	02:15 PM	1	173	40	2	11	0	1	5	0	0	0	0	2
2/8/2010	02:30 PM	1	172	39	1	9	1	0	3	1	0	0	0	1
2/8/2010	02:45 PM	1	168	31	5	8	1	0	7	0	2	0	2	2
2/8/2010	03:00 PM	1	193	44	3	21	4	1	7	1	2	1	0	0
2/8/2010	03:15 PM	1	174	43	2	9	0	0	10	0	2	0	0	1
2/8/2010	03:30 PM	0	169	51	5	12	2	1	9	1	3	1	0	2
2/8/2010	03:45 PM	0	204	44	3	12	0	0	11	3	0	1	0	2
2/8/2010	04:00 PM	1	206	47	3	13	0	0	15	1	2	0	0	2
2/8/2010	04:15 PM	0	199	43	0	12	3	1	9	0	0	1	0	0
2/8/2010	04:30 PM	1	193	38	1	14	0	2	12	1	1	1	2	2
2/8/2010	04:45 PM	0	195	33	3	8	1	0	14	1	1	0	1	0
2/8/2010	05:00 PM	1	173	46	3	12	1	1	16	0	0	0	0	0
2/8/2010	05:15 PM	2	197	34	2	9	1	0	9	1	3	1	1	2
2/8/2010	05:30 PM	0	226	48	2	14	2	0	14	0	3	1	0	2
2/8/2010	05:45 PM	3	199	33	1	13	0	0	5	0	0	0	1	1
2/8/2010	06:00 PM	1	201	44	3	9	3	2	3	0	1	0	0	2
2/8/2010	06:15 PM	0	161	22	5	4	0	0	3	0	1	0	0	0
2/8/2010	06:30 PM	0	167	26	3	2	1	0	4	1	1	0	0	0
2/8/2010	06:45 PM	1	161	14	2	5	1	0	1	1	0	1	0	0
2/8/2010	07:00 PM	1	148	31	2	7	1	0	3	0	0	0	0	3
2/8/2010	07:15 PM	0	121	13	3	5	0	1	2	0	0	0	0	3
2/8/2010	07:30 PM	0	114	22	1	3	0	0	1	0	0	0	0	0
2/8/2010	07:45 PM	0	101	17	3	4	0	0	0	0	0	0	0	0
2/8/2010	08:00 PM	1	119	12	2	7	1	0	1	0	0	0	0	0
2/8/2010	08:15 PM	0	98	13	0	5	1	0	2	0	0	0	0	0
2/8/2010	08:30 PM	0	76	12	1	3	0	0	1	0	0	0	0	0
2/8/2010	08:45 PM	0	92	23	1	2	0	0	1	0	0	0	0	1
2/8/2010	09:00 PM	0	80	9	2	0	0	1	3	0	0	0	0	0
2/8/2010	09:15 PM	0	84	11	0	0	2	0	0	0	0	0	0	1
2/8/2010	09:30 PM	0	86	11	0	3	0	1	2	0	0	0	0	0

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/8/2010	09:45 PM	0	72	10	1	3	0	0	0	0	0	0	1	1
2/8/2010	10:00 PM	0	53	11	0	1	0	0	1	0	0	0	0	0
2/8/2010	10:15 PM	1	45	5	1	4	0	0	0	0	0	0	0	1
2/8/2010	10:30 PM	0	49	5	0	1	0	0	1	0	0	0	0	0
2/8/2010	10:45 PM	0	36	7	1	1	0	0	0	0	0	0	0	0
2/8/2010	11:00 PM	0	34	5	1	1	0	0	0	0	0	0	0	0
2/8/2010	11:15 PM	0	36	4	0	2	0	0	0	0	0	0	0	0
2/8/2010	11:30 PM	0	32	8	1	0	0	0	0	0	0	0	0	0
2/8/2010	11:45 PM	1	21	7	0	1	0	0	0	0	0	0	0	0
2/9/2010	12:00 AM	1	25	2	2	0	0	0	0	0	0	0	0	0
2/9/2010	12:15 AM	0	17	5	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:30 AM	0	12	3	0	0	0	0	0	0	0	0	0	0
2/9/2010	12:45 AM	0	7	2	1	1	0	0	0	0	0	0	0	0
2/9/2010	01:00 AM	0	16	1	0	1	0	0	0	0	0	0	0	0
2/9/2010	01:15 AM	0	16	2	0	0	0	0	0	0	0	0	0	0
2/9/2010	01:30 AM	0	19	1	0	1	0	0	0	0	0	0	0	0
2/9/2010	01:45 AM	0	14	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:00 AM	0	15	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:15 AM	0	7	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:30 AM	0	7	0	0	0	0	0	0	0	0	0	0	0
2/9/2010	02:45 AM	0	12	1	0	0	0	0	1	0	0	0	0	0
2/9/2010	03:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/9/2010	03:15 AM	0	10	1	0	0	1	0	0	0	0	0	0	0
2/9/2010	03:30 AM	1	9	7	0	2	0	0	0	0	0	0	0	0
2/9/2010	03:45 AM	0	14	1	0	2	0	0	0	0	0	0	0	0
2/9/2010	04:00 AM	0	21	7	0	0	0	0	0	0	0	0	0	0
2/9/2010	04:15 AM	0	33	5	0	4	0	0	0	0	0	0	0	0
2/9/2010	04:30 AM	0	27	19	0	1	1	0	1	0	0	0	0	0
2/9/2010	04:45 AM	0	48	10	2	2	0	0	1	0	0	0	0	0
2/9/2010	05:00 AM	1	66	17	2	5	1	0	1	0	0	0	0	2
2/9/2010	05:15 AM	0	80	17	2	3	0	0	0	0	0	0	0	1
2/9/2010	05:30 AM	1	90	34	2	9	1	0	0	1	0	0	0	1
2/9/2010	05:45 AM	1	114	39	1	19	0	0	8	0	1	0	0	2
2/9/2010	06:00 AM	0	99	15	1	10	1	0	3	1	1	0	0	2
2/9/2010	06:15 AM	0	84	19	2	10	0	0	3	1	0	1	0	2
2/9/2010	06:30 AM	0	59	17	2	4	0	0	1	0	0	0	1	2
2/9/2010	06:45 AM	0	160	51	3	8	1	0	2	0	0	0	0	0
2/9/2010	07:00 AM	1	156	35	2	16	0	1	2	0	0	0	0	0
2/9/2010	07:15 AM	1	161	43	2	8	0	1	3	0	0	0	0	3
2/9/2010	07:30 AM	0	182	32	5	7	0	0	4	0	0	0	0	0
2/9/2010	07:45 AM	4	161	39	5	15	1	0	4	2	0	0	0	1
2/9/2010	08:00 AM	2	161	32	3	8	0	0	4	0	1	1	0	2
2/9/2010	08:15 AM	1	98	17	5	10	0	0	0	1	0	0	0	2
2/9/2010	08:30 AM	0	131	31	7	9	0	0	3	1	0	0	1	2
2/9/2010	08:45 AM	1	141	31	4	15	0	0	7	0	1	0	0	4
2/9/2010	09:00 AM	0	136	27	2	13	1	0	2	0	0	0	1	1

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/9/2010	09:15 AM	0	132	33	4	11	1	0	4	0	0	0	1	0
2/9/2010	09:30 AM	0	123	23	0	11	0	0	4	0	1	0	0	0
2/9/2010	09:45 AM	0	132	34	2	11	1	0	4	0	0	0	0	0
2/9/2010	10:00 AM	1	128	35	4	13	1	1	3	2	1	0	0	0
2/9/2010	10:15 AM	1	120	26	2	8	2	0	2	1	0	0	0	0
2/9/2010	10:30 AM	1	142	41	2	10	1	0	2	0	1	0	1	0
2/9/2010	10:45 AM	1	128	37	1	10	0	0	2	0	0	0	0	0
2/9/2010	11:00 AM	0	136	38	1	10	1	0	3	1	0	0	0	2
2/9/2010	11:15 AM	1	164	46	7	14	1	0	8	0	0	0	1	0
2/9/2010	11:30 AM	1	168	34	2	12	0	1	3	1	0	0	0	0
2/9/2010	11:45 AM	1	159	37	3	19	0	1	7	0	0	0	0	0
2/9/2010	12:00 PM	1	159	41	1	8	3	1	8	0	1	0	1	0
2/9/2010	12:15 PM	0	146	40	2	11	1	1	12	0	0	0	0	1
2/9/2010	12:30 PM	0	192	33	1	9	2	0	9	0	1	0	1	0
2/9/2010	12:45 PM	1	170	36	3	5	0	0	7	0	0	0	0	2
2/9/2010	01:00 PM	0	166	27	2	8	2	1	11	0	1	1	1	0
2/9/2010	01:15 PM	1	172	43	2	10	0	0	7	0	2	0	0	0
2/9/2010	01:30 PM	1	160	40	1	14	2	0	8	0	1	0	0	0
2/9/2010	01:45 PM	1	161	38	3	19	1	0	10	1	3	0	0	0
2/9/2010	02:00 PM	0	133	28	0	12	0	0	0	0	0	0	0	2
2/9/2010	02:15 PM	1	172	46	2	15	1	0	5	0	0	1	0	0
2/9/2010	02:30 PM	0	152	37	3	15	0	0	3	0	1	0	0	0
2/9/2010	02:45 PM	0	168	36	2	15	0	0	10	1	1	0	1	0
2/9/2010	03:00 PM	0	193	40	4	19	1	0	7	0	0	1	2	0
2/9/2010	03:15 PM	0	171	36	1	13	1	0	11	0	1	0	0	1
2/9/2010	03:30 PM	0	137	27	2	7	1	0	4	0	1	0	0	3
2/9/2010	03:45 PM	0	206	44	4	12	3	0	17	0	2	2	2	0
2/9/2010	04:00 PM	1	177	44	3	20	1	0	9	0	2	0	4	1
2/9/2010	04:15 PM	0	208	43	2	14	0	1	13	0	1	0	2	1
2/9/2010	04:30 PM	4	194	44	1	7	0	0	11	0	0	1	0	4
2/9/2010	04:45 PM	0	213	37	4	17	0	0	11	0	1	0	2	0
2/9/2010	05:00 PM	0	199	39	1	12	1	1	8	1	2	0	2	1
2/9/2010	05:15 PM	0	185	31	1	13	1	0	17	0	0	0	1	4
2/9/2010	05:30 PM	1	198	36	1	15	2	2	7	1	3	0	0	3
2/9/2010	05:45 PM	4	186	53	3	9	1	1	17	3	1	1	1	1
2/9/2010	06:00 PM	2	171	35	0	12	0	0	13	0	1	1	0	1
2/9/2010	06:15 PM	0	181	26	4	8	1	1	4	2	1	0	1	3
2/9/2010	06:30 PM	1	144	33	5	9	2	0	7	1	1	0	1	1
2/9/2010	06:45 PM	1	180	31	2	5	0	0	3	0	0	0	0	1
2/9/2010	07:00 PM	0	136	25	3	8	0	0	7	0	0	0	0	1
2/9/2010	07:15 PM	0	114	22	0	8	3	1	3	1	0	0	0	0
2/9/2010	07:30 PM	1	94	26	1	8	0	0	5	0	0	0	1	0
2/9/2010	07:45 PM	1	94	15	1	3	0	0	0	0	0	0	0	2
2/9/2010	08:00 PM	0	112	17	1	8	1	0	0	0	0	0	0	0
2/9/2010	08:15 PM	1	86	19	1	7	0	1	1	0	0	0	0	3

		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/9/2010	08:30 PM	0	109	10	1	3	0	0	0	0	0	0	0	0
2/9/2010	08:45 PM	1	97	24	0	5	0	1	3	0	0	0	0	0
2/9/2010	09:00 PM	0	86	8	2	7	0	0	1	0	0	0	0	0
2/9/2010	09:15 PM	0	95	13	0	5	0	0	1	0	0	0	0	0
2/9/2010	09:30 PM	0	72	20	0	3	0	0	0	0	0	0	0	0
2/9/2010	09:45 PM	0	78	19	0	1	0	0	2	0	0	0	0	0
2/9/2010	10:00 PM	0	59	10	1	3	0	0	0	0	0	0	0	1
2/9/2010	10:15 PM	0	56	13	0	4	0	0	1	0	0	0	0	0
2/9/2010	10:30 PM	0	52	10	0	0	1	0	0	0	0	0	0	0
2/9/2010	10:45 PM	1	39	3	0	4	0	0	0	0	0	0	0	0
2/9/2010	11:00 PM	0	37	3	2	1	0	0	0	0	0	0	0	0
2/9/2010	11:15 PM	0	44	5	0	1	0	0	0	0	0	0	0	0
2/9/2010	11:30 PM	0	34	9	0	2	0	0	0	0	0	0	0	0
2/9/2010	11:45 PM	0	24	7	1	0	0	0	0	0	0	0	0	0
2/10/2010	12:00 AM	0	26	5	2	0	0	0	0	0	0	0	0	0
2/10/2010	12:15 AM	0	17	3	0	0	0	0	0	0	0	0	0	0
2/10/2010	12:30 AM	0	17	7	0	4	0	0	0	0	0	0	0	0
2/10/2010	12:45 AM	0	13	1	1	2	0	0	0	0	0	0	0	0
2/10/2010	01:00 AM	0	16	3	0	1	0	0	0	0	0	0	0	0
2/10/2010	01:15 AM	0	14	3	0	0	0	0	0	0	0	0	0	0
2/10/2010	01:30 AM	0	9	0	0	1	0	0	0	0	0	0	0	0
2/10/2010	01:45 AM	1	8	1	0	1	0	0	0	0	0	0	0	0
2/10/2010	02:00 AM	0	11	1	0	0	0	0	0	0	0	0	0	0
2/10/2010	02:15 AM	0	8	0	0	1	0	0	0	0	0	0	0	0
2/10/2010	02:30 AM	0	5	2	0	0	0	0	0	0	0	0	0	0
2/10/2010	02:45 AM	0	10	2	0	0	0	0	0	1	0	0	0	0
2/10/2010	03:00 AM	0	19	2	0	0	0	0	0	0	0	0	0	0
2/10/2010	03:15 AM	0	13	1	0	2	0	0	0	0	0	0	0	0
2/10/2010	03:30 AM	0	19	3	0	1	0	0	0	0	0	0	0	0
2/10/2010	03:45 AM	0	15	4	0	3	0	0	0	0	0	0	0	0
2/10/2010	04:00 AM	0	15	4	0	2	1	0	0	0	0	0	0	0
2/10/2010	04:15 AM	0	19	7	0	3	0	0	0	0	0	0	0	1
2/10/2010	04:30 AM	0	36	15	1	2	0	0	0	0	0	0	0	0
2/10/2010	04:45 AM	1	49	15	0	2	0	0	2	0	1	0	0	0
2/10/2010	05:00 AM	1	69	16	3	8	0	0	1	0	0	0	0	0
2/10/2010	05:15 AM	0	83	22	1	7	1	0	3	0	1	0	0	0
2/10/2010	05:30 AM	2	87	25	2	9	1	0	2	0	0	0	0	0
2/10/2010	05:45 AM	1	114	32	1	15	0	0	5	0	0	0	0	2
2/10/2010	06:00 AM	0	118	28	1	10	2	1	2	0	0	0	0	0
2/10/2010	06:15 AM	0	128	29	2	7	2	0	2	0	0	0	0	1
2/10/2010	06:30 AM	1	131	39	2	9	0	0	2	1	1	0	0	2
2/10/2010	06:45 AM	0	159	45	1	11	0	0	2	0	0	1	0	1
2/10/2010	07:00 AM	0	133	28	2	8	0	0	2	0	1	0	0	2
2/10/2010	07:15 AM	0	82	15	3	5	0	1	3	0	0	0	0	1
2/10/2010	07:30 AM	0	155	26	3	5	1	0	3	0	1	0	0	2
2/10/2010	07:45 AM	0	165	43	5	13	0	0	8	1	1	0	1	3

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 08:00 AM	0	173	38	4	10	0	0	7	0	0	0	0	0
2/10/2010 08:15 AM	0	117	24	3	13	4	0	3	0	1	0	0	0
2/10/2010 08:30 AM	2	147	25	3	10	0	2	2	0	0	0	0	2
2/10/2010 08:45 AM	3	193	36	7	10	1	1	3	0	1	1	1	0
2/10/2010 09:00 AM	0	134	31	3	14	0	0	4	1	0	0	0	0
2/10/2010 09:15 AM	1	138	17	2	7	3	0	4	0	1	1	0	0
2/10/2010 09:30 AM	2	106	29	1	5	1	0	4	0	0	1	0	1
2/10/2010 09:45 AM	0	125	41	2	10	0	0	2	1	0	0	0	1
2/10/2010 10:00 AM	1	106	28	2	13	0	0	3	0	1	0	0	0
2/10/2010 10:15 AM	0	121	36	3	10	0	0	8	0	1	0	0	0
2/10/2010 10:30 AM	1	143	31	2	12	0	1	3	0	1	0	0	0
2/10/2010 10:45 AM	0	144	32	3	13	1	0	4	1	0	0	0	0
2/10/2010 11:00 AM	0	175	35	1	10	0	0	2	0	0	0	0	0
2/10/2010 11:15 AM	0	169	32	1	11	0	0	9	2	1	0	0	0
2/10/2010 11:30 AM	0	162	48	0	13	0	1	4	0	0	1	0	0
2/10/2010 11:45 AM	1	136	43	5	11	0	0	9	0	0	0	0	0

Combined
Start Date: 2/10/2010
Start Time: 11:30:00 AM
Site Code: 1000 West Clint Elem
Station ID:

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 11:30 AM	0	59	21	3	1	0	0	2	0	0	0	0	1
2/10/2010 11:45 AM	0	51	19	2	2	0	0	2	0	0	0	0	0
2/10/2010 12:00 PM	0	45	13	1	2	0	0	0	0	0	0	0	0
2/10/2010 12:15 PM	0	58	12	2	0	1	0	1	0	0	0	0	0
2/10/2010 12:30 PM	0	60	14	0	1	0	0	0	0	0	0	0	0
2/10/2010 12:45 PM	0	61	22	2	4	1	0	4	1	0	0	0	0
2/10/2010 01:00 PM	0	46	19	0	1	0	1	0	0	0	0	0	0
2/10/2010 01:15 PM	0	29	15	2	2	0	0	1	0	0	0	0	0
2/10/2010 01:30 PM	0	40	17	0	4	0	0	1	0	0	0	0	0
2/10/2010 01:45 PM	0	52	11	2	1	0	0	2	0	0	0	0	0
2/10/2010 02:00 PM	0	45	10	1	1	0	0	1	0	0	0	0	0
2/10/2010 02:15 PM	0	50	19	1	7	0	0	4	0	0	0	0	0
2/10/2010 02:30 PM	0	50	10	1	1	0	0	1	0	0	0	0	0
2/10/2010 02:45 PM	0	74	17	4	3	2	0	0	0	0	0	0	0
2/10/2010 03:00 PM	0	66	22	1	5	0	0	1	0	0	0	0	1
2/10/2010 03:15 PM	0	117	33	2	12	0	1	8	0	1	0	0	0
2/10/2010 03:30 PM	0	58	13	5	3	1	0	3	0	1	0	0	1
2/10/2010 03:45 PM	0	82	35	3	12	0	0	7	0	0	0	0	2
2/10/2010 04:00 PM	0	86	29	0	8	0	0	5	0	0	0	0	1
2/10/2010 04:15 PM	0	76	27	2	3	0	0	4	0	0	0	0	1
2/10/2010 04:30 PM	0	100	24	0	5	0	0	5	0	0	0	0	0
2/10/2010 04:45 PM	0	122	22	0	5	0	0	5	0	0	0	1	0
2/10/2010 05:00 PM	0	90	32	2	5	0	0	5	0	0	0	1	0
2/10/2010 05:15 PM	0	94	31	1	2	0	0	3	0	0	0	0	0
2/10/2010 05:30 PM	0	117	35	1	3	0	0	3	0	1	0	0	0
2/10/2010 05:45 PM	0	85	23	3	2	0	0	0	0	0	0	0	0
2/10/2010 06:00 PM	0	83	16	2	2	0	0	1	0	0	0	0	0
2/10/2010 06:15 PM	0	66	17	0	3	0	0	1	0	0	0	0	1
2/10/2010 06:30 PM	0	73	19	1	4	0	1	1	0	0	0	0	0
2/10/2010 06:45 PM	0	55	12	0	7	0	0	3	0	0	0	0	1
2/10/2010 07:00 PM	0	66	14	1	2	0	0	0	0	0	0	0	0
2/10/2010 07:15 PM	0	59	12	1	7	0	0	0	0	0	1	0	0
2/10/2010 07:30 PM	0	53	4	2	1	0	0	1	0	0	0	0	0
2/10/2010 07:45 PM	0	41	7	0	0	0	0	1	0	0	0	0	0
2/10/2010 08:00 PM	0	36	20	0	3	0	0	0	0	0	0	0	0
2/10/2010 08:15 PM	0	45	11	0	1	0	0	2	0	0	0	0	0
2/10/2010 08:30 PM	0	38	11	0	0	0	0	0	0	0	0	0	0
2/10/2010 08:45 PM	0	37	14	0	1	0	0	0	0	0	0	0	0
2/10/2010 09:00 PM	0	35	5	0	0	0	0	0	0	0	0	0	0

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/10/2010 09:15 PM	0	29	9	2	0	0	0	0	0	0	0	0	0
2/10/2010 09:30 PM	0	24	2	0	1	0	0	0	0	0	0	0	0
2/10/2010 09:45 PM	0	25	7	0	3	0	0	0	0	0	0	0	0
2/10/2010 10:00 PM	0	27	5	0	1	0	0	1	0	0	0	0	0
2/10/2010 10:15 PM	0	15	1	0	0	0	0	0	0	0	0	0	0
2/10/2010 10:30 PM	0	21	3	0	1	0	0	0	0	0	0	0	0
2/10/2010 10:45 PM	0	15	4	0	0	0	0	0	0	0	0	0	0
2/10/2010 11:00 PM	0	12	3	0	1	0	0	0	0	0	0	0	0
2/10/2010 11:15 PM	0	17	0	0	0	0	0	0	0	0	0	0	0
2/10/2010 11:30 PM	0	11	4	0	0	0	0	0	0	0	0	0	0
2/10/2010 11:45 PM	0	9	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:00 AM	0	5	1	0	1	0	0	0	0	0	0	0	0
2/11/2010 12:15 AM	0	13	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:30 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 12:45 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:00 AM	0	7	3	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:15 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:30 AM	0	3	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 01:45 AM	0	2	3	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 02:15 AM	0	5	3	0	0	0	0	1	0	0	0	0	0
2/11/2010 02:30 AM	0	3	0	0	1	0	0	0	0	0	0	0	0
2/11/2010 02:45 AM	0	1	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:15 AM	0	4	0	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:30 AM	0	4	2	0	0	0	0	0	0	0	0	0	0
2/11/2010 03:45 AM	0	8	2	0	0	0	0	0	0	0	0	0	0
2/11/2010 04:00 AM	0	7	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 04:15 AM	0	8	2	0	1	0	0	0	0	0	0	0	0
2/11/2010 04:30 AM	0	4	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 04:45 AM	0	5	2	0	1	0	0	0	0	0	0	0	0
2/11/2010 05:00 AM	0	10	1	0	0	0	0	0	0	0	0	0	0
2/11/2010 05:15 AM	0	11	4	1	1	1	0	0	0	0	0	0	0
2/11/2010 05:30 AM	0	21	5	0	1	0	0	0	0	0	0	0	0
2/11/2010 05:45 AM	0	26	13	1	3	0	0	0	0	0	0	0	0
2/11/2010 06:00 AM	0	36	21	0	1	0	0	0	0	0	0	0	0
2/11/2010 06:15 AM	0	44	17	3	3	0	0	0	0	0	0	0	0
2/11/2010 06:30 AM	0	22	13	0	1	0	0	0	0	0	0	0	0
2/11/2010 06:45 AM	0	51	17	2	7	1	0	3	0	0	0	0	0
2/11/2010 07:00 AM	0	33	12	3	9	0	0	1	0	0	0	0	0
2/11/2010 07:15 AM	0	43	11	3	3	0	0	0	0	0	0	0	0
2/11/2010 07:30 AM	1	41	13	3	8	0	0	0	0	0	0	0	0
2/11/2010 07:45 AM	0	52	29	3	5	0	0	2	0	0	0	0	0
2/11/2010 08:00 AM	0	61	13	0	4	0	0	4	0	0	0	0	0
2/11/2010 08:15 AM	0	48	17	3	2	0	0	0	0	0	0	0	0

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
2/11/2010 08:30 AM	1	77	33	1	4	0	0	5	0	0	0	0	0
2/11/2010 08:45 AM	0	26	15	0	5	0	1	0	0	0	0	1	0
2/11/2010 09:00 AM	0	36	22	1	4	0	0	5	0	0	0	0	1
2/11/2010 09:15 AM	0	23	4	3	2	0	0	0	0	0	0	0	0
2/11/2010 09:30 AM	0	25	11	0	2	0	0	0	0	0	0	0	0
2/11/2010 09:45 AM	0	26	14	2	3	0	0	2	0	0	0	0	0
2/11/2010 10:00 AM	0	28	13	0	2	0	0	0	0	0	0	0	0
2/11/2010 10:15 AM	0	29	11	2	1	0	0	0	0	0	1	0	0
2/11/2010 10:30 AM	0	21	5	2	0	0	0	0	0	0	0	0	0
2/11/2010 10:45 AM	0	39	11	1	2	0	0	0	0	0	0	0	0
2/11/2010 11:00 AM	1	45	24	3	4	0	0	0	0	0	0	0	0
2/11/2010 11:15 AM	0	50	13	1	4	0	0	3	0	0	0	0	0
2/11/2010 11:30 AM	0	52	13	3	5	0	0	3	0	0	0	0	0
2/11/2010 11:45 AM	0	58	32	1	2	0	0	4	0	0	0	0	0
2/11/2010 12:00 PM	0	51	11	1	2	0	0	0	0	0	0	0	1
2/11/2010 12:15 PM	0	39	19	1	2	0	0	0	0	0	0	0	0
2/11/2010 12:30 PM	0	53	10	0	3	0	0	2	0	0	0	0	0
2/11/2010 12:45 PM	0	64	23	2	4	0	0	2	0	0	0	0	0
2/11/2010 01:00 PM	0	50	16	0	4	0	0	0	0	0	0	0	0
2/11/2010 01:15 PM	0	47	8	2	2	0	0	0	0	1	0	0	0
2/11/2010 01:30 PM	0	51	17	0	1	0	0	1	0	0	0	0	0
2/11/2010 01:45 PM	0	39	16	2	5	0	0	0	0	0	0	0	0
2/11/2010 02:00 PM	0	44	11	0	1	0	0	3	0	0	0	0	0
2/11/2010 02:15 PM	0	44	31	2	2	0	0	2	0	0	0	0	0
2/11/2010 02:30 PM	0	47	15	1	4	1	0	1	0	0	0	0	0
2/11/2010 02:45 PM	0	61	19	4	10	1	0	1	0	0	0	0	0
2/11/2010 03:00 PM	0	76	29	1	4	0	0	1	0	0	0	0	0
2/11/2010 03:15 PM	0	111	31	1	9	0	1	4	0	0	0	0	1
2/11/2010 03:30 PM	0	93	40	4	8	0	1	9	0	1	0	0	2

APPENDIX G

Public Involvement Phase I Report

Beau Hunter
Kimberly Winterton
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March 15, 2010

TECHNICAL MEMORANDUM

Subject: Public Involvement Summary
UDOT Project Number: F-0037(3)12; Pin 6552

Introduction

Preliminary work on the Environmental Study for 1800 North in Davis County began in January 2010. Due to the investigative nature of Phase I, a minimal public involvement effort has been conducted to allow the project team an opportunity to gather information, determine need, and establish project parameters. More recently, three stakeholders have contacted the public involvement team to inquire about the project and have expressed some concern. This prompted UDOT to advance the PI efforts in Phase I by establishing a hotline, e-mail account, and Web site. The PI team will work closely with UDOT to implement these activities in the coming weeks.

Public Involvement Summary

A Draft Public Involvement Plan was developed for Phase I and distributed to UDOT for review and approval. The plan highlights the following areas: target dates, project team, public involvement expectations, stakeholder identification, and public involvement activities—including potential stakeholder outreach for Phases II and III. The PI Plan is intended to be a working document throughout the project, and will require updates at the end of Phase I to account for future PI efforts on the project.

A preliminary stakeholder database has been established using the most recent GIS information from Davis County. The database includes addresses for approximately 1,200 properties within two blocks north and south of 1800 North, but does not contain names or additional contact information for property owners. The PI team is currently working with Clinton and Sunset to include names of property owners and their respective mailing addresses (if different than the physical address) for the 120 parcels directly adjacent to 1800 North. An initial business inventory has also been conducted from Main Street to 2000 West to include names, addresses, and phone numbers for approximately 55 businesses.

Three calls have been received during Phase I from stakeholders inquiring about the project (see attached phone log). It was evident from these calls that information about the project is beginning to circulate, some of which is inaccurate. As a result, the PI efforts will be increased in the final stages of Phase I to include a project identity, Web site, hotline, and e-mail address. The PI staff will work closely with Vic Saunders, the UDOT Region 1 Public Involvement Manager, to advance all PI activities.

Upcoming Public Involvement Activities

- Establish a hotline number and e-mail address - March 2010
- Develop UCON Summary Page and project Web site - March 2010

- Link Web site to other applicable sites (i.e. Davis County, Sunset City, Clinton City, etc.) - March 2010
- Key stakeholder meeting with Hill Air Force Base - March/April 2010
- Develop and distribute initial newsletter - April 2010

Conclusion

A minimal level of public involvement has been implemented to date, but planned efforts will increase as Phase I concludes and Phase II begins. Our initial stakeholder outreach will start at the end of Phase I and focus on the residents, businesses, and property owners adjacent to 1800 North. Other interested parties will be added to the database when they contact the project team through the project Web site, hotline, and e-mail address.

1800 North Environtmental Study
Call Log

NAME	CALL DATE	CALL SUMMARY
Monica Miles 1674 N 725 W Clearfield, UT (801) 728-0990 monica@africamail.com	2/24/2010	Monica heard rumors about the project and called to get more information. Beau informed her we are currently studying the traffic to determine if there is a need for a project in this area. She also mentioned that a number of her neighbors have interest and concerns as well. Beau committed to notifying her as we know more about the project. He also collected her contact information and sent her an e-mail to establish contact.
Brent Andrews Sunset City Council	3/2/2010	Blake w/ The Langdon Group Received a call from Brent Andrews on the West Davis Hotline. Brent is a Sunset City Council Member that called with questions about the 1800 North project, namely schedule, current status, and if the interchange would be addressed as part of the project. Beau called Mr. Andrews on 3/2/2010 and left a message.
Casey Johnson 1862 N 630 W Clearfield, UT (435)760-2908	3/2/2010	Casey is starting to hear about the project from various neighbors who are concerned. It sounds like rumors are starting to surface about widening and impacts to houses on both sides of the road. Casey may be interested in participating in a citizen committee if we put one together for the project and is willing to help get information to his neighbors.

Communication Plan

1800 North (SR-37) 2000 West to Main Street Environmental Study
UDOT Project No. F-0037(4)0; Pin 6652
January 7, 2010

UDOT Project Manager: Marjorie Rasmussen, P.E.
Horrocks Project Manager: Stan Jorgensen, P.E.

1. Project Team members may communicate with each other. All project team communication should be done electronically as much as possible. Marjorie Rasmussen (mcrasmussen@utah.gov) and Stan Jorgensen (stan@horrocks.com) <u>shall be copied on all email.</u>

2. Meetings: An agenda will be provided prior to each meeting. Meeting Minutes will be the responsibility of the Consultant and will be distributed within one week. All meetings at which project decisions are made will be documented. All meetings with stakeholders will be documented. Send email of minutes to Marjorie Rasmussen (mcrasmussen@utah.gov) and Stan Jorgensen (stan@horrocks.com).

3. Important decisions or communication shall be documented and included in the Project Files to be used in FHWA's Administrative Record. Forward documentation to Judy Imlay (judyi@horrocks.com) and copy Marjorie Rasmussen (mcrasmussen@utah.gov) and Stan Jorgensen (stan@horrocks.com).

APPENDIX H

Project Management

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Tom Allen
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March 25, 2010

Subject: QC/QA Plan for 1800 North (SR-37) 2000 W. to Main St. Environmental Study
UDOT Project Number: F-0037(3)12; Pin 6552

The Horrocks Engineers Quality Management Plan (QMP) addresses QC/QA activities for all Horrocks Engineers' activities. A copy of the QMP is attached. The Horrocks Engineers QMP will be used for the Clinton 1800 North project to ensure that quality products are delivered to UDOT. Quality control will be continuous during performance of the tasks of Phase 1 in preparation for completing an environmental document in subsequent phases, if assigned.

The QC/QA plan for Phase 1 focuses on the products to be delivered as provided in the Detailed Work Plan. A QC/QA review process will be used for the deliverables listed on the attached Project QC/QA Sign-off Sheet. The Activity Lead, or the person doing the work, after using the appropriate internal reviews (which may include UDOT and FHWA, if desired) and completing the task, verifies that the activity has been completed by signing the Project QC/QA Sign-off Sheet. The deliverable is then provided to the QC checker, who should be a senior engineer or senior staff member knowledgeable of the activity requirements. The checker provides an independent review and therefore must not have prepared the deliverable being checked. The full five-step Check Print Process outlined in the QMP will not be used for the deliverables in Phase 1.

Comments will be recorded on the Review Comment and Resolution Form and the deliverable, with the comment form, will be returned to the Activity Lead. Corrections will be made and recorded on the comment form; a resolution meeting will be held, if needed.

After comments have been resolved to the checker's satisfaction, as documented by initialing the comment form, the product with the QC information is provided to the Project Manager (or a designee) who verifies that the QC process has been followed. Following QA sign-off, the product can be delivered to UDOT.

If further phases are assigned, such as for the preparation of an EA or other environmental document, the final documents will undergo the five-step Check Print Process prior to submittal to UDOT, ensuring that the document meets the best practices and standards.

Project QC/QA Sign-off Sheet				
Project F-0034(4)0; PIN 6552				
1800 North (SR-37) 2000 W. to Main Street Environmental Study				
Activity	**Deliverable**	**Activity Lead**	**Quality Control**	**Quality Assurance**
Activity 05E - Develop Initial Public Involvement Plan				
	Public Involvement Plan			
Activity 11E - Obtain Mapping and/or Photography				
	Aerial images			
	Planimetrics			
	Digital Terrain Model			
	Supplemental Survey Data			
Activity 15E - Develop Project Context (partial)				
	Project Design Criteria Report			
	Drainage Report/Memo			
	Utilities base map and GIS files			
	Right-of-way base map from County GIS files			
	Traffic report			
	GIS files/layers			
	CH2M Hill portion			
	Prepare geotechnical report that summarizes existing geotechnical data			
Activity 38E - Implement Public Involvement Plan (partial)				
	One newsletter			
	One media information packet			
	One press release			
	Final Phase 1 Report			

Codes

1 - Add or Correct
2 - Clarify or Evaluate
3 - Add'l Info Needed
4 - Not Cost Effective / Preference
5 - Disagree
6 - Delete Comment

Review Comment and Resolution Form

Project Name	1800 North (SR-37) 2000 W. to Main St. Env. Study	PIN 6552	Reviewer:
Project No.	F-0034(4)0	Review Meeting Date	

Item #	Dwg or Page #	Comment	Code	Responsibility	Response / Clarification	QC OK

HORROCKS ENGINEERS QUALITY MANAGEMENT PLAN

VERSION 2.1

NOVEMBER 25, 2009

HORROCKS ENGINEERS

FOREWORD

This Quality Management Plan (QMP) contains the quality processes and procedures which Horrocks Engineers will implement for the design on all projects.

This QMP has been structured to enable all disciplines of the Horrocks Team and their partners to support each other and through collaboration, overcome quality challenges, ensuring a high quality project while maintaining efficient and effective operations. This QMP is a controlled document for a ***standard*** project and may be modified in a continued effort to improve processes and quality on every project, from Roadway, Municipal, Design Build, CMGC, etc.

GENERAL PROJECT INFORMATION

Horrocks Engineers understands every project is unique and has its own specific set of challenges. However, several proven practices/processes have been established for addressing these challenges. This QMP is the minimum procedures for addressing issues in a consistent and efficient manner.

QUALITY DEFINITIONS

What quality is and how quality is achieved involves multiple, related terms that must be defined:

- ***Quality*** - The features and characteristics (in total) of a product or service to satisfy the requirements of the Client as expressed in the contract and meet applicable professional standards.
- ***Quality Policy*** - The overall intentions and direction of an organization regarding quality, as formally expressed by top management. The Horrocks Quality Policy is stated below:

> Horrocks Engineers is committed to completing all projects that meets our Client's requirements with respect to scope, schedule, budget and technical quality. Each Project team is committed to the following quality goals:
>
> 1. To satisfy specific criteria and requirements in all phases of the project.
> 2. To recognize, learn and practice standards applicable to the project.
> 3. To involve all staff in delivery of quality products.
> 4. To recognize productive employee contributions towards establishing a professional, interactive work environment that fosters teamwork, achievement, and quality awareness.
> 5. To maintain and support this Quality Management Plan (QMP) for use by all project team members and partners.

- ***Quality Management*** – Involves the development and use of processes by which project work is assigned, carried out, checked and reviewed to provide the greatest opportunity to meet the Clients requirements and applicable professional standards for technical quality. Quality

Management is the responsibility of all employees, requiring the commitment of top management and the commitment and participation of all project team members.

- *Quality Assurance (QA)* – Quality Assurance consists of specific types of examinations of the project submittals, to verify the QC Reviews, Inter-Discipline reviews and Constructability Reviews were conducted in accordance with the QC procedures. These QA Audit's review that stated actions in the QMP are being conducted and that the actions are effective in improving project quality.
- *Quality Control (QC)* - Implemented at the discipline and project level. Quality Control includes those checks and reviews deemed most appropriate for a specific discipline and project. Its purpose is to subject each deliverable to rigorous scrutiny at the initial, intermediate and final stages of development. Although submittal stages will vary by project, all submittals will be checked prior to delivery to the Client.
- *Quality Management Plan (QMP)* - a document setting out the specific quality resources, practices, and sequence of activities relevant to a particular project that provides the best opportunity for deliverables to meet both the Client's requirements and applicable professional standards for technical quality. It identifies Quality Control techniques and activities to be followed. It identifies Quality Assurance actions and reviews to be carried out.

TABLE OF CONTENTS

INTRODUCTION

Horrocks Engineers has streamlined and standardized the QA/QC process to improve the project delivery process and enhance the level of service. This Quality Management Plan (QMP) incorporates best practices to be followed; however, every project should be personalized to meet specific project intent.

The objectives of the QMP are to accomplish the following:

- Identify key project quality roles and resources.
- Identify and describe quality processes and procedures applicable to the project. The QMP ensures that all team members are following the same processes.
- Identify specific technical references to be followed, as applicable.
- Serve as a "one-stop" reference tool for the Project Manager and other project staff in carrying out steps related to quality control and quality assurance.
- Provide Client (if requested or required) with a concise picture of quality-related processes and procedures.

In addition to inclusion of Quality Control (QC) procedures specific to the project disciplines, the QMP documents the Quality Assurance (QA) reviews to be performed. Reviews include the following:

- QC Review – Review performed by an engineer equal or better in experience and <u>independent</u> of the portion of the project they are reviewing. The review can be delegated out under the direction of a licensed engineer. The objectives are to yellow out everything correct and red line anything incorrect or that needs to be included. This is a check for fatal flaws in the design and to verify the Project Standards have been met.

- Inter-Discipline Review – Review by technical staff from each individual discipline of the entire design (including partnering firms), to ensure consistency and continuity, and avoid design conflicts.

- Constructability Review – Performed by qualified and experienced individuals to determine the constructability of a project relative to scope, schedule, and acceptability to industry. The QMP specifies how the results of the review are to be incorporated into the design.

- QA Review and Audit – Review performed by the QA/QC Coordinator to verify the procedures of the QMP have been followed.

- Peer Review (typical for large scale projects) – Review performed by Client or Client's oversight personnel (ex. on a UDOT project, a formal review with UDOT personnel will be held at key milestones). The objectives are to evaluate the design according to the Client's requirements and objectives; spot-check key values, if appropriate; verify completeness and correctness; and confirm that the product meets professional practice requirements.

The QMP also identifies when quality audits are to be performed. The audits are a means to ensure that the QMP is in place, is appropriate, and is being followed. Typically audits occur at the Preliminary (30%- 60%) and Final (100%) milestones. Additional optional reviews may be held if needed.

1. KEY PERSONNEL

1.1. Project Organization

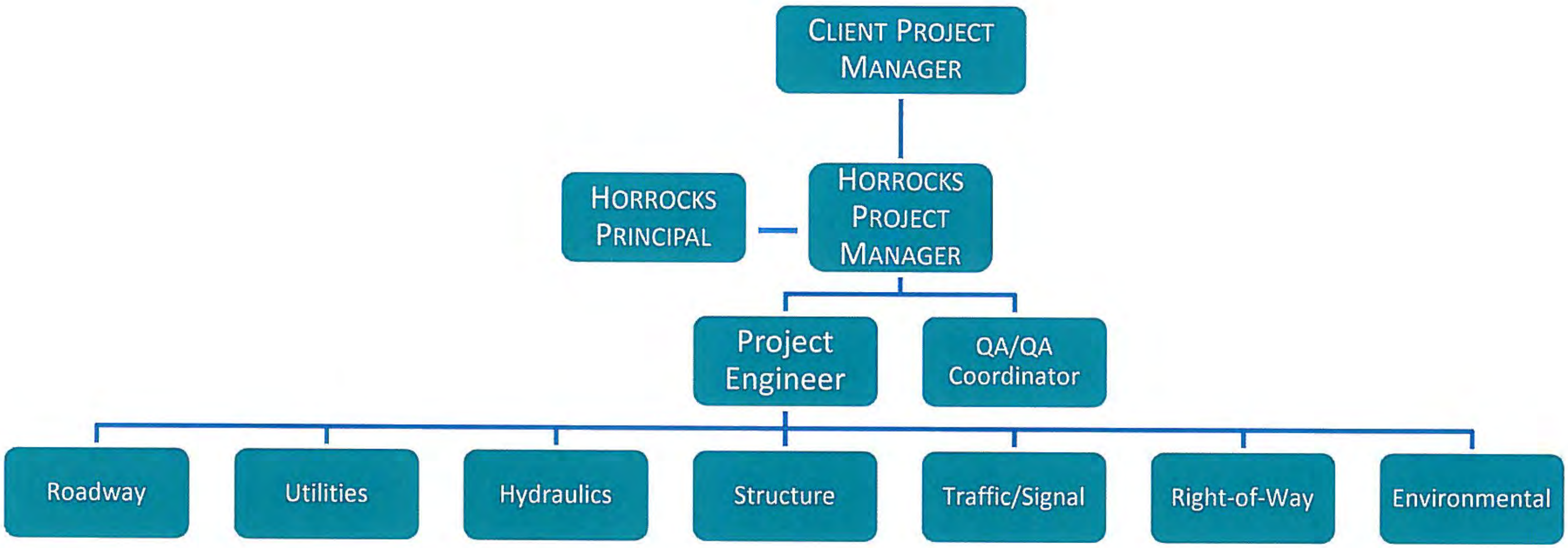
Stakeholder (a person or organization affected by the projects action – typically our Client):

Partnering Sub-Consultants (if necessary):

Horrocks "Project Specific" Personnel:

The following organization chart shows the key personnel and positions for a standard project. The organization chart is a fluid process in which every project is addressed individually to effectively and efficiently meet project scope, schedule, and budget by assigning the appropriate project personnel.

Typical Organization Chart



1.2. Key Staff Personnel & Resources

Every project will have a Project Manager assigned who will be a Principal or Associate Engineer. Occasionally the Project Manager will be a discipline lead with oversight from a Principal or Associate Engineer as appropriate according to the project scope. Key personnel will be assigned to each discipline with the intent to follow the project through completion. Depending on the project size, the organization chart could be broken down into segments with segment lead managers, etc.

1.3. Roles

Horrocks ensures that responsibilities and authorities are defined and communicated within the design team and that the quality policy, objectives, and procedures are understood within the design organization.

1.3.1. Project Manager

Project oversight from NEPA document preparation to design production and finally to construction support activities, is the responsibility of the **Project Manager** (PM), who periodically reviews the project status with the Client. The PM's duties include:

- Project is QA Certified prior to delivery
- Project schedule has appropriate time for QA/QC activities
- QA/QC activities are budgeted
- Overall engineering and project administration
- Oversight to ensure compliance with Client's requirements, standards, and formats
- Delivery of documents, plans, specifications, and reports on schedule

1.3.2. Project Engineer

The Project Engineer is responsible for all activities, including schedule, budget, day to day production, and leading the task force meetings for the Project. The major disciplines are grouped under Roadway, Utilities, Hydraulics, Structure, Traffic/Signal, Right-of-Way, and Environmental. Depending on project scope, additional discipline leads may be required.

1.3.3. QA/QC Coordinator

Quality assurance and control is the responsibility of the QA/QC Coordinator as delegated by the PM. The QA/QC Coordinator has no responsibilities in the production of work or any non-quality related activities, and will not be influenced by any potential impact of implementation on the project's schedule, performance, or cost. The QA/QC coordinator will prepare a monthly board report of all compliant and non-compliant projects.

1.3.4. Design Discipline Leads

The Design Discipline Lead is responsible to assemble and maintain the original calculations, check calculations, drawings, and check prints for the project in an orderly fashion until these are audited and turned over to the Project Manager for storage. The lead is also responsible for overseeing the QC process effort and to ensure that the assigned personnel are capable of performing the analysis or calculations required. The Design Discipline Lead:

- Is fully knowledgeable of the design requirements of the Project
- Is responsible for the completion of all QC functions within the discipline
- Performs day-to-day supervision of project activities
- Maintains a current status listing of the design discipline's work, expected audit dates, outstanding audit findings, and current document checking/review status
- Tracks schedule progression

The QC function is performed by design staff independently checking each other's work, and the Design Discipline Leads coordinating formal and documented Interdisciplinary Design Reviews, Technical Coordination Reviews and Constructability Reviews.

2. Process and Procedures

2.1. Quality Control Procedures

The design process may vary by discipline (Roadway, Utilities, Hydraulic, Structure, Traffic/Signal, Right-of-Way) and by project type (DOT and Municipal). Most of these process types include formal submittal to the client at a Preliminary (30-60%), Final (100%), and when necessary an optional stage. All projects will go through the Final (100%) stage prior to delivery.

All projects will have a project Design Notebook to keep correspondences, calculations, reports, check prints, memos, etc., which is kept by the Project Manager. Depending on project size, each Project Engineer should keep a project notebook or, at a minimum, a project file. The originals and check prints (section 2.1.4) of all hand calculations are to be indexed, and stored in the Design Notebook. All information is to be printed, title boxes filled in completely, initials used in the sign-off blocks, pages numbered, sketches used as required to clarify the calculations, and all assumptions, references, units and conclusions are to be clearly stated. In addition, digital records should be kept in the project directory under the "documentation" folder or on the client's network (ex. ProjectWise). E-mail correspondence should be kept by project discipline leads and archived at project closeout by the Project Manager.

To provide a standard QC check, project design checklists have been developed by discipline (see Appendix 5.1). These checklists are not intended to be all inclusive but a guide for checking design. By no means are these to replace engineering judgment. If an element on the checklist is not applicable it is marked as such. Signed Design Checklists are saved in the project folder and kept for a minimum of three years.

Comment and certification forms are found in Appendix 5.2.

2.1.1. Computer Programs

The project team will use the following software applications for the specified work:

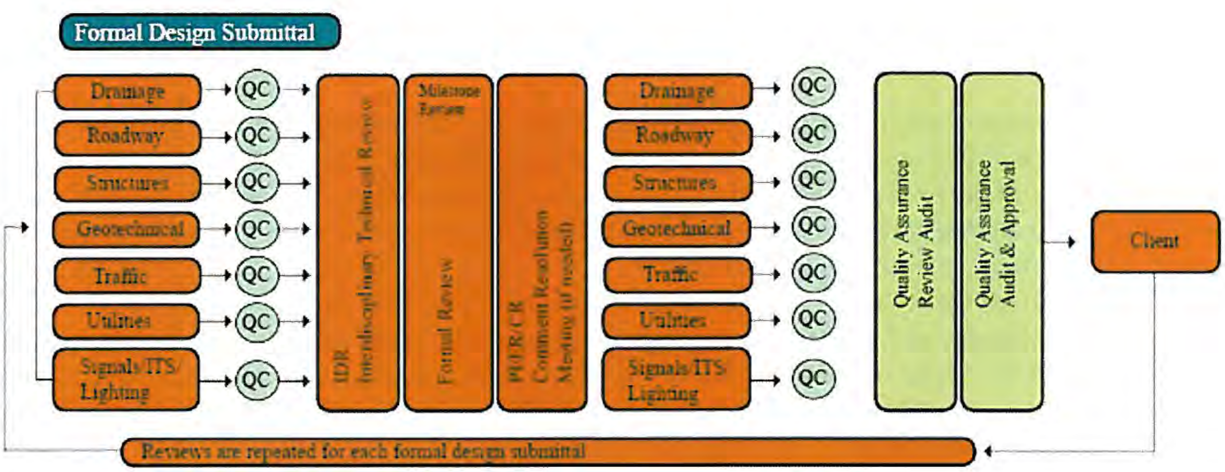
- InRoads, for highway design
- MicroStation or Auto Cadd, for Computer Aided Drafting and Design
- Microsoft Word and Excel for project correspondence and quantity calculations
- InRoads Storm and Sanitary, PondPack, Flowmaster, Stormcad, Culvert Master, Win TR-55, Hydrain v6, HY-8, Storm Water Management Model (SWMM), HydroCAD, HEC-RAS, and HEC-HMS, for drainages and stormwater management design.
- ____________for structure and bridge design

All of these programs are products of established vendors and accepted as industry standards. The input to these programs will be checked, but the programs themselves do not need to be reviewed. All commercial programs will be properly licensed.

2.1.2. Drawings (Check Print)

The following standard procedure will be followed for all design plans, specifications and reports.

The formal Checking of Drawings is to be completed before they are submitted for review in each phase of design. Figure 1 is an example from a UDOT project that outlines the formal design review process.



The Design QC/QA Process outlined in Figure 1 will be followed for each submittal. Design documentation outputs, including drawing, calculations, report and specifications will be checked using the defined discipline checklists in Appendix 5.1. The level of review is determined on the submittal type (Preliminary, Final, or optional). Timely checking of drawings is important for an efficient design process. Plan schedules are to provide time for QC process based on the level of effort required.

The five-step **Check Print Process** for drawings is described below.

Initiating the Checking Process

The **Originator** of the work on a document has the primary responsibility for accuracy and adequacy. It is not intended that the Originator rely upon the checking system to complete the drawing. The Originator will check the drawing against calculations and confirm that the calculations are shown property on the plans. As each drawing is deemed ready for checking, the original is copied or a print is made and stamped with the Check Print stamp (Figure 2 – Check Print Stamp). The Originator of each document is responsible for initiating the checking process by stamping the Check Print, numbering it, dating it, initialing it and directing it through the checking process. Once each sheet has been stamped and verified by the Originator, the Check Print set is passed to the Checker.

No.......	CHECK PRINT	
Orig. By	....	Date...............
Checked	....	Date...............
Bk. Checked	....	Date...............
Corrected	....	Date...............
Verified	....	Date...............

Figure 1 - Check Print Stamp

Checking

The **Checker** is responsible for checking the drawing for design intent, technical adequacy and conformance to project standards and format in accordance with this QMP, independent of the Originator. The checker should be a senior engineer and may be a member of the design organization, but must not have prepared the design being checked. The checking activity is recorded directly on the Check Print.

To document the drawing checking process, the Checker highlights in yellow on the Check Print each part of the drawing that is found to be correct. Comments or instructions should be written in blue pencil or ink. Information found to be incorrect is lined through and corrected in red pencil or ink (ex. ~~Incorrect~~ corrected). The Check Print Stamp is then initialed and dated upon completion. This process is repeated on each page checked.

In the case where no corrections, additions, or deletions are found, there is no need for back checking or further signatures on the Check Print Stamp. The Check Print, signed in the appropriate place of the Check Print stamp, should be returned to the Originator for placement in the Project's QC/QA file.

Back Checking

The **Back Checker** is responsible for confirming/denying corrections by reviewing each of the Checker's red and blue marks on the Check Print. If the Back Checker is in agreement with a Checker's correction, the Back Checker check marks in green pencil or ink each of the Checker's red-marked changes and, with the concurrence of the Checker, adds in green any additional changes not picked up by the Checker (ex. I~~ncorrect~~ corrected ✓).

If not in agreement with a Checker's correction, the Back Checker confers with the Checker. If both agree that the Checker's correction should not be made, the Back Checker crosses out, in green pencil or ink, the Checker's correction and writes "stet" next to the Checker's correction (ex. I~~ncorrect corrected~~ stet).

Following back checking, the Back Checker signs (or initials) and dates on the Check Print stamp and forwards it on to the Corrector.

Correcting the Drawing Original

The **Corrector** is responsible to revise the CADD files according to the red and green line markups. Correction of the drawing original should be supervised by (or drafted by) either the Checker or the Back Checker. When making the Check Print corrections to the original drawing the Corrector circles in green pencil or ink each correction as incorporated (ex. ~~Incorrect~~ corrected ✓). When all of the corrections have been made, the person correcting the drawing signs and dates the "Corrected" block on the Check Print stamp. A new original drawing is printed. The new original and the Check Print are passed to the Verifier.

Verifying the Corrected Check Print

The **Verifier** is responsible to compare the Check Print with the new drawing original to confirm that the agreed-to corrections have been incorporated without error. If the corrections has been properly made in the Original Drawing, the Verifier will highlight in orange the green-circled item on the Check Print drawing (ex. ~~Incorrect~~ corrected ✓). If orange is not available another color may be substituted other than yellow or green. If a correction has not been made, or is in error, the Check Print is annotated, and is returned to the corrector. Once all corrections are verified as having been properly made, the Verifier will initial and date the Check Print stamp. The verifier will also check that the Check Print stamp is completely filled out.

Each Check Print drawing is kept in the project folder for audit purposes. If changes are made to the original, a new check print set is reissued, numbered appropriately and the review process is repeated on the drawing. All check prints are kept in the project file to show the drawing progression throughout the course of the design.

The following Quality Control table summarizes the Drawing (Check Print) review process.

Quality Control

Color Code

Originator Generally the person who created the sheet	Provide clean, stamped sheet to checker
Checker Person with sufficient experience to review plans	Yellow for Correct r Red for Corections ← *Italics* ^ "Additions, or ~~Deletions"~~ *Changes* Blue for comment and notes
Back Checker Generally, but not always the originator	Green checkmark for agreement r √ √ Corections ← *Italics* ^ Green "*stet*" and crossout when it is agreed that no change should be made *stet* "Additions, or ~~Deletions"~~ ~~*Changes*~~ *(Follow same process for all **Blue Comments** on sheet)*
Corrector Anyone qualified to correct sheet files	Circle in green to indicate corrections were made in sheet file r √ √ Corections ← *Italics*
Verifier Generally the Checker or Backchecker	Orange over **Red**, **Blue,** and **Green** to verify corrections were made r √ √ Corections ← *Italics* *stet* "Additions, or ~~Deletions"~~ ~~*Changes*~~

Comments, calculations, and notes to/from the checker/corrector should be done in blue ink or pencil.

2.1.3. Specifications/Table of Contents/Engineers Estimate

The engineer or designer will adopt or develop project specifications, including standard and supplemental specifications, in conjunction with the design plans. For DOT projects, the specifications will be added to the most current download of the Table of Contents (TOC) document. In addition, a current engineer's estimate will accompany the project submittal. Project discipline leads are to review their specifications against the design checklist in Appendix 5.1. Qualified staff members will QC specifications, TOC, and engineers estimate. Standard specifications need only be reviewed for completeness (ie. all pages are accounted for, project number correct inserted). Only non-standard specification need be reviewed in their entirety.

The **Originator** will, at a minimum, check print stamp the cover page of the TOC, the first specification (if TOC is not required) and Engineers Estimate. This process may vary as certain clients may require one Check Print stamp per Specification, usually stamped on the front page.

The **Checker** reviews the specifications for applicability and clarity. Each page is marked through with a single yellow line from top to bottom, indicating that it was reviewed; corrections are annotated in red and the sheet tabbed for easy location.

Typically, the Originator backchecks the corrections, and check-marks them in green if in agreement. If not in agreement, the Originator confers with the Checker for consensus. The corrections are made and either the Originator or Checker verifies that the corrections have been incorporated into the original document (Note: the individual that performs the corrections on the document is not allowed to also sign as the **Verifier**).

2.1.4. Checking Calculations

A member of the project team, other than the person performing the calculations, will check the calculations, including computer input and output. Calculation sheets will be signed and dated by both the person performing the calculations and the checker. The originals of the design calculations for each discipline will be kept in the Design Notebook for reference and audit.

Computer input/output sheets or hand calculation sheets need to be signed and dated by the person generating them.

The **Originator** of each document is responsible for making the Check Print, following that Check Print through the checking process, and obtaining the required sign-offs. One Check Print stamp is required per document, usually stamped on the front page.

The **Checker** thoroughly checks the calculations starting with assumptions, mandated parameters, references, given values and formulas, omissions, and correctness of arithmetic. The Checkers are responsible for asking questions of the Designers in areas that are not clear or seeking technical advice if unsure of any particular element of the calculations. The Checker should have experience equal to or greater than that or the designer. All portions of the calculations that are correct should be highlighted in yellow. Information identified as incorrect is lined through and corrected in red.

Typically, the Originator backchecks the corrections, and check-marks them in green if in agreement. If not in agreement, the Originator confers with the Checker for consensus. The corrections are made and calculations redone. The Checker examines the original calculations sheets to verify that the agreed-to corrections have been made. Each correction verified as made to the original is circled on the Check Print in green and the sheet is initialed as **Verifier**).

NOTES: An alternate way to check calculations is to prepare an independent calculation and compare the results to the originals. This alternative method is especially applicable to structural design on major structures. A registered professional engineer will either perform or check all structural calculations.

For interactive "point and click" design calculations generated through software, such as InRoads, the person originally performing the calculation will generate and sign a copy of the plan or report at a sufficient size to evaluate. If the individual checking the data confirm it is correct, he/she will highlight in yellow which data was spot checked on that plan and sign the sheet (not every line item is required to be checked if a random sampling is taken). If there is a discrepancy, the checker will provide that information to the original designer and the checking process will be repeated until all of the input and output has been checked. The designer will place the checked plans and/or reports in the design notebook (or file a PDF electronically) along with calculations review checklists used in the checker's review.

For the computer programs listed in section 2.1.1 "Computer Programs," only the input needs to be checked and the transfer of the output to the appropriate sheets verified.

2.1.5. Quantity Estimates

The designer of a specific item will perform or supervise the actual quantity calculation after the item is completed. The persons performing and checking the quantity calculations will sign and date the calculations (typically a spreadsheet printout). CADD generated quantities, such as from InRoads, will be saved electronically or printed out and saved in the design notebook. Each disciplines quantity calculations will be kept in a design notebook for reference and audit. Summary sheets are to be Print Checked and compared against the quantity estimates following the process described in Section 2.1.4 "Checking Calculations". All quantities will be independently verified and then reconcile.

2.1.6. Cost Estimates and Schedules

An engineer or designer will develop construction cost estimates and construction schedules based on the current standards for procedures and methodologies for such estimates. Estimated item quantities are taken from check printed plans sheets and quantity estimates. All estimates and schedules are review by another engineer of equal or greater experience at the final (100%) stage.

2.2. Reviews

Design Reviews are a series of reviews performed by senior project staff at designated stages of the Project. These reviews concern themselves with constructability, integration, compatibility and legibility of the plans along with the communication between the projects disciplines involved in the design and incorporation of the environmental commitments.

Design reviews are composed of two basic elements:

- In-formal review or on-going discussion and resolution of design issues through technical coordination meetings and task force meetings, including follow-up meetings for problem-solving purposes.
- Formal reviews by design and construction personnel scheduled for Preliminary (30-60%), and Final (100%) milestones in the design development process.

2.2.1. Informal Review

There are two main types of informal review; Project Management Meetings and Project Discipline meetings. Meeting minutes are used to create action lists at these meetings.

Project Management Meetings are conducted by the Project Manager and held between representatives from the Client, Stakeholders, Discipline Leads and Construction partner (a Design-Bid-Build contract will usually not have a construction representative present – occasionally an independent cost estimator will attend – Design-Build and CM/GC contracts have a construction partner). Team members discuss technical design challenges and issues that are brought up at the Project Discipline Meetings.

At the Preliminary (30-60%) and Final (100%) milestone stages, a project manager typically holds a technical coordination and interdisciplinary reviews. The Technical Coordination Review is for approach, suitability, consistency with Project design criteria, standards, client requirements, and good engineering practice. The Interdisciplinary Review is applied to the integrated design package to coordinate design responsibility and design details between and within disciplines. The Project Manager determines the design leads who will review the documents for interference, compatibility between design disciplines, completeness, and sound engineering practices.

Project Discipline Meetings are conducted by the Discipline Leads responsible for each discipline and project team. Project design and construction issues are addressed and documented at these meetings. Issues that involve possible changes to design plans which are in progress are assigned to a responsible team engineer, logged and track to resolution. All design issues are tracked in the meeting minutes and assigned as informational or action items. Discipline Leads are responsible for the implementation of the design direction and the coordination with other discipline leads.

2.2.2. Formal Review

Ultimate responsibility for the quality of all design documents produced by Horrocks Engineers and its subcontractors rest with the Project Manager. Horrocks ensures that all final documents are compatible with project functional and technical requirements, meets established design criteria, client directions and review comments, and reflects good engineering practice. The Discipline Leads are always an integral part of the review process. These technical specialists are responsible for a specific design – geotechnical, roadway, structures, maintenance of traffic, utilities, etc. – for the project.

Reviewers of design documents consider constructability, usability, reliability, maintainability, availability of materials, operability, safety, bid-ability, cost, aesthetics, and where appropriate, sociological aspects and sustainability.

Depending on the scale of the project, Formal Reviews are held at Preliminary (30-60%), and Final (100%). Additional Formal Reviews are conducted if project requires early procurement of construction elements or as directed by the Client. All projects, at a minimum, will have a Final (100%) formal review. Client personnel may be involved in any or all of these reviews. Formal reviews can be divided into three types, Construction Review, Bid-ability Review, and Final Review. These reviews can be combined into one meeting or held separately.

2.2.2.1. Construction Review

The constructability review is performed by the construction manager and field engineers. A third party Independent Cost Estimator may be brought on to assist in the review. The constructability review considers:

- Consistency with design concept objectives
- Adequacy of information on the plans and specifications to construct the work
- Other aspects that can affect the construction, such as site restrictions, economics of the proposed construction, availability of materials, construction equipment requirements, local work force availability
- Survey verification
- Consistency with environmental mitigation requirements
- Maintainability features
- The ability to construct the work, including such items as the practicality of achieving specified tolerances, access needed to properly install or construct work elements, interdisciplinary conflicts, and construction schedules
- Proper incorporation of review comments from prior reviews (if any)

2.2.2.2. Bid-Ability Review

The Bid-ability Review is performed by an individual independent of the project team and under the direction of the Project Manager. The Client's advertising process is check against the project package. Bid items are check for consistency against Measurement and Payment, Engineers Estimate, Summary of Items and Plan Sheets.

2.2.2.3. Final Review

The Final Package Review is completed prior to release of the design package. The Project Manager and the Discipline Leads perform the review and verify that the package is complete and current

The QA Audit is performed by the QA/QC Engineer to assure that the plans, specifications, calculations, and design reports have been checked, reviewed, and properly signed-off in conformance with the Quality Management Plan (QMP). Noncompliant issues and addressed with the Project Manager for correction. Once compliant a Quality Assurance Certificate is issued by the QA/QC Engineer.

2.2.3. Other Review

At any time during the design process, reviews may occur to assure that the design is conforming and changing with the client's intent. At times qualified and experienced individuals independent of the project may perform peer reviews as directed by the Client (these Peer Reviews typically happen on large scale projects). These reviews may be performed for each discipline. The objective of peer reviews is to assess the product versus the Clients requirements, spot check key values, verify completeness and clarity, and determine if the design meets sound engineering practice. Peer reviews may be performed on, but not limited to, the documents and submissions provided milestone submittals (Preliminary and Final).

2.2.4. Comment Resolution

When multiple persons formally review a project a Comment Resolution Form will be filled out by each person performing the review. The person performing the review will fill out the top of the Review Comment Form and fill in the additional columns as needed. The reviewer will number his comments, reference the comment to the sheet or page it refers to, write out the comment and initial the comment. The initials are for the designers to determine who made the comment if multiple people are submitting comments on the same comment sheet. The comment sheets will be returned to the Project Manager for consideration.

The Project Manager will, with input of the Discipline Leads, fill in the Disposition (Disp) and Response columns using the disposition codes noted at the bottom of the page. These dispositions may be reviewed with the reviewers in a formal Resolution Meeting or more informally on a one-on-one meeting. After discussion they should agree on the disposition of each comment.

After revising the plans to satisfy the disposition of each comment, the Project Manager will note the final disposition and initial each comment in the final two columns. The Project Engineer will then show the revised sheets and completed Review Comment Form to the QA/QC Coordinator and get their signature at the bottom of the form signifying they are in agreement with the revisions and that their comments are all resolved.

2.3. Quality Audits

The QA/QC Coordinator for the project or a representative assigned by the QA/QC Coordinator will audit the work in accordance with the Quality Management Plan. These design verifications are carried out throughout the QC checking and the formal design review process to ensure that design output meets design input requirements and hence, ensure that specified requirements in the contract are being fulfilled. The audits will be conducted approximately as the submittals are released (Preliminary and Final).

2.3.1. Significant and Minor Audits

Significant audits are final submittal packages in which the project deliverables are released for construction/advertisement or to be published as official project documentation. The level of QC review should be all inclusive as defined by the project QMP. For instance, a structural project final submittal would include Check Prints on all plan sheets, calculations, project notebook, etc... with the accompanying QC Certifications. Minor audits (ex. Concept submittals, preliminary submittals or over the shoulder reviews) do not require a full comprehensive QA/QC review but can be scaled back to a level of review appropriate for the submittal. The Design Checklist's in Appendix 5.1 are to assist the project managers in selecting the appropriate level of QA/QC

2.4. Design Checklist

Design Checklists have been developed for use by the checkers of submittal documents. These checklists are tools that enable checkers in each discipline to verify conformance with design criteria, standards, and other requirements. The design checklist in Appendix 5.1 is a fluid document, changing to meet the needs of the project. These checklists cover general review criteria to be added to or subtracted from, based on each unique project scope.

2.5. Subconsultant Submittal Validation

Validation of the design by Horrocks Engineers is an on-going process at different stages of design aimed to ensure that the project requirements for design's intended application is continuously fulfilled. All data supplied by subconsultants, (ex. Geotechnical, survey, utility, right-of-way, etc...) are first analyzed, validated and documented before being used in design. All non-commercial computer programs used in design are validated before use. The list of such programs and their validation are kept on record in the project folder.

2.6. Schedule

Every project will have a design schedule prepared with major design activities listed in critical path format. Additionally, all milestone reviews and submittals will be clearly defined on the schedule.

3. File and Document Management

3.1. Naming Conventions (typically follow UDOT's Standards below)

Non-CAD Documents: NNNNN_ANumeric_YYYYMMDD_Rev.docx
Design Files: NNNNN_StdName_ANumeric_Rev.dgn
Standard Sheet Files: NNNNN_ID-(n)_ANumeric_Rev.dgn
Structure Sheet Files: NNNNN_DRG-(n)_Sht-(n)_ANumeric_Rev.dgn

NNNNN = UDOT Pin Number
Stdname = UDOT Standard Name (Column N – attached spreadsheet)
ANumeric = an alpha-numeric description up to 8 character long
YYYYMMDD = Date in 4 Digit Year, 2 Digit Month, 2 Digit Day format
ID-(n) = Standard plan sheet code from standard drawing sheet
DRG-(n) = Bridge Number
Sht-(n) = Sheet number for the bridge plan set.
Rev = revision number (optional)

3.2. File and Document Management

Horrocks O: drive is used for standard project to manage project documents and files.

3.3. Technical Discussions

Technical discussions between team members, Client disciplines and contractor representatives are encouraged. Decisions made and outcomes of these discussions will be documented and logged under the project "Documents" folder or included in the weekly Discipline Task Force Meeting Minutes.

3.4. Outside Agencies

The team will not directly contact outside agencies without the knowledge of Client's Project Management Team. At no time will the team make submissions to outside agencies without the knowledge and approval of Client's Project Manager. The team will copy the Client on all transmittals of information to other agencies as directed.

4. Revisions to the QMP

The QA/QC Coordinator or Project Manager may update the QMP to integrate specified or identified revisions during the course of the project. Updates will address QA/QC adjustments as a result of changes that result from the normal evolution of the QA/QC process. The Project Manager will be responsible for making and implementing such changes.

5. APPENDIX

5.1. Forms/Comment Resolution

5.2.1 – Quality Assurance Design Certification

5.2.2 – Certification of Compliance with Quality Plan and Design Procedures

5.2.1

QUALITY ASSURANCE DESIGN CERTIFICATION

Project Name: Project Name

Project No.: Project Number

Milestone Review: ☐ Final ☐ Preliminary ☐ Other: ____________

Description: *Type description here*

Upon examination of the documents of this submittal, I find that:

The design quality control process has been completed and meets the minimum requirements in the Horrocks Engineers Quality Management Plan.

Quality Control Manager: ______________________ Date: ______________
(or designee) (Signature)

Name: ______________________
(Print)

5.2.2

Certification of Compliance with Quality Plan and Design Procedures

This is to certify that the design document(s) identified below have been produced and reviewed in accordance with the QC process as defined in the Horrocks Engineers Quality Management Plan:

Project Name: Project Name

Project No.: UDOT: ???-???(??)? Horrocks: ????-???

Milestone Review: ☐ Final ☐ Preliminary ☐ Other: ____________________

Description: *Type description here*

Discipline (Check which ones apply):

☐ Roadway	☐ Utilities	☐ Landscaping, Irrigation, Urban Design
☐ Structure	☐ Survey/Mapping	☐ Signing and Striping
☐ Drainage	☐ Traffic Signal/Street Lighting	☐ Environmental
☐ Right-of-Way	☐ ITS	☐ Other: ____________________

Additional Items:

☐ Design Criteria ☐ Specifications ☐ Calculations

Project Engineer/:
Project Manager ______________________________ (Signature) Date: ____________________

Name: ______________________________ (Print)

HORROCKS ENGINEERS

To: Project Files

From: Brian Jones, P.E.

Date: June 2012

Memorandum

Subject: 1800 North Environmental Impact Statement
Noise Analysis

1.0 INTRODUCTION

This Noise Analysis was prepared in accordance with 23 CFR §772 and the UDOT Noise Abatement Policy (last revised January 10, 2012).

1.1 DESCRIPTION OF PROJECT

There are six proposed alternatives, labeled A-F. The alternatives include different combinations of potential 1800 North realignments, and three potential interchanges at I-15. Alternatives A-F include:

- Construction of additional travel lanes on 1800 North, in both the eastbound and westbound directions
- Construction of a grade separated railroad crossing on 1800 North over the existing railroad tracks
- Construction of a new interchange at I-15 and 1800 North
- Improvements at the 1800 North intersections of Main Street and 2000 West

1.2 APPLICABILITY

The UDOT Noise Abatement Policy states that "noise abatement will be considered for all Type I projects where noise impacts are identified." Type I projects are projects that include any of the following: the construction of a highway at a new location, the physical alteration of an existing highway that substantially alters its alignment, the addition of a through traffic lane, the addition of an auxiliary lane, or the addition or relocation of interchange lanes or ramps. This project is considered a Type I project because of the addition of through traffic lanes in both the eastbound and westbound directions, construction of a grade separated railroad crossing, and the construction of a new interchange.

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2.0 ANALYSIS OF TRAFFIC NOISE IMPACTS

Traffic noise levels are measured in A-weighted decibels (dBA), which most closely approximate the way the human ear hears sounds at different frequencies. Since traffic noise varies over time, the sound levels for this noise analysis are expressed as “equivalent levels” or Leq, representing the average sound level over a one hour period of time. Unless noted otherwise, all sound levels in this noise analysis are expressed in the hourly equivalent noise level.

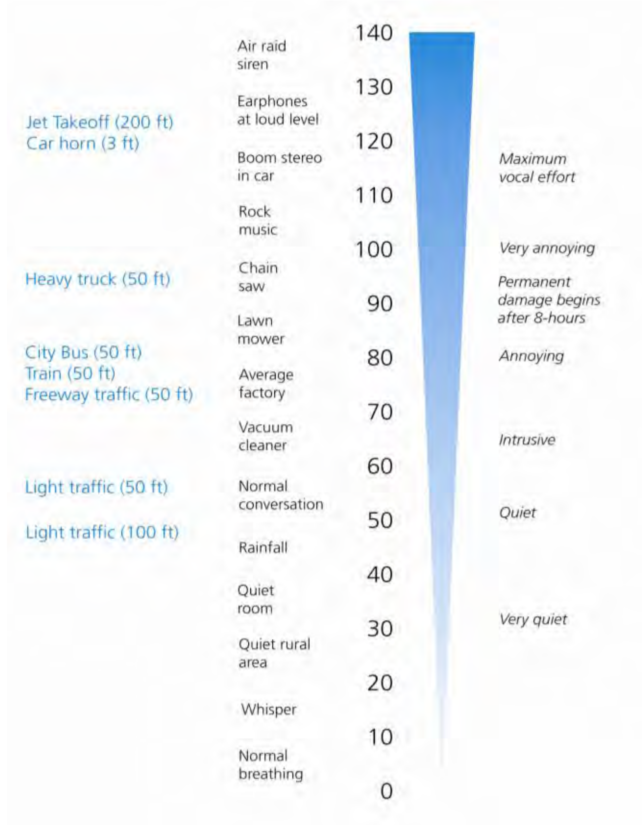


Figure 1 Sound Levels (in dBA) of Common Sounds.

(Compiled from Federal Transit Administration and Environmental Protection Agency Data)

2.1 NOISE ABATEMENT CRITERIA

FHWA has established Noise Abatement Criteria for several categories of land use activities (see Table 1). FHWA’s noise criteria is based on noise levels that are considered to be an impact to nearby property owners, also known as receptors. Primary consideration is to be given for exterior areas where frequent human use occurs.

UDOT has developed a Noise Abatement Policy for transportation projects, which conforms to FHWA noise abatement requirements outlined in 23 CFR §772. UDOT’s Noise Abatement Policy states that a traffic noise impact occurs when either 1) the future worst case noise level is equal to or greater than the UDOT Noise Abatement Criteria for specified land use categories or, 2) the future worst case noise level is greater than or equal to an increase of 10 dBA over the existing noise level. Noise levels were determined using the greatest hourly traffic noise conditions likely to occur on a regular basis - at or near LOS C conditions. LOS C conditions occur when traffic is free-flowing and truck volumes and vehicle speeds are the greatest.

Table 1 Noise Abatement Criteria

Activity Category	Leq (h)	Activity Description
A	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 (Exterior)	Residential.
C	66 (Exterior)	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D	51 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	71 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	---	Undeveloped lands that are not permitted.

Source: UDOT Noise Abatement Policy

Activity Categories F and G include lands that are not sensitive to traffic noise. There are no impact criteria for these land use types and an analysis of noise impacts is not required. Noise impact and abatement analyses will include lands within Land Use Activity Categories A, B, C, D, and E (see Table 1) only when development exists or has been permitted (formal building permit issued before the date of the final environmental decision document).

UDOT has defined a level of 66 dBA to be the threshold for the consideration of noise abatement for residences, recreation areas, churches, etc (Category B and Category C, refer to Table 1) and 71 dBA to be the threshold for the consideration of noise abatement for hotels, motels, offices, restaurants/bars, etc (Category E land use, refer to Table 1). In addition, a receptor is considered impacted if the future worst case noise level is 10 dBA or more above the current noise level.

2.2 NOISE SENSITIVE LAND USES

There are no Activity Category A land uses within the study area. Activity Category B land uses include all residences. Activity Category C land use includes churches, schools, and parks. Activity Category D land use includes churches and schools. Activity Category E land use includes restaurants and offices in the study area. The UDOT Noise Policy states that a noise impact analysis will not be considered for Activity Categories E, F, and G.

2.3 EXISTING NOISE

The primary source of noise in the study area is automobile and truck traffic from 1800 North, I-15, and other streets in the project area. Existing traffic noise levels for each receptor in the project area were calculated using the Traffic Noise Model (TNM) 2.5 software using existing conditions (travel lane configurations and traffic volumes). On-site measurements were made to verify the accuracy of the model and are shown in Table 2 and the attached Existing Noise Levels Figure.

Table 2 Field Noise Measurements

Site Number	Location	Field Noise Level	TNM Output	Difference
1	1633 West 1800 North	66.9 dBA	66.2 dBA	0.7 dBA
2	1604 West 1800 North	66.9 dBA	67.2 dBA	0.3 dBA
3	LDS Church at 1400 West/1800 North	64.3 dBA	63.9 dBA	0.4 dBA
4	Park at 1000 West/1800 North	64.0 dBA	65.3 dBA	1.3 dBA
5	658 West 1800 North	67.8 dBA	66.9 dBA	0.9 dBA
6	568 West 1800 North	67.4 dBA	67.0 dBA	0.4 dBA
7	LDS Church at 300 West/1800 North	64.8 dBA	64.2 dBA	0.6 dBA
8	Park at 100 West/1800 North	67.3 dBA	66.7 dBA	0.6 dBA

Existing noise impacts can be seen in the attached Existing Noise Levels Figure.

2.4 ALTERNATIVES A-F NOISE

There are six proposed alternatives, labeled A-F. The alternatives include different combinations of potential 1800 North realignments, and three potential interchanges at I-15. Alternatives A-F include:

- Construction of additional travel lanes on 1800 North, in both the eastbound and westbound directions
- Construction of a grade separated railroad crossing on 1800 North over the existing railroad tracks
- Construction of a new interchange at I-15 and 1800 North
- Improvements at the 1800 North intersections of Main Street and 2000 West

Alternative A minimizes impacts to environmental resources along 1800 North, and shifts the alignment north between 250 West and Main Street. This alternative also includes an interchange (Diamond of SPUI) on I-15 at 1800 North, and would shift I-15 to the east to provide adequate separation between Main Street and the I-15 ramps.

Alternative B minimizes impacts to environmental resources along 1800 North, and shifts the alignment north between 250 West and Main Street. This alternative also includes an interchange on I-15 at 1800 North, with directional ramps converging on the east side of I-15.

Alternative C minimizes impacts to environmental resources along 1800 North, and shifts the alignment north between 250 West and Main Street. This alternative also includes an interchange on I-15 at 1800 North, with directional ramps converging on the east side of I-15. The ramp intersection with 1800 North is shifted to the south to avoid the Army Rail Shop.

Alternative D minimizes impacts to environmental resources along 1800 North, and shifts the alignment south between 250 West and Main Street. This alternative also includes an interchange (Diamond of SPUI) on I-15 at 1800 North, and would shift I-15 to the east to provide adequate separation between Main Street and the I-15 ramps.

Alternative E minimizes impacts to environmental resources along 1800 North, and shifts the alignment south between 250 West and Main Street. This alternative also includes an interchange on I-15 at 1800 North, with directional ramps converging on the east side of I-15.

Alternative F minimizes impacts to environmental resources along 1800 North, and shifts the alignment south between 250 West and Main Street. This alternative also includes an interchange on I-15 at 1800 North, with directional ramps converging on the east side of I-15. The ramp intersection with 1800 North is shifted to the south to avoid the Army Rail Shop.

These improvements would increase noise levels in the study area. Projected traffic noise levels for each receptor in the study area were calculated using TNM 2.5 software using build conditions (travel lane configurations and traffic volumes). Worst Case Scenario noise levels, for Alternatives A-F, range from 55.6 dBA to 74 dBA, with an average noise level of about 65 dBA. See maps in Appendix B for Worst Case Scenario noise levels. Receptor 394 which is on the east side of I-15, near the proposed interchange location, is the only area impacted as a result of a 10 dBA or more increase in noise levels over the current noise levels.

Table 3 shows a summary of existing noise levels, as well as noise levels for Alternatives A-F, for each noise measurement site. Shaded cells indicate noise impacts, as defined by the UDOT Noise Abatement Policy.

Table 3 Summary of Existing and Alternatives A-F Noise Levels

Site #	Location	Existing Hourly Leq	Alternative A-C Hourly Leq	Alternative D-E Hourly Leq
1	1633 West 1800 North	66.2 dBA	71.8 dBA	71.8 dBA
2	1604 West 1800 North	67.2 dBA	Receptor removed as part of widening	Receptor removed as part of widening
3	LDS Church at 1400 West/1800 North	63.9 dBA	71.6 dBA	71.6 dBA
4	Park at 1000 West/1800 North	65.3 dBA	71.1 dBA	71.1 dBA
5	658 West 1800 North	66.9 dBA	Receptor removed as part of widening	Receptor removed as part of widening
6	568 West 1800 North	67.0 dBA	Receptor removed as part of widening	Receptor removed as part of widening
7	LDS Church at 300 West/1800 North	64.2 dBA	Receptor removed as part of widening	72.0 dBA
8	Park at 100 West/1800 North	66.7 dBA	73.6 dBA	Receptor removed as part of widening

3.0 NOISE ABATEMENT

According to the UDOT Noise Abatement Policy, specific conditions must be met before traffic noise abatement is implemented as part of the Proposed Action. Noise mitigation must be considered feasible and reasonable. Some of the factors considered when determining if mitigation is feasible and reasonable include, but are not limited to, the following:

- **Engineering Considerations:** Engineering considerations such as safety, presence of cross streets, sight distance, access to adjacent properties, barrier height, topography, drainage, utilities, maintenance access and maintenance of the abatement measure must be taken into account as part of establishing feasibility.
- **Safety on Urban Non-Access Controlled Roadways:** To avoid a damaged wall from becoming a safety hazard, in the event of a failure, wall height shall be no greater than the distance from the back of curb to the face of proposed wall.
- **Noise Abatement Design Goal:** Every reasonable effort should be made to obtain substantial noise reductions. UDOT defines the minimum noise reduction (design goal) from proposed abatement measures to be 8 dBA or greater for at least 75% of front-row receptors.
- **Cost Effectiveness**: The cost used to determine reasonable mitigation for Activity Category B is $30,000 per benefited receptor. (A benefited receptor is a noise-sensitive receptor that is predicted to receive a minimum of 8 dBA of noise reduction as a result of noise abatement.) The cost used to determine reasonable mitigation for Activity Categories A, C, D, or E is $360 per linear foot.
- **Viewpoints of Property Owners and Residents**: As part of the final design phase, public balloting would take place if noise abatement measures appear to meet the criteria outlined in UDOT's Noise Abatement Policy.

Under UDOT's Noise Abatement Policy, only Type I projects are eligible for noise abatement measures. Type I projects are projects that include any of the following: the construction of a highway at a new location, the physical alteration of an existing highway that substantially alters its alignment, the addition of a through traffic lane, the addition of an auxiliary lane, or the addition or relocation of interchange lanes or ramps. Alternatives A through F are Type I projects so noise abatement was considered. The types of noise mitigation measures considered for Alternatives A through F included:

- Traffic management measures
- Noise barriers
- Noise insulation of Activity Category D land use facilities

3.1 TRAFFIC MANAGEMENT MEASURES

Traffic management measures include reducing speed or signing for the restriction of compression brakes. According to the *Highway Traffic Noise Analysis and Abatement Policy and Guidance* report produced by FHWA, a reduction in speed of more than 20 mph is necessary for a noticeable decrease in noise levels. Therefore, speed reduction is not a viable abatement measure for this project because it is not consistent with the roadway classification.

3.2 NOISE BARRIERS

For a noise wall to be effective, it must be high enough and long enough to block the view of the noise source from the receptor's perspective. The *Highway Traffic Noise Analysis and Abatement Policy and Guidance* states that a good rule of thumb is that the noise barrier should extend four times as far in each direction as the distance from the receptor to the barrier. For instance, if the receptor is 50 feet from the proposed noise barrier, the barrier needs to extend at least 200 feet on either side of the receptor in order to shield the receptor from noise traveling past the ends of the barrier.

Openings in noise walls for driveway connections or intersecting streets destroy the effectiveness of the walls. Therefore, impacted receptors with direct access onto 1800 North do not qualify for noise walls. The majority of receptors in the study area have either direct access onto 1800 North, or are adjacent to intersecting streets. Therefore, only a few areas along 1800 North qualify for noise wall analysis. Noise walls were also considered along I-15 because construction of the proposed interchanges will substantially alter the horizontal and/or vertical alignments of I-15. Potential noise walls are discussed below, refer to the appendix for exact locations. Noise wall heights along 1800 North cannot exceed the distance from the back of curb to the face of the wall; therefore, analysis for walls along 1800 North included wall heights between 6 feet and 9 feet. For noise walls along I-15, analysis included wall heights between 12 feet and 17 feet.

Railroad Grade Separation South Wall

This wall would be located on the south side of 1800 North at the back of the sidewalk on the raised profile for the railroad grade separation. This wall was analyzed for Alternatives A-F (see Worst Case Scenario Noise Levels, Alt. A-C Map 3 and Alt. D-F Map 3, in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for any alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 5 Railroad Structure South Wall, Alternatives A-C

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
2,132	6	0	0.0%	No	N/A	0	N/A	No	No
	7	0	0.0%	No	N/A	0	N/A	No	No
	8	1	6.7%	No	N/A	1	N/A	No	No
	9	2	13.3%	No	N/A	2	N/A	No	No

Table 6 Railroad Structure South Wall, Alternatives D-F

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
2,132	6	0	0.0%	No	N/A	0	N/A	No	No
	7	0	0.0%	No	N/A	0	N/A	No	No
	8	0	0.0%	No	N/A	0	N/A	No	No
	9	1	6.7%	No	N/A	1	N/A	No	No

Railroad Grade Separation North Wall

This wall would be located on the north side of 1800 North at the back of the sidewalk on the raised profile for the railroad grade separation. This wall was analyzed for Alternatives A-F (see Worst Case Scenario Noise Levels, Alt. A-C Map 3 and Alt. D-F Map 3, in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for any alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 7 Railroad Structure North Wall, Alternatives A-C

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
2,185	6	0	0.0%	No	N/A	0	N/A	No	No
	7	0	0.0%	No	N/A	0	N/A	No	No
	8	0	0.0%	No	N/A	0	N/A	No	No
	9	0	0.0%	No	N/A	0	N/A	No	No

Table 8 Railroad Structure North Wall, Alternatives D-F

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
2,185	6	0	0.0%	No	N/A	0	N/A	No	No
	7	1	7.7%	No	N/A	1	N/A	No	No
	8	2	15.4%	No	N/A	2	N/A	No	No
	9	2	15.4%	No	N/A	2	N/A	No	No

200 West Wall, Alternatives A-C

This wall would be located on the north side of 1800 North between 75 West and 200 West. For alternatives A-C, 1800 North is shifted north, east of 250 West. As a result, the homes on the north side will be removed, and the next row of homes will be exposed to greater noise impacts which could potentially be benefited by a noise wall. Alternatives D-F shift 1800 North to the south, and the existing homes would remain. Noise walls would not be considered for Alternative D-F, because existing driveway connections destroy the effectiveness of a wall (see Worst Case Scenario Noise Levels, Alt. A-C Map 3, in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for any alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 9 200 West Wall, Alternatives A-C

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
	6	0	0.0%	No	N/A	0	N/A	No	No
	7	0	0.0%	No	N/A	0	N/A	No	No
	8	0	0.0%	No	N/A	0	N/A	No	No
	9	0	0.0%	No	N/A	0	N/A	No	No

I-15 SE Wall, Alternatives A and D

Alternatives A and D include the relocation of I-15, to the east, and the construction of a new interchange. This wall would be located along the east side of I-15 and the NB exit ramp, and south of 1800 North. This wall was analyzed for Alternatives A and D (see Worst Case Scenario Noise Levels, Alts. A&D Maps 4&5 in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for either alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 10 I-15 SE Wall, Alternatives A and D

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
1500	12	0	0.0%	No	N/A	0	N/A	No	No
	13	0	0.0%	No	N/A	0	N/A	No	No
	14	0	0.0%	No	N/A	0	N/A	No	No
	15	0	0.0%	No	N/A	0	N/A	No	No
	16	1	16.7%	No	N/A	1	N/A	No	No
	17	4	66.7%	No	N/A	4	N/A	No	No

I-15 SW Wall, Alternatives A and D

Alternatives A and D include the relocation of I-15, to the east, and the construction of a new interchange. This wall would be located along the west side of I-15 and the SB entrance ramp, and south of 1800 North. This wall was analyzed for Alternatives A and D (see Worst Case Scenario Noise Levels, Alts. A&D Maps 4&5 in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for either alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 11 I-15 SW Wall, Alternatives A and D

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
3727	12	0	0.0%	No	N/A	0	N/A	No	No
	13	0	0.0%	No	N/A	0	N/A	No	No
	14	0	0.0%	No	N/A	0	N/A	No	No
	15	0	0.0%	No	N/A	0	N/A	No	No
	16	0	0.0%	No	N/A	0	N/A	No	No
	17	0	0.0%	No	N/A	0	N/A	No	No

I-15 NW Wall, Alternatives A and D

Alternatives A and D include the relocation of I-15, to the east, and the construction of a new interchange. This wall would be located along the west side of I-15 and the SB exit ramp, and north of 1800 North. This wall was analyzed for Alternatives A and D (see Worst Case Scenario Noise Levels, Alts. A&D Maps 4&5 in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for either alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 12 I-15 NW Wall, Alternatives A and D

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
3600	12	0	0.0%	No	N/A	0	N/A	No	No
	13	0	0.0%	No	N/A	0	N/A	No	No
	14	0	0.0%	No	N/A	0	N/A	No	No
	15	0	0.0%	No	N/A	0	N/A	No	No
	16	0	0.0%	No	N/A	0	N/A	No	No
	17	0	0.0%	No	N/A	0	N/A	No	No

I-15 SE Wall, Alternatives B, C, E, and F

Alternatives B, C, E, and F include the reconstruction of I-15, to raise the profile over 1800 North. It also includes the construction of an interchange, with SB ramps crossing under I-15 to converge with the NB ramps on the east side of I-15. This wall would be located along the east side of I-15 and the NB exit ramp, and south of 1800 North. This wall was analyzed for Alternatives B, C, E, and F (see Worst Case Scenario Noise Levels, Alts. B,C,E,F Maps 4&5 in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for any alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 13 I-15 SE Wall, Alternatives B, C, E, and F

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
4401	12	0	0.0%	No	N/A	0	N/A	No	No
	13	0	0.0%	No	N/A	0	N/A	No	No
	14	0	0.0%	No	N/A	0	N/A	No	No
	15	0	0.0%	No	N/A	0	N/A	No	No
	16	0	0.0%	No	N/A	0	N/A	No	No
	17	1	14.3%	No	N/A	1	N/A	No	No

I-15 SW Wall, Alternatives B, C, E, and F

Alternatives B, C, E, and F include the reconstruction of I-15, to raise the profile over 1800 North. It also includes the construction of an interchange, with SB ramps crossing under I-15 to converge with the NB ramps on the east side of I-15. This wall would be located along the west side of I-15 and the SB entrance ramp, and south of the ramp structure crossing beneath I-15. This wall was analyzed for Alternatives B, C, E, and F (see Worst Case Scenario Noise Levels, Alts. B,C,E,F Maps 4&5 in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for any alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 14 I-15 SW Wall, Alternatives B, C, E, and F

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
3100	12	0	0.0%	No	N/A	0	N/A	No	No
	13	0	0.0%	No	N/A	0	N/A	No	No
	14	0	0.0%	No	N/A	0	N/A	No	No
	15	0	0.0%	No	N/A	0	N/A	No	No
	16	0	0.0%	No	N/A	0	N/A	No	No
	17	0	0.0%	No	N/A	0	N/A	No	No

I-15 NW Wall, Alternatives B, C, E, and F

Alternatives B, C, E, and F include the reconstruction of I-15, to raise the profile over 1800 North. It also includes the construction of an interchange, with SB ramps crossing under I-15 to converge with the NB ramps on the east side of I-15. This wall would be located along the west side of I-15 and the SB exit ramp, and north of the ramp structure crossing beneath I-15. This wall was analyzed for Alternatives B, C, E, and F (see Worst Case Scenario Noise Levels, Alts. B,C,E,F Maps 4&5 in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for any alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 15 I-15 NW Wall, Alternatives B, C, E, and F

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
3164	12	0	0.0%	No	N/A	0	N/A	No	No
	13	0	0.0%	No	N/A	0	N/A	No	No
	14	0	0.0%	No	N/A	0	N/A	No	No
	15	0	0.0%	No	N/A	0	N/A	No	No
	16	0	0.0%	No	N/A	0	N/A	No	No
	17	0	0.0%	No	N/A	0	N/A	No	No

I-15 West Wall, Alternatives B, C, E, and F

Alternatives B, C, E, and F include the reconstruction of I-15, to raise the profile over 1800 North. It also includes the construction of an interchange, with SB ramps crossing under I-15 to converge with the NB ramps on the east side of I-15. This wall would be located along the west side of I-15 between the SB exit ramp and the SB entrance ramp. This wall was analyzed for Alternatives B, C, E, and F (see Worst Case Scenario Noise Levels, Alts. B,C,E,F

Maps 4&5 in Appendix). This wall would not reduce noise levels by 8 dBA to 75% of front row receptors for any alternative. Therefore, this wall is not considered feasible and reasonable according to the UDOT Noise Abatement Policy.

Table 16 I-15 West Wall, Alternatives B, C, E, and F

Barrier Length (feet)	Barrier Height (feet)	# of First-Row Benefitted	% of First-Row Benefitted	Meets Noise Abatement Goal?	Cost	# of Benefitted Receptors	Cost per Benefitted Receptor	Meets Cost Criteria?	Is Barrier Feasible and Reasonable?
3772	12	0	0.0%	No	N/A	0	N/A	No	No
	13	0	0.0%	No	N/A	0	N/A	No	No
	14	0	0.0%	No	N/A	0	N/A	No	No
	15	0	0.0%	No	N/A	0	N/A	No	No
	16	0	0.0%	No	N/A	0	N/A	No	No
	17	0	0.0%	No	N/A	0	N/A	No	No

Non-Residential Noise Walls

This section discusses mitigation for those areas that are solely commercial or other non-residential uses. According to the UDOT Noise Abatement Policy, a value of $360 per linear foot of noise wall will be applied to determine if noise abatement is cost effective for recreation areas, churches, commercial properties, and other non-residential areas.

The receptors at Sunset Central Park, Clinton Elementary School, and church buildings along 1800 North have noise impacts of at least 66 dBA. Noise walls were limited by driveway openings and cross streets for the church buildings and elementary school. Noise walls were evaluated at Sunset Central Park for all alternatives, but were unable to reduce noise levels by 8 dBA. Therefore a noise wall is not considered feasible and reasonable at this location.

3.3 NOISE INSULATION OF ACTIVITY CATEGORY D LAND USE FACILITIES

The UDOT Noise Abatement Policy states that noise insulation of Activity Category D Land Use facilities will be considered as a noise abatement measure when determined reasonable and feasible. The interior noise levels of any Activity Category D Land Uses in the study area (churches, schools, etc.) are not expected to reach the 51 dBA threshold for the consideration of noise abatement under Alternatives A - F.

4.0 CONSTRUCTION IMPACTS

Construction noise impacts are considered temporary and will be minimized through adherence to UDOT Standard Specification 01355 Environmental Compliance, Part 3.6 – Noise Control. Extended disruption of normal activities is not anticipated, since no receptors are expected to be exposed to construction noise for a long duration of time.

5.0 INFORMATION FOR LOCAL OFFICIALS

According to the UDOT Noise Abatement Policy, for Type 1 projects, the Department will inform local officials of noise compatible planning concepts and an estimate of future noise levels on undeveloped lands or properties within the project limits. Projected noise levels on the undeveloped lands within the project limits can be seen in the attached Worst Case Scenario Noise Levels figures.

6.0 CONCLUSION

The proposed improvements to 1800 North would increase noise levels in the study area. Noise levels would range from 55.6 dBA to 74 dBA, with an average noise level of about 65 dBA.

Noise walls were analyzed in four locations along 1800 North and on both sides of I-15, in the vicinity of the proposed interchange. None of these walls were considered feasible or reasonable under the UDOT Noise Abatement Policy.

Legend

Receptor Locations

- Measurement Site
- Receptor

N

300 150 0 300 Feet

Receptor Locations

Map 1 of 5

1800 North SR-37 Environmental Impact Statement

Legend

Receptor Locations

- Measurement Site
- Receptor

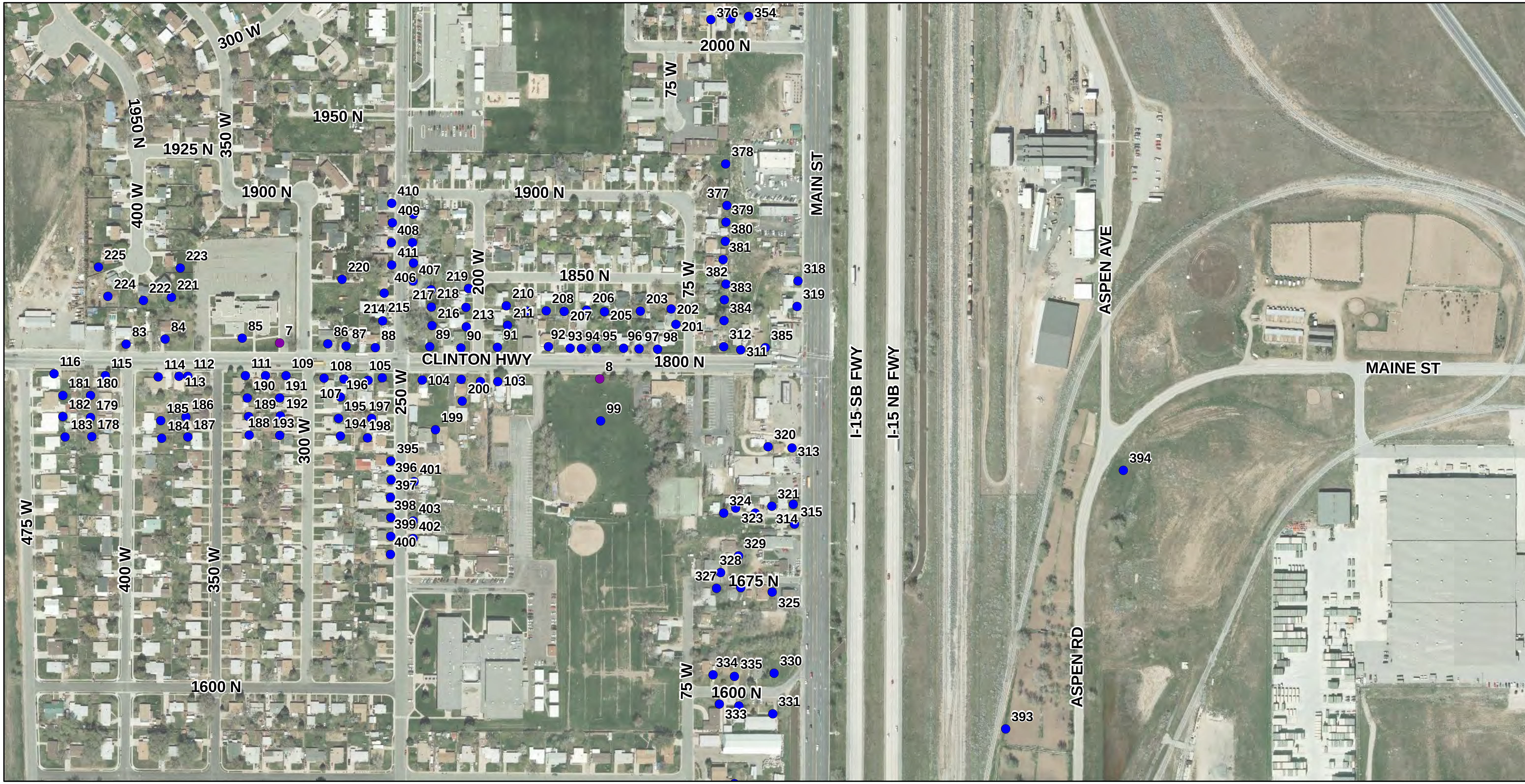
N

300 150 0 300 Feet

Receptor Locations

Map 2 of 5

1800 NORTH SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Receptor Locations

Measurement Site

Receptor

N

300 150 0 300 Feet

Receptor Locations

Map 3 of 5

Legend

Receptor Locations

- Measurement Site
- Receptor

N

300 150 0 300 Feet

Receptor Locations

Map 4 of 5

1800 North SR-37 Environmental Impact Statement

Legend

Receptor Locations

- Measurement Site
- Receptor

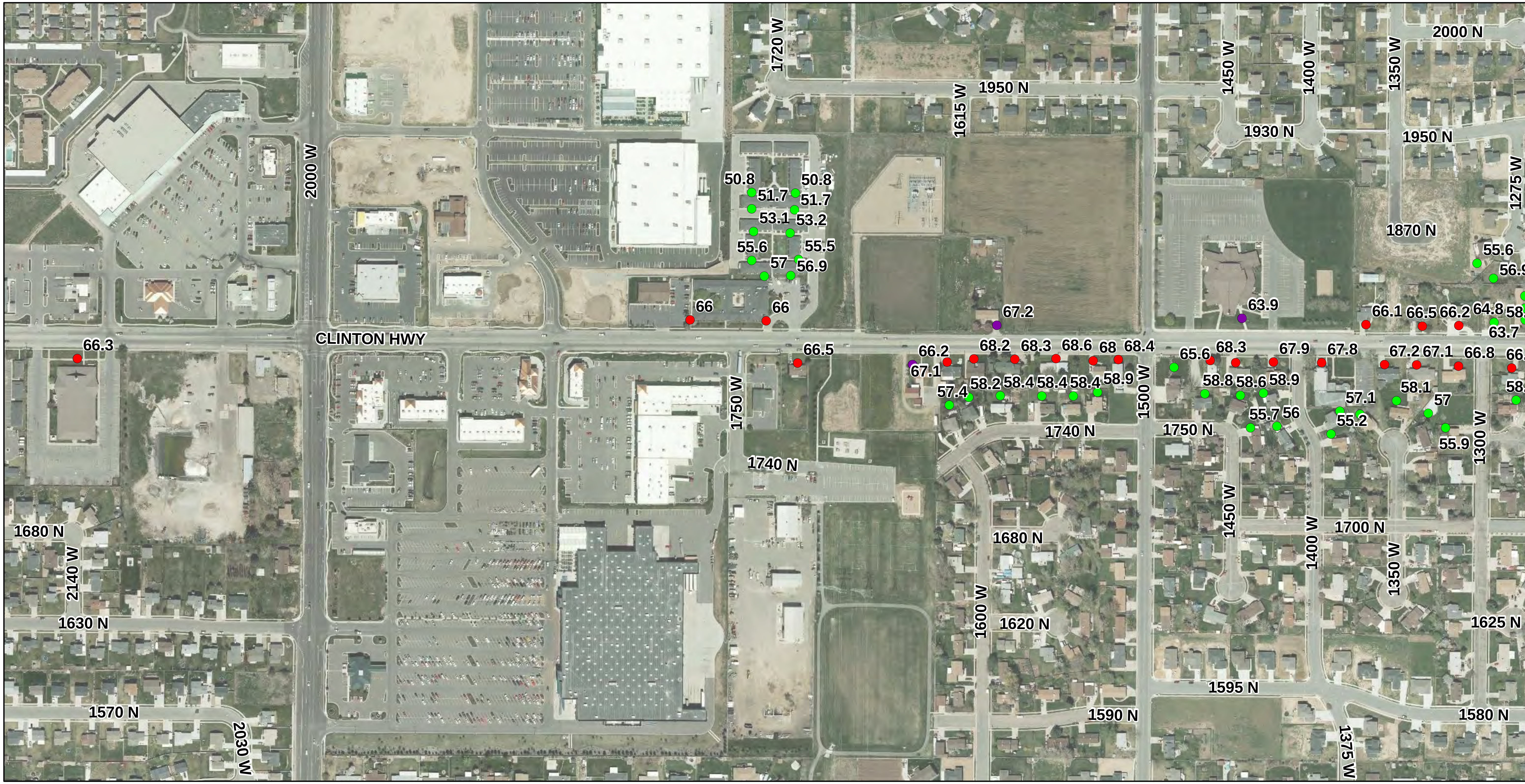
N

300 150 0 300 Feet

Receptor Locations

Map 5 of 5

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT



Legend

Existing Sound Levels Impact

- Measurement Site
- No
- Yes

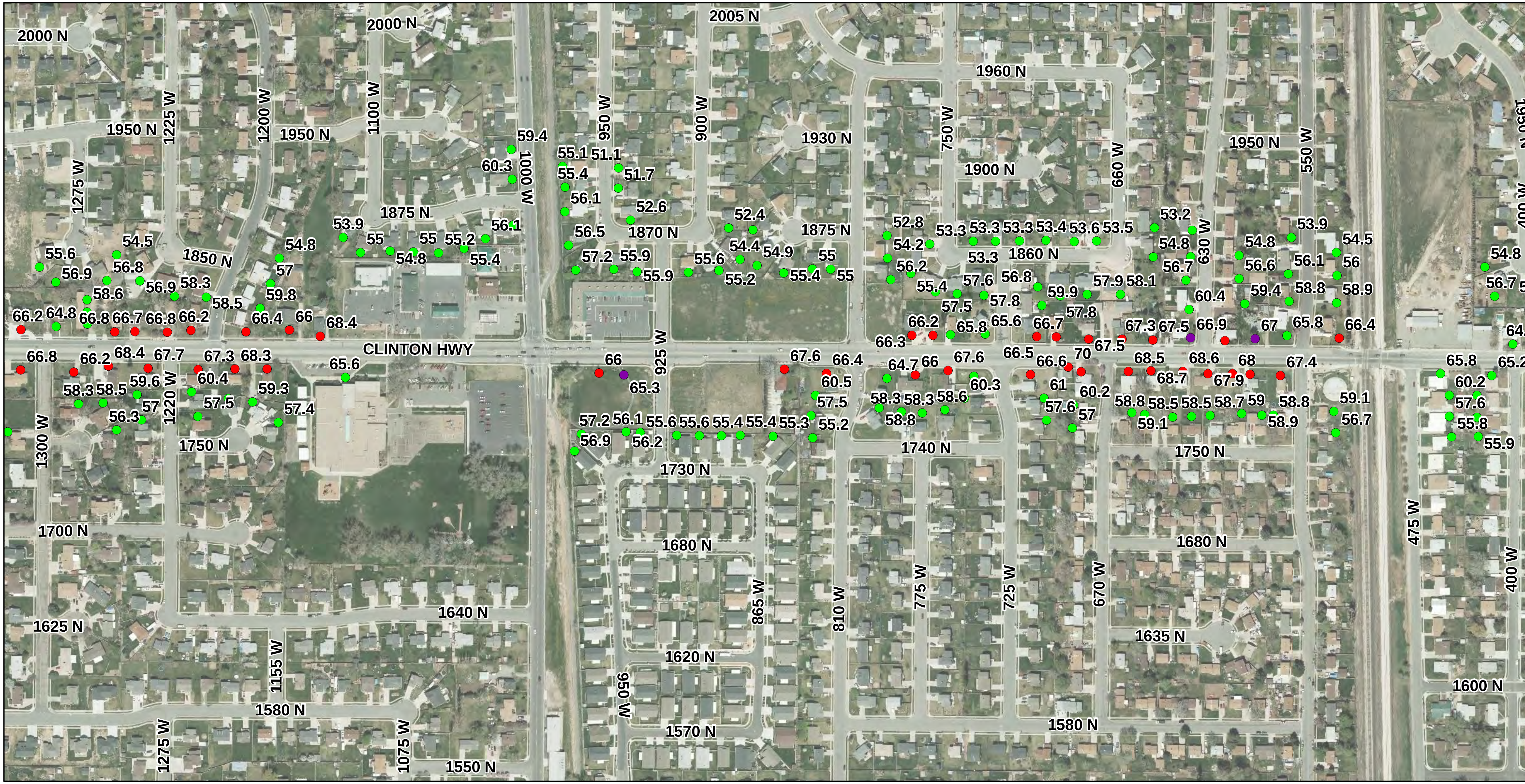
N

300 150 0 300 Feet

Existing Noise Levels

Map 1 of 5

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT



Legend

Existing Sound Levels Impact

- Measurement Site
- No
- Yes

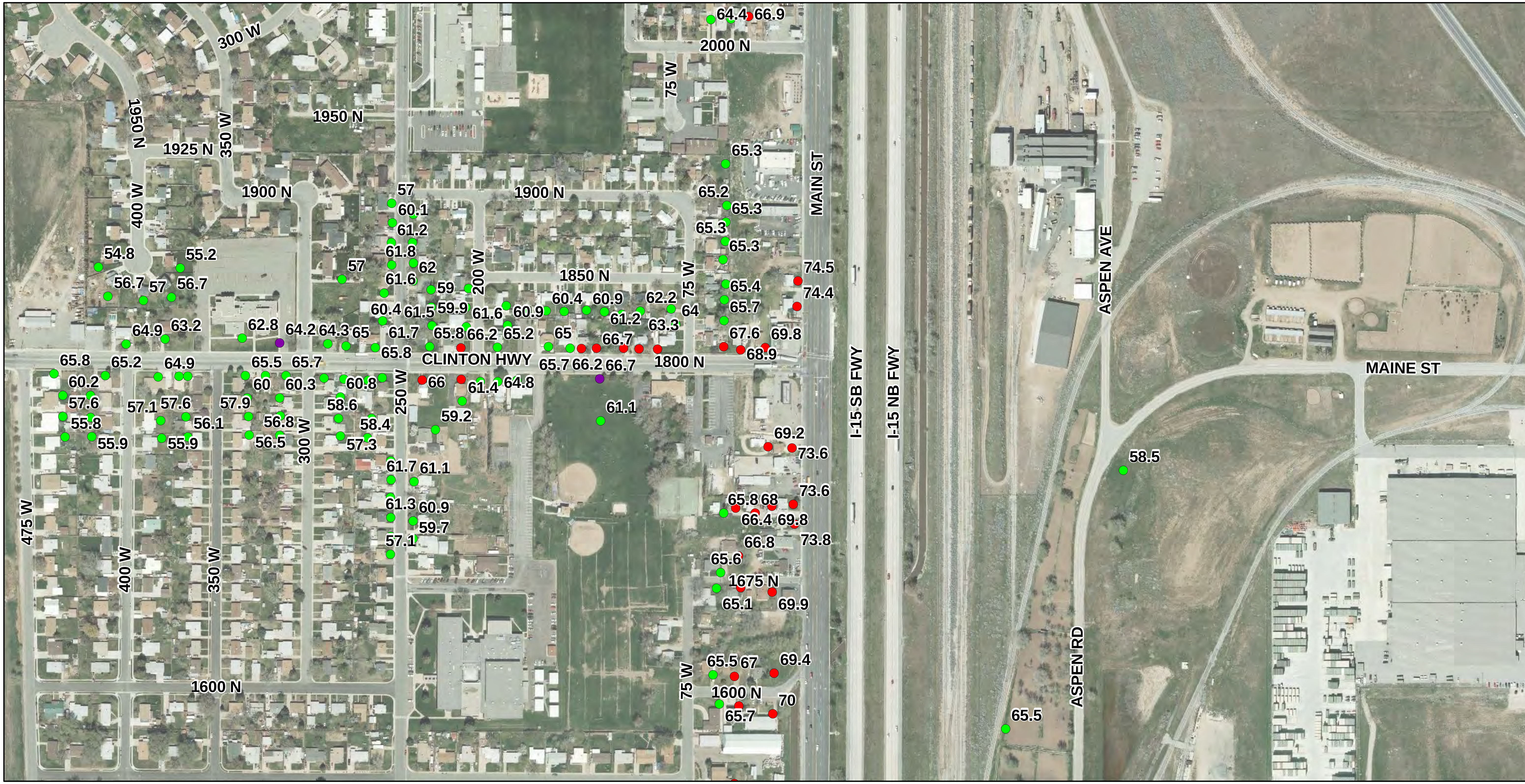
N

300 150 0 300 Feet

Existing Noise Levels

Map 2 of 5

1800 North SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Existing Sound Levels Impact

- Measurement Site
- No
- Yes

N

300 150 0 300 Feet

Existing Noise Levels

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT

Legend

Existing Sound Levels Impact

- Measurement Site
- No
- Yes

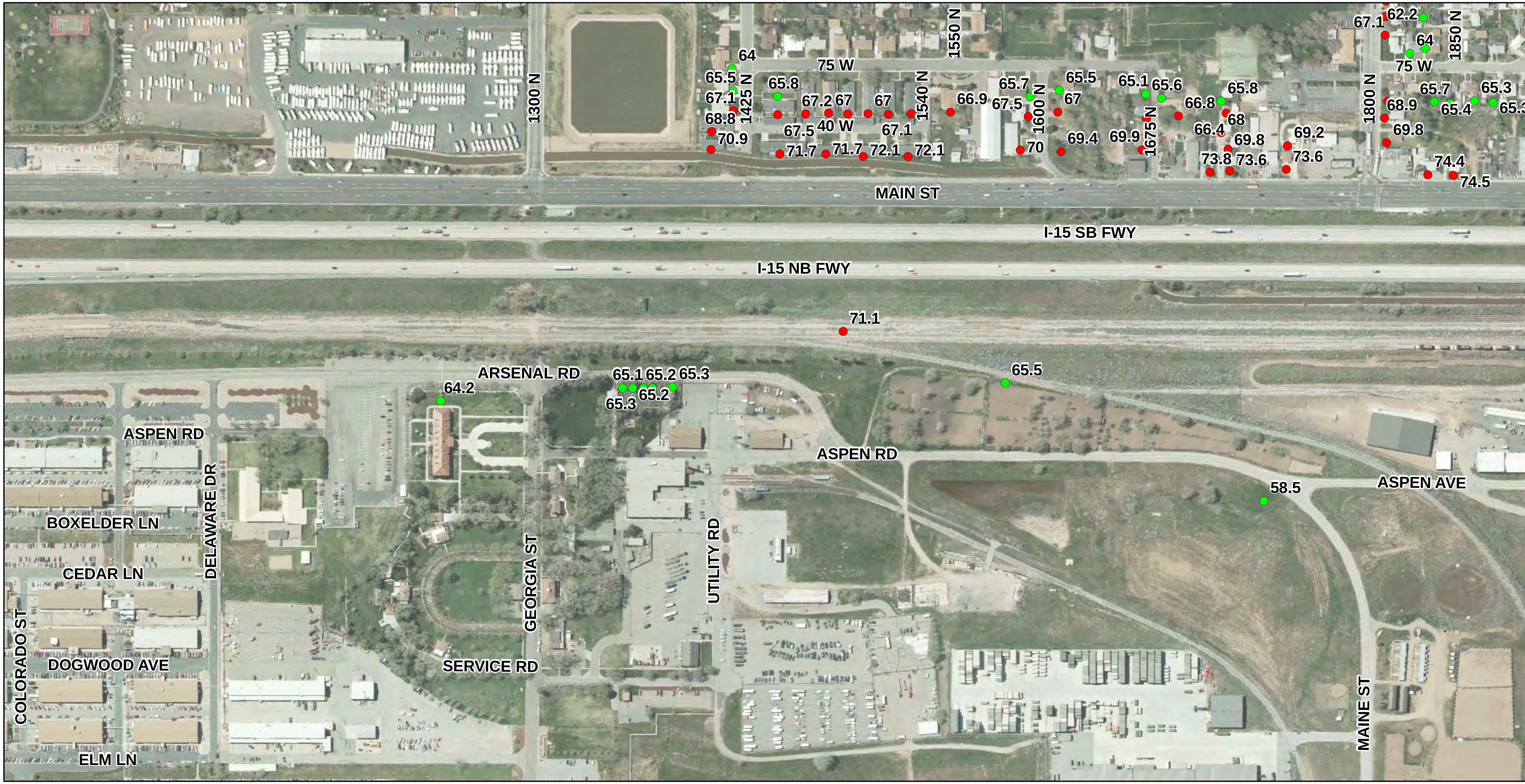
N

300 150 0 300 Feet

Existing Noise Levels

Map 4 of 5

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT



Legend

Existing Sound Levels Impact

- Measurement Site
- No
- Yes

N

310 155 0 310 Feet

Existing Noise Levels

Map 5 of 5

1800 North SR-37 Environmental Impact Statement

Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

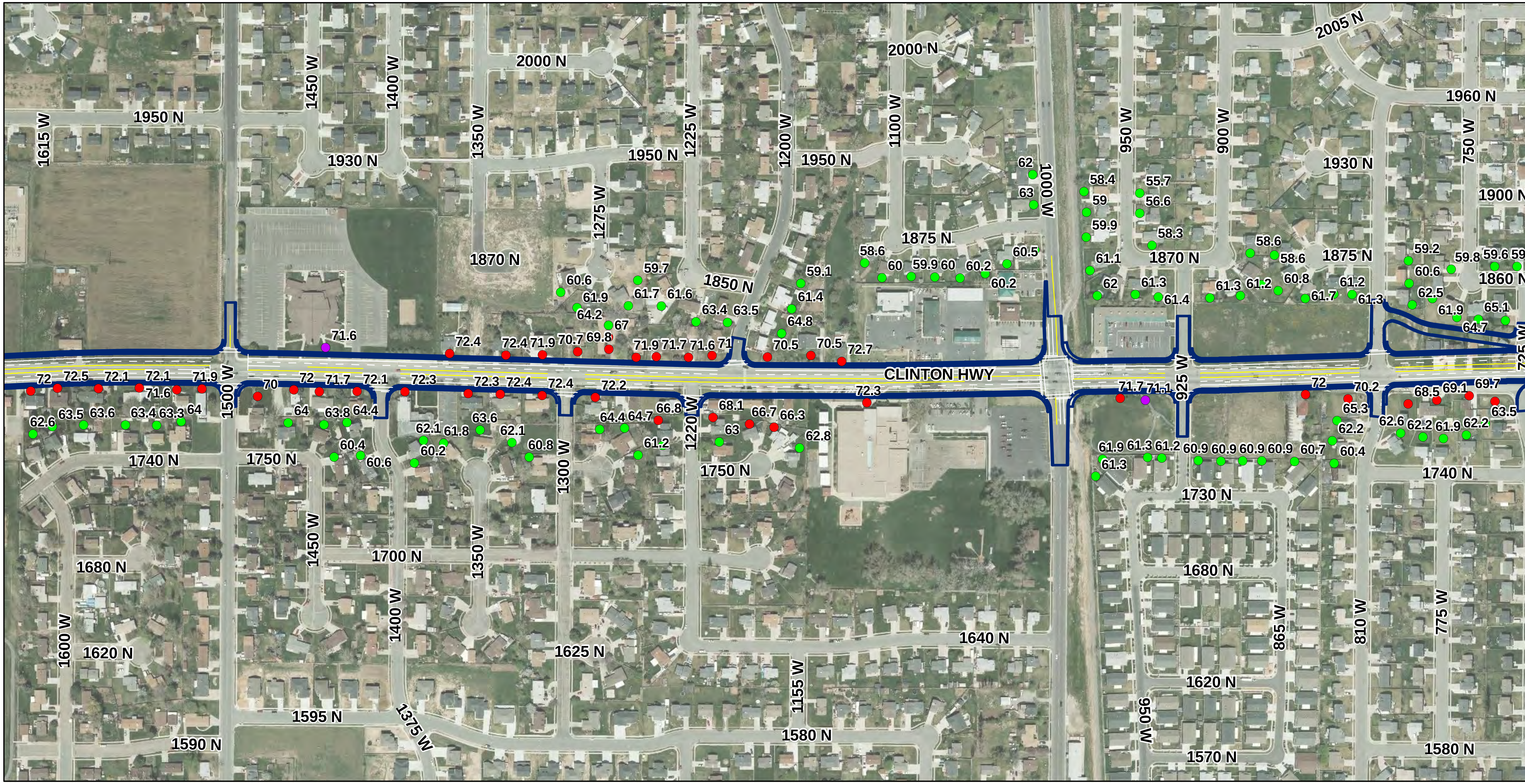
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternatives A-F

Map 1 of 5

1800 NORTH SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

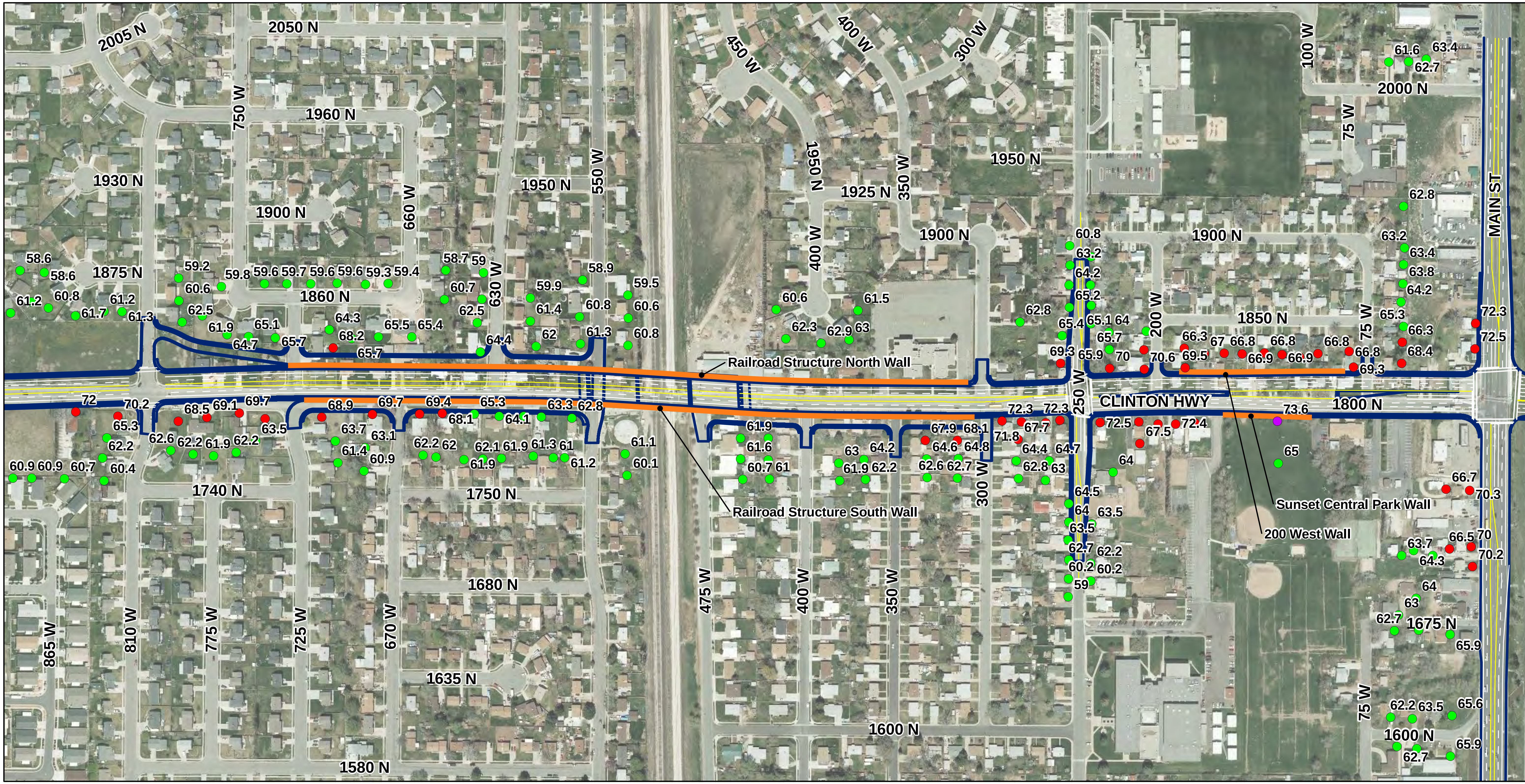
300 150 0 300 Feet

Worst Case Scenario Noise Levels

Alternatives A-F

Map 2 of 5

1800 NORTH SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

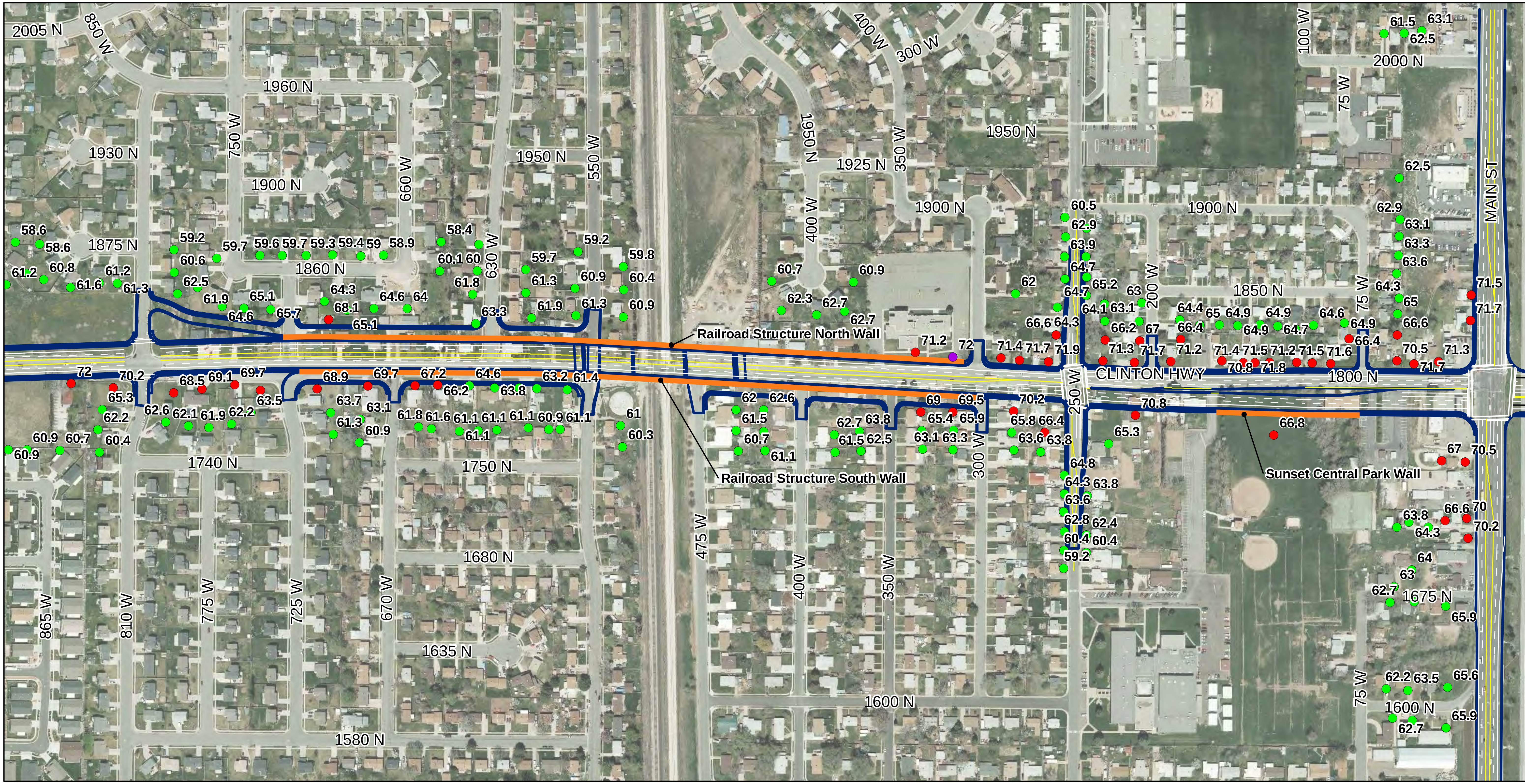
- Measurement Site
- No
- Yes

Worst Case Scenario Noise Levels

Alternatives A-C

Map 3 of 5

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

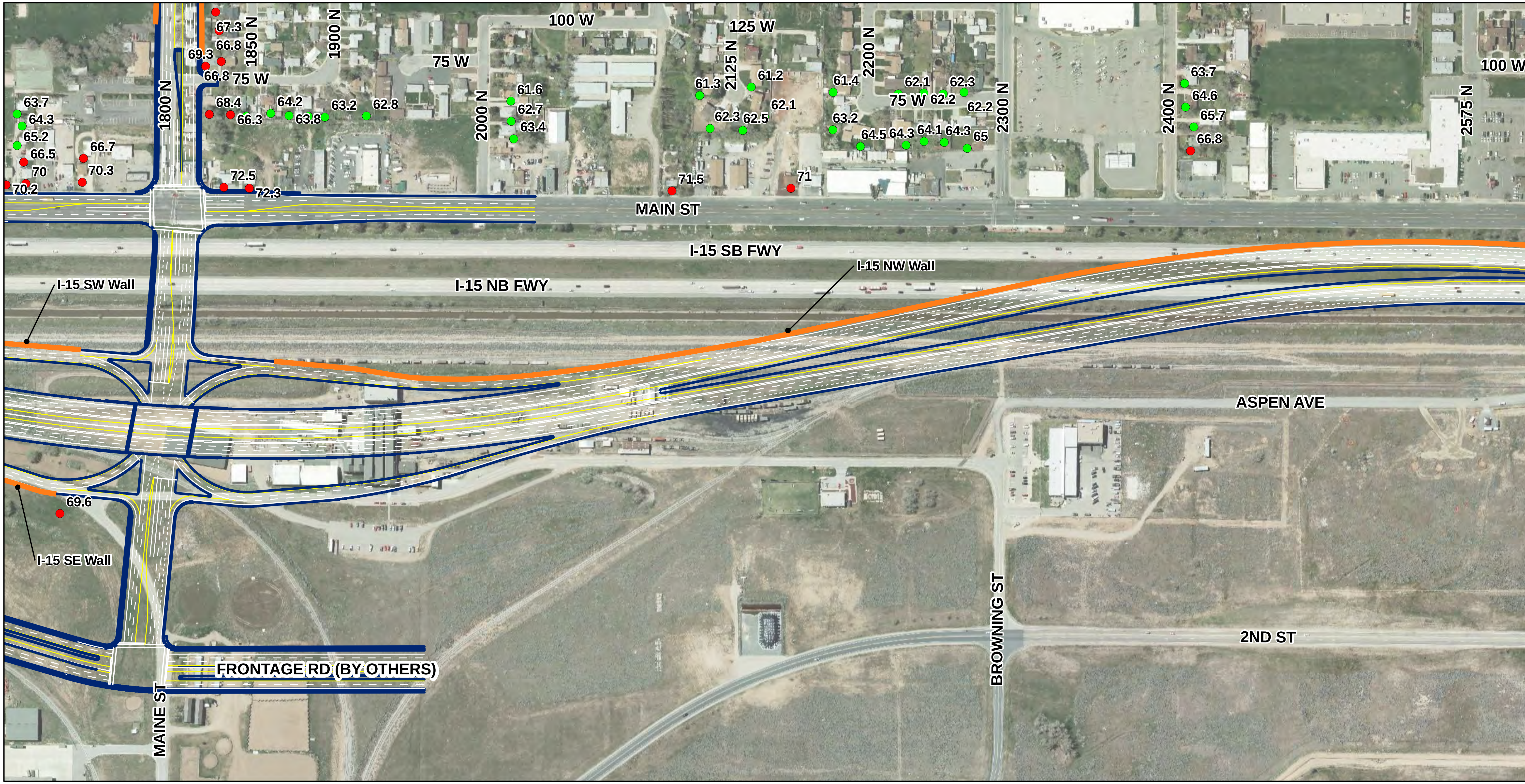
300 150 0 300 Feet

Worst Case Scenario Noise Levels

Alternatives D-F

Map 3 of 5

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

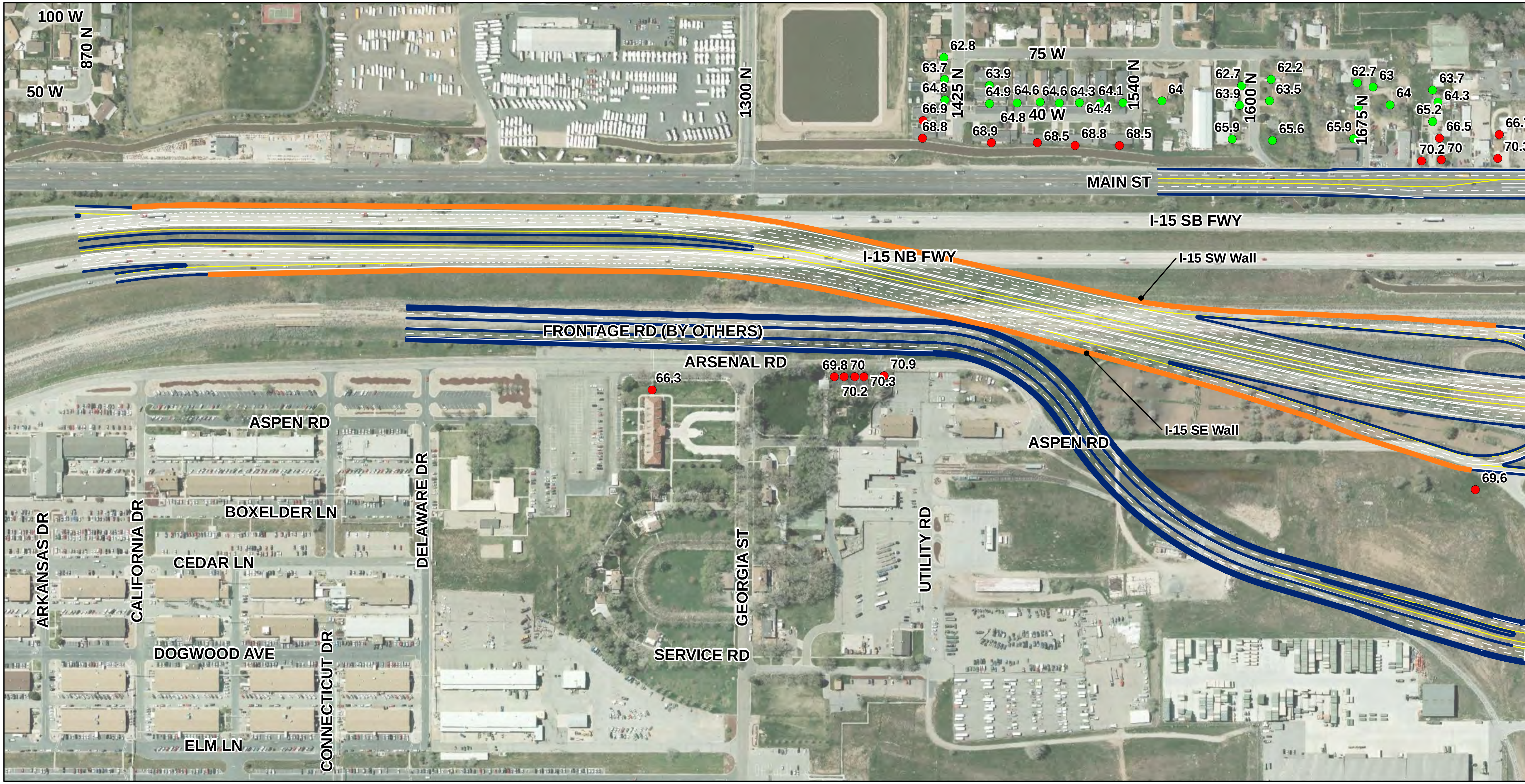
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative A

Map 4 of 5

1800 NORTH SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

Measurement Site

No

Yes

N

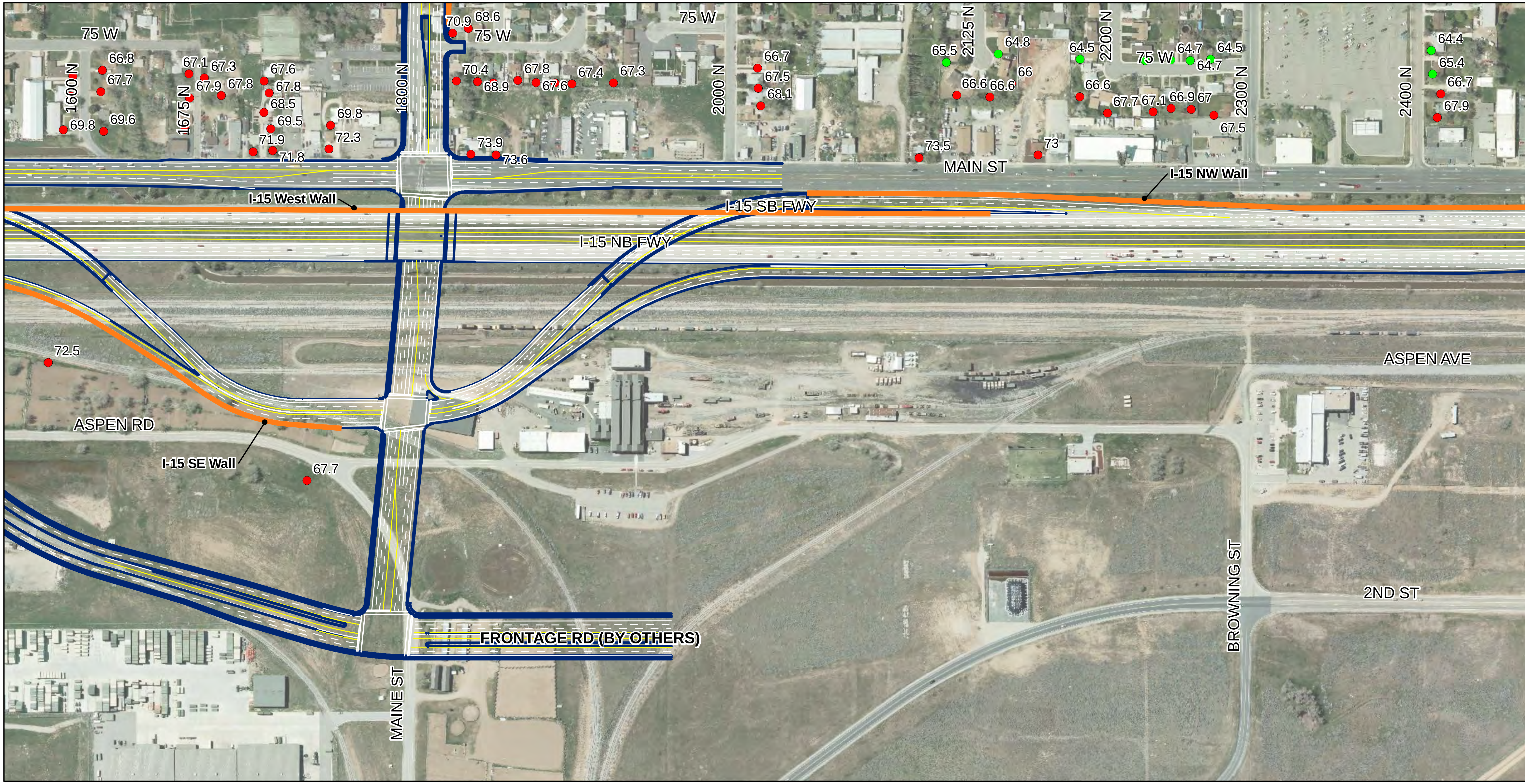
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative A

Map 5 of 5

1800 North SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

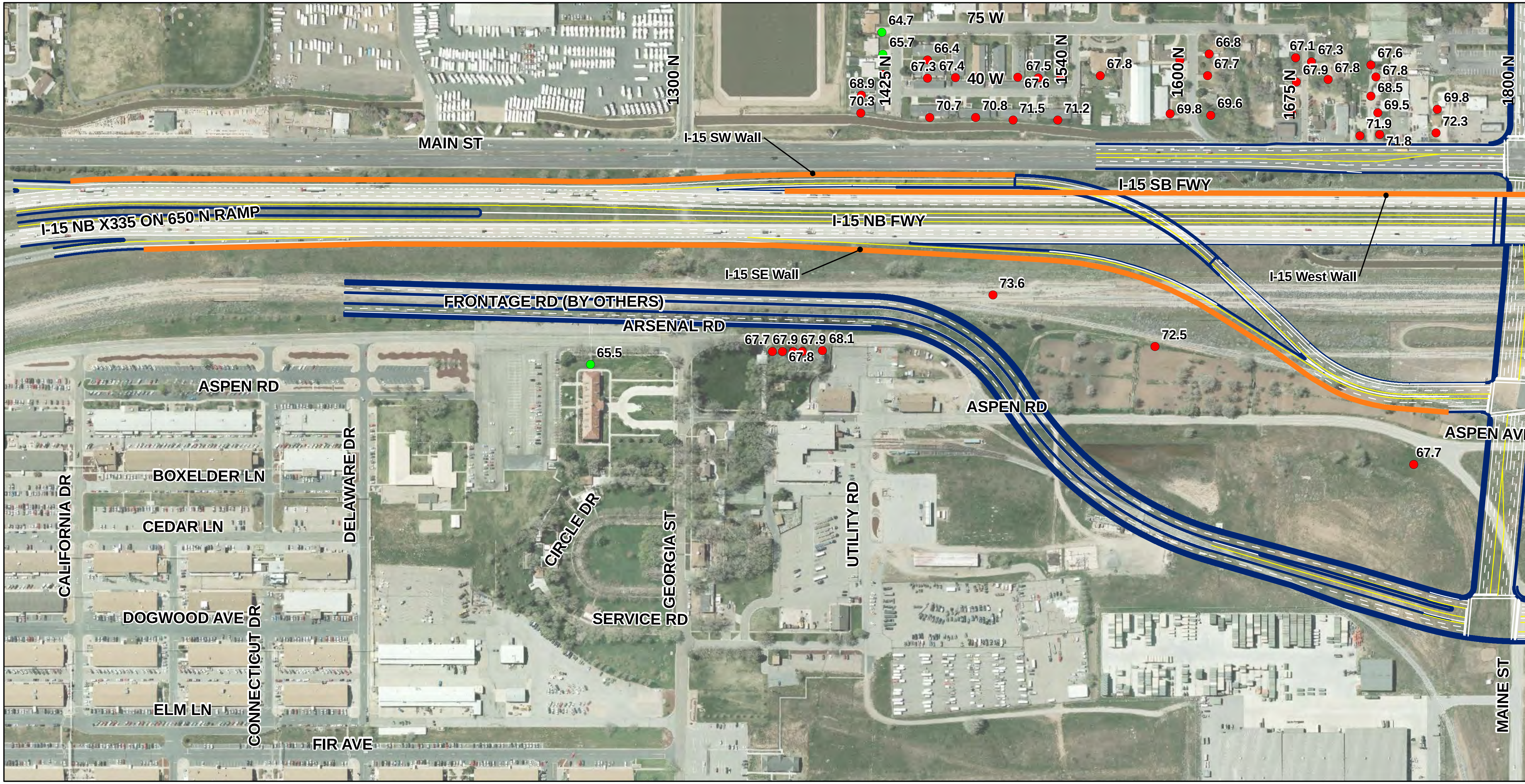
N

300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative B

1800 North SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

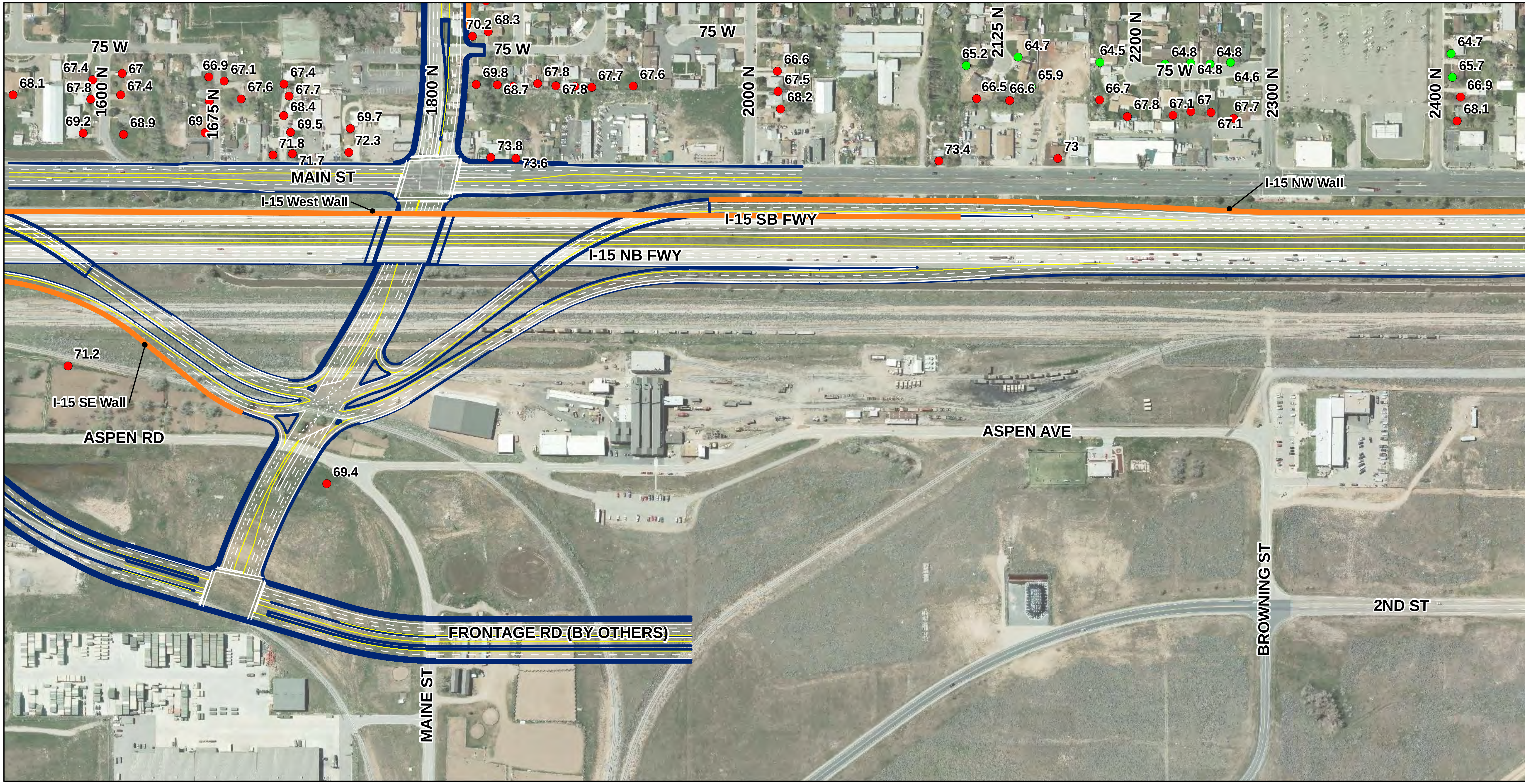
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative B

Map 5 of 5

1800 NORTH SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

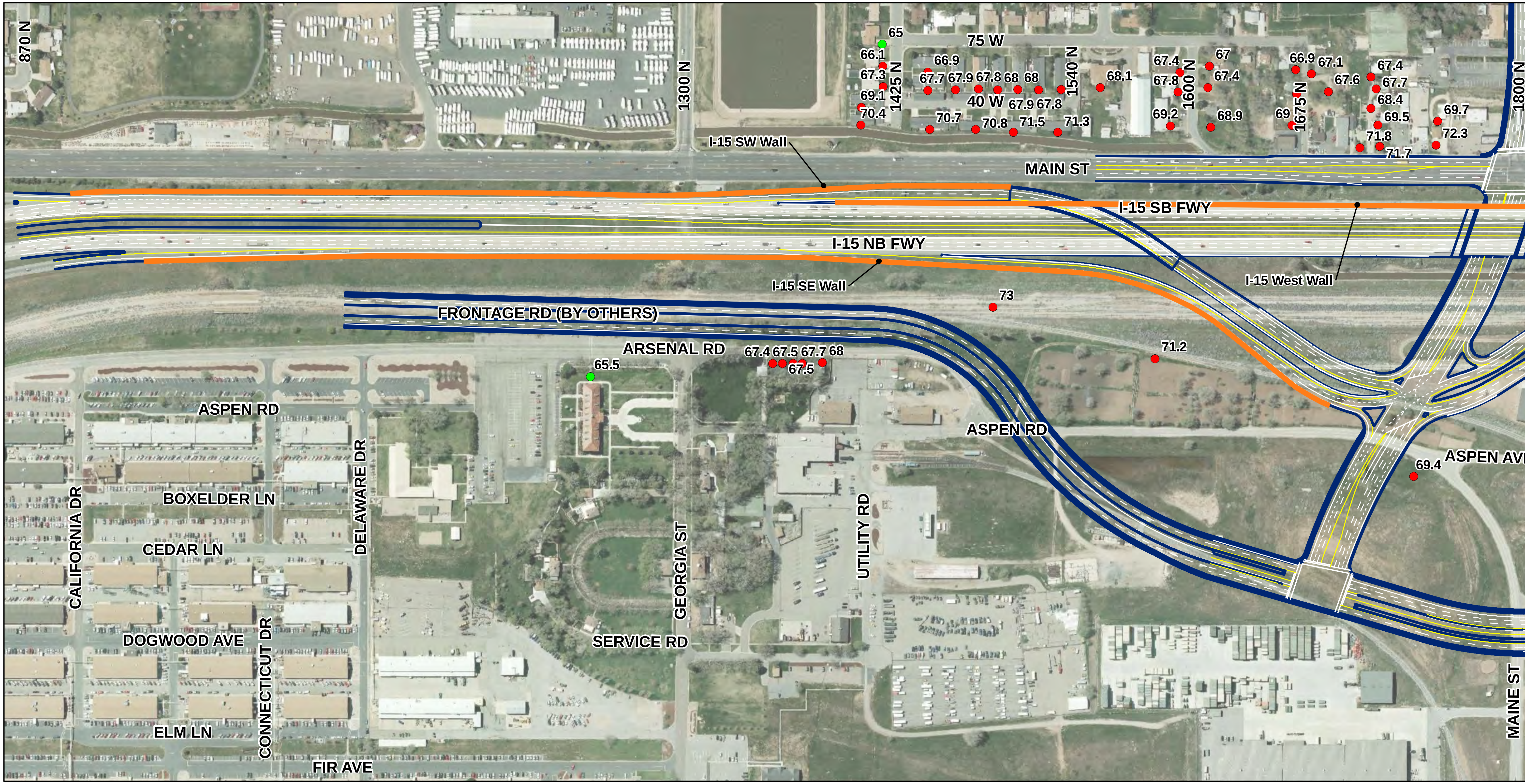
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative C

Map 4 of 5

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

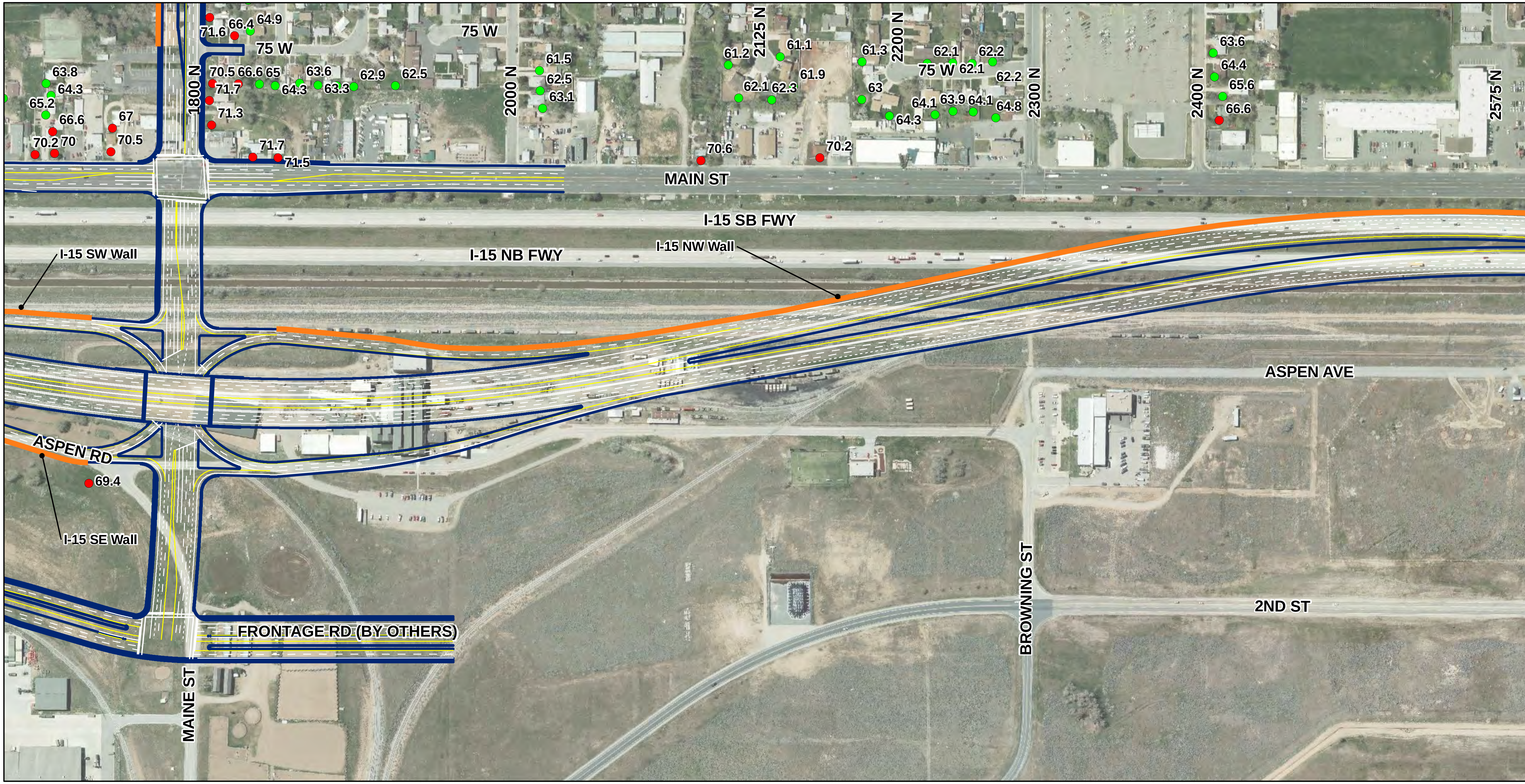
N

300 150 0 300 Feet

Worst Case Scenario Noise Levels

Alternative C

1800 NORTH SR-37 ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

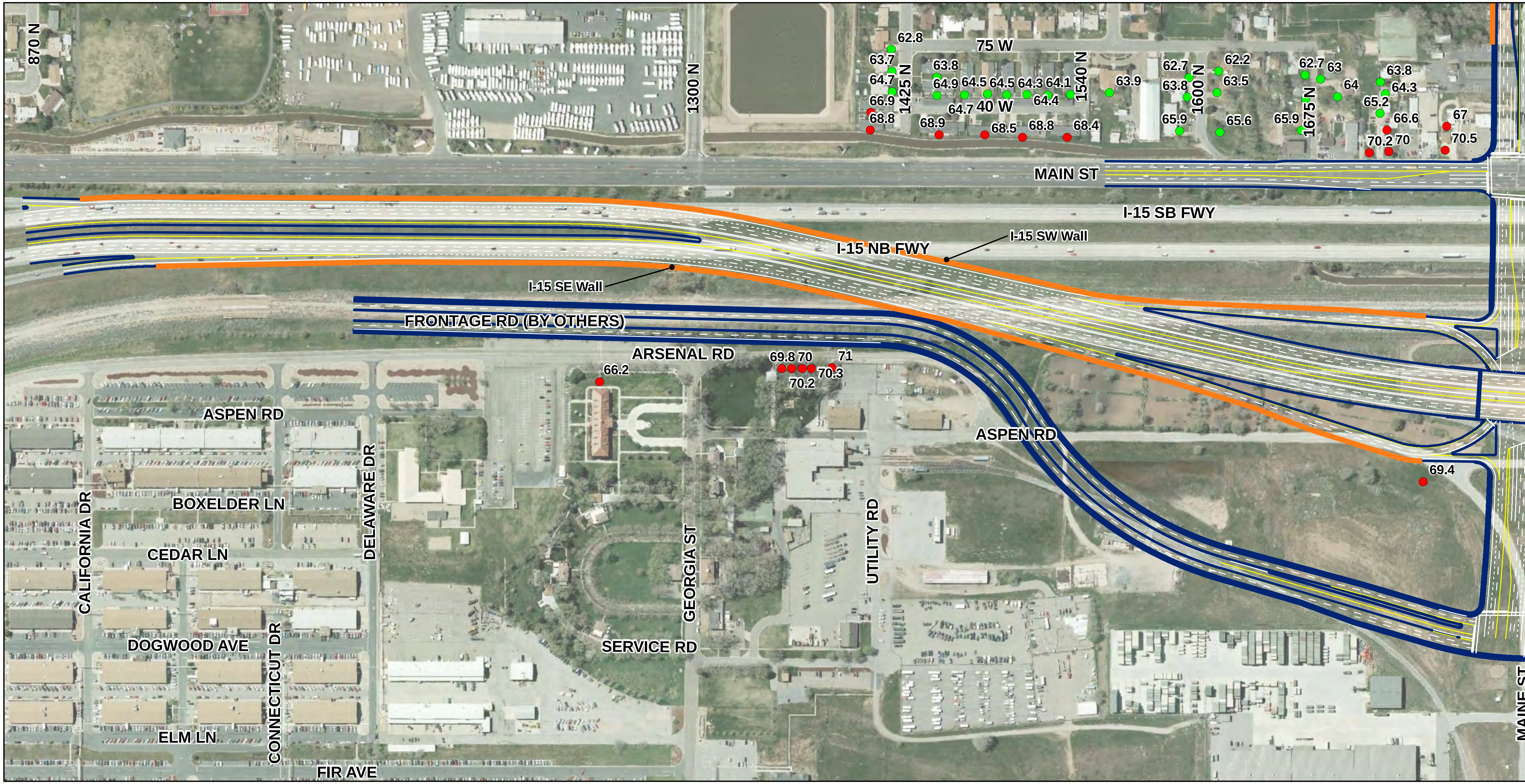
Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

Worst Case Scenario
Noise Levels

Alternative D

1800 North SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

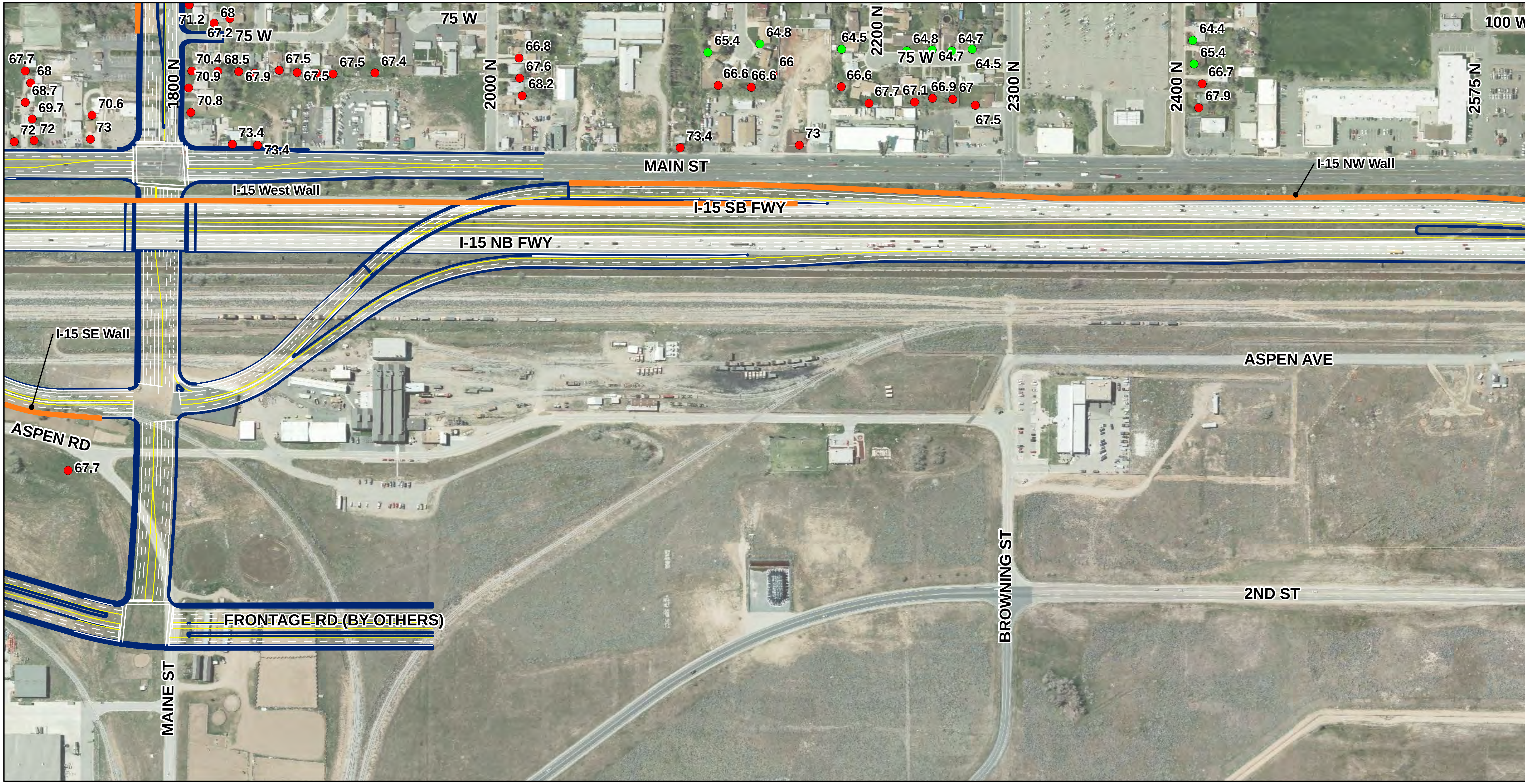
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative D

Map 5 of 5

1800 NORTH SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

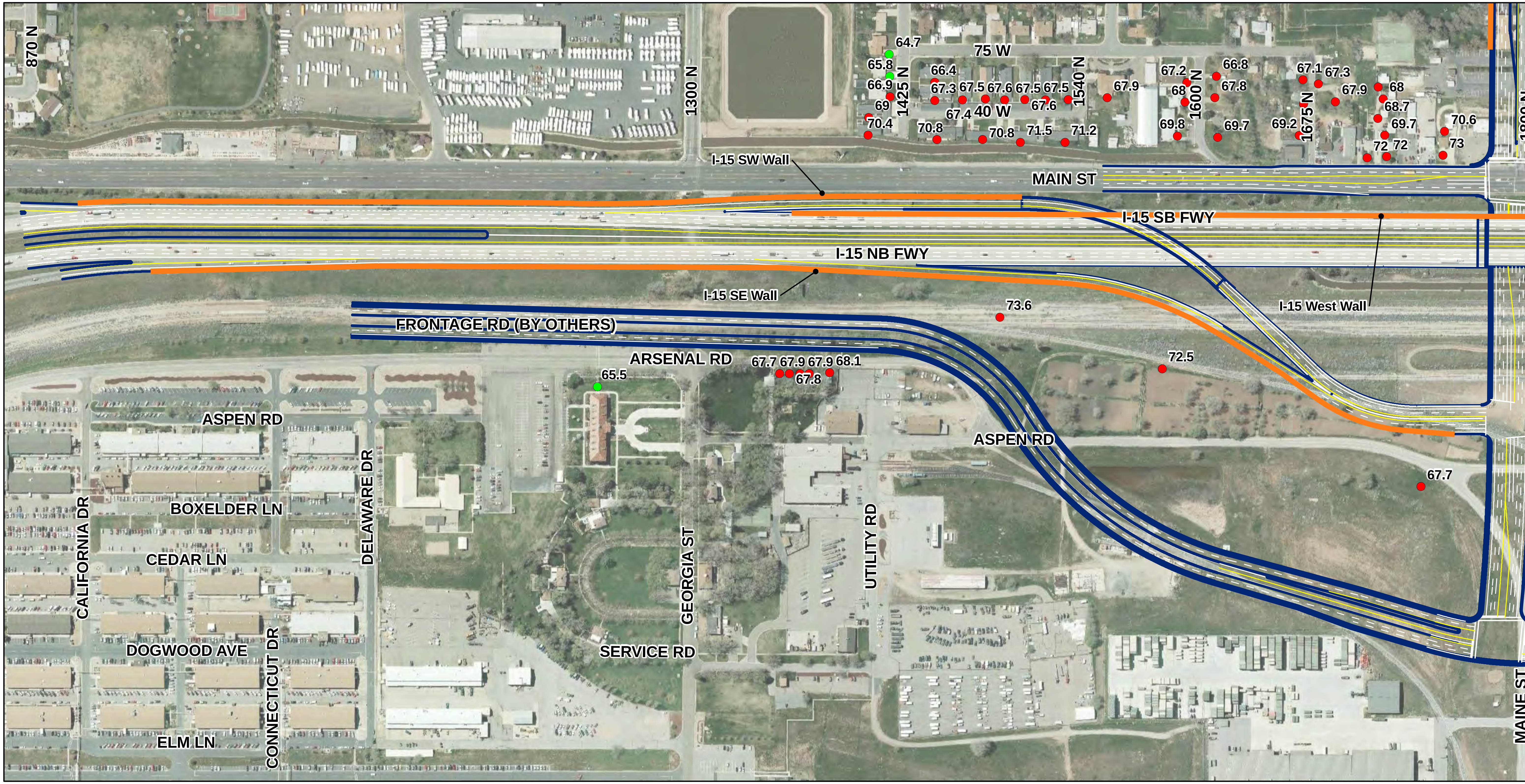
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative E

Map 4 of 5

1800 North SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

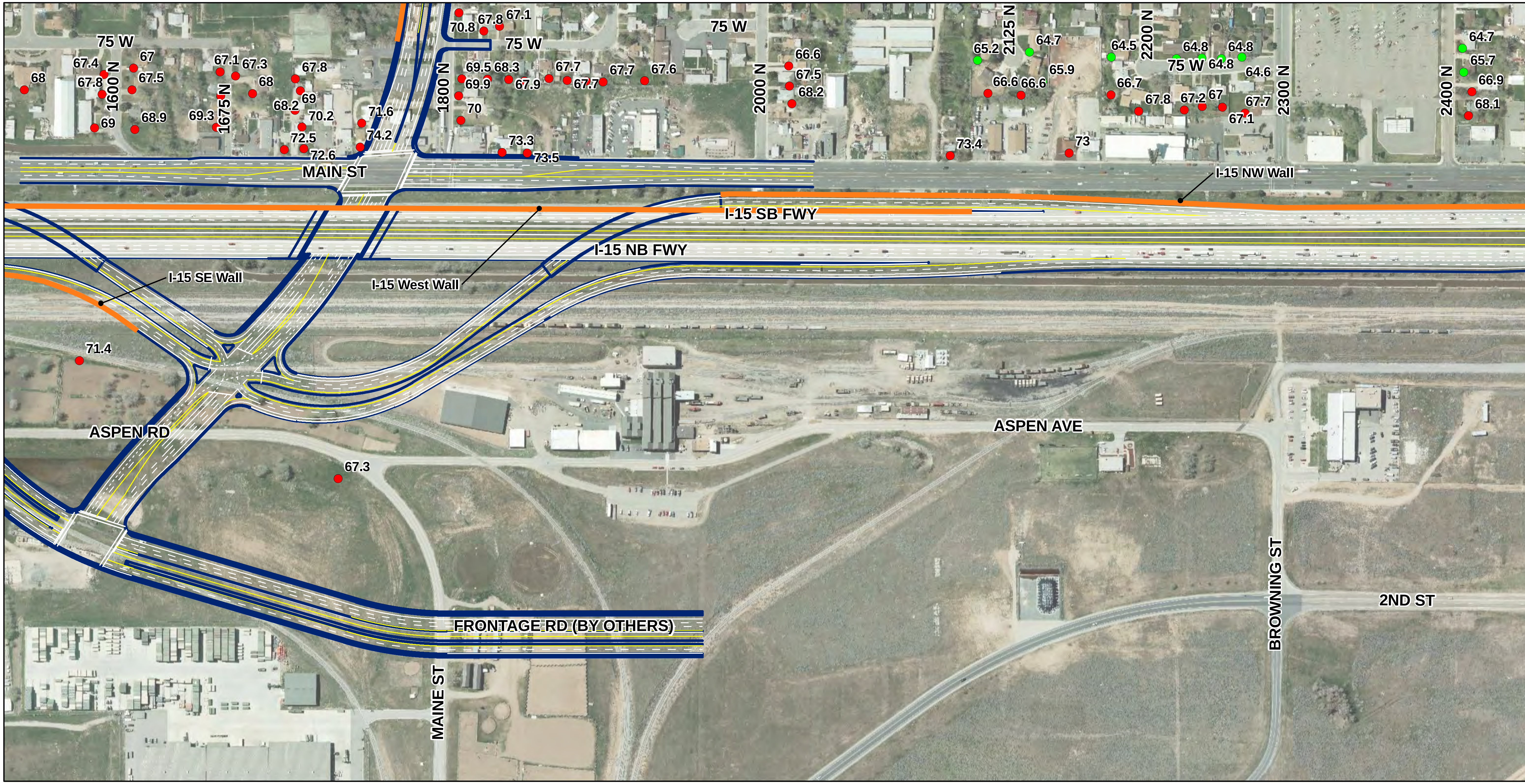
300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative E

Map 5 of 5

1800 North SR-37
ENVIRONMENTAL IMPACT STATEMENT



Legend

Potential Noise Walls

Proposed Alt. Sound Levels Impact

- Measurement Site
- No
- Yes

N

300 150 0 300 Feet

Worst Case Scenario
Noise Levels

Alternative F

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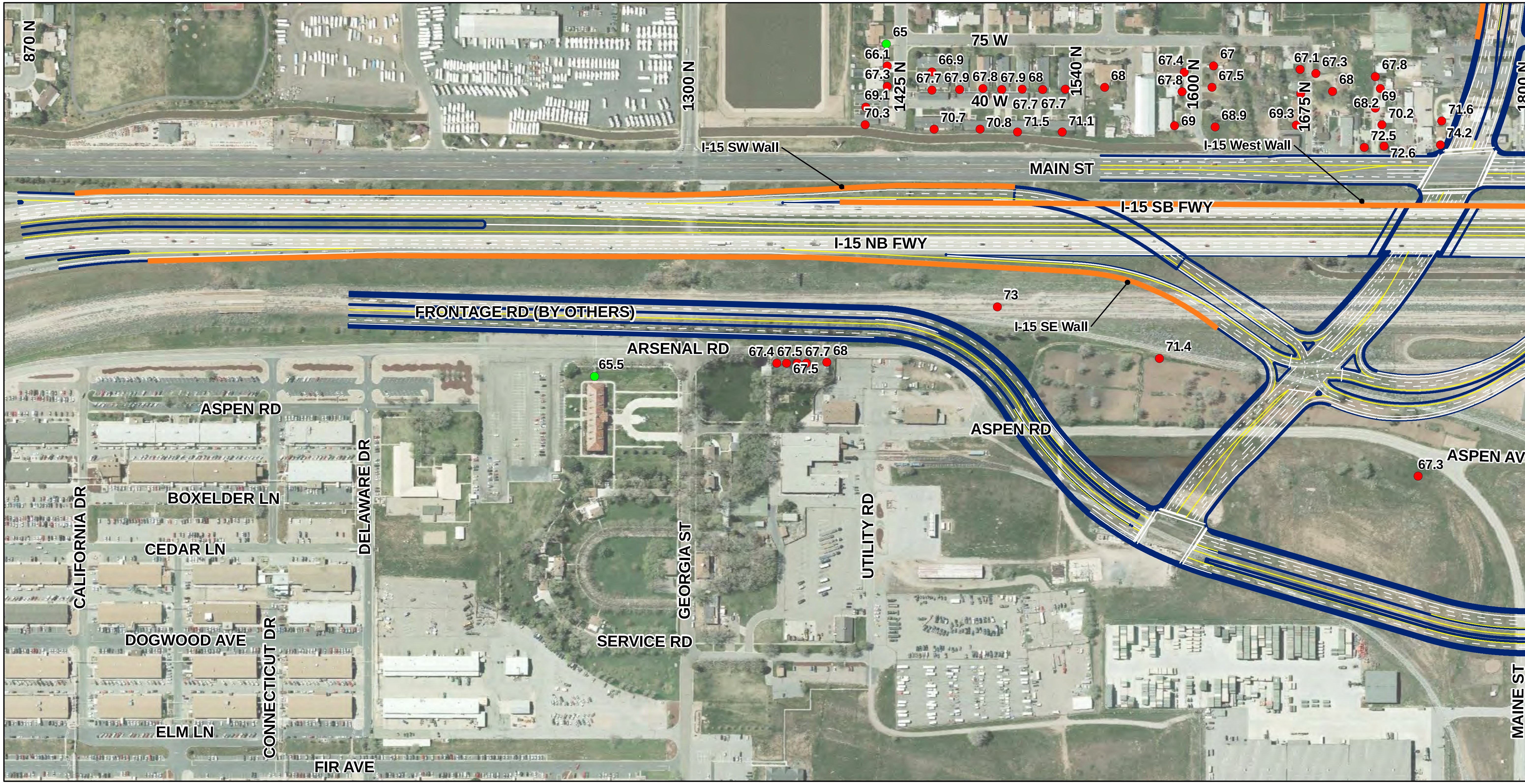

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