BRUNSWICK COUNTY PLANNING BOARD
REGULAR MEETING AGENDA
July 14, 2025
4:00 PM

I. Call to Order

II. Invocation/Pledge of Allegiance

III. Approval of Minutes

1. June 9, 2025 Minutes

   Consideration for approval of the June 9, 2025 minutes.

IV. Public Comment

V. Presentations

1. Brunswick County Voluntary Agricultural District (VAD) Promotional Video

   Request to hear a presentation by Cooperative Extension on a new promotional video created by the Voluntary Agricultural District (VAD) Board to educate the public about agriculture in Brunswick County.

VI. Old Business

1. Hooper Road Tract Planned Development (PD-146)

   Consideration of the proposed Hooper Road Planned Development consisting of 1,676 single family units on approximately 594.09 acres, creating an overall density of 2.82 dwelling units per acre.

VII. Public Hearings

1. Folly Hills Planned Development (PD-157)

   Consideration of the proposed Folly Hills Planned Development consisting of 204 single family units on approximately 146.09 acres, creating an overall density of 1.4 dwelling units per acre.

2. Sailors Haven Planned Development (PD-158)

   Consideration of the proposed Sailors Haven Planned Development consisting of 299 single family units on approximately 117.38 acres, creating an overall density of 2.55 dwelling units per acre.

3. Oxpen Oaks Major Subdivision (SS-291)

   Consideration of the proposed Oxpen Oaks Major Subdivision consisting of 15 single family units on approximately 6.67 acres, creating an overall density of 2.25 dwelling units per acre.

4. Rezoning Case Z-917

   Consideration of Rezoning Case Z-917: Request to rezone Tax Parcel 02100058 (58.38

acres) from CI (Commercial Intensive) to R-7500 (Medium Density Residential).

VIII. Other Business/Informal Discussion

1. FY 25 Administrative Adjustment Report

2. New Agenda Management System

3. UDO Modernization Project Update

4. Planning Board Case Item Update

IX. Adjournment

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Connie Marlowe, ADMIN ASST II/CAMA OFFICER

Action Item# III1
June 9, 2025 Minutes

Issue/Action Requested:
Consideration for approval of the June 9, 2025 minutes.

Background/Purpose of Request:
Minutes from June 9, 2025 Planning Board Meeting.

Planning Department Recommendation:
Consideration for approval of the June 9, 2025 minutes.

Attachments:
1. June 9, 2025

MEETING MINUTES

BRUNSWICK COUNTY PLANNING BOARD
REGULAR MEETING OFFICIAL MINUTES

June 9, 2025
4:00 PM

The Brunswick County Planning Board met in Regular Session on June 9, 2025 at 4:00 p.m. in the Commissioners' Chambers of the David R. Sandifer Administration Building, located at the Brunswick County Government Center, 30 Government Center Drive, Bolivia, North Carolina.

MEMBERS PRESENT
Jason Gaver, Vice Chair
James (Jim) Board
William Bittenbender, At-Large
Howard Stocks, At-Large
Harry "Richard" Ishler, Alternate

MEMBERS ABSENT
Clifton Cheek, Chair
Richard Leary
Ron Medlin

STAFF PRESENT
Kirstie Dixon, Director
Marc Pages, Deputy Director
Connie Marlowe, Admin. Asst. II/CAMA LPO
Tyler Connor, Planner I
Garrett Huckins, GIS Planning Analyst
Ryan King, Asst. County Attorney

OTHERS PRESENT
Dylan Phillips, Brunswick Beacon
James Paggioli
Karen Babson
Carla White
Ron Ferguson
Andy Mills
Todd Willis
Ramsey Kemp
Matt Haley
Deborah Howard
Toni Miley
Matt Ross
Evelyn Jeffries
Jackson Starliing
Savanna Tenenoff, Star News
Cameron Savage
Shirley Sullivan
Lisa Propst
Alex Cameron
Sam Franck
Steve Conrad
Jody Bland
Lynn Leask
Robert Nowak
Laura McEnany
Jayce Morris
Vicki Marder
Carla Imes

DRAFT

Rich Rittinger

I. CALL TO ORDER

Vice Chair Gaver called the meeting to order at 4:01 p.m.

II. INVOCATION/PLEDGE OF ALLEGIANCE

Vice Chair Gaver said a prayer. He asked everyone to stand and face the U.S. Flag to say the Pledge of Allegiance.

III. ROLL CALL

Chair Cheek, Ron Medlin and Richard Leary were absent.

IV. APPROVAL OF MINUTES

Mr. Bittenbender made a motion to approve the 12-May-25 minutes as presented and the motion was unanimously carried.

V. AGENDA AMENDMENTS

There were none.

VI. PUBLIC COMMENT

Mr. Cameron Savage, 132 Mill Creek Road SE, addressed the Board and he expressed concerns with water management, wildlife preservation (approximately 44 endangered species in the County), job demands, limited bus drivers in the school system, flooding and the possibility of existing residents losing their homes and livelihood. Mr. Savage said his road has flooded twice since the approval of new development(s) began in the County.

Ms. Karen Babson, 132 Mill Creek Road SE, addressed the Board regarding the loss of teachers (12 in the past month) in the school system as well as bus drivers. She stated that the middle and high school students are sharing bus rides to school, which could pose a problem for the elementary school students. Ms. Babson reiterated the same concerns expressed by Mr. Savage as well as unimproved roads in the County that school buses have to travel on.

Ms. Shirley Sullivan, 5002 Seaward Court, addressed the Board regarding when a Traffic Impact Analysis (TIA) is required based on vehicle trips per day because she was under the impression that a TIA should be submitted at the point when there are 1,000 vehicle trips per day for a residential project. Mr. Pages said the Brunswick County Unified Development (UDO) does stipulate that a Traffic Impact Analysis (TIA) is required for a residential project that generates 1,000 vehicle trips per day, but the Board of Commissioners directed staff to require a TIA or warrant analysis to be completed prior to Planning Board approval when there are 2,000 vehicle trips per day for a residential project. He stated that a TIA is required prior to construction when a residential project generates 1,000 vehicle trips per day. He

further stated that the UDO rewrite will address this matter in better detail and he offered to provide Ms. Sullivan with a copy of the Board of Commissioners' minutes stating such.

Ms. Carla White, 1775 Clemmons Road, addressed the Board. Ms. White said her daughter has a genetic anomaly that can be caused by environmental factors. She said her water is 285 parts per trillion (should only be 4 parts per trillion) with a PFAS that may have caused her daughter's disability according to an epigeneticist. Ms. White was very concerned with water contamination and felt it should be addressed to prevent negative impacts on citizens' health in the County.

Ms. Lisa Propst, 514 Bayshore Drive SE, addressed the Board. She said she has been in contact with Charlie Miller's office regarding Senate Bill 419 (Restore Done Zoning Authority). She asked staff to elaborate on Senate Bill 419. Ms. Dixon said she cannot elaborate on that specify Senate Bill because there are 174 Planning related Senate Bills, so Ms. Dixon said she would get Ms. Propst's contact information so she can contact her tomorrow to discuss the matter further. Ms. Propst suggested that staff be proactive when the potential changes occur.

Mr. Ron McPherson, 559 Roxboro Street SE, addressed the Board regarding excessive overdevelopment in the County. He felt that there is not enough infrastructure to support all of the newly approved development(s).

VII. PRESENTATION

Mr. Garrett Huckins addressed the Board with a PowerPoint presentation (attached) of the Residential Development Dashboard that included data highlights, approved, proposed, abandoned/inactive, annexed and the City of Northwest developments. He stated that the data captures development from 2015 – Present. He provided a demonstration of how to review the information on the Planning website. Mr. Huckins concluded that other features will be forthcoming such as denied developments, developments older than 2015, and other dashboards (rezonings, special use permits, and commercial developments). Vice Chair Gaver thanked Mr. Huckins for the presentation.

VIII. PUBLIC HEARINGS

A. <u>Planned Development – PD-146</u>

Name:	Hooper Road Tract Planned Development
Applicant:	Colliers Engineering and Design
Tax Parcel(s):	01000010, 01000021, 0100002101 and 00600011
Location:	Hooper Road NE (SR 1427)
Description:	Hooper Road Tract is a proposed planned development consisting of 1,722 single-family units on approximately 594.09 acres, creating an overall density of 2.90 dwelling units per acre.

Mr. Marc Pages addressed the Board. Mr. Pages read the Staff Report (attached) and identified the subject property and surrounding properties on a visual map. He provided the Board with school capacity charts (attached) for the nearby schools. He stated that a K-8 school (location unknown at this time) is proposed in the area in August 2028 according to the school representative.

Mr. Pages said staff recommends approval based on the following conditions:

- That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.
- That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
- Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.
- Add a note to the plan that the emergency access road to Dogwood Road NE (SR 1428) will be constructed as part of Phase 1B.

Mr. Pages said the applicant worked with adjacent property owners to obtain another access point, which is the emergency access to Dogwood Road NE (SR 1428). He stated that the applicant was unsuccessful in getting any other access through adjacent neighborhoods due to deed restrictions prohibiting such. He further stated that the developer is proposing another emergency access point near the southwest area of the project that connects to a cul-de-sac. He concluded that the regular traffic to this project will utilize Hooper Road NE (SR 1427) for ingress and egress.

Vice Chair Gaver asked staff to show the entrances and exits to the site and Mr. Pages pointed out the areas on a visual map. Mr. Pages said an emergency access road to Dogwood Road NE (SR 1428) will be constructed in Phase 1B and he proceeded to identify the open space areas. Mr. Board was concerned with all access points to the project being off Hooper Road NE (SR 1427). Mr. Pages said there was an attempt made to get access off Black Chestnut Drive NE to no avail. Mr. Board reiterated that there will be approximately 14,000 trips per day on a two-lane road. Mr. Pages said the North Carolina Department of Transportation (NCDOT) had no issues with Hooper Road NE (SR 1427) being the primary access road for the proposed development. Mr. Board felt that there should be more entrance points to this huge development for emergency vehicle access and potential hazards for evacuation of vehicles from this community. Mr. Board said Lincoln Elementary is at capacity and student attendance is growing in numbers every year. Mr. Board was not convinced that a new school will be constructed in August 2028 as planned by the school officials.

Mr. Board made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Alex Cameron, representative for Blue Firm Development, addressed the Board. Mr. Cameron said Blue Firm Development believes that great communities are built when natural landscapes guide the vision. He said they intend to craft a neighborhood that reflects the natural beauty along Hood Creek and the Cape Fear River. He introduced the project consultants, Andy Mills (Colliers Engineering), Ramey Kemp (RFK Engineers), and Sam Franck (Ward & Smith Law Firm) for this project.

Mr. Andy Mills, Colliers Engineering and Design, addressed the Board on behalf of the developer. Mr. Mills said he spoke with Mr. Eckert, representative of Brunswick County Schools, and he concurred with staff's comments regarding school capacity at Lincoln Elementary and the potential of constructing a K-8 school in 2028. Mr. Mills said they will probably not begin construction for the first home in this community until 2028. He stated that there are several more steps (Engineering, Utilities, Stormwater, and NCDOT) in this process for approval before construction can begin including installation of a 3-mile force main off Mt. Misery Road NE (SR 1426). He reiterated that the project is designed to the 100-year storm event and there will be multiple stormwater ponds throughout the project. The lots will be contoured to ensure stormwater will drain into roads and a drainage system

that will travel to the retention ponds on the site. Mr. Mills said they have worked with NCDOT and Wilmington MPO (Metropolitan Planning Organization) to ensure traffic flows properly. Mr. Mills said Hooper Road NE (SR 1427) will be widened to accommodate the additional traffic generated by this project. They have had conversations with the County regarding an emergency access and they worked with a neighboring property owner to put an emergency access to Dogwood Road NE (SR 1428) that will go to Mt. Misery Road NE (SR 1426). He stated that there is an existing access easement on the opposite side of the road.

Mr. Sam Franck, Legal Counsel for the applicant, addressed the Board and reserved the right to provide comments later.

Mr. Todd Willis, 9169 Spivey Court, addressed the Board regarding Tar Pit Landing, which is a border from the project. Mr. Willis was concerned with traffic in relation to Black Chestnut Drive NE to Hooper Road NE (SR 1427). He said Hooper Road NE (SR 1427) is a narrow, curvy, busy road with no shoulder. He stated that an additional 14,000 cars are excessive and an overload to an already heavily travelled road. He stated that he lives at the end of Black Chestnut Drive NE with a different homeowners' association that was never approached about an emergency exit, which would be ideal for this project. He went on to say it is challenging (construction traffic going to The Bluffs on the Cape Fear) getting out of Black Chestnut Drive NE at the current time. He reiterated that adding additional traffic in the area that will be generated by this project will severely slow down traffic on Hooper Road NE (SR 1427) and create more congestion in the area. He reiterated concerns about schools, water, and electricity.

Mr. Steve Conrad, 9176 Spivey Court, addressed the Board regarding house price points for this community will be more than $400k, which will likely increase property taxes that could potentially force current property owners out of their homes. He concurred with comments made by Mr. Todd Willis regarding excessive traffic generated by this development. He was concerned with the area becoming a concrete jungle and losing the quite community people have enjoyed.

Mr. Sam Franck addressed the Board on behalf of the developer. He said this development will be built in phases with a minimum build out of 10 years. Mr. Franck said the TIA has been completed and its purpose is to evaluate the necessary road improvements in connection with and to support development. The burden of road improvements often falls on the people who build on their land. The improvements to the road will be enjoyed by everyone and not just the new homeowners in the proposed development. Mr. Franck said there are future plans for interconnectivity where stub outs are shown. He reiterated that homes will not be built until 2028, which is when a K-8 school is anticipated. He added that building homes in the area will increase the ad valorem tax base that may be used to support the school system.

Mr. Andy Mills re-addressed the Board regarding contacting surrounding property owners about additional access to the development, but some of the areas were not viable due to environmental issues (i.e., wetlands and flood zones) with the adjacent properties. He said they were trying to limit impacts to wetlands and flood zones as much as possible. Mr. Mills stated that a neighborhood meeting was held and there were several concerns expressed about the well system and the neighboring property owners were assured that this is not a mining project that could likely affect residential wells.

Mr. Ramey Kemp, RFK Engineers, addressed the Board. Mr. Kemp made himself available for questions from the Board. Mr. Board asked the impact of placing a roundabout on Hooper Road NE (SR 1427) and Mr. Kemp said it allows traffic going into the development in the northbound direction

to circle around and get into the development and not be held up by traffic travelling south on Hooper Road NE (SR 1427). He said there is not a lot of traffic travelling south at the roundabout. Mr. Board asked if it is currently a through street? Mr. Kemp replied, yes. Mr. Board felt that the roundabout will add an impediment to the road. Mr. Kemp said they would not have any objections to installing a left turn if it is the pleasure of the Board. He reiterated that most of the traffic will be going into the development and coming out of the development, so the roundabout allows for the circulation to occur easily.

Mr. Mills said the roundabout will keep traffic flowing without installing signalization. He stated that there will be a signal light at the intersection of Mt. Misery Road NE (SR 1426) and Hooper Road NE (SR 1427). He further stated that they will not impact adjacent property owners.

Mr. Board asked if the fire department from the City of Northwest (City) was contacted and Mr. Mills said they met with the Fire Marshal to ensure there is proper fire flow in the development. Mr. Mills said he was uncertain if the local fire chief was present at the TRC meeting, but they had multiple discussions with the Fire Marshal's office. He said the Fire Marshal assured them that the emergency accesses are compliant with fire code. Mr. Board, again, expressed his concern with the City's fire department being able to handle a fire in this large development. Mr. Mills said they have a 10" water line running across the property on Hooper Road NE (SR 1427) and an 8" water line that runs through the lower section of the property between the existing communities. Mr. Board said he would be concerned, as a fire fighter, meandering a fire truck through the development from the main entrance to an outlying area. Mr. Pages said the Fire Marshal forwarded the plan to the Fire Chief and he did not receive any objections from the Fire Chief. Mr. Pages proceeded to say that the emergency exit on the south end of the development was requested by staff and signed off by Fire Marshal.

Mr. Ishler said he also is concerned with entrances only off Hooper Road NE (SR 1427) because he felt like it will be a traffic nightmare. Vice Chair Gaver asked Mr. Mills what they are willing to give in exchange for the flexibility requested. Mr. Mills said they are exceeding open space requirements with upland open space that will interconnect with walking trails that tie into the sidewalks meandering through different open space areas throughout the community.

Mr. Bittenbender was concerned with the excessive vehicle trips that will be generated by the proposed development with a single ingress and egress point. Mr. Mills said the project will be buffered on the perimeter and the project is designed to the 100-year storm event rather than the 25-year requirement. He further stated that the project is 2.9 dwelling units per acre. He pointed out that Hooper Road NE (SR 1427) is their main access to and from the development. He stated that they are open to reasonable recommendations from the Board.

Vice Chair Gaver polled the Board with their concerns and potential resolutions. There were concerns with access and egress from and to the community in the proposed location that should have more than 1 ingress and egress other than Hooper Road NE (SR 1427); school over crowdedness (need assurance that adequate educational needs are met for existing and new students moving to the area); emergency services availability to the area, which may mean reducing the number of units to ensure emergency services can accommodate the community in a timely manner; and make sure that all efforts have been exhausted for another entrance other than Hooper Road NE (SR 1427) to the development.

Vice Chair Gaver pointed out staff recommended, in the TRC comments, that 5% of the units are set aside for Workforce Housing, but the proposed price point ($400K) mentioned earlier would not be conducive to the working class. Mr. Mills said they never discuss prices because the market changes.

Staff also asked for a second active entrance to connect to Black Chestnut Road SE that should be a gated emergency entrance to the development. Mr. Pages said staff was hoping there would be an extra access point that did not necessarily rely on Hooper Road NE (SR 1427), but the UDO does not require such. The UDO requires 3 entrances, which could all be on Hooper Road NE (SR 1427). He reiterated that they are proposing a gated emergency access easement on the cul-de-sac on the west side of the development that relies, also, on Hooper Road NE (SR 1427). Vice Chair Gaver was concerned with the potential of another rainstorm that could flood out Hooper Road NE (SR 1427) and the potential of approximately 3,000 people's inability to evacuate this development. Mr. Mills said they would like to go back and address all the concerns expressed by the Board to provide other alternatives and/or solutions to the Board's concerns prior to a vote on this matter. As a result, he asked that the matter be tabled for 30 days and the Board agreed to table the matter until July 14, 2025 at 4:00 p.m.

With no further comments, Mr. Board made a motion to close the public hearing and the motion was unanimously carried.

B. Planned Development – PD-149

Name:	Viridian Reserve Planned Development Expansion
Applicant:	Norris and Tunstall Engineering
Tax Parcel(s):	11100006
Location:	Mill Creek Road SE (SR 1514)
Description:	Viridian Reserve is a previously approved (November 2021) planned development that consisted of 295 single-family units on 151.90 acres and created an overall density of 1.94 dwelling units per acre. The applicant is proposing an expansion consisting of an additional 151 single-family units on an additional 45.16 acres, creating an overall density of 3.34 dwelling units per acre. With the expansion, Viridian Reserve will consist of 446 single-family dwelling units on 197.06 acres, creating an overall density of 2.26 dwelling units per acre.

Mr. Marc Pages addressed the Board. Mr. Pages read the Staff Report (attached) and identified the subject property and surrounding properties on a visual map. He stated that Phase 1 of this development was approved 4 years ago and the property is in a Voluntary Agricultural District because the property used to be a catfish farm that will be removed. He provided the Board with school capacity charts (attached) for the nearby schools.

Mr. Pages said staff recommends approval based on the following conditions:

- That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.
- That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
- Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.

Mr. Board made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Cameron Savage addressed the Board. Mr. Savage was concerned with water management and water quality, potential stormwater runoff from the proposed development as well as the distance between dwelling units. He also expressed concern with adequate medical facilities, emergency facilities (fire, police, rescue), roads, sewer, and schools.

Mr. Jody Bland, Norris and Bland Consulting Engineers. addressed the Board on behalf of the property owner. Mr. Bland explained the approval process for this project. He further stated that they are requesting approval of the second phase of the plan where a lot was deleted to provide interconnectivity at the upper portion of the development and a second interconnectivity was added down at the cul-de-sac to improve access for emergency services. Water and sewer will be provided, installed and certified by the engineer, approved by the County, accepted by the State, and operational prior to the issuance of any building permits. This phase of the development will be designed for a 100-year storm event. Mr. Bland said there is a powerline easement on the property where pickleball courts, a dog park, playground area, and stormwater ponds will be on the opposite side. There will be sidewalks throughout the development on one side of the street. Mr. Bland said the traffic report requires a right-hand turn lane that will be installed by the developer.

Ms. Carla White addressed the Board. Ms. White spoke on behalf of a nearby property owner (unable to attend) that is concerned about the watershed affecting his family and property, and a drainage ditch that may not be sufficient to eliminate flooding issues in the area.

With no further comments, Mr. Ishler made a motion to close the public hearing and the motion was unanimously carried.

Mr. Board made a motion to approve PD-149 (Viridian Reserve Planned Development Expansion) with the noted conditions in the Staff Report and the motion was unanimously carried.

C. Planned Development – PD-150

Name:	McLamb Farm Planned Development
Applicant:	Norris and Tunstall Engineering
Tax Parcel(s):	20900025, 20900026, 20900027, 2090002701, 2090002702, 20900036, and a portion of 20900024
Location:	No. 5 School Road NW (SR 1305)
Description:	McLamb Farm is a previously approved planned development consisting of 319 single-family units on approximately 82.36 acres and created an overall density of 3.87 dwelling units per acre. The applicant is proposing an expansion of the development, consisting of an additional 128 single-family units and 184 duplex units on an additional 73.26 acres. With the expansion, the overall development will consist of 631 dwelling units per acre on approximately 155.62 acres, creating an overall density of 4.05 dwelling units per acre.

Mr. Marc Pages addressed the Board. Mr. Pages read the Staff Report (attached) and identified the subject property and surrounding properties on a visual map. He provided the Board with school capacity charts (attached) for the nearby schools.

Mr. Pages said staff recommends approval based on the following conditions:

- That the development shall proceed in conformity with all plans and design features

submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.

- That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
- Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.

Mr. Board made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Jody Bland, Norris and Bland Consulting Engineers, addressed the Board on behalf of the property owner. Mr. Bland said this is an expansion of the existing development. He said the current development is under construction. There are no issues with the TIA. All development will be outside the AE Flood Zone, but there will be a stormwater pond within the AE Flood Zone. Mr. Bland said there is an amenity area in the center of the development. Water and sewer will be provided by Brunswick County and the system will be expanded to accommodate this addition. Mr. Board asked if there are duplex units on the plan and Mr. Bland said there are duplexes (184 units) in Phase II.

Ms. Carla White addressed the Board and she said the roads are rural in this area. She stated the NCDOT has been contacted about the excessive traffic that will be generated from this development. She further stated that there have been several accidents on No. 5 School Road NW (SR 1305). Ms. White asked the Board to keep in mind that there are concerns about traffic and potential accidents that may result in adding more dwelling units to an area that is currently congested.

With no further comments, Mr. Bittenbender made a motion to close the public hearing and the motion was unanimously carried.

Mr. Board made a motion to approve PD-150 (McLamb Farm Planned Development) with the noted conditions in the Staff Report and the motion was unanimously carried.

D. <u>Planned Development – PD-152</u>

Name:	Sunset Harbor Tract Planned Development (fka Seawatch West Tract)
Applicant:	Dream Finders Homes
Tax Parcel(s):	2170011601, 217LD001, 217LD002, 217LD003, 217LD004, 217LD005, 217LD006, 217LD007, 217LD008, 217LD009, 217LD010, 217LD011, 217LD012, 217LD013, 217LD014, 217LD015, 217LD016, 217LD017, 217LD018, 217LD00101, 217LD00102, 217LD00103, and 217LD00104
Location:	Sunset Harbor Road SE (SR 1112)
Description:	Seawatch at Sunset Harbor – West Tract is a currently approved development, consisting of 183 single-family units and 81 multifamily units on approximately 88.26 acres, creating an overall density of 3.0 dwelling units per acre. The applicant is proposing a modification to the development. With the modification, the development will consist of 328 single-family units on approximately 88.26 acres, creating an overall density of 3.72 dwelling units per acre.

Mr. Howard Stocks asked to be recused from this matter citing a potential conflict of interest. Mr. Board made a motion to recuse Mr. Stocks and the motion was unanimously carried.

Mr. Marc Pages addressed the Board. Mr. Pages read the Staff Report (attached) and identified the subject property and surrounding properties on a visual map. He provided the Board with school capacity charts (attached) for the nearby schools. He pointed out that there is a proposed gated emergency access between Lots 249 and 250.

Mr. Pages said staff recommends approval based on the following conditions:

- That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.
- That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
- Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.
- Add a note to the plan that a 10' wide access easement shall be included within the Sunset Harbor Road street buffer for a future pedestrian path or greenway.

Mr. Board asked if the TIA addresses the effect the 3,000 trips per day generated by this development will have on Southport-Supply Road SE (NC 211) and Mr. Pages said he thinks the study area only addressed Zion Hill Road SE (SR 1114) and Sunset Harbor Road SE (SR 1112).

Mr. Board made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Matt Haley, Cape Fear Engineering, addressed the Board. Mr. Haley said the traffic engineer (DRMP) met with NCDOT to scope the project and NCDOT asked that the intersection of Sunset Harbor Road SE (SR 1112) and NC 211 be studied. The results of the study showed that no improvements were necessary. Mr. Pages added that Page 2 of the TIA, Item 2, Existing Traffic Conditions, indicates that NC 211 and Sunset Harbor Road SE (SR 1112) were study areas. Mr. Haley said this project was previously approved under different ownership for a combination of single-family and multifamily units, but the current proposal is for single-family only. NCDOT is recommending a right-hand turn lane off Sunset Harbor Road SE (SR 1112) into the development. They are proposing a second emergency vehicle only entrance off Sunset Harbor Road SE (SR 1112) off the cul-de-sac to the southeast of the plan, and the project is designed to the 100-year storm event. The property is sandy and well drained. There will be an amenity site and open recreational area directly across the street from the amenity site.

Ms. Lynn Leask, 3540 Marina Drive, addressed the Board as a member of River Run Plantation. Ms. Leask read a statement regarding road impacts, schools, clear-cutting trees, stormwater runoff, safety, sustainability, wildlife preservation, and livelihood. She was concerned with evacuation should there be a torrential rainstorm.

Ms. Deborah Howard, 704 Lakeside Drive SE, addressed the Board regarding water drainage, clear-cutting trees, erosion and water runoff, additional vehicles on the road, excessive speeding, too many cookie cutter homes that detracts from the rural beauty of the County, infrastructure not in place for roads and businesses, current traffic congestion, no sewer availability, fire protection limitations (facility is moving to Clemmons Road SE [SR 1505]).

Mr. Robert Nowak, 716 Far Pointe Court, addressed the Board. He stated that he abuts the subject property and he was concerned with flooding if there is another rainstorm/hurricane. Mr. Nowak said he had 3' of water from a previous storm on his property and near the community lake. He stated that they have fish in their lake that may be contaminated with stormwater runoff from this development. He was also concerned with potential road damage and school traffic.

Ms. Toni Miley, 3191 Island Drive SE, addressed the Board regarding school overcrowding, aquifer, Lockwood Folly estuary, utilities (currently low water pressure), electricity, internet service, telephone service, security and safety. She felt that a 6-acre amenity pond is not sufficient and there is no barrier between the properties to ensure security for their community.

Ms. Laura McEnany, 619 Lockwood Court SE, addressed the Board regarding clear-cutting trees. She asked if there is a way to stop the developer from clear-cutting trees and Vice Chair Gaver replied, no. She said the trees absorb the water and minimize flooding. Ms. McEnany further stated that the properties in River Run Plantation have on-site wastewater systems that could potentially contaminate the Lockwood Folly River if they overflow from potential flooding that may occur from this development. Vice Chair Gaver said this Board has no purview over clear-cutting trees as the State governs over this matter. Ms. McEnany expressed concern that burned debris from clear-cutting is left for days on end and she was concerned with wildlife preservation. Vice Chair Gaver said this Board has no authority over burned debris.

Mr. Matt Ross, 3221 Island Drive, addressed the Board regarding security in River Run Plantation because there is no barrier to prevent the property owners in the proposed community from using their amenities. He stated that there is a pond in River Run Plantation that encroaches onto the subject property, which gives this community access to the River Run Plantation Pond. He pointed out that Zion Hill Road SE (SR 1114) and Sunset Harbor Road SE (SR 1112) washed out during the storm in September 2024 and the ponds overflowed. He reiterated that there are flooding issues in the area.

Ms. Lisa Propst, 514 Bayshore Drive, addressed the Board regarding a graveyard in River Run Plantation that may be in danger if this property is developed. She said the electric grid cannot withstand the growth in the County. She felt that growth needs to slow down. She reiterated that Zion Hill Road SE (SR 1114) and Sunset Harbor Road SE (SR 1112) washed out in 2 places in the no name storm. There are 4 gated communities off Sunset Harbor Road SE (SR 1112) and Zion Hill Road SE (SR 1114). She concluded that the County Landfill is getting to capacity and she asked that the residence be kept in mind during the Board's decision-making process.

Mr. Jayce Morris, 707 Blue Sail Drive, addressed the Board as a resident of River Run Plantation. Mr. Morris was concerned with excessive development where homes are in close proximity to each, inhaling smoke from property that is being clear-cut, cookie cutter homes, low quality built homes, not enough infrastructure to accommodate the excessive growth, potential flooding and no way out during another major rainstorm, locals being forced into high rent apartments and out of towners and transplants on pensions take advantage of an overrated saturated housing market that is unaffordable for most native residents. Mr. Morris asked that overdevelopment be stopped.

Ms. Evelyn Jefferies, 3011 Valderrama Way SE, addressed the Board as a resident of Seawatch. She stated that Mercer Mill Creek bridge needs to be repaired and it is the only route out of Sunset Harbor for residents that live beyond Zion Hill Road SE (SR 1114) if there is a natural disaster. Ms. Jefferies said they were told that the entrance to this development would be away from Seawatch entrance, but the plan shows the entrance across from Seawatch entrance. Mr. Pages said the entrances are not directly across from each other and he pointed out the areas on a map showing this development

entrance north of the initial location. Ms. Jefferies was concerned with frequent power outages in the area.

Ms. Vicki Marder, 3254 Island Drive, addressed the Board regarding the density of the proposed project. She felt that buffer requirements should be increased. Ms. Marder expressed concern with the proposed ponds when there is a major rainstorm. She felt that the developments should be aesthetically pleasing and require more responsible building.

Ms. Carla Imes, 2881 Island Drive SE, addressed the Board regarding greed with all of the overdevelopment in the County. She felt that developers can preserve the trees on the site. She, too, was in favor of smart growth.

Vice Chair Gaver said he is concerned with the issues expressed, but the Board has to follow the letter of the law, in that, if a developer meets the minimum requirements of the Brunswick County Unified Development Ordinance (UDO), the Board must approve the planned development request unless there is a legitimate reason to deny, such as a health and safety issue, that is sustainable and can be defended in a Court of Law.

Mr. Board asked Mr. Haley about the buffers. Mr. Haley asked if he could address comments made by the general public and proceeded to responded to comments such as the speed limit on Sunset Harbor Road SE (SR 1112) is posted by NCDOT and any improvements on this site will have to adhere to the speed limit for the length of the deceleration lane and the geometry of the proposed improvements; the majority of the property flows into the wetland and lake that is a part of the River Run Plantation community. Pond 1 is designed to discharge in the southwest corner of the property. Pond 2 will collect a small portion of the development and release treated water to the existing natural draw on the property; this project is located in SA waters (highest watershed classification in the State) that has different standards for treating stormwater runoff; there is a plan that has been approved for 264 units that requires clearing and grading of the property to meet State standards; vegetation will be preserved along the perimeter of the property to the fullest extent possible with additional plantings; buffering will be increased from the required 30' wide to 40' wide adjacent to River Run Plantation community to the north of the project with plantings consisting of a 0.80 opacity as outlined in the UDO.

With no further comments, Mr. Ishler made a motion to close the public hearing and the motion was unanimously carried.

Mr. Ishler made a motion to approve PD-152 (Sunset Harbor Tract Planned Development) with the noted conditions in the Staff Report including a 40' wide peripheral buffer adjacent to River Run Plantation and River Walk subdivisions with a 0.80 opacity and the motion carried 3 to 1 with Mr. Board opposing.

Mr. Bittenbender made a motion to bring Mr. Stocks back to the Board and the motion was unanimously carried.

D. <u>Rezoning Z-916 – Shon R. Wicker.</u>

Request rezoning of approximately 68.40 acres located at the end of Stones Throw Drive SW off of Ocean Aire Road SW near Ocean Isle Beach, NC from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 243CE02002, 243CE02003, and 243CE02004.

Mr. Tyler Connor addressed the Board. He read the Staff Report (attached) and identified the subject property and surrounding properties on a visual map. Mr. Connor read the consistency and reasonableness determination statement (attached). He provided the Board with school capacity charts (attached) for the nearby schools.

Mr. Connor said staff recommends approval from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 243CE02002, 243CE02003, and 243CE02004 located at the end of Stones Throw Drive SW off of Ocean Aire Road SW near Ocean Isle Beach, NC and adopt the consistency and reasonableness determination statement.

Mr. Board made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Jackson Starling, East Coast Engineering, addressed the Board on behalf of the applicant. He made himself available for questions from the Board.

With no further comments, Mr. Bittenbender made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Ishler made a motion to approve Tax Parcels 243CE02002, 243CE02003, and 243CE02004 to R-6000 (High Density Residential) located at the end of Stones Throw Drive SW off of Ocean Aire Road SW near Ocean Isle Beach, NC and adopt the consistency and reasonableness determination statement and the motion was unanimously carried.

CONSISTENCY & REASONABLENESS DETERMINATION

Per NCGS, zoning regulations shall be made in accordance with a comprehensive plan. Prior to adopting or rejecting any zoning amendment (including map and text amendments), a statement regarding plan consistency shall be adopted.

This request is CONSISTENT with the Blueprint Brunswick 2040 Comprehensive Plan place type designation and CONSISTENT with the goals, recommendations, and policies of the plans adopted by Brunswick County (listed below). Staff also finds the request REASONABLE, appropriate, and in the public interest based upon the following findings:

- The Blueprint Brunswick 2040 Comprehensive Plan (CAMA Plan) goals and objectives support the rezoning:
  - Consistent with the goals and objectives
    - HW-1. Expand housing choices within Brunswick County to respond to changing preferences and to increase housing affordability in the County.
- Consistent with the characteristics of the area, existing zoning in the area, and adjacent uses.
- The Residential Suitability Map indicates the property as suitable for residential development.

☐ *Agricultural Development Plan*	☒ *Unified Development Ordinance*
☐ *Brunswick County Comprehensive Transportation Plan (CTP)*	☐ *Southeastern North Carolina Hazard Mitigation Plan*
☐ *Brunswick County Trail Plan*	☐ *Airport Height Control Ordinance*
☒ *Blueprint Brunswick 2040 Comprehensive Plan (CAMA Plan)*	☐ *Other: ___*

Vice Chair Gaver stated that any person with standing may appeal the decision of the Planning Board to the Brunswick County Board of Commissioners. Notice of the appeal must be provided in writing within 15 days. If no appeal is received, then the decision of the Planning Board shall be final. If an appeal is received in the allotted time, the case will move forward to the Brunswick County Board of Commissioners for a Public Hearing and their consideration.

E. Rezoning Z-918 – Glen N. Williamson, Jr.

Request rezoning of approximately 74.11 acres located north of 5785 Old Georgetown Road SW (SR 1163) near Shallotte, NC from R-7500 (Medium Density Residential) to RR (Rural Low Density Residential) for Tax Parcels 2290001403 and 2290001416.

Mr. Tyler Connor addressed the Board. He read the Staff Report (attached) and identified the subject property and surrounding properties on a visual map. Mr. Connor read the consistency and reasonableness determination statement (attached). He provided the Board with school capacity charts (attached) for the nearby schools.

Mr. Connor said staff recommends approval from R-7500 (Medium Density Residential) to RR (Rural Low Density Residential) for Tax Parcels 2290001403 and 2290001416 located north of 5785 Old Georgetown Road SW (SR 1163) near Shallotte, NC to RR (Rural Low Density Residential) and adopt the consistency and reasonableness determination statement.

Vice Chair Gaver clarified that the sand mine is in operation illegally and the applicant is requesting a rezoning in an effort to come into compliance with the Brunswick County Unified Development Ordinance. Ms. Dixon said the sand mine was previously approved, but the applicant's operation of the sand mine exceeded what was approved. She stated that staff received notification from the State regarding the violation of the sand mine's State permit. Vice Chair Gaver asked staff what happens if the Board denies the rezoning? Ms. Dixon said the County will issue a notice of violation and the applicant will be mandated to cease operations. If the rezoning is approved, the applicant can apply for a special use permit from the Board of Adjustment to continue the mining operation.

Mr. Ishler made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Jody Bland, Norris and Bland Consulting Engineers, addressed the Board on behalf of the applicant. Mr. Bland stated that he has been working with the applicant for a year to address the current issues on the site. He said the applicant has been working with the U.S. Army Corps of Engineers (Corps of Engineers) trying to establish the specific wetlands on the site and the potential impacts to those wetlands. The North Carolina Department of Environmental Quality, Division of Land Quality, issued a NOV (Notice of Violation) Letter that said the applicant must file a State Mining Permit Application and

the County received a notice of the transaction. A State Mining Permit was submitted in 2017, while Old Georgetown Road was being built, the applicant responded to comments from the State, and the reviewer at the State retired and the permit was never issued. Mr. Bland said the applicant ceased operations when they were made aware that a permit had not been issued by the State. He stated that they are trying to come into compliance with all of the unpermitted activity on the applicant's property. Mr. Bland said the zoning change is the first step in bringing the property into compliance.

With no further comments, Mr. Board made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Board made a motion to approve Tax Parcels 2290001403 and 2290001416 located north of 5785 Old Georgetown Road SW (SR 1163) near Shallotte, NC to RR (Rural Low Density Residential) and adopt the consistency and reasonableness determination statement and the motion was unanimously carried.

CONSISTENCY & REASONABLENESS DETERMINATION

Per NCGS, zoning regulations shall be made in accordance with a comprehensive plan. Prior to adopting or rejecting any zoning amendment (including map and text amendments), a statement regarding plan consistency shall be adopted.

This request is CONSISTENT with the Blueprint Brunswick 2040 Comprehensive Plan place type designation and CONSISTENT with the goals, recommendations, and policies of the plans adopted by Brunswick County (listed below). Staff also finds the request REASONABLE, appropriate, and in the public interest based upon the following findings:

- The Blueprint Brunswick 2040 Comprehensive Plan (CAMA Plan) goals and objectives support the rezoning:
    - Consistent with the goals and objectives.
    - HN-1. Expand housing choices within Brunswick County to respond to changing preferences and to increase housing affordability in the County.
    - ED-1. Maintain and expand job opportunities in the County.
- Consistent with the characteristics of the area, existing zoning in the area, and adjacent uses.

☐ *Agricultural Development Plan*	☒ *Unified Development Ordinance*
☐ *Brunswick County Comprehensive Transportation Plan (CTP)*	☐ *Southeastern North Carolina Hazard Mitigation Plan*
☐ *Brunswick County Trail Plan*	☐ *Airport Height Control Ordinance*
☒ *Blueprint Brunswick 2040 Comprehensive Plan (CAMA Plan)*	☐ *Other: _____*

Vice Chair Gaver stated that any person with standing may appeal the decision of the Planning Board to the Brunswick County Board of Commissioners. Notice of the appeal must be provided in writing within 15 days. If no appeal is received, then the decision of the Planning Board shall be final. If an appeal is received in the allotted time, the case will move forward to the Brunswick County Board of Commissioners for a Public Hearing and their consideration.

F. Rezoning Z-919 – Rich Rittinger.

Request rezoning of approximately 3.12 acres located at 4951 Mancy C. Stanley Trail SW near Shallotte, NC from R-7500 (Medium Density Residential) to RR (Rural Low Density Residential) for Tax Parcel 1970001113.

Mr. Tyler Connor addressed the Board. He read the Staff Report (attached) and identified the subject property and surrounding properties on a visual map. Mr. Connor read the consistency and reasonableness determination statement (attached). He provided the Board with school capacity charts (attached) for the nearby schools.

Mr. Connor said staff recommends approval from R-7500 (Medium Density Residential) to RR (Rural Low Density Residential) for Tax Parcel 1970001113 located at 4951 Mancy C. Stanley Trail SW near Shallotte, NC to RR (Rural Low Density Residential) and adopt the consistency and reasonableness determination statement.

Mr. Board made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Rich Rittinger, General Manager of Clayton Homes, made himself available for questions from the Board.

With no further comments, Mr. Board made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Board made a motion to approve Tax Parcel 1970001113 located at 4951 Mancy C. Stanley Trail SW to RR (Rural Low Density Residential) and adopt the consistency and reasonableness determination statement and the motion was unanimously carried.

CONSISTENCY & REASONABLENESS DETERMINATION

Per NCGS, zoning regulations shall be made in accordance with a comprehensive plan. Prior to adopting or rejecting any zoning amendment (including map and text amendments), a statement regarding plan consistency shall be adopted.

This request is CONSISTENT with the Blueprint Brunswick 2040 Comprehensive Plan place type designation and CONSISTENT with the goals, recommendations, and policies of the plans adopted by Brunswick County (listed below). Staff also finds the request REASONABLE, appropriate, and in the public interest based upon the following findings:

- The Blueprint Brunswick 2040 Comprehensive Plan (CAMA Plan) goals and objectives support the rezoning:
  - Consistent with the goals and objectives.
  - HN-1. Expand housing choices within Brunswick County to respond to changing preferences and to increase housing affordability in the County
  - HN-2. Minimize impacts to and invest in established residential areas
- Consistent with the characteristics of the area, existing zoning in the area, and adjacent uses.
- The Residential Suitability Map indicates the property as more suitable for residential development.

☐ *Agricultural Development Plan*	☒ *Unified Development Ordinance*
☐ *Brunswick County Comprehensive Transportation Plan (CTP)*	☐ *Southeastern North Carolina Hazard Mitigation Plan*
☐ *Brunswick County Trail Plan*	☐ *Airport Height Control Ordinance*
☒ *Blueprint Brunswick 2040 Comprehensive Plan (CAMA Plan)*	☐ *Other: _____*

Vice Chair Gaver stated that any person with standing may appeal the decision of the Planning Board to the Brunswick County Board of Commissioners. Notice of the appeal must be provided in writing within 15 days. If no appeal is received, then the decision of the Planning Board shall be final. If an appeal is received in the allotted time, the case will move forward to the Brunswick County Board of Commissioners for a Public Hearing and their consideration.

IX. OTHER BUSINESS.

A. Planning Board Case Update.

Ms. Dixon addressed the Board and she stated that all previously approved cases (Z-912CZ, Z-913, Z-914 and Z-915) were not appealed, so the Board's decision stands.

B. UDO Modernization Project Update.

Ms. Dixon addressed the Board and she stated that staff is working with the consultant and the consultant is watching the Senate Bills to determine how we can move forward with the updates to the UDO. Ms. Dixon further stated that staff and legal have reviewed several sections of the rewrite to the UDO and they will continue reviewing sections when the consultant provides sections for review.

X. ADJOURNMENT.

With no further business, Mr. Board made a motion to adjourn and the motion was unanimously carried.

DRAFT

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Kirstie Dixon, PLANNING DIRECTOR

Action Item# V1
Brunswick County Voluntary Agricultural District (VAD) Promotional Video

Issue/Action Requested:
Request to hear a presentation by Cooperative Extension on a new promotional video created by the Voluntary Agricultural District (VAD) Board to educate the public about agriculture in Brunswick County.

Background/Purpose of Request:
Taylor McDaniel from the Brunswick County Cooperative Extension will present a new promotional video created by the Voluntary Agricultural District (VAD) Board. The video aims to educate the public about agriculture and farming operations in Brunswick County.

Planning Department Recommendation:
Recommend hearing a presentation by the Cooperative Extension. No action needed.

Attachments:
None

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Marc Pages, Deputy Director

Action Item# VI1
Hooper Road Tract Planned Development (PD-146)

Issue/Action Requested:
Consideration of the proposed Hooper Road Planned Development consisting of 1,676 single family units on approximately 594.09 acres, creating an overall density of 2.82 dwelling units per acre.

Background/Purpose of Request:
(Tabled at the June 9th Planning Board Meeting)
The applicant, Colliers Engineering and Design, requests site plan approval for a Planned Development on Tax Parcels 01000010, 01000021, 0100002101, & 00600011 located on Hooper Road NW (SR 1427) near Northwest. The project proposes 1,676 single family units on approximately 594.09 acres, creating an overall density of 2.82 dwelling units per acre.

Planning Department Recommendation:
Planning Staff has determined that the proposed Planned Development meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:
1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.
2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.
4. Add a note to the plan that the emergency access road to Dogwood Road will be constructed at the end of Phase 1B.

Attachments:
1. Staff Report

2. Site Plan
3. Zoning Map
4. Imagery Map
5. FLU Map
6. Flood Map
7. Hooper Road TIA
8. TRC Comment Letter
9. Application
10. Mailing List

BRUNSWICK COUNTY
STAFF REPORT AND RECOMMENDATION

Application No. PD-146

Applicant: Colliers Engineering and Design

Project Name: Hooper Road Tract

Property Location: Hooper Road (SR 1427)

Parcel Numbers: 01000010, 01000021, 0100002101, & 00600011

Zoning District: RR (Rural Residential)
RR Density Maximum – 2.9 Dwelling Units per Acre (with water and sewer)
The Rural Low Density Residential District is intended to accommodate nonresidential agricultural uses and low density residential development, as well as limited nonresidential uses that are supportive of the County's traditional agricultural orientation including farming, silviculture operations and related activities. Development in this District should rely predominantly on individual wells and septic tank systems for domestic water supply and sewage disposal, respectively, although clustered residential development served by public water and wastewater systems may be allowed.

Surrounding Zoning: RR (Rural Residential)

Proposed Use: Hooper Road Tract is a proposed planned development, consisting of 1,676 single family units on approximately 594.09 acres, creating an overall density of 2.82 dwelling units per acre.

Approval Criteria

- The majority of surrounding uses consist of single family residential and vacant land.
- The Blueprint Brunswick Future Land Use Map denotes this area as RA (Rural Agricultural) and OSC-1 (Open Space Conservation).
- Parking will be off street with a minimum of 2 driveway parking spaces per lot.
- Proposed infrastructure:
    1. **Water** and **Sewer** will be provided by Brunswick County.
    2. **Roads** will be private.
- The proposed development will have a 30-foot, 0.6 opacity peripheral buffer using existing vegetation to satisfy the requirement. Supplemental landscaping will be installed where necessary.
- The proposed development will have a 20-foot wide street buffer along Hooper Road.
- The required open space for the development is approximately 89.12 acres. The developer is proposing 145.0 acres of dedicated open space. The developer is also proposing 20.0 acres of recreation space of which 13.37 acres are required.

- The proposed project will generate approximately 14,492 vehicle trips per 24-hour weekday volume. A Traffic Impact Analysis (TIA) has been completed for the project. Proposed road improvements made by the TIA include:
    - For the Intersection of Mt. Misery and Hooper Road Intersection:
        - Construct eastbound and westbound right turn lanes on Mt. Misery Road.
        - Install a traffic signal at this intersection.
    - Improve/widen the Eastbound and Westbound ramps of Mt. Misery Road and I-140.
    - Improve/widen the Eastbound and Westbound ramps of Mt. Misery Road and US 74/76.
    - For the project entrances on Hooper Road:
        - Construct northbound right turn lane.
        - Construct roundabout.
- The Exceptional Design elements to be included in the project are as follows:
    1. The developer is proposing 145.0 acres of open space where as 89.12 acres are required.
    2. The developer is proposing 20.0 acres of open space where as 13.37 acres are required.
    3. The stormwater ponds will be constructed to the 100-year storm event.
    4. Limited driveways on the arterial entrance road.
    5. Sidewalks are to be constructed on one side of all internal roads.
    6. Additional open space buffer proposed adjacent to the majority of the wetlands.
    7. All lots located outside of AE Flood Zones.
- The design flexibility elements requested for the project are as follows:
    1. Reduction in lot dimensions.
    2. Reductions in setbacks.
- Portions of the site are located in a Flood Hazard Zone but all lots shall be located outside of any AE Flood Zone areas.
- Adjacent property owners were notified via US mail and a notification sign was posted on the subject property.
- TRC was held on January 15, 2025.
- A neighborhood meeting was held on December 3, 2024.

If approved, this development shall have a vested right for a period of three years. A two-year extension may be requested by the applicant to the Brunswick County Planning Department.

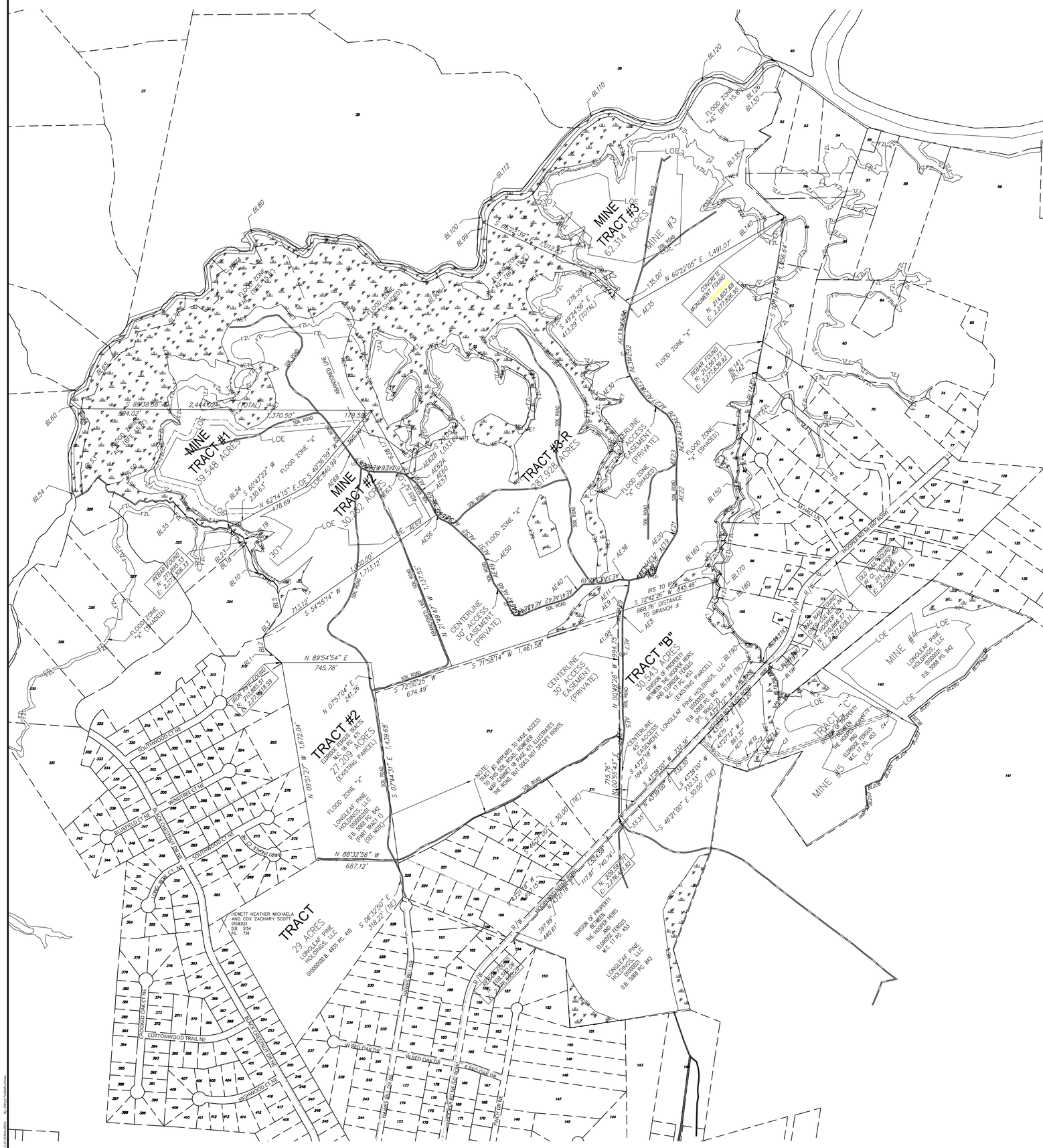
Planning Staff has determined that the proposed Planned Development meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:

1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.

2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.

3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.

4. Add a note to the plan that the emergency access road to Dogwood Road will be constructed at the end of Phase 1B.


MINE TRACT #1
39.545 ACRES
MINE TRACT #2
30.382 ACRES
MINE TRACT #3-R
287.926 ACRES
MINE #3
TRACT #3
62.314 ACRES
MINE #4
MINE #5
TRACT #2
ELDRIDGE FERRIS M.C. 17 PG. 62
27.209 ACRES
(EXISTING PARCEL)
FLOOD ZONE "X"
FLOOD ZONE "AE" (BFE 15.8')
FLOOD ZONE "X" (SHADED)
LOE
SOIL ROAD
WET
FZL
TZ
TRACT "B"
30.543 ACRES
DIVISION OF PROPERTY BETWEEN THE HOOPER HEIRS AND ELDRIDGE FERRIS M.C. 17 PG. 633
LONGLEAF PINE HOLDINGS, LLC
0100000103
D.B. 5068 PG. 842
(PARCEL 2)
TRACT "C"
DIVISION OF PROPERTY BETWEEN THE HOOPER HEIRS AND ELDRIDGE FERRIS M.C. 17 PG. 633
TRACT
29 ACRES
LONGLEAF PINE HOLDINGS, LLC
0100000108 & 4035 PG. 410
HEWETT HEATHER MICHAELA AND COX ZACHARY SCOTT
0106203
D.B. 5154
PG. 734
CENTERLINE 30' ACCESS EASEMENT (PRIVATE)

	LEE JANICE P		ROBBINS WILLIAM H		ARIAS JUAN		"JONES RONALD ALLEN AND SELF LORI J"		COSTIN GERALENE ROBBINS		"EVANS LAKEISHA AND EVANS THEARTIS JR "		HOOPER WORTH DAVID JR ET		BELL DARIKA AMEERAH		BLUFFS INVESTMENT LLC		N C DEPARTMENT OF TRANSPORTATION	
1.00	PARCEL PIN: 226102950934	11.00	PARCEL PIN: 226102968202	21.00	PARCEL PIN: 226102859128	31.00	PARCEL PIN: 226102956259	41.00	PARCEL PIN: 227100741740	101.00	PARCEL PIN: 227100718640	111.00	PARCEL PIN: 227100811460	121.00	PARCEL PIN: 227100910926	131.00	PARCEL PIN: 227100918978	141.00	PARCEL PIN: 227002976788
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
	LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: VACANT LAND
	ALI MOHAMAD		CEMETERY		"CHOATE WILLIAM DANIEL AND RIGGS KAITLIN LEIGH "		FOSS BRETT MICHAEL ETUX		COOK JOHN		"RIDDY BALINDA AND CARR SAMMY"		WILLIS LOUISE H		HALL JOE JEAN		BLUFFS INVESTMENT LLC		BOX STREET PARTNERS NC LLC
2.00	PARCEL PIN: 226102859777	12.00	PARCEL PIN: 227100052855	22.00	PARCEL PIN: 226102950124	32.00	PARCEL PIN: 226102957342	42.00	PARCEL PIN: 226104941567	102.00	PARCEL PIN: 227100719670	112.00	PARCEL PIN: 227100815531	122.00	PARCEL PIN: 227100912952	132.00	PARCEL PIN: 227100917867	142.00	PARCEL PIN: 227002679497
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
	LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY
	JACOBS MITCHELL WAYNE		ROBBINS WILLIAM HENRY JR		WOOD STEVEN D		FINGER DANIEL JAMES		COSTON MARY AND		NIXON BRYAN ETALS		HOOPER BRIAN A ET		BLUFFS INVESTMENT LLC		BLUFFS INVESTMENT LLC		HAMILTON BRIAN K ET
3.00	PARCEL PIN: 226102859501	13.00	PARCEL PIN: 227100051708	23.00	PARCEL PIN: 226102952139	33.00	PARCEL PIN: 226102958490	43.00	PARCEL PIN: 226104941091	103.00	PARCEL PIN: 227100716591	113.00	PARCEL PIN: 227100828491	123.00	PARCEL PIN: 227100828112	133.00	PARCEL PIN: 228117011665	143.00	PARCEL PIN: 227002675080
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	JACOBS MITCHELL WAYNE		AGEE CHRISTOPHER A ETUX		ROSS JELESA T		SPANN DEBORAH C		COSTIN GERALENE ROBBINS		HOOPER TERRY		PADILLA MONICA HANKINS		BLUFFS INVESTMENT LLC		BLUFFS INVESTMENT LLC		BROWN P MICHAEL ETUX
4.00	PARCEL PIN: 226102950480	14.00	PARCEL PIN: 226102959831	24.00	PARCEL PIN: 226104848862	34.00	PARCEL PIN: 227100050585	44.00	PARCEL PIN: 226104947123	104.00	PARCEL PIN: 227100718479	114.00	PARCEL PIN: 227100816714	124.00	PARCEL PIN: 227100925106	134.00	PARCEL PIN: 227100915729	144.00	PARCEL PIN: 227002663978
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	MARCANTONIO CLAIRE ETVIR		"SHOLDERS DIANE AND SHOLDERS ALEXIS"		PARSLOW DAVID M ETUX		SPANN DEBRA ELAINE		PRIDGEN JAN MILLER		JACOBS RICHARD L		JONES DANA D ETALS		COLLIER HILDA FLOYD		BLUFFS INVESTMENT LLC		KING ALTON R
5.00	PARCEL PIN: 226102951557	15.00	PARCEL PIN: 226102958783	25.00	PARCEL PIN: 226104849858	35.00	PARCEL PIN: 227100052771	45.00	PARCEL PIN: 227100034991	105.00	PARCEL PIN: 227100715274	115.00	PARCEL PIN: 227100819710	125.00	PARCEL PIN: 227100829286	135.00	PARCEL PIN: 227100918538	145.00	PARCEL PIN: 227002659969
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	ROBBINS WILLIAM HENRY JR		**BRITT BARRY C SR ETUX**		EVANS SARA JANE		BRINKLEY MAXINE ROBBINS		ROBBINS WILLIAM HENRY JR		JACOBS MILDRED		BRYANT ERIC K		HOOPER MELVIN		BLUFFS INVESTMENT LLC		BODOH DAVID A
6.00	PARCEL PIN: 226102952736	16.00	PARCEL PIN: 226102958635	26.00	PARCEL PIN: 226104940976	36.00	PARCEL PIN: 227100152789	46.00	PARCEL PIN: 226104931252	106.00	PARCEL PIN: 227100717293	116.00	PARCEL PIN: 227100815982	126.00	PARCEL PIN: 227100921294	136.00	PARCEL PIN: 228117011336	146.00	PARCEL PIN: 227002575086
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	TORRES KRYSTAL ET		ROSS JOHN M ETUX		KERSEY JOHNNY KENNETH		BRINKLEY MAXINE ROBBINS		ROBBINS WILLIAM H JR		JACOBS ELLA RAY		"BRYANT ERIC K AND SHEPARD MONICA"		HOOPER MELVIN ETALS		BLUFFS INVESTMENT LLC		MASON ELIZABETH
7.00	PARCEL PIN: 226102954613	17.00	PARCEL PIN: 226102957557	27.00	PARCEL PIN: 226102951052	37.00	PARCEL PIN: 227100254303	47.00	PARCEL PIN: 226104935361	107.00	PARCEL PIN: 227100845935	117.00	PARCEL PIN: 227100817921	127.00	PARCEL PIN: 227100920384	137.00	PARCEL PIN: 227100912692	147.00	PARCEL PIN: 227002579224
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	TORRES KRYSTAL ET		MEOLA JEFFREY J AND		LAMARRE PAUL L ETUX		CORBETT PACKAGE COMPANY		REGISTER SARAH COOK		JACOBS YVONNE		NIXON ANTWANE JARRELL		HOOPER MELVIN ETUX		BLUFFS INVESTMENT LLC		MARTINEZ HECTOR MANUEL GONZALEZ
8.00	PARCEL PIN: 226102954764	18.00	PARCEL PIN: 226102956429	28.00	PARCEL PIN: 226102953018	38.00	PARCEL PIN: 227100450126	48.00	PARCEL PIN: 226104939611	108.00	PARCEL PIN: 227100719181	118.00	PARCEL PIN: 227100818897	128.00	PARCEL PIN: 227100923339	138.00	PARCEL PIN: 227100916406	148.00	PARCEL PIN: 227002670403
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	TORRES PATRICIA R ETVIR		DEGLER KENT E ETUX		LABRODE PAUL ETUX		CORBETT PACKAGE COMPANY		WILLIS MARY COOK		HOOPER WORTH D (BUG) ETUX		VARNER GWENDOLYN B		WILLIS HERBERT LEE		BLUFFS INVESTMENT LLC		MILLER DANNY ETUX
9.00	PARCEL PIN: 226102954873	19.00	PARCEL PIN: 226102954441	29.00	PARCEL PIN: 226102955148	39.00	PARCEL PIN: 227100575198	49.00	PARCEL PIN: 227100030149	109.00	PARCEL PIN: 227100810237	119.00	PARCEL PIN: 227100911800	129.00	PARCEL PIN: 227100925485	139.00	PARCEL PIN: 228117010222	149.00	PARCEL PIN: 227002670516
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	STOKLEY JOSEPH BYRON TIDE		SMITH RICO A		COOK SARA E ETVIR		CORBETT TIMBER CO		COSTIN GERALENE ROBBINS		"WILLIS HERBERT L AND ELLIOTT ESTHER"		HALL FELICIA		HOOPER HILL LAND CO INC ETALS		LONGLEAF PINE HOLDINGS LLC		DEAN STEPHEN C ETUX
10.00	PARCEL PIN: 226102954964	20.00	PARCEL PIN: 226102951278	30.00	PARCEL PIN: 226102950934	40.00	PARCEL PIN: 227100398525	50.00	PARCEL PIN: 227100039337	110.00	PARCEL PIN: 227100811051	120.00	PARCEL PIN: 227100827071	130.00	PARCEL PIN: 228117020179	140.00	PARCEL PIN: 227002686842	150.00	PARCEL PIN: 227002670629
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	LONGLEAF PINE HOLDINGS LLC		DAVIS HELEN C		GRADY SHEILA D		DAVIS SHERRY A		MOORE BEVERLY HALL		RUIZ ELIZABETH		BALTAZAR GERARDO		SHARPE DAKOTA A ETALS		VANDERBILT MORTGAGE AND FINANCE INC		GARCIA LEONEL GARCIA ETALS
51.00	PARCEL PIN: 227100630225	61.00	PARCEL PIN: 227100843326	71.00	PARCEL PIN: 227100826613	81.00	PARCEL PIN: 227100823424	91.00	PARCEL PIN: 227100725611	151.00	PARCEL PIN: 227002672769	161.00	PARCEL PIN: 227002572974	171.00	PARCEL PIN: 227002571017	181.00	PARCEL PIN: 227001477639	191.00	PARCEL PIN: 227001488482
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	EVERETT IRENE		"HOLLIDAY CHARLES A SR AND HOLLIDAY MINNIE"		BRYANT LILA M		DAVIS HELEN C		HALL BEVERLY		RUIZ ELIZABETH		WILLIAMS OSSIE RAYNAY		BONEY HARRY T SR ET		STEPHENS ARTHUR K ETUX		GRAHAM JAMES A
52.00	PARCEL PIN: 227100757220	62.00	PARCEL PIN: 227100738862	72.00	PARCEL PIN: 227100828580	82.00	PARCEL PIN: 227100825227	92.00	PARCEL PIN: 227100725437	152.00	PARCEL PIN: 227002578968	162.00	PARCEL PIN: 227002572842	172.00	PARCEL PIN: 227001478052	182.00	PARCEL PIN: 227001479663	192.00	PARCEL PIN: 227002582435
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	HOOPER HILL LAND COMPANY INC		JACOBS HARVIE E		"DANIELS RAY FIELD AND DANIELS GLATHA "		HALL JANEEN		MYERS IVORY D SR ETUX		EATON GAYTHON C ETALS		WILLIAMS JAMES F JR ET		FIGUEROA TERETHA S ET		TROY TERRY C		"GARCIA JOSE JESUS AND GARCIA GUSTAVO GARCIA"
53.00	PARCEL PIN: 227100759365	63.00	PARCEL PIN: 227100837561	73.00	PARCEL PIN: 227100920942	83.00	PARCEL PIN: 227100726734	93.00	PARCEL PIN: 227100725286	153.00	PARCEL PIN: 227002588215	163.00	PARCEL PIN: 227002574739	173.00	PARCEL PIN: 227001476025	183.00	PARCEL PIN: 227001479784	193.00	PARCEL PIN: 227001489527
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	DAVIS HELEN C		HOOPER FAMILY CEMETERY		SOUTHERLAND HAZEL		HALL HORACE LEON		HOOPER ELLIS JAMES		"WADDELL DAVID JR AND BROWN KATINA L"		WILLIAMS JAMES F JR ET		FARRELL ROBERTA D		WADDELL DAVID E		MCDUFFIE DONAHUE CYNTHIA ETVIR
54.00	PARCEL PIN: 227100853203	64.00	PARCEL PIN: 227100836805	74.00	PARCEL PIN: 227100931112	84.00	PARCEL PIN: 227100728523	94.00	PARCEL PIN: 227100727131	154.00	PARCEL PIN: 227002585498	164.00	PARCEL PIN: 227002574607	174.00	PARCEL PIN: 227001476240	184.00	PARCEL PIN: 227001477864	194.00	PARCEL PIN: 227001488774
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	HOOPER MELVIN ETALS		WILLIS HERBERT		DAVIS WILLIE JR ET		HALL WILLIAM HENRY		HOOPER SHIRLEY M		WILLIAMS LINWOOD		CLEMMONS WILLIAM C		WILLIAMS THOMAS EDWARD SR		TROY TERRY C		SLOAN HENRY LEE
55.00	PARCEL PIN: 227100855234	65.00	PARCEL PIN: 227100934711	75.00	PARCEL PIN: 227100923927	85.00	PARCEL PIN: 227100729358	95.00	PARCEL PIN: 227100810948	155.00	PARCEL PIN: 227002584398	165.00	PARCEL PIN: 227002572692	175.00	PARCEL PIN: 227001478173	185.00	PARCEL PIN: 227002570806	195.00	PARCEL PIN: 227002583567
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	HOOPER HILL LAND COMPANY INC		DANIELS EVORIA		SOUTHERLAND HAZEL		HALL MARVIN ALLEN		"HOLLIDAY MINNIE AND NW CHANNEL INC ETALS"		REDD LAKEESHA SHARELLE		CLEMMONS GEORGE ANTHONY		"PADILLA EDER XAVIER TORO AND PEREZ MAGALI MARTINEZ"		HERNANDEZ DARWIN		SLOAN HENRY
56.00	PARCEL PIN: 227100749847	66.00	PARCEL PIN: 227100737322	76.00	PARCEL PIN: 227100922799	86.00	PARCEL PIN: 227100152789	96.00	PARCEL PIN: 227100717971	156.00	PARCEL PIN: 227002584208	166.00	PARCEL PIN: 227002571367	176.00	PARCEL PIN: 227001478294	186.00	PARCEL PIN: 227001477988	196.00	PARCEL PIN: 227002583675
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	"CANTY CRYSTAL VICTORIA DAVIS AND PLUMMER SHERMAINE DAVIS "		RICHARDSON MARY		SOUTHERLAND HAZEL		GRADY JOHN H		HOOPER ELLIS JAMES		CURL ALICE FAYE		BOWERS JEFFREY D ETUX		ROSSITER HUBERT J SR		PALACIOS MIGUEL ETUX		WHITE DAJA
57.00	PARCEL PIN: 227100845935	67.00	PARCEL PIN: 227100739250	77.00	PARCEL PIN: 227100922628	87.00	PARCEL PIN: 227100822138	97.00	PARCEL PIN: 227100810822	157.00	PARCEL PIN: 227002585123	167.00	PARCEL PIN: 227002573344	177.00	PARCEL PIN: 227001476374	187.00	PARCEL PIN: 227002570917	197.00	PARCEL PIN: 227002582716
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	HOOPER HILL LAND COMPANY INC		JONES MARJORIE D		YOUNG KELVIN D		GRADY MAXINE		BROWN SYLVIA LEE		BUENROSTRO MARGARITO ETUX		HOLLIDAY TONI C		SAULS LAWRENCE J		RAMIREZ SERGIO EDGARDO ETUX		SIDBURY RENITTA JO LANDA
58.00	PARCEL PIN: 227100847696	68.00	PARCEL PIN: 227100821967	78.00	PARCEL PIN: 227100736056	88.00	PARCEL PIN: 227100823017	98.00	PARCEL PIN: 227100811891	158.00	PARCEL PIN: 227002583127	168.00	PARCEL PIN: 227002573220	178.00	PARCEL PIN: 227001479315	188.00	PARCEL PIN: 227002580165	198.00	PARCEL PIN: 227002582950
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	GODWIN JAMES Z II		CLEMMONS ELLA N ETVIR		LAMAR JUANITA		MOSELEY GAIL GRADY		HOOPER BRYAN ETALS		HOWARD CHRISTOPHER		CLEMMONS TERRY W		HALL ANGELA		DOMINGUEZ BETSY A		DAVIS CAROLYN J
59.00	PARCEL PIN: 227100939565	69.00	PARCEL PIN: 227100823796	79.00	PARCEL PIN: 227100728842	89.00	PARCEL PIN: 227100824067	99.00	PARCEL PIN: 227100715647	159.00	PARCEL PIN: 227002582084	169.00	PARCEL PIN: 227002571138	179.00	PARCEL PIN: 227001479437	189.00	PARCEL PIN: 227001488248	199.00	PARCEL PIN: 227002584767
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	HOOPER WORTH D JR ETALS		"HOOPER CURLIE AND HOOPER ESSIE M ETALS"		DAVIS WILLIE D JR		HALL JOSEPH CORNELIOUS		HOOPER WORTH DAVID JR		CURL ALICE FAYE		HOLLIDAY CHARLES SR A		MOSLEY HATTIE L		THOMPSON NEIL J ET		TODD LEMONDO DEIRICO ETUX
60.00	PARCEL PIN: 227100749590	70.00	PARCEL PIN: 227100826933	80.00	PARCEL PIN: 227100820683	90.00	PARCEL PIN: 227100398525	100.00	PARCEL PIN: 227100810751	160.00	PARCEL PIN: 227002574952	170.00	PARCEL PIN: 227002573007	180.00	PARCEL PIN: 227001477409	190.00	PARCEL PIN: 227002581311	200.00	PARCEL PIN: 227002586859
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	"CLEMMONS KEYA SHAVAUN AND CLEMMONS WILLIAM C SR "		ELLIOTT THOMAS ET		DAVIS WILLIE D JR		RIVENBARK BENJAMIN GRAHAM		PAGE EDWARD W		GAUSE ALLIENE		HEWETT HEATHER MICHAELA AND COX ZACHARY SCOTT		HANNEL JAMES A HEIRS		RIDDLE ROBIN MARIE		JULIAN DONALD HOWARD ETUX
201.00	PARCEL PIN: 227002584929	211.00	PARCEL PIN: 227002692718	221.00	PARCEL PIN: 227002590108	231.00	PARCEL PIN: 227001483044	241.00	PARCEL PIN: 227001474534	251.00	PARCEL PIN: 227001376569	261.00	PARCEL PIN: 227001380690	271.00	PARCEL PIN: 227001397246	281.00	PARCEL PIN: 227001391503	291.00	PARCEL PIN: 227001393807
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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	HOOPER MELVIN ETUX		ELLIOTT THOMAS ETALS		PLUMMER SHERMAINE DAVIS ETVIR		GIBBS THEODORE ETUX		WHITE STEPHEN R		HONAKER BARBARA (LT)		B

301.00	"DOWNING TAUREAN ETUX VENSON CHAVONNE "	**311.00**	MCCULLOCH RANDALL ET	**321.00**	ALBARRAN MIGUEL PALACIOS ETUX ROMERO ORLANDA ANGEL	**331.00**	ANDRES RUTILO EZPINOZA ETALS	**341.00**	HINES WILLIE LEE JR
	PARCEL PIN: 227001296807		PARCEL PIN: 227100304642		PARCEL PIN: 227100203239		PARCEL PIN: 227100107021		PARCEL PIN: 227001290504
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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302.00	"GOMEZ DAVID MORALES ETUX ROMERO TATIANA GOMEZ "	**312.00**	RANSOM DESHAUN ANTRELL	**322.00**	CLEMMONS JESSICA K ETVIR	**332.00**	WHITEHEAD VERNON ALLEN	**342.00**	MAZUR KRISTOPHER M ETUX
	PARCEL PIN: 227001295947		PARCEL PIN: 227100303801		PARCEL PIN: 227100201337		PARCEL PIN: 227100200123		PARCEL PIN: 227001199358
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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303.00	YEOMAN JULIET L	**313.00**	YURGEL PETER	**323.00**	BEACHY QUARTNEY LYNN	**333.00**	HUMBLES STACEY M ETUX	**343.00**	SANDERS KENDRA L
	PARCEL PIN: 227100204087		PARCEL PIN: 227100300769		PARCEL PIN: 227100205725		PARCEL PIN: 227100201017		PARCEL PIN: 227001290245
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304.00	PERAZA GUSTAVO DE JESUS RIOS	**314.00**	ELSWICK PAUL M ETUX	**324.00**	BEACHY NICKEL LYNN	**334.00**	MASON CHEYENNE	**344.00**	LASTER AMANDA SHANNELL
	PARCEL PIN: 227100206160		PARCEL PIN: 227100209669		PARCEL PIN: 227100312338		PARCEL PIN: 227001291979		PARCEL PIN: 227001291274
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305.00	BARRETT TINA M	**315.00**	ELSWICK PAUL M ETUX	**325.00**	"GRAINGER VICTORIA AND HEDWIN DONNIE R"	**335.00**	WHARTON MARIA J	**345.00**	ABARNO MICHAEL
	PARCEL PIN: 227100207155		PARCEL PIN: 227100208670		PARCEL PIN: 227100217921		PARCEL PIN: 227001292942		PARCEL PIN: 227001292382
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306.00	SCOTT FELIX	**316.00**	ROBINSON SHANITA H ETVIR	**326.00**	TAR PIT LANDING HOA	**336.00**	WHARTON MARIA J	**346.00**	LANDRETH KIMBERLY DAWN
	PARCEL PIN: 227100208240		PARCEL PIN: 227100208502		PARCEL PIN: 227100220156		PARCEL PIN: 227001293804		PARCEL PIN: 227001293378
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307.00	MARTINEZ JULIO K	**317.00**	"ADAMSKI CHERYL L AND FARMER ADAM"	**327.00**	WILLIS PATRICIA JAN	**337.00**	MCDONALD DONNA	**347.00**	MCNEIL VICTORIA S E
	PARCEL PIN: 227100209246		PARCEL PIN: 227100207416		PARCEL PIN: 227100214508		PARCEL PIN: 227001293765		PARCEL PIN: 227001294590
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308.00	EDWARDS WILLIAM R ETUX	**318.00**	SUGGS SUSAN E	**328.00**	WILLIS PATRICIA JAN	**338.00**	MCALLISTER JONATHAN KEITH ETUX	**348.00**	WILLIAMS THOMAS RAY ETUX
	PARCEL PIN: 227100300332		PARCEL PIN: 227100206411		PARCEL PIN: 227100211305		PARCEL PIN: 227001294606		PARCEL PIN: 227001295441
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309.00	EDWARDS WILLIAM R ETUX	**319.00**	"BENFIELD KRISTY AND MARSHALL JARED BRANDON"	**329.00**	"GRAINGER VICTORIA J AND HEDWIN DONNIE R "	**339.00**	"DRAGGETT DARIEN R AND BROWN JESSICA MORGAN "	**349.00**	WILLIAMS THOMAS RAY ETUX
	PARCEL PIN: 227100301338		PARCEL PIN: 227100205325		PARCEL PIN: 227100118100		PARCEL PIN: 227001292626		PARCEL PIN: 227001296226
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310.00	EDWARDS WILLIAM R ETUX	**320.00**	LAGRANDEUR LEO J JR ETALS	**330.00**	SUGGS KELLIE R	**340.00**	MORGAN MALCOLM V SR	**350.00**	FRIEND HEIDI M
	PARCEL PIN: 227100302473		PARCEL PIN: 227100203281		PARCEL PIN: 227100105606		PARCEL PIN: 227001291620		PARCEL PIN: 227001294198
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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351.00	ASKEW ALICIA YVETTE	**361.00**	CONTERAS JOSE RAFAEL LARA	**371.00**	ROBINSON ALPHONSO	**381.00**	PALACIOS MIGUEL & ORLANDA A ROMERO	**391.00**	ROGERS HARRY ETUX
	PARCEL PIN: 227001294039		PARCEL PIN: 227001288639		PARCEL PIN: 227001277963		PARCEL PIN: 227001283034		PARCEL PIN: 227001275356
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352.00	LYSYKANYCZ DEBORAH	**362.00**	AUBIN MARY JANE	**372.00**	HOWARD EDDIE DWAYNE	**382.00**	ALBARRAN MIGUEL PALACIOS ETUX ROMERO ORLANDA ANGE	**392.00**	CORRALES GABRIEL TRIANA
	PARCEL PIN: 227001284909		PARCEL PIN: 227001288563		PARCEL PIN: 227001275885		PARCEL PIN: 227001273923		PARCEL PIN: 227001275456
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353.00	MALPASS CHRISTINA	**363.00**	WILLIAMS ARNOLD E	**373.00**	ROGERS TEMONICA F	**383.00**	ORTEGA YEFRY ALCIDES SOLORZANO	**393.00**	"RIOS JUAN LOPEZ ETUX ALTAMIRANO ROSARIO MARTINEZ"
	PARCEL PIN: 227001283865		PARCEL PIN: 227001289307		PARCEL PIN: 227001275995		PARCEL PIN: 227001273812		PARCEL PIN: 227001275567
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354.00	CAYTON JEFFERY T	**364.00**	UDRY BRITTANY M ETVIR	**374.00**	"BONILLA ANGELICA M SILVA ETVIR HERNANDEZ ERICK E ROBLEDO"	**384.00**	CAMPOS JULIO CESAR PORTILLO	**394.00**	WEBBER HEATHER STEPHENS ETVIR
	PARCEL PIN: 227001283781		PARCEL PIN: 227001289256		PARCEL PIN: 227001286007		PARCEL PIN: 227001273606		PARCEL PIN: 227001275678
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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355.00	MEDINA ALFREDO AGUILAR	**365.00**	SMITH GARY S	**375.00**	LONG CHERYL L	**385.00**	"MOONEY MICHEAL KENT AND MOONEY LYSSA JOHANNA"	**395.00**	WEST RICKEY ET
	PARCEL PIN: 227001285639		PARCEL PIN: 227001380127		PARCEL PIN: 227001286178		PARCEL PIN: 227001272499		PARCEL PIN: 227001277641
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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356.00	"ACEVADO SERGIO D AND ASEVEDO MAIDA D"	**366.00**	ALI AMIR	**376.00**	HOEHN MICHEAL	**386.00**	BROWNING WILLIAM H ET	**396.00**	VINCENT SHARON ETUX
	PARCEL PIN: 227001286745		PARCEL PIN: 227001380088		PARCEL PIN: 227001286372		PARCEL PIN: 227001272388		PARCEL PIN: 227001278650
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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357.00	GLOVER ROGER L	**367.00**	SAULS LAWRENCE J	**377.00**	VACA JUAN C GONZALEZ	**387.00**	PALMER DAVID K SR ETUX	**397.00**	HINCKLEY JOSHUA ETUX
	PARCEL PIN: 227001286923		PARCEL PIN: 227001371949		PARCEL PIN: 227001285495		PARCEL PIN: 227001272253		PARCEL PIN: 227001279680
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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358.00	HARKLESS JAMIE O	**368.00**	HARKER DANNY	**378.00**	PATRICK MARK TWAIN (LT) ETALS	**388.00**	PALMER DAVID K SR ETUX	**398.00**	HAJABED SALWA IBRAHIM
	PARCEL PIN: 227001297045		PARCEL PIN: 227001371899		PARCEL PIN: 227001284412		PARCEL PIN: 227001272168		PARCEL PIN: 227001371633
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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359.00	POTTER ERIC ET	**369.00**	PRYOR STEVEN C	**379.00**	BLUE BOBBY	**389.00**	DEANS AMANDA L	**399.00**	CAISON CHRISTINE ETVIR
	PARCEL PIN: 227001288903		PARCEL PIN: 227001370808		PARCEL PIN: 227001283320		PARCEL PIN: 227001274163		PARCEL PIN: 227001372782
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
	LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY
360.00	MACBETH WILLIAM P ETUX	**370.00**	"SECUNDINO JOSE FAUSTINO ROBLES ETUX GUTIERREZ EUNICE CARLO"	**380.00**	PALACIOS MIGUEL ETUX	**390.00**	JOHNSON TASHA	**400.00**	TERRY LARRY SHANE
	PARCEL PIN: 227001288810		PARCEL PIN: 227001278982		PARCEL PIN: 227001283136		PARCEL PIN: 227001275262		PARCEL PIN: 227001373652
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR
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401.00	NEILL CALVIN	**411.00**	O'BRIANT CHERYL ETVIR	**421.00**	BBTB REAL PROPERTIES NC LLC	**431.00**	EDWARDS SPENCER G		
	PARCEL PIN: 227001374503		PARCEL PIN: 227001279068		PARCEL PIN: 228113040677		PARCEL PIN: 228113042780		
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		
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402.00	"TERRY STACIE J AND NALEPA LISA"	**412.00**	BROWNING WILLIAM H ET	**422.00**	LAPRADE STEPHEN A ETUX				
	PARCEL PIN: 227001374453		PARCEL PIN: 227001370078		PARCEL PIN: 228113040777				
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR				
	LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY				
403.00	BOYLE BRUCE A JR ETALS	**413.00**	"CARLOS BIRIVEY ROBLES ETVIR GARNICA ANTONIO SANCHEZ"	**423.00**	GIUSTI ENRICO ETUX				
	PARCEL PIN: 227001372399		PARCEL PIN: 227001371088		PARCEL PIN: 228113040888				
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR				
	LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY				
404.00	HEIDBRINK ROBERT E JR ETUX	**414.00**	ROBERTS DALE ET	**424.00**	HUGHSON MELODY				
	PARCEL PIN: 227001371378		PARCEL PIN: 227001373018		PARCEL PIN: 228113040979				
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	LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY				
405.00	PEOPLES GOLDEN JR	**415.00**	KING JAMES RUFUS III ETUX	**425.00**	"MOREE PARRISH FRY AND MOREE KEITH BRADLEY "				
	PARCEL PIN: 227001370367		PARCEL PIN: 227001374143		PARCEL PIN: 228109050145				
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR				
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406.00	"RUSS DAVID LLOYD AND POTTER MICHELLE "	**416.00**	"NEELY JILL DOREEN AND NEELY WILLIAM HUNTER JR"	**426.00**	"MOREE PARRISH FRY AND MOREE KEITH BRADLEY"				
	PARCEL PIN: 227001279357		PARCEL PIN: 227001375257		PARCEL PIN: 228109051136				
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR				
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407.00	SHEPARD DAMON LEE	**417.00**	STRICKLAND GUY ET	**427.00**	"WEBB GREGORY ETUX MCGLONE WEBB DEIRDRE"				
	PARCEL PIN: 227001278430		PARCEL PIN: 227001376115		PARCEL PIN: 228109052119				
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408.00	ETTER LESLEY ANNE	**418.00**	MCLAUGHLIN JACKIE G	**428.00**	KROPA RICHARD R ETUX				
	PARCEL PIN: 227001277340		PARCEL PIN: 227001375090		PARCEL PIN: 228109053201				
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR				
	LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY		LANDUSE: SINGLE FAMILY				
409.00	AMAN DENNIS ETUX	**419.00**	"BUTLER DAVID W AND BUTLER IRA DANIEL III"	**429.00**	BETTINSON LLC				
	PARCEL PIN: 227001277146		PARCEL PIN: 227001081124		PARCEL PIN: 228113042994				
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR				
	LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY				
410.00	LATHAM JOHN C	**420.00**	WEYERHAEUSER COMPANY	**430.00**	MERKL GREGORY J				
	PARCEL PIN: 227001278038		PARCEL PIN: 226104911315		PARCEL PIN: 228113042882				
	CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR		CURRENT ZONING: CO-RR				
	LANDUSE: SINGLE FAMILY		LANDUSE: VACANT LAND		LANDUSE: SINGLE FAMILY				

VICINITY MAP

NOT TO SCALE

Colliers
Engineering & Design,
Architecture, Landscape Architecture, Surveying, CT P.C.
www.colliersengineering.com

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Doing Business as MASER CONSULTING

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REV	DATE	DRAWN BY	DESCRIPTION

REV	DATE	DRAWN BY	DESCRIPTION

REV	DATE	DRAWN BY	DESCRIPTION

PLANNED DEVELOPMENT MASTER PLAN

FOR

HOOPER ROAD TRACT

BLUE FERN DEVELOPMENT AND REDFISH LAND COMPANY
8015 165TH/AVE.NE
REDMOND, WA 98052

LELAND
BRUNSWICK COUNTY
NORTH CAROLINA

Colliers Engineering & Design, Architecture, Landscape Architecture, Surveying, CT P.C.

RALEIGH
2000 Regency Parkway, Suite 295
Cary, NC 27518
Phone: 919.439.6082

COLLIERS ENGINEERING & DESIGN, ARCHITECTURE, LANDSCAPE ARCHITECTURE, SURVEYING, CT P.C. (FORMLY BUSINESS AS MASER CONSULTING)

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/28/2024	ST	AEM

PROJECT NUMBER: 25010558

DRAWING NAME: C-EXCO

SHEET TITLE:

EXISTING CONDITIONS PLAN

SHEET NUMBER:

C-202

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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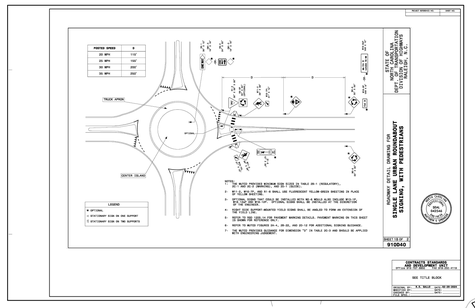
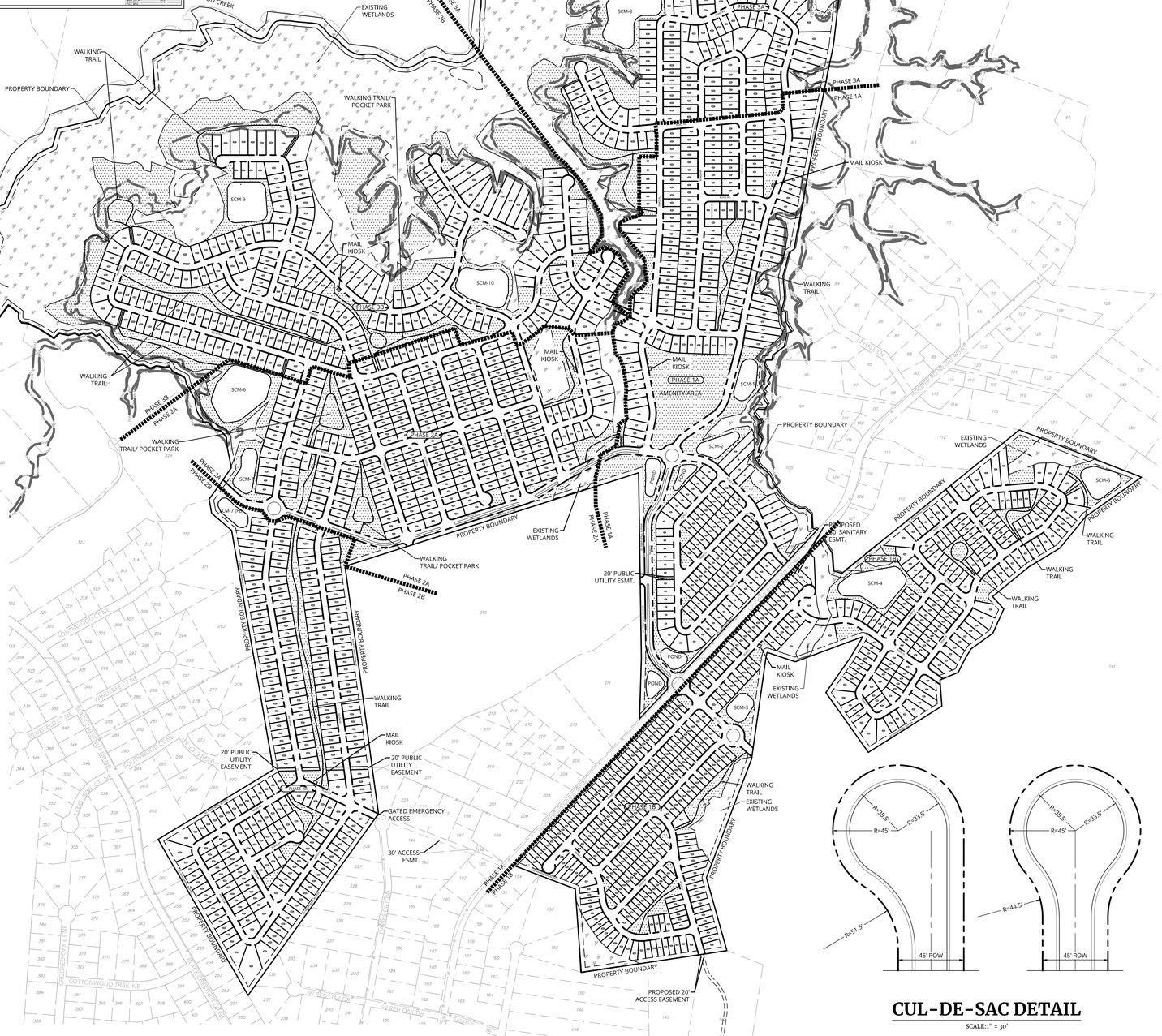


VICINITY MAP

NOT TO SCALE



SITE DATA:

TOTAL ACREAGE: 594.088 AC
WETLAND ACREAGE: 115.06 AC
AREA WITHIN FLOOD ZONE: 120.08 AC
TAX PARCEL NUMBERS:
- 00600011
- 0100002101
- 01000010
- 01000021

SINGLE FAMILY LOTS: 1676
PROJECT DENSITY: 2.83 DU/ AC

REQUIRED OPEN SPACE: 89.24 AC
PROVIDED OPEN SPACE: 145.00 AC
(35 AC UPLAND OPEN AREA I.E., 39 % OF REQUIRED OPEN SPACE)

REQUIRED RECREATION SPACE: 13.39 AC
PROVIDED RECREATION SPACE: 20.00 AC

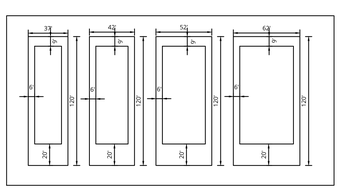
LINK-NODE RATIO- REQUIRED: 1.15
LINK-NODE RATIO- PROVIDED: 1.34

HOUSING TYPE: SINGLE FAMILY UNITS
AVERAGE LOT SIZE: 6000 SF
SMALLEST LOT SIZE: 4440 SF
IMPERVIOUS AREA: +/- 214.00 AC

SETBACKS:
- FRONT: 20'
- REAR: 9'
- SIDE: 6'
- CORNER: 12'

PERIPHERY BUFFER: 30'
STREET BUFFER: 20' (ALONG HOOPER RD)

PHASE 1A- (+/- 89.05 AC)- 283 UNITS
PHASE 1B- (+/- 100.56 AC)- 443 UNITS
PHASE 2A- (+/- 74.73 AC)- 281 UNITS
PHASE 2B- (+/- 58.53 AC)- 248 UNITS
PHASE 3A- (+/- 94.39 AC)- 164 UNITS
PHASE 3B- (+/- 176.61 AC)- 257 UNITS

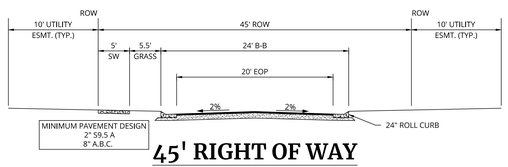


TYPICAL LOT DETAIL

SCALE:1" = 50'

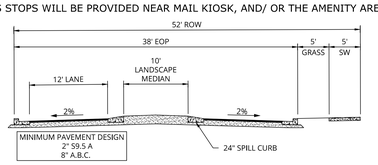
CUL-DE-SAC DETAIL

SCALE:1" = 30'



45' RIGHT OF WAY
24' ROADWAY SECTION

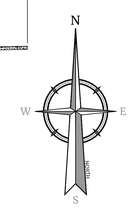
NOT TO SCALE



52' RIGHT OF WAY
38' ROADWAY SECTION

NOT TO SCALE

NOT FOR CONSTRUCTION



300 0 300 600

SCALE : 1" = 300'

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

NOTES:

1. THIS PROPERTY IS CURRENTLY ZONED RURAL RESIDENTIAL (RR) AND IS BEING SUBMITTED FOR MASTER PLAN APPROVAL AS A PLANNED DEVELOPMENT (PD).
2. DEVELOPMENT OF THE PROJECT WILL BE CONSTRUCTED IN PHASES.
3. EACH LOT WILL HAVE A MINIMUM OF 2 NON GARAGE PARKING SPACES.
4. ALL UTILITY AND DRAINAGE EASEMENTS SHOWN ON THIS PLAN IS FOR MASTER PLAN SUBMITTAL ONLY AND MAY BE MODIFIED PRIOR TO THE FINAL PLAT RECORDATION.
5. AREAS OF OPEN SPACE WILL PROVIDE CORRIDORS FOR WALKING TRAILS AND GREENWAYS THROUGHOUT THE COMMUNITY.
6. ANY REVISIONS TO THE MASTER PLAN WILL BE SUBJECT TO REVIEW AND APPROVAL BY BRUNSWICK COUNTY'S PLANNING AND ZONING DEPARTMENT AND/OR THE PLANNING BOARD.
7. ALL STREETS WITHIN THIS DEVELOPMENT ARE TO BE PRIVATE.
8. ALL STREETS WITHIN THIS DEVELOPMENT WILL HAVE SIDEWALKS INSTALLED ON ATLEAST ONE SIDE OF THE ROAD.
9. THE WATER AND SEWER SYSTEMS SHOWN ON THIS PLAN IS FOR MASTER PLAN SUBMITTAL ONLY AND WILL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE BRUNSWICK COUNTY ENGINEERING AND PUBLIC UTILITIES DEPARTMENT.
10. A 4" SEWER CLEAN OUT TO BE PROVIDED PER LOT.
11. DOUBLE WATER METER BOX TO BE INSTALLED PER LOT.
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31. ALL SURVEY RELATED INFORMATION PRESENTED ON THIS PLAN SET SUBMITTAL WAS PROVIDED BY DANFORD & ASSOCIATES LAND SURVEYING, P.C., 4002 ½ OLEANDER DRIVE, SUITE 203, WILMINGTON, NC 28403. IN ADDITION COLLIERS ENGINEERING AND DESIGN HAS PREPARED AN ALTA SUREVY DATED 05/22/2025.
32. ALL WETLAND INFORMATION SHOWN ON THIS PLAN SET SUBMITTAL WAS PROVIDED BY THE SOUTHERN ENVIRONMENTAL GROUP (SEGI), S. COLLEGE ROAD, SUITE E, WILMINGTON, NC 28412.
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Colliers
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Architecture, Landscape Architecture, Surveying, CT P.C.
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REV	DATE	DRAWN BY	DESCRIPTION
1	10/21/25	ST	SITE LAYOUT REVISIONS FOR PHASE 1A
1	10/21/25	ST	SITE DATA UPDATED
1	10/21/25	ST	UTILITY REVISIONS FOR PHASE 1A
1	10/21/25	ST	DRAINAGE PLAN UPDATED FIRST PHASE 1A

PLANNED DEVELOPMENT MASTER PLAN

FOR

HOOPER ROAD TRACT

BLUE FERN DEVELOPMENT AND REDFISH LAND COMPANY
8015 165TH/AVE.NE
REDMOND, WA 98052

LELAND
BRUNSWICK COUNTY
NORTH CAROLINA

Colliers Engineering & Design, Architecture, Landscape Architecture, Surveying, CT P.C.
RALEIGH
2000 Regency Parkway, Suite 205
Cary, NC 27518
Phone: 919.439.6082
COLLIERS ENGINEERING & DESIGN, ARCHITECTURE, LANDSCAPE ARCHITECTURE, SURVEYING, CT P.C. IS A MASER CONSULTING COMPANY

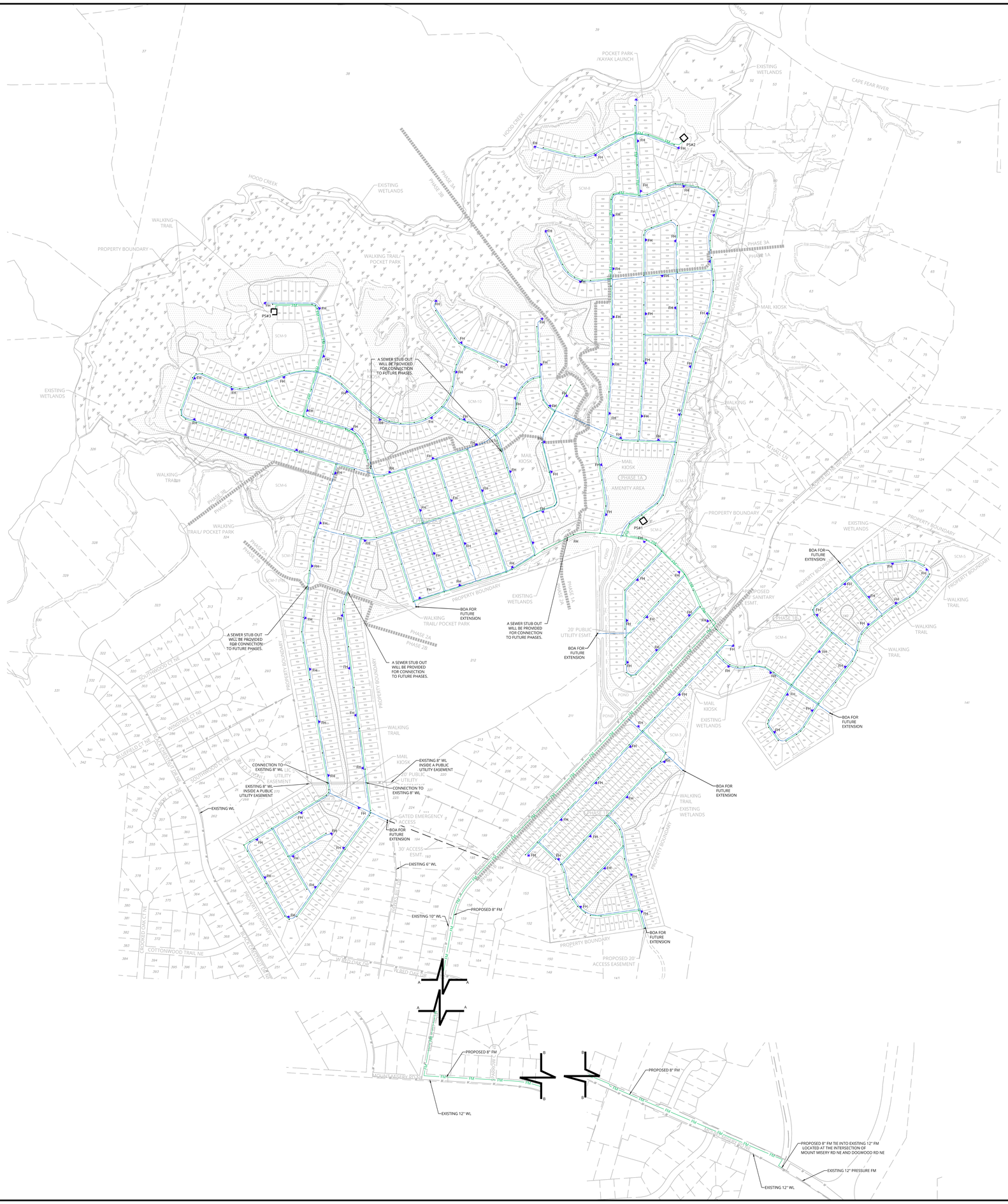
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	07/01/2025	ST	AEM

PROJECT NUMBER: 25010558
DRAWING NAME: C-LAYT

SHEET TITLE: PLANNED DEVELOPMENT MASTER SITE PLAN

SHEET NUMBER: C-300

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



VICINITY MAP

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NOT FOR CONSTRUCTION

SCALE : 1" = 300'

300 0 300 600

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

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1	8/27/2025	ST	DRAINAGE PLAN UPDATED REF PHASE 1A

PLANNED DEVELOPMENT MASTER PLAN

FOR

HOOPER ROAD TRACT

BLUE FERN DEVELOPMENT AND REDFISH LAND COMPANY
8015 165TH/AVE.NE
REDMOND, WA 98052

LELAND
BRUNSWICK COUNTY
NORTH CAROLINA

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	07/01/2025	ST	AEM

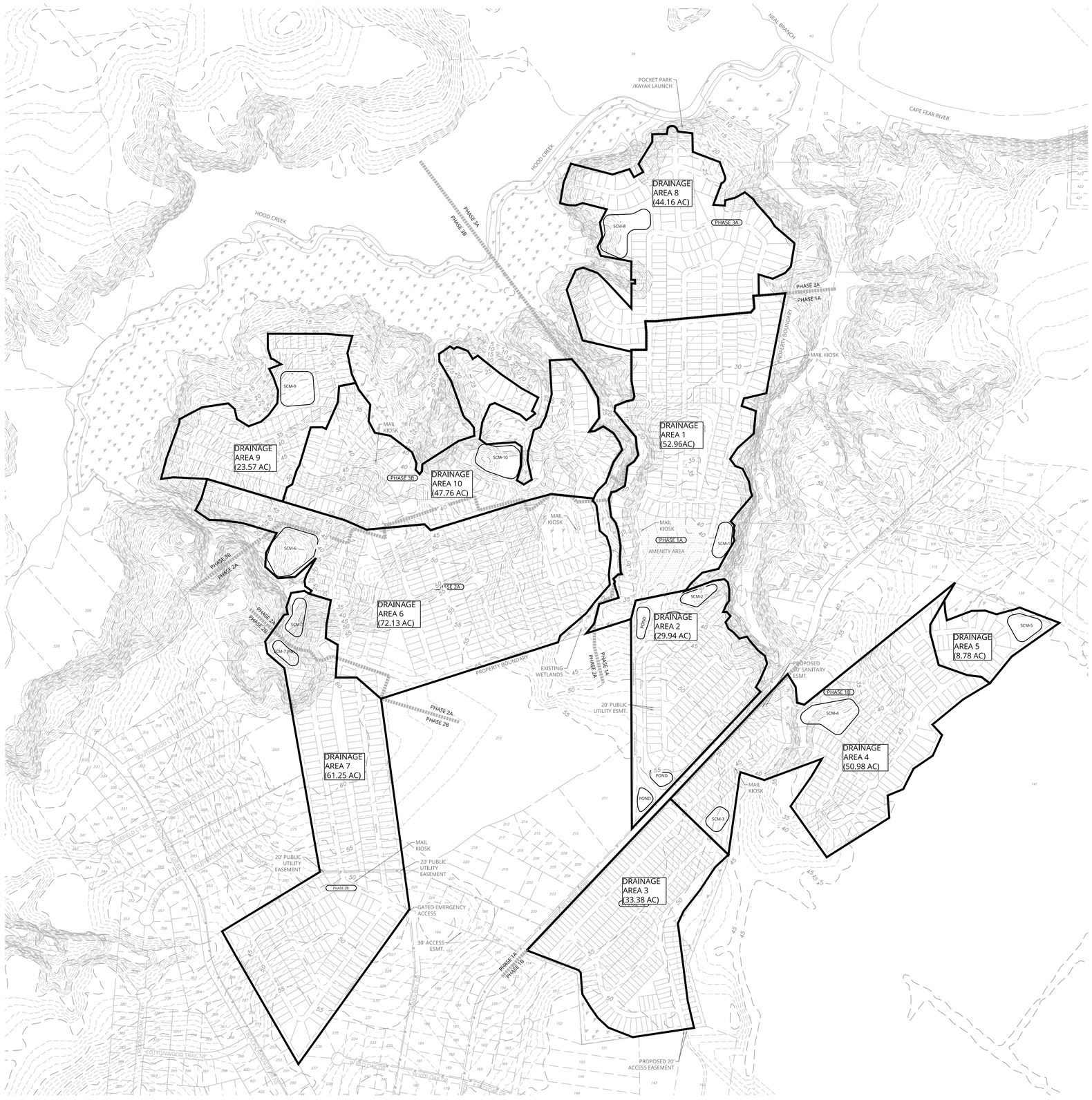
PROJECT NUMBER:	DRAWING NAME:
25010558	C-UTIL

SHEET TITLE:
PRELIMINARY UTILITIES PLAN

SHEET NUMBER:
C-400

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

J:\Projects\Engineering\Brunswick Co_Hooper Rd\Civil\Plans\Preliminary\Hooper Rd Preliminary Plan.dwg, 8/28/2025 8:39:47 AM, By: SHAUN.TURNER



NOTES:

1. A STATE STORM WATER PERMIT WILL BE REQUIRED.
2. A STATE EROSION CONTROL PERMIT WILL BE REQUIRED
3. A COUNTY STORM WATER PERMIT WILL BE REQUIRED.
4. STORM WATER DESIGN WILL FOLLOW THE COUNTY'S REQUIREMENT OF ATTENUATING FOR 1 YR, 10 YR AND 25 YR DESIGN STORMS
5. SCMS DESIGNED WILL HANDLE THE 100- YR STORM WITHOUT OVERTOPPING THE SCMS.

VICINITY MAP

NOT TO SCALE

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28. WALKING TRAILS WILL BE DESIGNED AND CONSTRUCTED THROUGHOUT THE DEVELOPMENT WITHIN COMMON AREAS TO CONNECT TO THE SIDEWALK WITHIN THE STREET RIGHT-OF-WAY TO PROMOTE WALKABILITY THROUGHOUT THE COMMUNITY.
29. OPEN SPACE/COMMON AREAS THROUGHOUT THE COMMUNITY WILL BE DESIGNED BY A LANDSCAPE ARCHITECT FOR VARIOUS ACTIVE AND PASSIVE USES.
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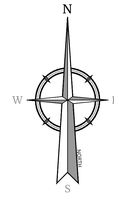
31. ALL SURVEY RELATED INFORMATION PRESENTED ON THIS PLAN SET SUBMITTAL WAS PROVIDED BY DANFORD & ASSOCIATES LAND SURVEYING, P.C., 4002 ½ OLEANDER DRIVE, SUITE 203, WILMINGTON, NC 28403.
32. ALL WETLAND INFORMATION SHOWN ON THIS PLAN SET SUBMITTAL WAS PROVIDED BY THE SOUTHERN ENVIRONMENTAL GROUP (SEGI), S. COLLEGE ROAD, SUITE E, WILMINGTON, NC 28412.
33. A HERITAGE TREE SURVEY WILL BE PERFORMED PRIOR TO ANY CONSTRUCTION
34. TEMPORARY TURN-AROUNDS WILL BE PROVIDED AT EACH PHASE LINE.
35. WATER LINE AT EACH PHASE LINE WILL END WITH EITHER A FIRE HYDRANT OR TEMPORARY BLOW OFF ASSEMBLY.
36. NO IMPERVIOUS AREA TO BE LOCATED WITHIN 20' OF WETLANDS
37. SCHOOL BUS STOPS WILL BE PROVIDED NEAR MAIL KIOSK, AND/ OR THE AMENITY AREA.



NOT FOR CONSTRUCTION

300 0 300 600

SCALE : 1" = 300'

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

Colliers Engineering & Design,
Architecture, Landscape Architecture, Surveying, CT P.C.
www.colliersengineering.com

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

REV	DATE	DRAWN BY	DESCRIPTION
1	03/17/2026	ST	SITE LAYOUT REVISIONS FOR PHASE 1A.
2	03/17/2026	ST	SITE DATA UPDATED.
3	03/17/2026	ST	UTILITY REVISIONS FOR PHASE 1A.
4	03/17/2026	ST	DRAINAGE PLAN UPDATED FED PHASE 1A.

PLANNED DEVELOPMENT MASTER PLAN

FOR

HOOPER ROAD TRACT

BLUE FERN DEVELOPMENT AND REDFISH LAND COMPANY
8015 165TH/AVE.NE
REDMOND, WA 98052

LELAND
BRUNSWICK COUNTY
NORTH CAROLINA

Colliers Engineering & Design,
Architecture, Landscape Architecture, Surveying, CT P.C.
RALEIGH
2000 Regency Parkway, Suite 295
Cary, NC 27518
Phone: 919.439.6082
COLLIERS ENGINEERING & DESIGN, ARCHITECTURE, LANDSCAPE ARCHITECTURE SURVEYING, CT P.C. | COLLIERSENGINEERING.COM

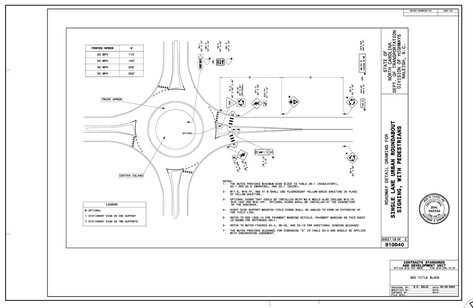
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	07/01/2025	ST	AEM

PROJECT NUMBER: 25010558
DRAWING NAME: C-DRNG

SHEET TITLE: PRELIMINARY DRAINAGE PLAN

SHEET NUMBER: C-500

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



VICINITY MAP

NOT TO SCALE

NOTES:

1. THIS PROPERTY IS CURRENTLY ZONED RURAL RESIDENTIAL (RR) AND IS BEING SUBMITTED FOR MASTER PLAN APPROVAL AS A PLANNED DEVELOPMENT (PD).
2. DEVELOPMENT OF THE PROJECT WILL BE CONSTRUCTED IN PHASES.
3. EACH LOT WILL HAVE A MINIMUM OF 2 NON GARAGE PARKING SPACES.
4. ALL UTILITY AND DRAINAGE EASEMENTS SHOWN ON THIS PLAN IS FOR MASTER PLAN SUBMITTAL ONLY AND MAY BE MODIFIED PRIOR TO THE FINAL PLAT RECORDATION.
5. AREAS OF OPEN SPACE WILL PROVIDE CORRIDORS FOR WALKING TRAILS AND GREENWAYS THROUGHOUT THE COMMUNITY.
6. ANY REVISIONS TO THE MASTER PLAN WILL BE SUBJECT TO REVIEW AND APPROVAL BY BRUNSWICK COUNTY'S PLANNING AND ZONING DEPARTMENT AND/OR THE PLANNING BOARD.
7. ALL STREETS WITHIN THIS DEVELOPMENT ARE TO BE PRIVATE.
8. ALL STREETS WITHIN THIS DEVELOPMENT WILL HAVE SIDEWALKS INSTALLED ON ATLEAST ONE SIDE OF THE ROAD.
9. THE WATER AND SEWER SYSTEMS SHOWN ON THIS PLAN IS FOR MASTER PLAN SUBMITTAL ONLY AND WILL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE BRUNSWICK COUNTY ENGINEERING AND PUBLIC UTILITIES DEPARTMENT.
10. A 4" SEWER CLEAN OUT TO BE PROVIDED PER LOT.
11. DOUBLE WATER METER BOX TO BE INSTALLED PER LOT.
12. FOR MASTER PLAN REVIEW AND APPROVAL ONLY, THE SANITARY SEWER SYSTEM IS BEING PROPOSED AS A GRAVITY COLLECTION SYSTEMS WITH 8" PVC PIPES TO CONVEY FLOW TO A PUMP STATION. FLOW WILL THEN BE CONVEYED THROUGH A PROPOSED 8" FORCE MAIN, APPROXIMATLEY 3 MILES IN LENGTH, TO AN EXISTING 12" HIGH PRESSURE FORCE MAIN LOCATED IN THE R/W OF MT. MISERY ROAD AT THE INTERSECTION OF MT. MISERY ROAD AND DOGWOOD ROAD.
13. FOR MASTER PLAN REVIEW AND APPROVAL ONLY, FLOW RECEIVED IN PUMP STATIONS 2 AND 3 WILL BE CONVEYED THROUGH A PROPOSED 4" FORCE MAIN EACH TO THE NEAREST SANITARY SEWER GRAVITY MANHOLE AND WILL THEN FLOW TO PUMP STATION 1. PUMP STATION 1 WILL THEN PUMP TO AN OFFSITE CONNECTION POINT AS SPECIFIED PREVIOUSLY.
14. FOR MASTER PLAN REVIEW AND APPROVAL ONLY, THE WATER SYSTEM TO SERVE THE PROJECT IS PROPOSED AS 8" PVC PIPES THROUGHOUT THE COMMUNITY. ALL FIRE HYDRANTS ARE TO HAVE A MAXIMUM SEPARATION OF 500' BETWEEN EACH FIRE HYDRANT.
15. STREETLIGHTS WILL BE INSTALLED PER BRUNSWICK COUNTY'S UNIFIED DEVELOPMENT ORDINANCE (UDO).
16. ALL NON RESIDENTIAL USES ARE SUBJECT TO SITE SPECIFIC REVIEW.
17. A HOMEOWNER'S ASSOCIATION WILL BE FORMED TO ACCEPT RESPONSIBILITY FOR THE MAINTENANCE AND UPKEEP OF ALL STORMWATER DEVICES, OPEN SPACE, AND AMENITY SITE.
18. A 10' UTILITY EASEMENT (DUE) IS TO BE RECORDED ON EACH LOT ALONG THE OUTSIDE OF THE STREET RIGHT-OF-WAY.
19. THE DEVELOPER RESERVES THE RIGHT TO MODIFY THE FINAL AMENITY PLANS PRIOR TO APPROVAL FOR CONSTRUCTION.
20. PROJECT TO BE BUILT PER BRUNSWICK COUNTY SPECIFICATIONS IN REGARD TO ALL UTILITIES. PLANS MUST BE ENGINEERED AND SUBMITTED TO BRUNSWICK COUNTY ENGINEERING AND THE FIRE MARSHAL FOR REVIEW AND APPROVAL PRIOR TO ANY CONSTRUCTION.
21. COUNTY AND/OR STATE (NCDEQ) STORMWATER PERMITS MUST BE OBTAINED PRIOR TO ANY CONSTRUCTION. NO NATURAL DRAINAGE AREAS WILL BE CUTOFF OR DISTURBED BEFORE OBTAINING PERMITS.
22. STORMWATER RUNOFF SHALL BE CONVEYED THROUGH A COLLECTION SYSTEM TO A STORMWATER POND (SCM) FOR TREATMENT AND TO MEET COUNTY REQUIREMENTS FOR PRE-POST RUNOFF. STORMWATER PONDS WILL BE DESIGNED TO CONTROL RUNOFF FROM A 100-YEAR STORM EVENT.
23. THERE SHALL BE A NOTE ON THE FINAL PLATS, MASTER COVENANTS, AND DEEDS SHOWING THE LOCATION OF WETLANDS AND NOTING THAT THOSE AREAS MAY NOT BE FILLED, DISTURBED, OR ALTERED IN ANY WAY UNLESS PROPERLY PERMITTED BY THE NC DEPARTMENT OF NATURAL RESOURCES AND/OR THE U.S. ARMY CORP OF ENGINEERS.
24. A HOMEOWNER'S ASSOCIATION WILL BE FORMED PRIOR TO THE SALE OF LOTS AND MEMBERSHIP WILL BE AUTOMATIC UPON PURCHASE WITHIN THE DEVELOPMENT. THE HOMEOWNER'S ASSOCIATION WILL COMPLY WITH THE STANDARDS SET FORTH IN SECTION 6.11.2.1. OF THE UNIFIED DEVELOPMENT ORDINANCE.
25. ALL ROADS WILL BE BUILT TO NCDOT MINIMUM CONSTRUCTION STANDARDS FOR SUBDIVISION ROADS.
26. A 30' PERIPHERY BUFFER TO REMAIN ALONG THE PERIMETER OF THE PROJECT BOUNDARY.
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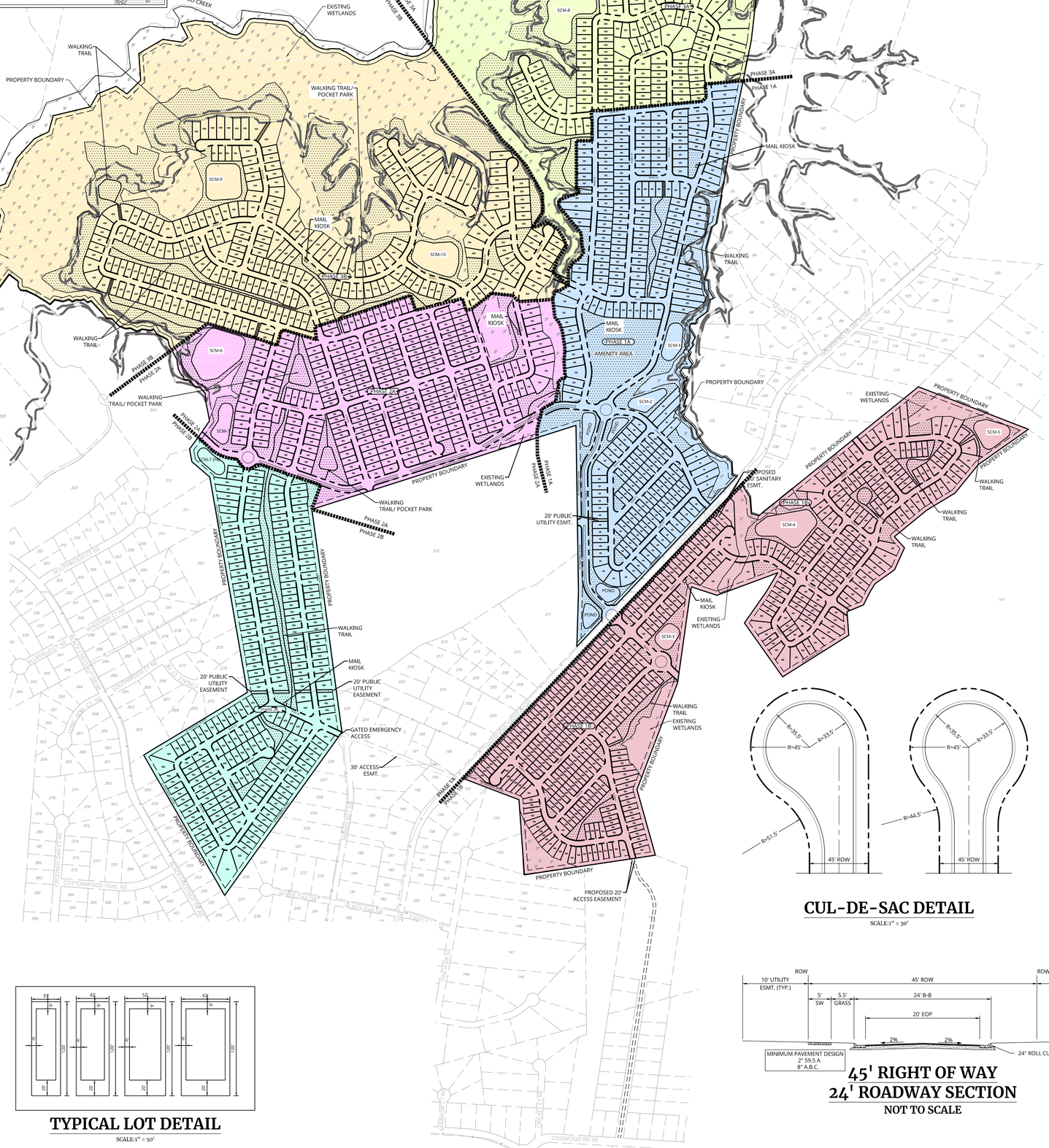
37. SCHOOL BUS STOPS WILL BE PROVIDED NEAR MAIL KIOSK, AND/ OR THE AMENITY AREA.



SITE DATA:

TOTAL ACREAGE: 594.088 AC
WETLAND ACREAGE: 115.06 AC
AREA WITHIN FLOOD ZONE: 120.08 AC
TAX PARCEL NUMBERS:
- 00600011
- 0100002101
- 01000010
- 01000021

SINGLE FAMILY LOTS: 1676
PROJECT DENSITY: 2.83 DU/ AC

REQUIRED OPEN SPACE: 89.24 AC
PROVIDED OPEN SPACE: 145.00 AC
(35 AC UPLAND OPEN AREA I.E., 39 % OF REQUIRED OPEN SPACE)

REQUIRED RECREATION SPACE: 13.39 AC
PROVIDED RECREATION SPACE: 20.00 AC

LINK-NODE RATIO- REQUIRED: 1.15
LINK-NODE RATIO- PROVIDED: 1.34

HOUSING TYPE: SINGLE FAMILY UNITS
AVERAGE LOT SIZE: 6000 SF
SMALLEST LOT SIZE: 4440 SF
IMPERVIOUS AREA: +/- 214.00 AC

SETBACKS:
- FRONT: 20'
- REAR: 9'
- SIDE: 6'
- CORNER: 12'

PERIPHERY BUFFER: 30'
STREET BUFFER: 20' (ALONG HOOPER RD)

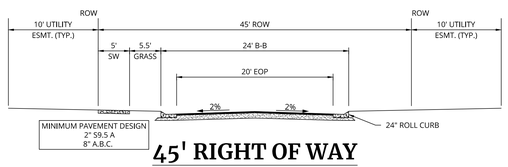
PHASE 1A- (+/- 89.05 AC)- 283 UNITS
PHASE 1B- (+/- 100.56 AC)- 443 UNITS
PHASE 2A- (+/- 74.73 AC)- 281 UNITS
PHASE 2B- (+/- 58.53 AC)- 248 UNITS
PHASE 3A- (+/- 94.39 AC)- 164 UNITS
PHASE 3B- (+/- 176.61 AC)- 257 UNITS

TYPICAL LOT DETAIL

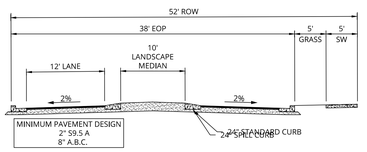
SCALE:1" = 50'

CUL-DE-SAC DETAIL

SCALE:1" = 30'



45' RIGHT OF WAY
24' ROADWAY SECTION
NOT TO SCALE



52' RIGHT OF WAY
38' ROADWAY SECTION
NOT TO SCALE

NOT FOR CONSTRUCTION

SCALE : 1" = 300'
Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	10/21/25	ST	SITE LAYOUT REVISIONS FOR PHASE 1A
1	10/21/25	ST	SITE DATA UPDATED
1	10/21/25	ST	UTILITY REVISIONS FOR PHASE 1A
1	10/21/25	ST	DRAINAGE PLAN UPDATED FOR PHASE 1A

PLANNED DEVELOPMENT MASTER PLAN

FOR

HOOPER ROAD TRACT

BLUE FERN DEVELOPMENT AND REDFISH LAND COMPANY
8015 165TH/AVE.NE
REDMOND, WA 98052

LELAND
BRUNSWICK COUNTY
NORTH CAROLINA

Colliers Engineering & Design, Architecture, Landscape Architecture, Surveying, CT P.C.
RALEIGH
2000 Regency Parkway, Suite 205
Cary, NC 27518
Phone: 919.439.6082
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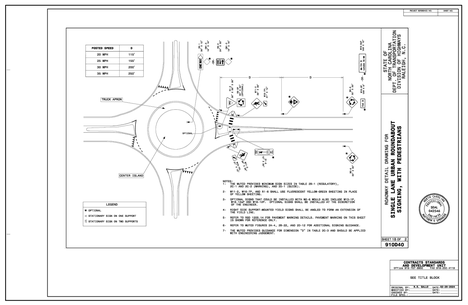
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	07/01/2025	ST	AEM
PROJECT NUMBER: 25010558	DRAWING NAME: C-LAYT		

SHEET TITLE:
PLANNED DEVELOPMENT MASTER COLORED PHASED PLAN

SHEET NUMBER:
C-600

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



VICINITY MAP

NOT TO SCALE

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32. ALL WETLAND INFORMATION SHOWN ON THIS PLAN SET SUBMITTAL WAS PROVIDED BY THE SOUTHERN ENVIRONMENTAL GROUP (SEGI), S. COLLEGE ROAD, SUITE E, WILMINGTON, NC 28412.
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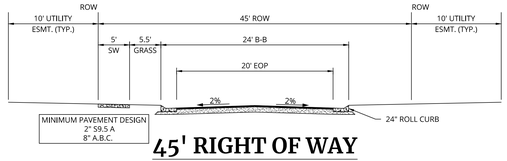
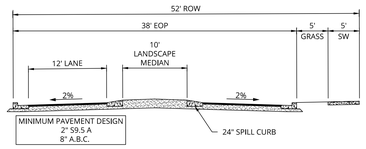
CUL-DE-SAC DETAIL

SCALE:1" = 30'



45' RIGHT OF WAY 24' ROADWAY SECTION

NOT TO SCALE



52' RIGHT OF WAY 38' ROADWAY SECTION

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SITE DATA:

TOTAL ACREAGE: 594.088 AC
WETLAND ACREAGE: 115.06 AC
AREA WITHIN FLOOD ZONE: 120.08 AC
TAX PARCEL NUMBERS:
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- 0100002101
- 01000010
- 01000021

SINGLE FAMILY LOTS: 1676
PROJECT DENSITY: 2.83 DU/ AC

REQUIRED OPEN SPACE: 89.24 AC
PROVIDED OPEN SPACE: 145.00 AC
(35 AC UPLAND OPEN AREA I.E., 39 % OF REQUIRED OPEN SPACE)

REQUIRED RECREATION SPACE: 13.39 AC
PROVIDED RECREATION SPACE: 20.00 AC

LINK-NODE RATIO- REQUIRED: 1.15
LINK-NODE RATIO- PROVIDED: 1.34

HOUSING TYPE: SINGLE FAMILY UNITS
AVERAGE LOT SIZE: 6000 SF
SMALLEST LOT SIZE: 4440 SF
IMPERVIOUS AREA: +/- 214.00 AC

SETBACKS:
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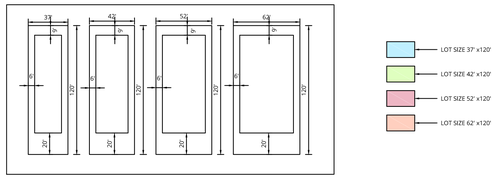
PHASE 3A- (+/- 94.39 AC)- 164 UNITS
PHASE 3B- (+/- 176.61 AC)- 257 UNITS



TYPICAL LOT DETAIL

SCALE:1" = 50'

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REV	DATE	DRAWN BY	DESCRIPTION
-	07/17/2025	ST	DRAINAGE PLAN UPDATED (RED PHASE 1A,
-	07/17/2025	ST	UTILITY REVISIONS (DR PHASE 1A,
-	07/17/2025	ST	SITE DATA UPDATED.
-	07/17/2025	ST	SITE LAYOUT REVISIONS (FOR PHASE 1A,

PLANNED DEVELOPMENT MASTER PLAN

FOR

HOOPER ROAD TRACT

BLUE FERN DEVELOPMENT AND REDFISH LAND COMPANY
8015 165TH/AVE.NE
REDMOND, WA 98052

LELAND
BRUNSWICK COUNTY
NORTH CAROLINA

Colliers Engineering & Design,
Architecture, Landscape Architecture, Surveying, CT P.C.
RALEIGH
2000 Regency Parkway, Suite 295
Cary, NC 27518
Phone: 919.439.6082
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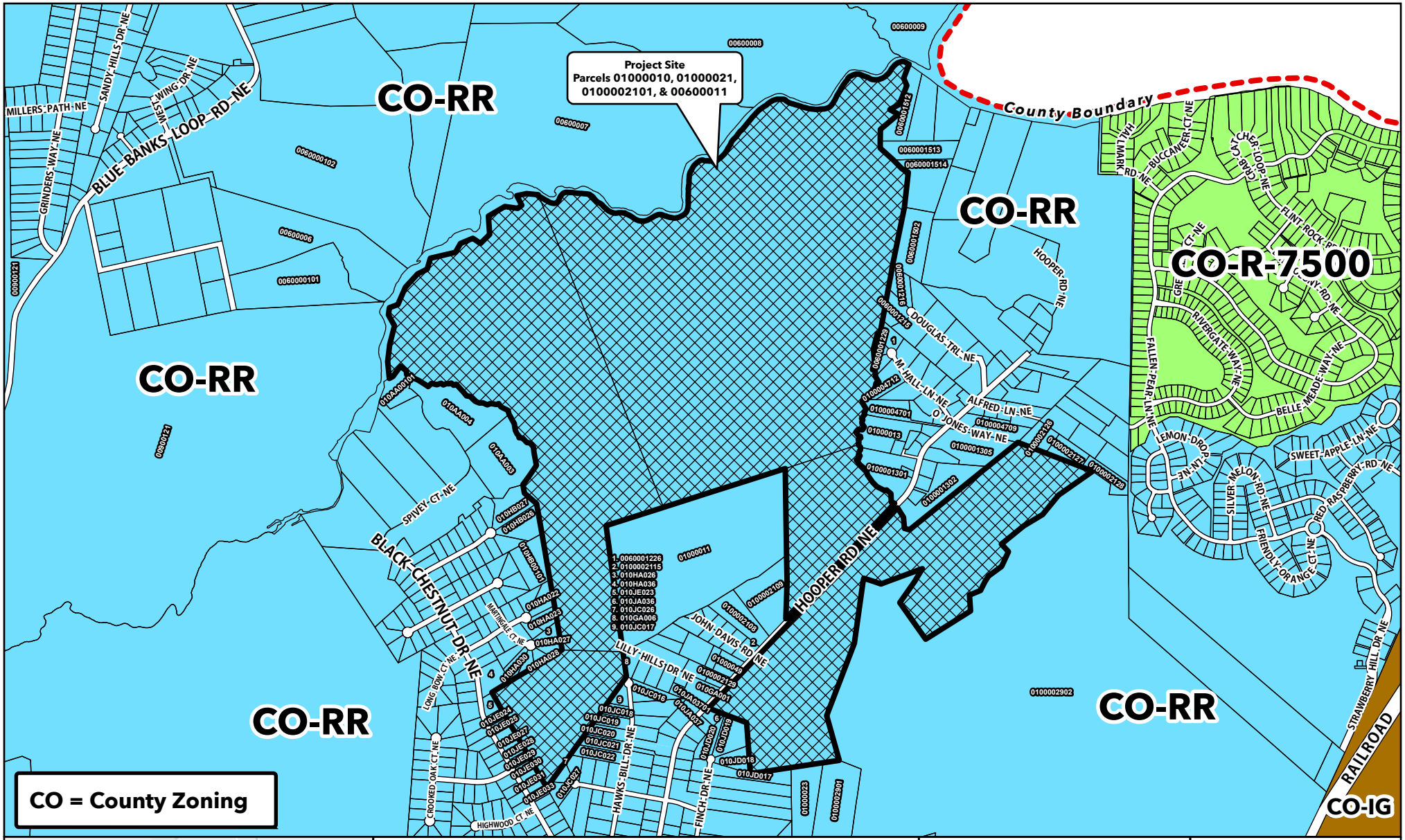
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	07/01/2025	ST	AEM

PROJECT NUMBER: 25010558
DRAWING NAME: C-RENDERING

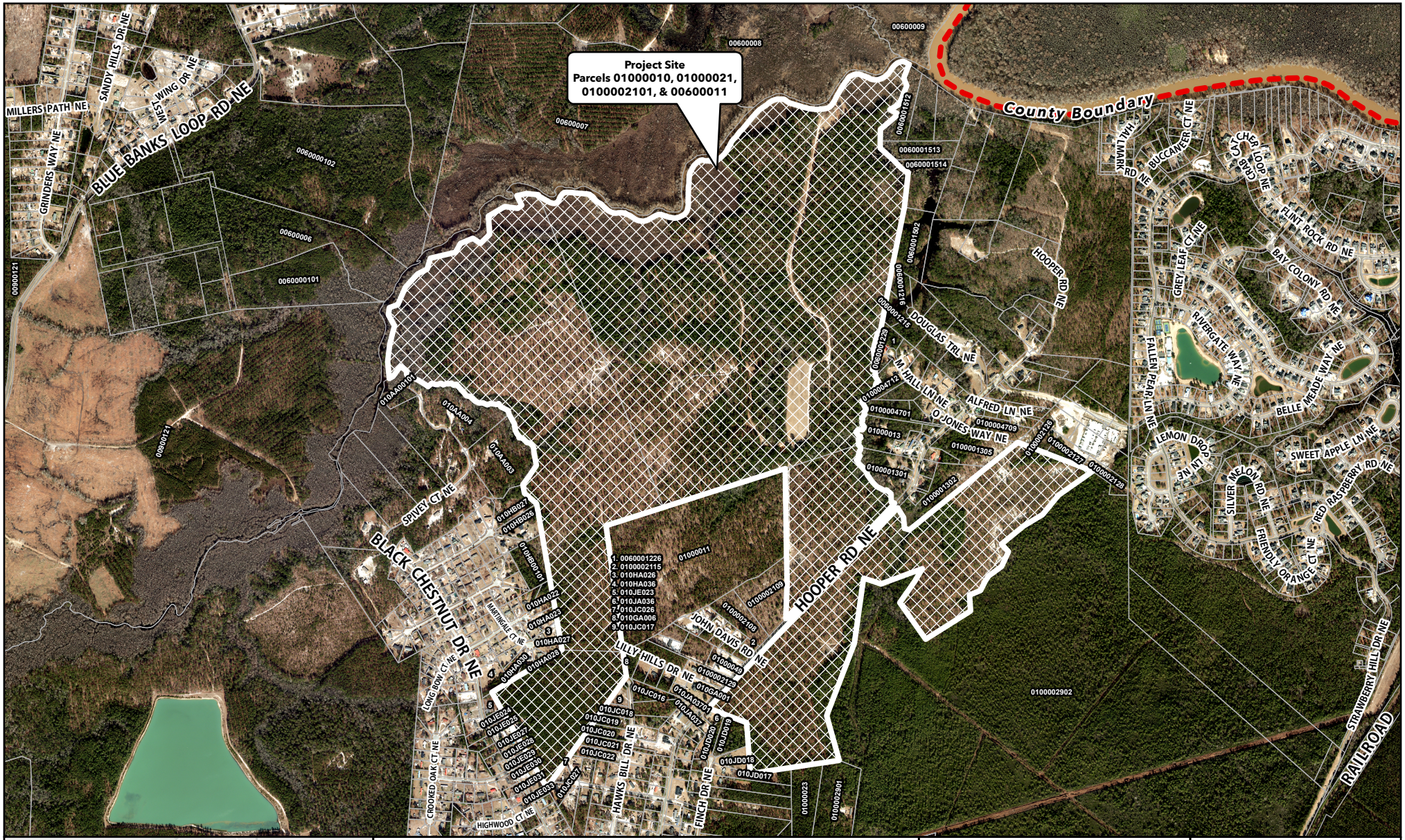
SHEET TITLE: RENDERING PLAN

SHEET NUMBER: C-600

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



Brunswick County Planning Board
Planned Development
Hooper Road Tract
Case PD-146
Zoning Map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0100002101, & 00600011
County Boundary
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MILLERS PATH NE
SANDY HILLS DR NE
WEST WING DR NE
GRINDERS WAY NE
HOOPER RD NE
DOUGLAS TRL NE
M HALL LN NE
ALFRED LN NE
O JONES WAY NE
BLACK CHESTNUT DR NE
SPIVEY CT NE
HOOPER RD NE
JOHN DAVIS RD NE
LILLY HILLS DR NE
HAWKS BILL DR NE
FINCH DR NE
CROOKED OAK CT NE
LONG MOSS CT NE
MARTINGALE CT NE
HIGHWOOD CT NE
BUCCANEER CT NE
HALLMARK RD NE
CHER LOOP NE
FLINT ROCK RD NE
GREY LEAF CT NE
BAY COLONY RD NE
RIVERGATE WAY NE
FALLEN PEAR LN NE
BELLE MEADE WAY NE
LEMON DROP LN NE
SWEET APPLE LN NE
SILVER MELON RD NE
RED RASPBERRY RD NE
FRIENDLY ORANGE CT NE
STRAWBERRY HILL DR NE
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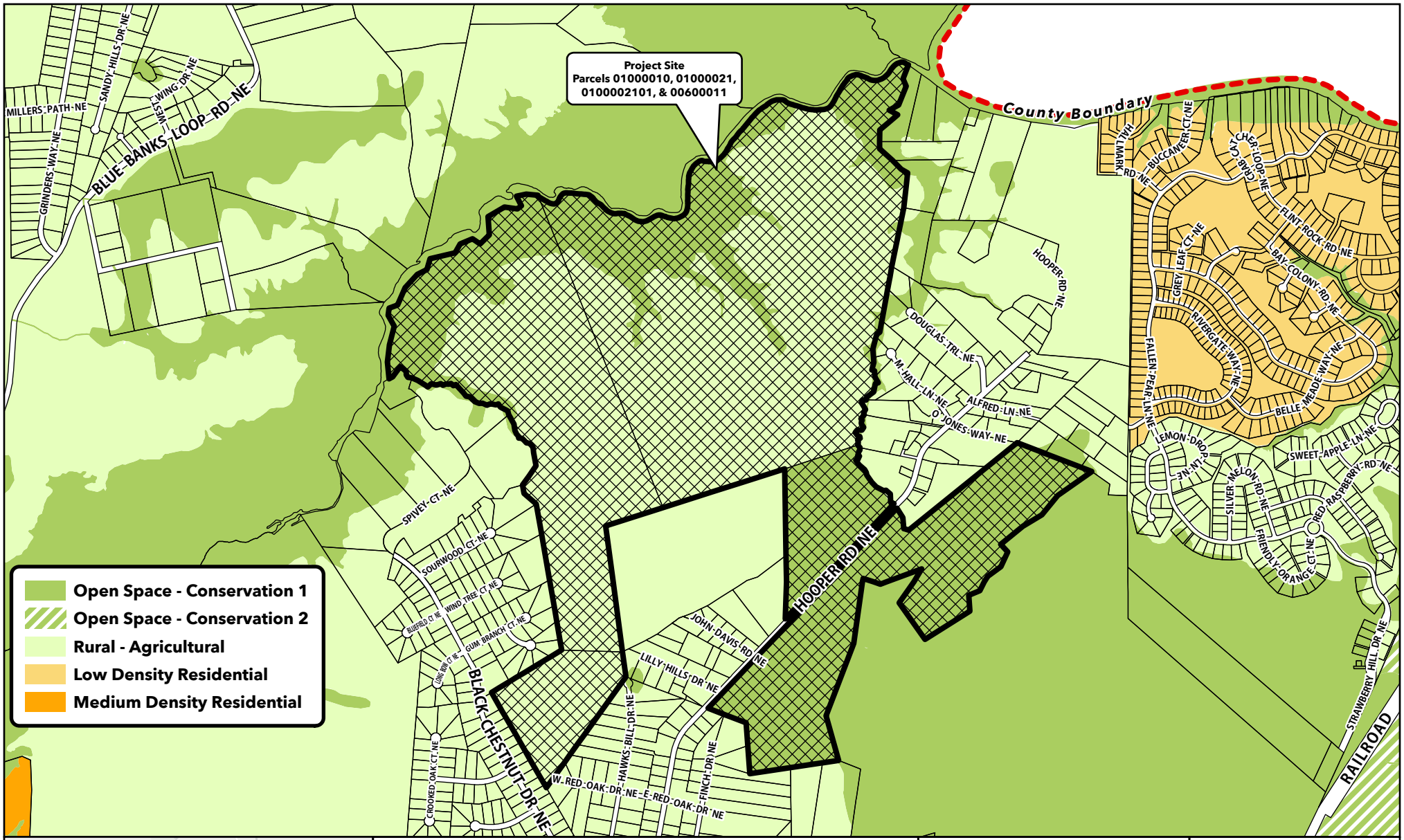
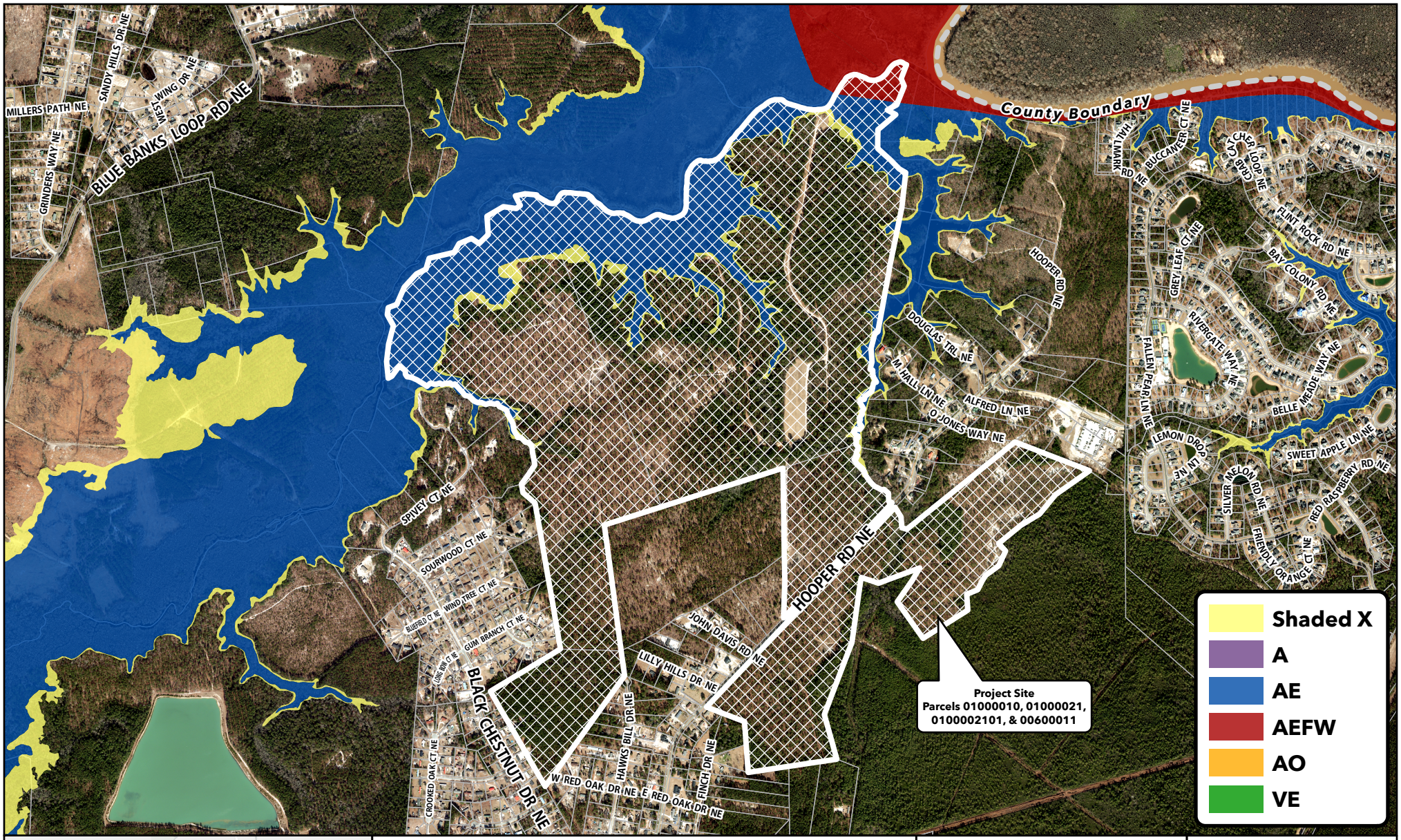
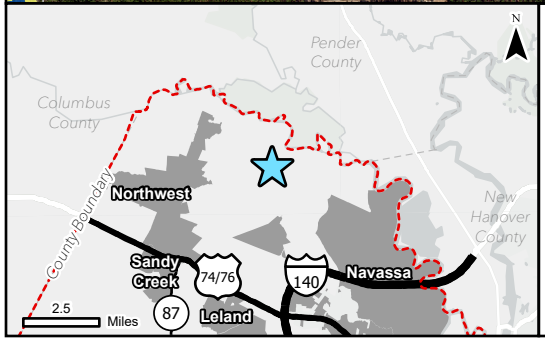


Brunswick County Planning Board
Planned Development
Hooper Road Tract
Case PD-146
Blueprint Brunswick 2040
Place Type Map





Brunswick County Planning Board
Planned Development
Hooper Road Tract
Case PD-146
Flood Hazards Map

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1,000
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TRAFFIC IMPACT ANALYSIS
HOOPER ROAD SUBDIVISION

BRUNSWICK COUNTY, NORTH CAROLINA

APRIL 2025

TRAFFIC IMPACT ANALYSIS

FOR

HOOPER ROAD SUBDIVISION

LOCATED

IN

BRUNSWICK COUNTY, NORTH CAROLINA

Prepared for:
Blue Fern Development
18300 Redmond Way, Suite 120
Redmond, WA 98052

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5808 Faringdon Place, Box 9
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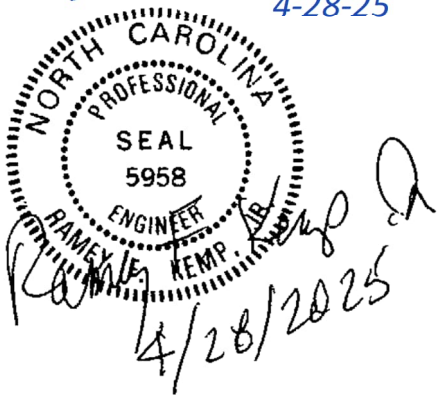
License # P-2254

April 2025

Project No. 24-029



EXECUTIVE SUMMARY

This report summarizes the findings of the Traffic Impact Analysis (TIA) that was prepared for the Hooper Road Subdivision development in Brunswick County, North Carolina. The residential development, which is anticipated to be fully built out by the year 2031, is proposed to consist of up to 1,722 detached single-family homes [constructed in three (3) phases]. Site access is proposed to be provided via full movement driveways at one connection on Hooper Road, located approximately one (1) mile north of Mt. Misery Road.

The purpose of this study is to determine the potential impacts to the transportation system caused by the additional traffic generated by the proposed development, as well as identify improvements to mitigate any impacts, if necessary. In addition to site-generated traffic, this study also considered the impact of background traffic growth within the area as well as approved development traffic.

The study analyzed the intersections of Hooper Road, I-140 Westbound Ramps, I-140 Eastbound Ramps, US 74 Westbound Ramps, and US 74 Eastbound Ramps on Mt. Misery Road in addition to the site access [under future build scenarios only] on Hooper Road during the weekday AM and PM peak hours for the following scenarios:

- Existing (2024) Traffic Conditions
- Future (2029) No Build Traffic Conditions
- Future (2030) No Build Traffic Conditions
- Future (2031) No Build Traffic Conditions
- Future (2029) Build Traffic Conditions – *Phase 1*
- Future (2030) Build Traffic Conditions – *Phase 2*
- Future (2031) Build Traffic Conditions – *Phase 3*

Utilizing the 11th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, the proposed residential development is expected to generate 14,492 total daily trips (half entering and half exiting), with 1,046 trips (262 entering and 784 exiting) occurring during the AM peak hour and 1,493 trips (941 entering and 552 exiting) during the PM peak hour.

Specific geometric and traffic control improvements have been identified as mitigation measures under horizon years 2029, 2030, and 2031 based on the findings of this analysis, and are summarized below.

Intersection of Mt. Misery Road and Hooper Road

Phase 1

- Construct an exclusive westbound right turn lane on Mt. Misery Road with a minimum of 500 feet of storage and appropriate bay taper.
- Construct an exclusive eastbound left turn lane on Mt. Misery Road with a minimum of 50 feet of storage and appropriate bay and transitional tapers.

Phase 2

- Install a traffic signal at this intersection.
- Extend exclusive eastbound left turn lane on Mt. Misery Road to provide a minimum of 100 feet of storage with appropriate bay and transitional tapers.

Phase 3

- Extend exclusive eastbound left turn lane on Mt. Misery Road to provide a minimum of 150 feet of storage with appropriate bay and transitional tapers.

Intersection of Mt. Misery Road and I-140 Westbound Ramp

Phase 3

- Restripe the northbound approach of Mt. Misery Road to provide a shared left-through lane and through lane.
- Restripe the eastbound approach of the Westbound I-140 Ramp to provide an exclusive left turn lane and shared left-right lane.
- In order to accommodate these improvements, Mt. Misery Road would need to be widened and/or restriped to provide two (2) outbound travel lanes for an appropriate distance.

Intersection of Mt. Misery Road and I-140 Eastbound Ramp

Phase 2

- Construct an additional left turn lane on the southbound approach of Mt. Misery Road to provide dual left turn lanes onto the I-140 Eastbound Ramp with a minimum of 200 feet of full storage [per lane] and appropriate bay and transitional tapers.
- In order to accommodate these improvements, Mt. Misery Road and the on-ramp would need to be widened and/or restriped to accommodate the dual left turn movement.

Intersection of Mt. Misery Road and US 74 Westbound Ramp

Phase 1

- Widen and/or restripe Mt. Misery Road to provide an additional outbound lane for an appropriate distance north of the US 74 Westbound Ramp to accommodate a free-flow right turn movement from the off-ramp.
- To allow free-flowing conditions, the westbound right turn movement would not operate under signal-control.

Intersection of Mt. Misery Road/Lanvale Road and US 74 Eastbound Ramp

Phase 1

- Widen and/or restripe Mt. Misery Road to provide an additional outbound lane for an appropriate distance south of the US 74 Eastbound Ramp to accommodate a free-flow right turn movement from the off-ramp.
- To allow free-flowing conditions, the eastbound right turn movement would not operate under signal-control.

Phase 3

- Construct an additional left turn lane on the southbound approach of Mt. Misery Road to provide dual left turn lanes onto the US 74 Eastbound Ramp with a minimum of 150 feet of full storage [per lane] and appropriate bay and transitional tapers.
- In order to accommodate these improvements, Mt. Misery Road and the on-ramp would need to be widened and/or restriped to accommodate the dual left turn movement.

Intersection of Hooper Road and Site Drive

Phase 1

- Construct an exclusive northbound right turn lane on Hooper Road with a minimum of 175 feet of storage and appropriate bay taper.
- Provide a one-lane cross-section for the eastbound and westbound approaches of the Site Drive. Per NCDOT Policy, a minimum of 100 feet of internal protected stem should be provided for the drives.

Phase 2

- Construct a roundabout at this intersection.

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Appendix J Synchro Analysis Reports – Mt. Misery Road/Lanvale Road and US 74 EB Ramps

Appendix K Synchro Analysis Reports – Hooper Road and Site Drive

Appendix J SimTraffic Queuing Reports

TRAFFIC IMPACT ANALYSIS
HOOPER ROAD SUBDIVISION
BRUNSWICK COUNTY, NORTH CAROLINA

1. INTRODUCTION

This report summarizes the findings of the Traffic Impact Analysis (TIA) that was prepared for the Hooper Road Subdivision development in Brunswick County, North Carolina. The purpose of this study is to determine the potential impacts to the transportation system caused by the additional traffic generated by the proposed development, as well as identify improvements to mitigate any impacts, if necessary.

The residential development, which is anticipated to be fully built out by the year 2031, is proposed to consist of up to 1,722 detached single-family homes [constructed in three (3) phases].

The study analyzed traffic during the weekday AM and PM peak hours for the following conditions:

- Existing (2024) Traffic Conditions
- Future (2029) No Build Traffic Conditions
- Future (2030) No Build Traffic Conditions
- Future (2031) No Build Traffic Conditions
- Future (2029) Build Traffic Conditions – *Phase 1*
- Future (2030) Build Traffic Conditions – *Phase 2*
- Future (2031) Build Traffic Conditions – *Phase 3*

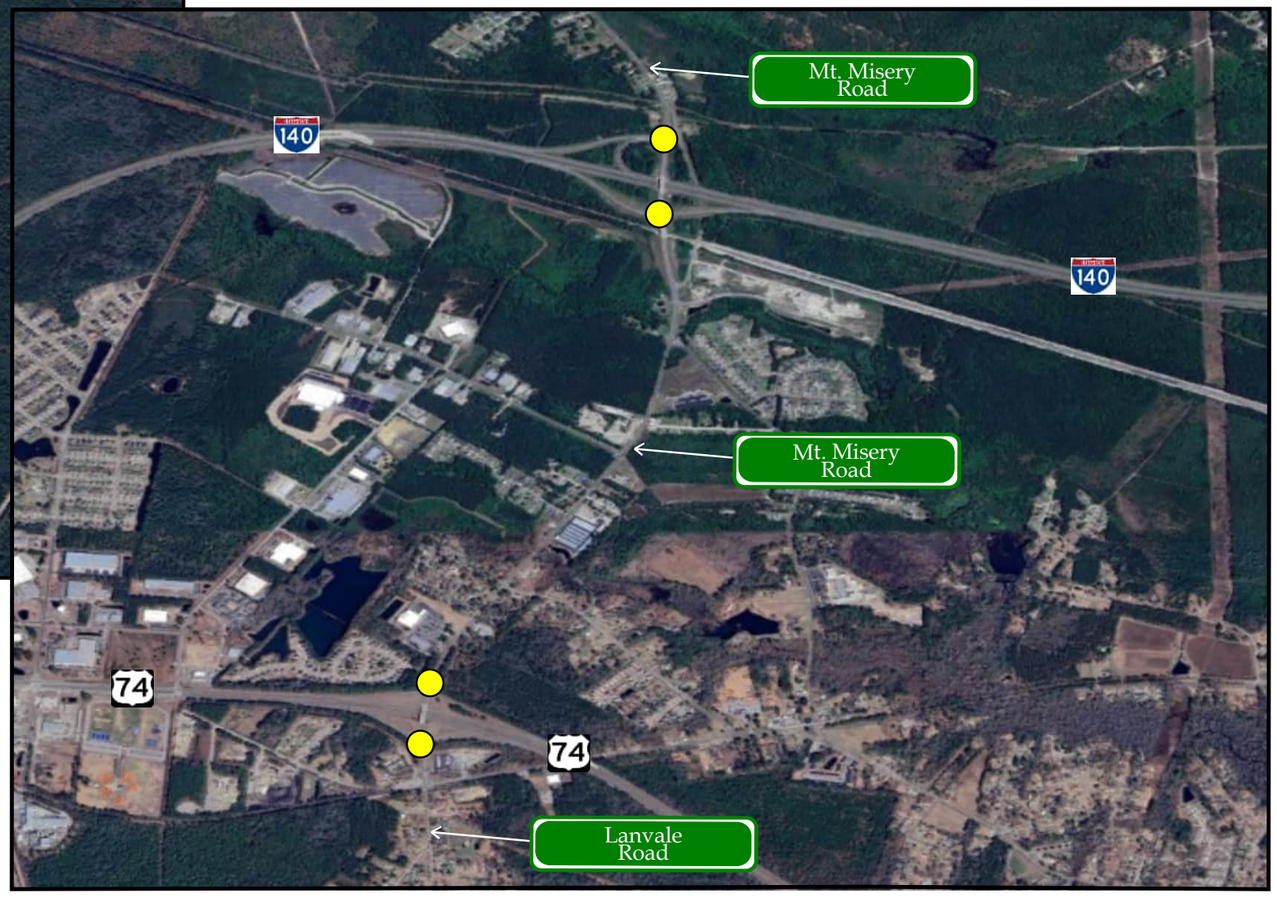
1.1. Site Location and Study Area

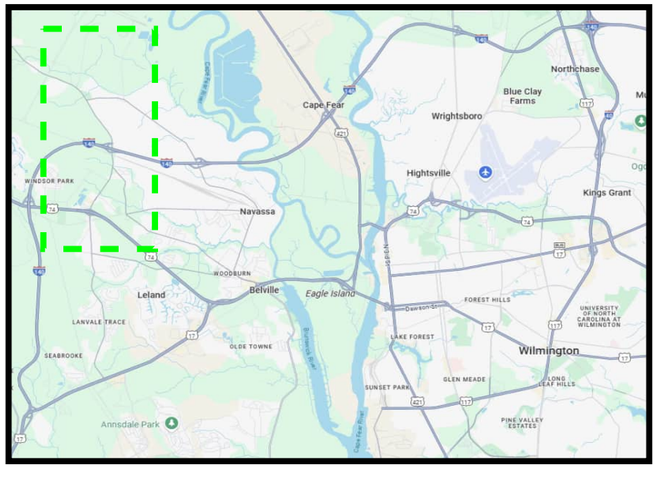
The site is located on both sides (east and west) of Hooper Road in Brunswick County, North Carolina. Refer to Figure 1 for the site location map and Figure 2 for the conceptual site plan.

To I-140 & US 74

To Hooper Road

N





LEGEND

- Proposed Site Location
- Existing Study Intersection
- Study Area

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Hooper Road Subdivsion
Brunswick County, NC

Site Location Map

Not to Scale | Figure 1

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Hooper Road Subdivsion
Brunswick County, NC

Conceptual Site Plan

Not to Scale | Figure 2

The study area for the TIA was determined through coordination with the Wilmington Metropolitan Planning Organization (WMPO), the North Carolina Department of Transportation (NCDOT), and Brunswick County (County) and consists of the following existing intersections in addition to the site access on Hooper Road.

- Mt. Misery Road and Hooper Road
- Mt. Misery Road and I-140 Westbound (WB) Ramps
- Mt. Misery Road and I-140 Eastbound (EB) Ramps
- Mt. Misery Road and US 74 WB Ramps
- Lanvale Road/Mt. Misery Road and US 74 EB Ramps

Refer to Appendix A for a copy of the approved NCDOT TIA Scoping Checklist.

1.2. Proposed Land Use and Site Access

Hooper Road Subdivision is anticipated to consist of up to 1,722 detached single-family homes and is proposed to be built out in three (3) phases. See below for a summary of the phases of construction.

- Phase 1 – 605 homes (440 east of Hooper Road and 165 west of Hooper Road)
- Phase 2 – 532 homes (west of Hooper Road)
- Phase 3 – 585 homes (west of Hooper Road)

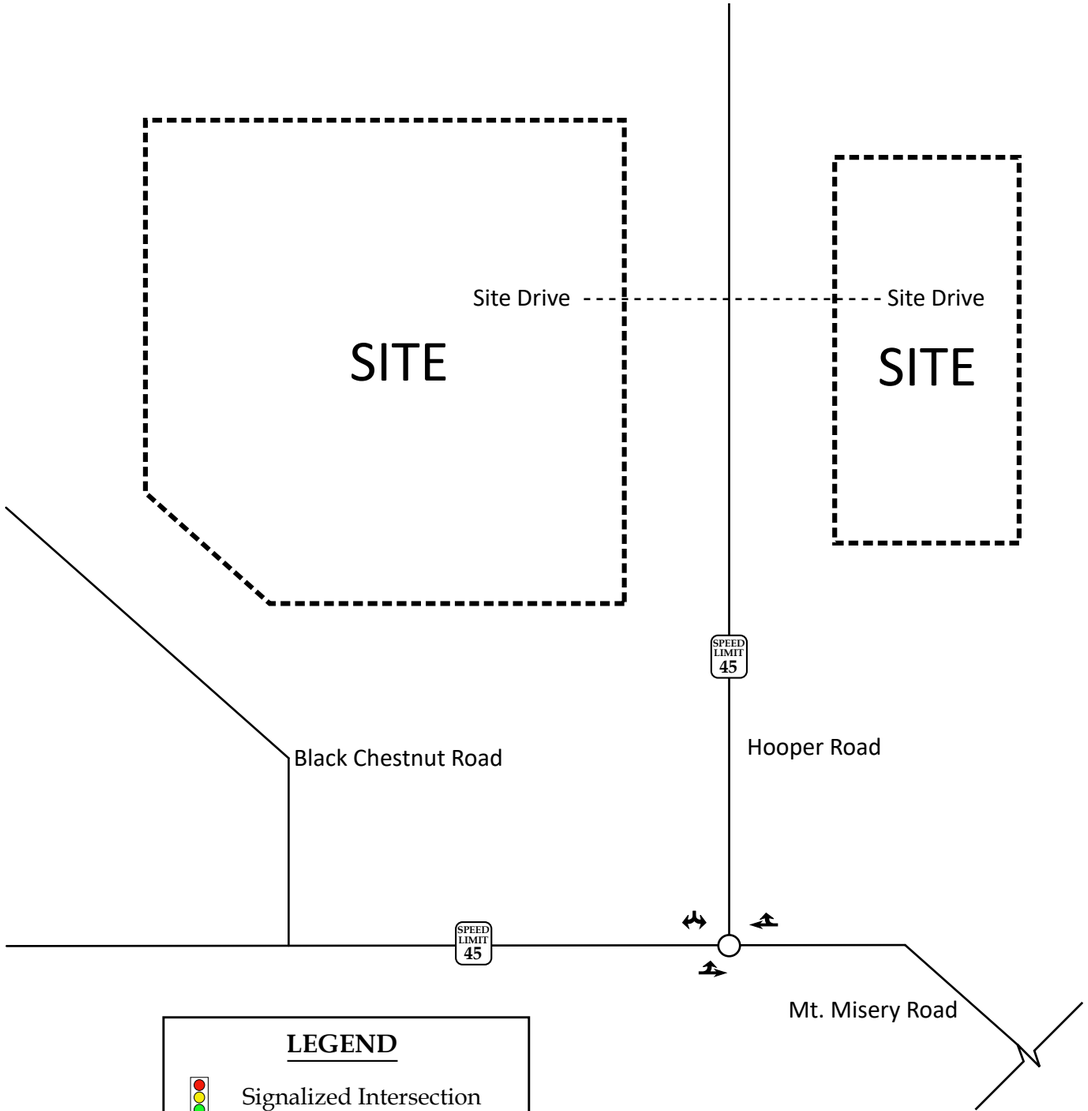
Site access is proposed to be provided via full movement driveways at one connection on Hooper Road, located approximately one (1) mile north of Mt. Misery Road.

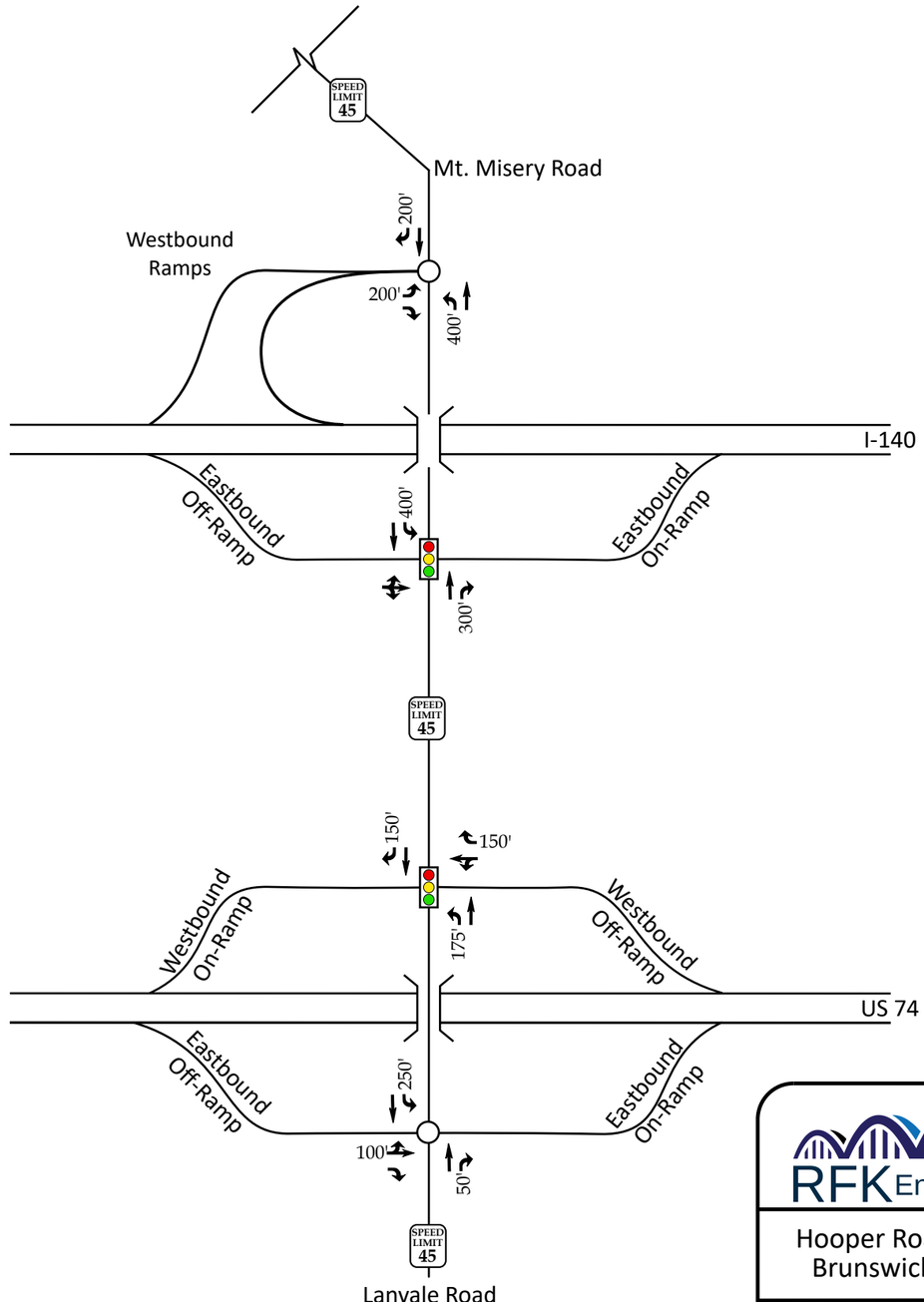
1.3. Adjacent Land Uses

The proposed development is in an area consisting primarily of vacant land and residential development.

1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), storage capacities, traffic control, and other roadway information within the study area are illustrated in Figure 3. Table 1 also provides a summary of information about the existing roadways.





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Hooper Road Subdivsion
Brunswick County, NC

Existing Lane Configurations and Traffic Control

Not to Scale | Figure 3

Table 1: Existing Roadways

Road Name	Route Number	Typical Cross Section	Speed Limit	Maintained By	AADT (vpd)
Mt. Misery Road	SR 1426	2-lane undivided	45 mph	NCDOT	7,300 (2023)
Hooper Road	SR 1427	2-lane undivided	45 mph	NCDOT	390*

*Annual Average Daily Traffic (AADT) based on 24-hour traffic data collected.

2. EXISTING (2024) TRAFFIC CONDITIONS

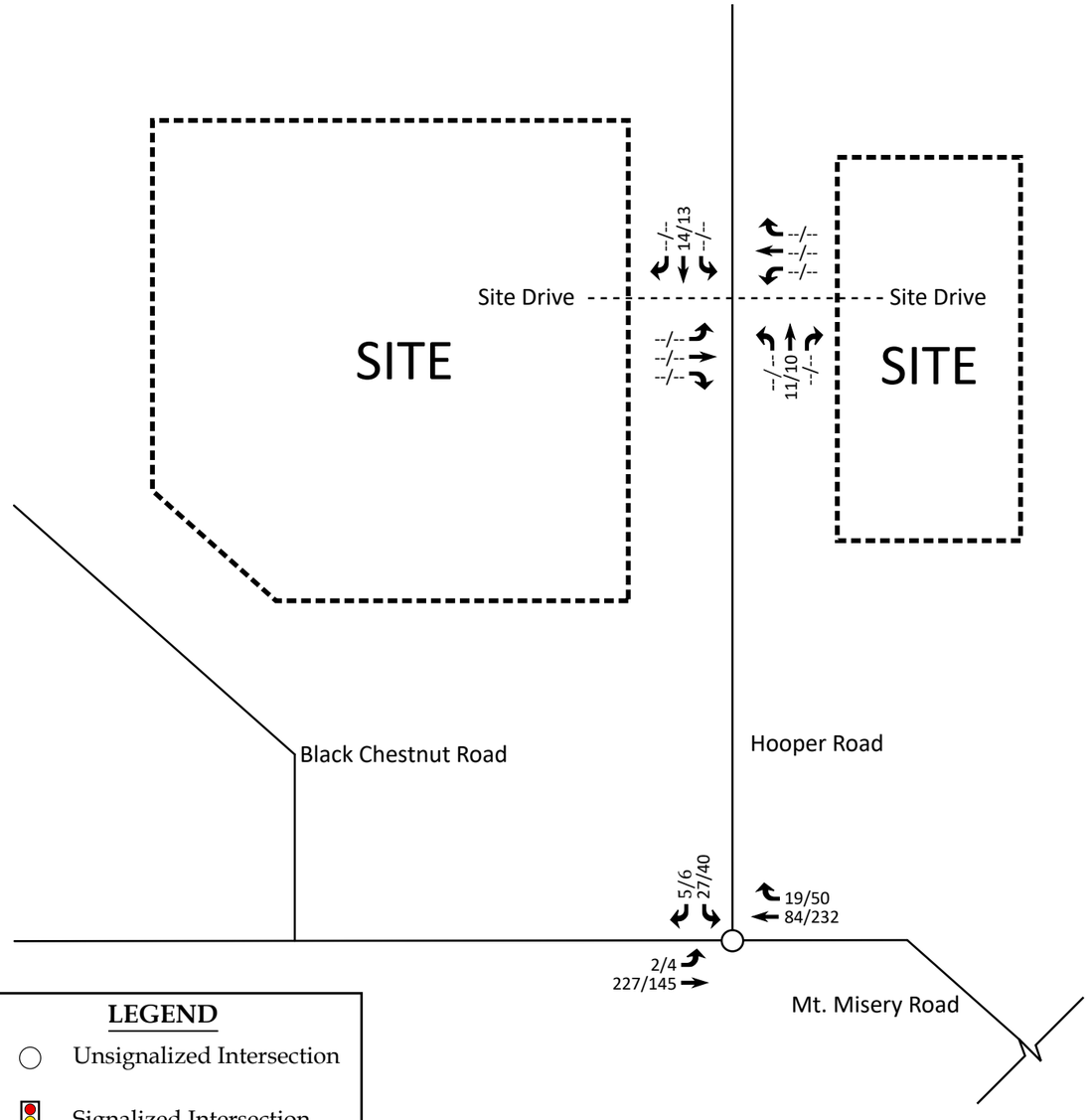
Existing peak hour traffic volumes were determined based on traffic counts conducted on November 21, 2024 at the study intersections listed below, during the typical weekday AM (6:00 to 9:00 AM) and PM (3:00 to 6:00 PM) peak periods while schools were in session.

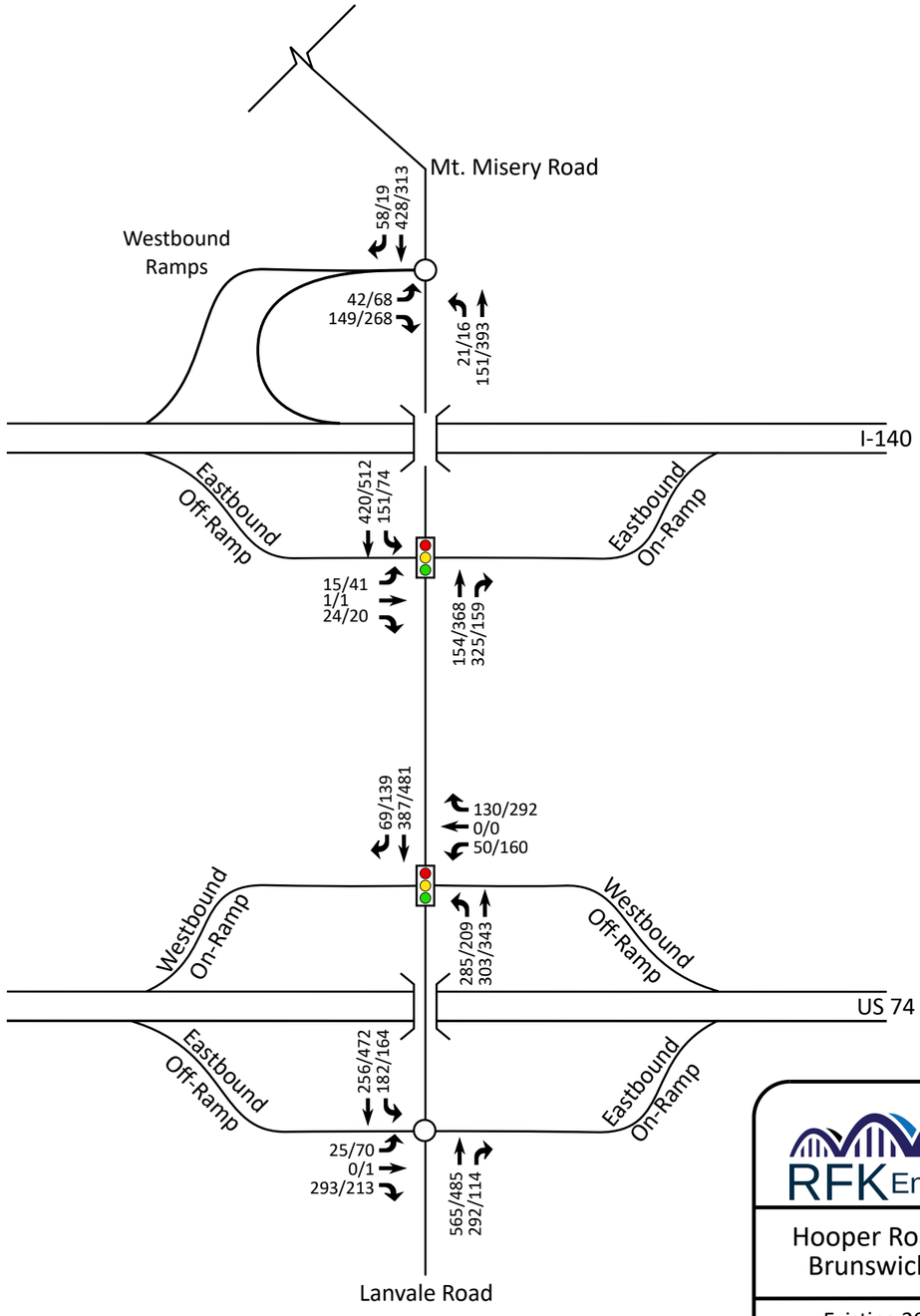
- Mt. Misery Road and Hooper Road
- Mt. Misery Road and I-140 Westbound (WB) Ramps
- Mt. Misery Road and I-140 Eastbound (EB) Ramps
- Mt. Misery Road and US 74 WB Ramps
- Lanvale Road/Mt. Misery Road and I-74 EB Ramps

A 24-hour bi-directional count was also conducted on Hooper Road on December 4, 2024, and was utilized to estimate the existing volumes on Hooper Road along the frontage of the proposed site.

2.1. Existing (2024) Peak Hour Traffic

The 2024 traffic counts were analyzed to determine the "controlling intersection" (the highest volume intersection), and the peak hours at the controlling intersection were used for all study intersections. The peak hours for this study were determined to be 7:00 – 8:00 AM and 5:00 – 6:00 PM. Refer to Figure 4 for an illustration of the existing (2024) peak hour traffic volumes. A copy of the raw count data can be found in Appendix B of this report.





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Hooper Road Subdivsion
Brunswick County, NC

Existing 2024 Peak Hour Traffic Volumes

Not to Scale | Figure 4

2.2. Analysis of Existing (2024) Peak Hour Traffic

The existing (2024) weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections with existing lane configurations and traffic control. The results of the analysis are presented in Section 7 of this report.

3. FUTURE NO BUILD TRAFFIC CONDITIONS

To account for the growth of traffic and subsequent traffic conditions in a future year, background traffic projections are needed. Background traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether the proposed site is developed. Background traffic is comprised of existing traffic growth within the study area in addition to traffic generated by approved development.

3.1. Ambient Traffic Growth

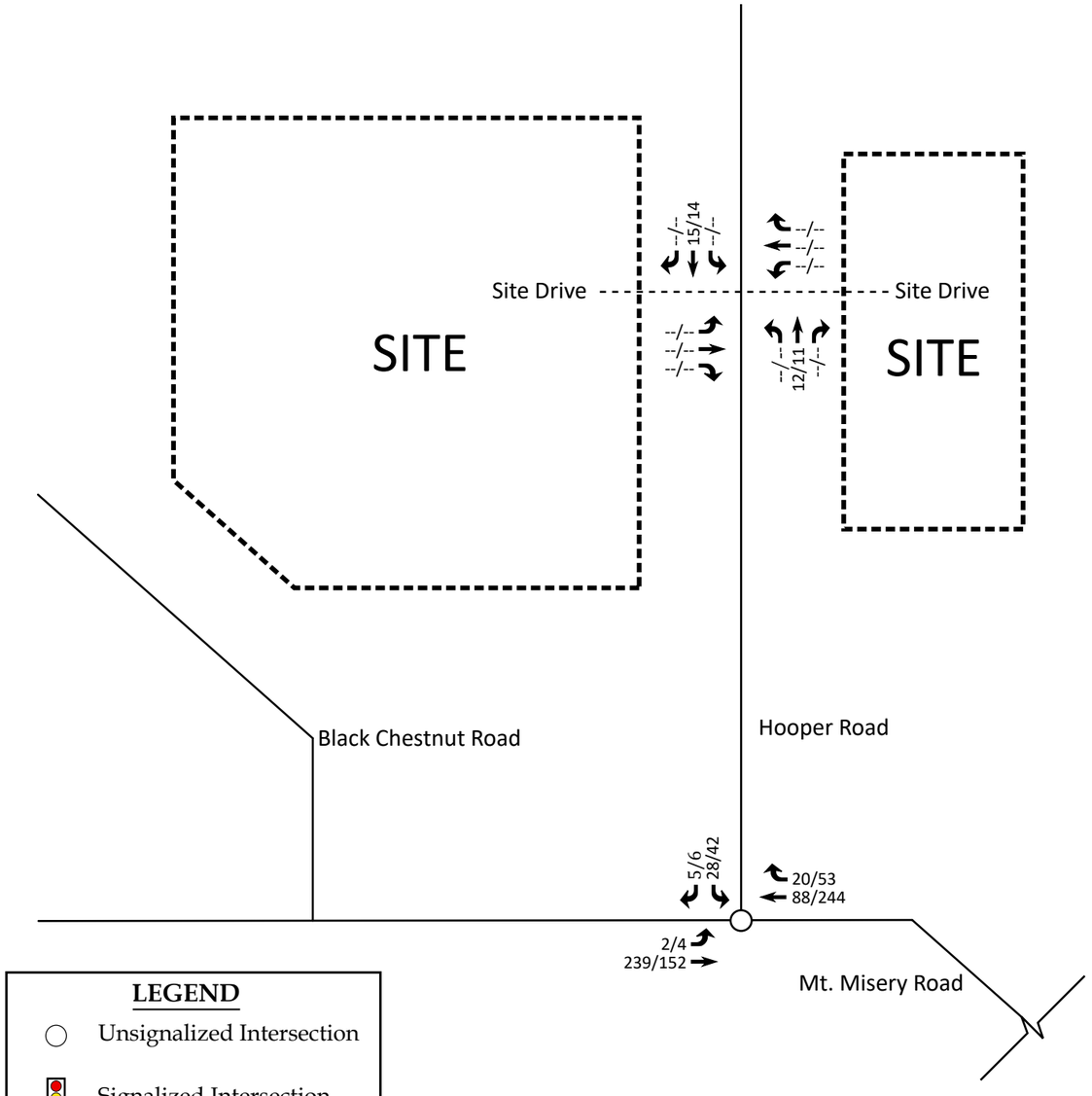
Through coordination with the review agencies, it was determined that a compounded annual growth rate of 1.0% would be used to project future (2029, 2030, 2031) weekday AM and PM peak hour traffic volumes. Refer to Figures 5A-5C for illustration of the projected AM and PM peak hour traffic volumes for each horizon year.

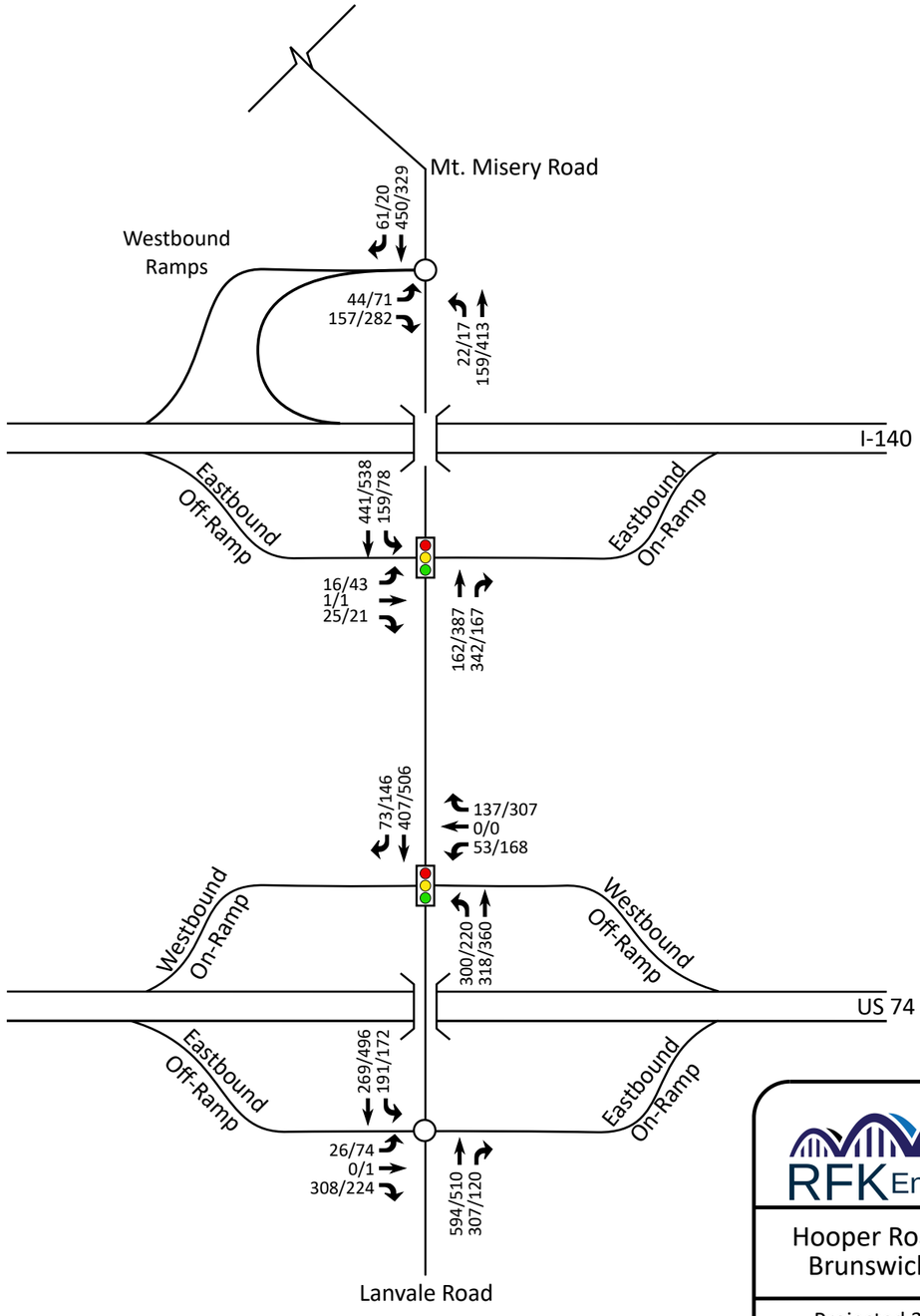
3.2. Approved Development Traffic

As indicated in the approved scope, it was determined that one (1) approved development should be included in this analysis. This development is listed below.

- Cedar Hill Landing is to be located on the west side of Daniels Road, north of Cedar Hill Road, and is proposed to consist of 1,250 single-family detached and 48 single-family attached housing units.

Refer to Figure 6A for an illustration of the approved development trip distribution, and Figures 6B-6D for an illustration of the approved development's AM and PM peak hour trips for each horizon year.





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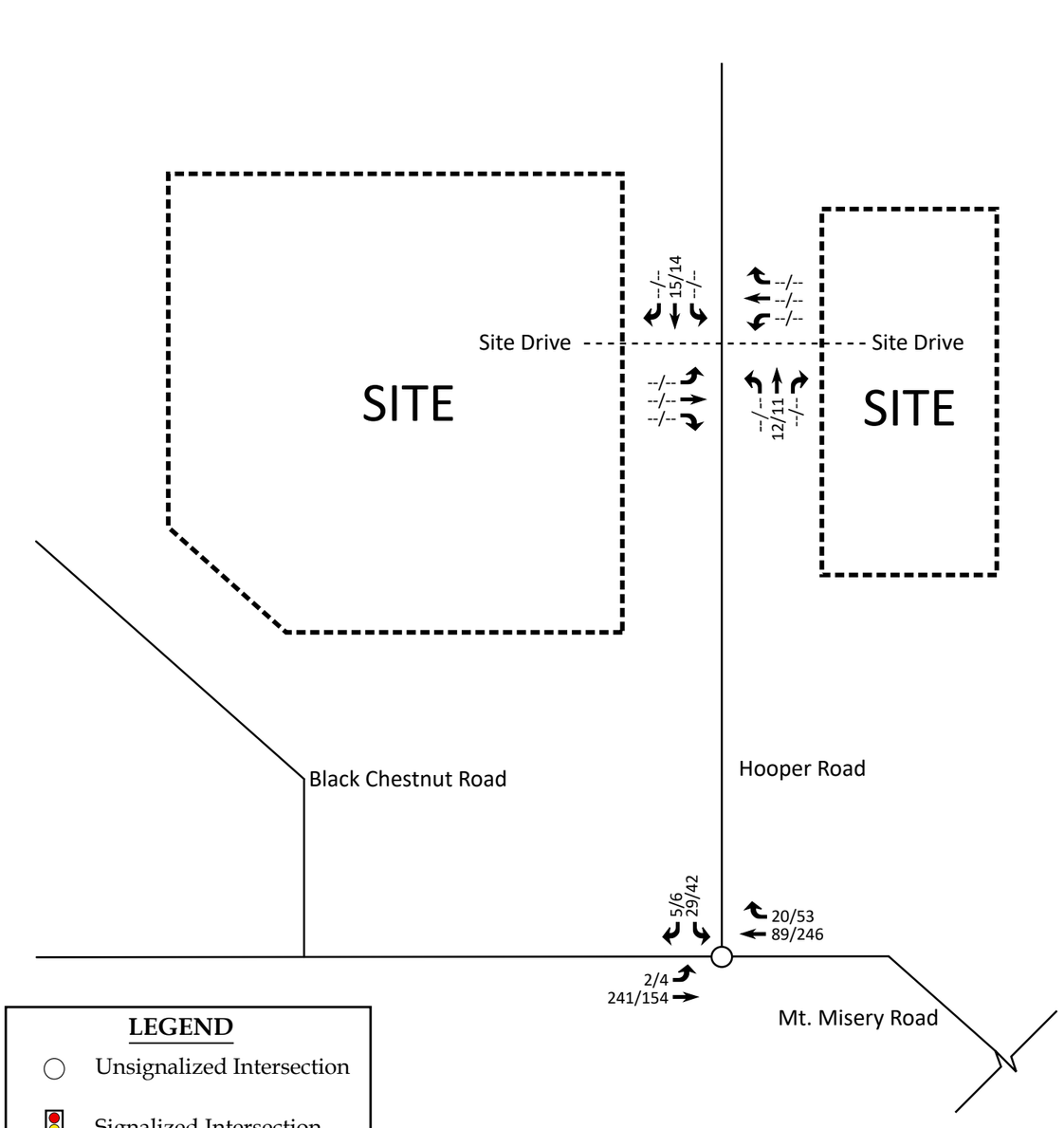
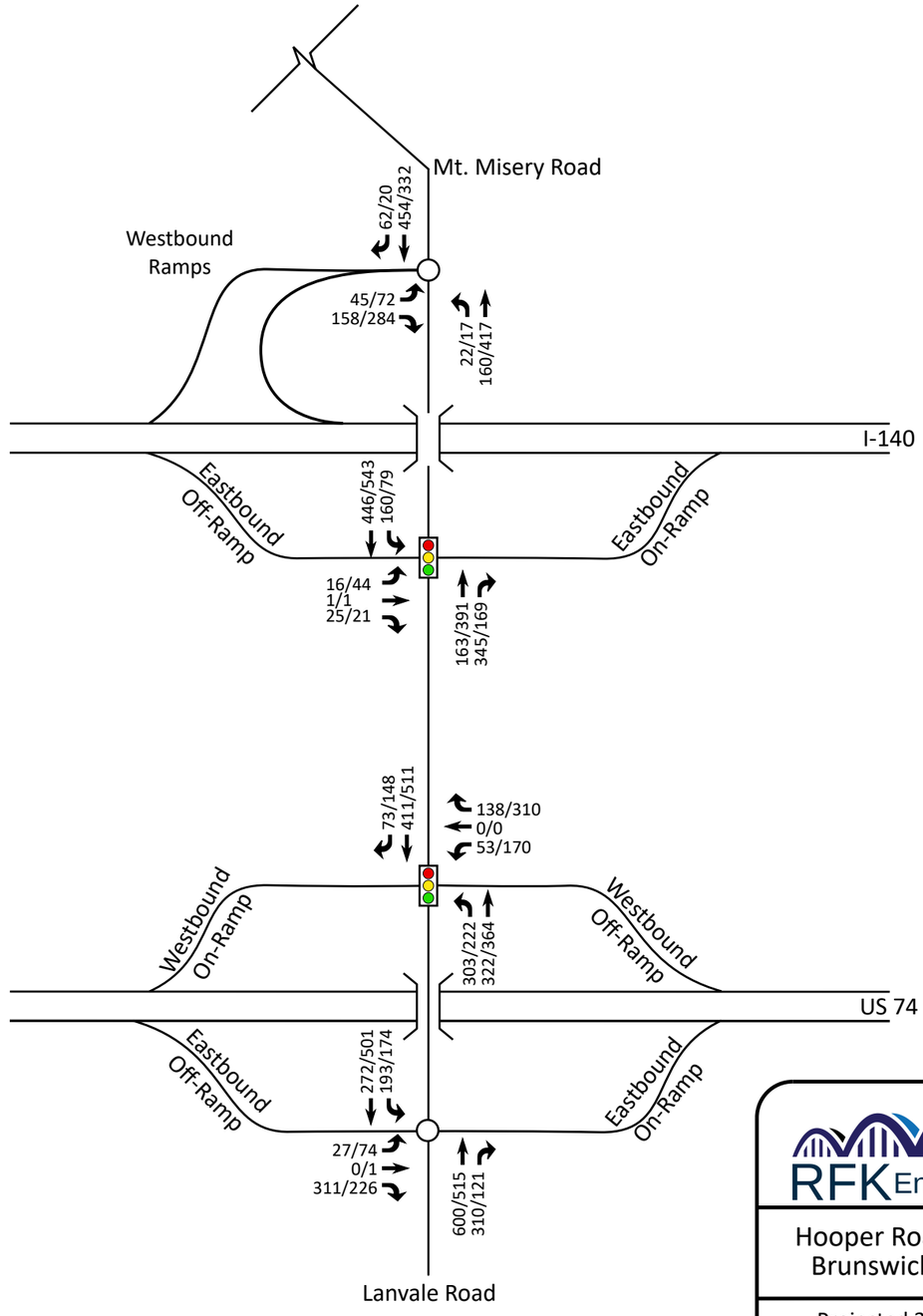
Hooper Road Subdivsion
Brunswick County, NC

Projected 2029 Peak Hour Traffic Volumes

Not to Scale | Figure 5A



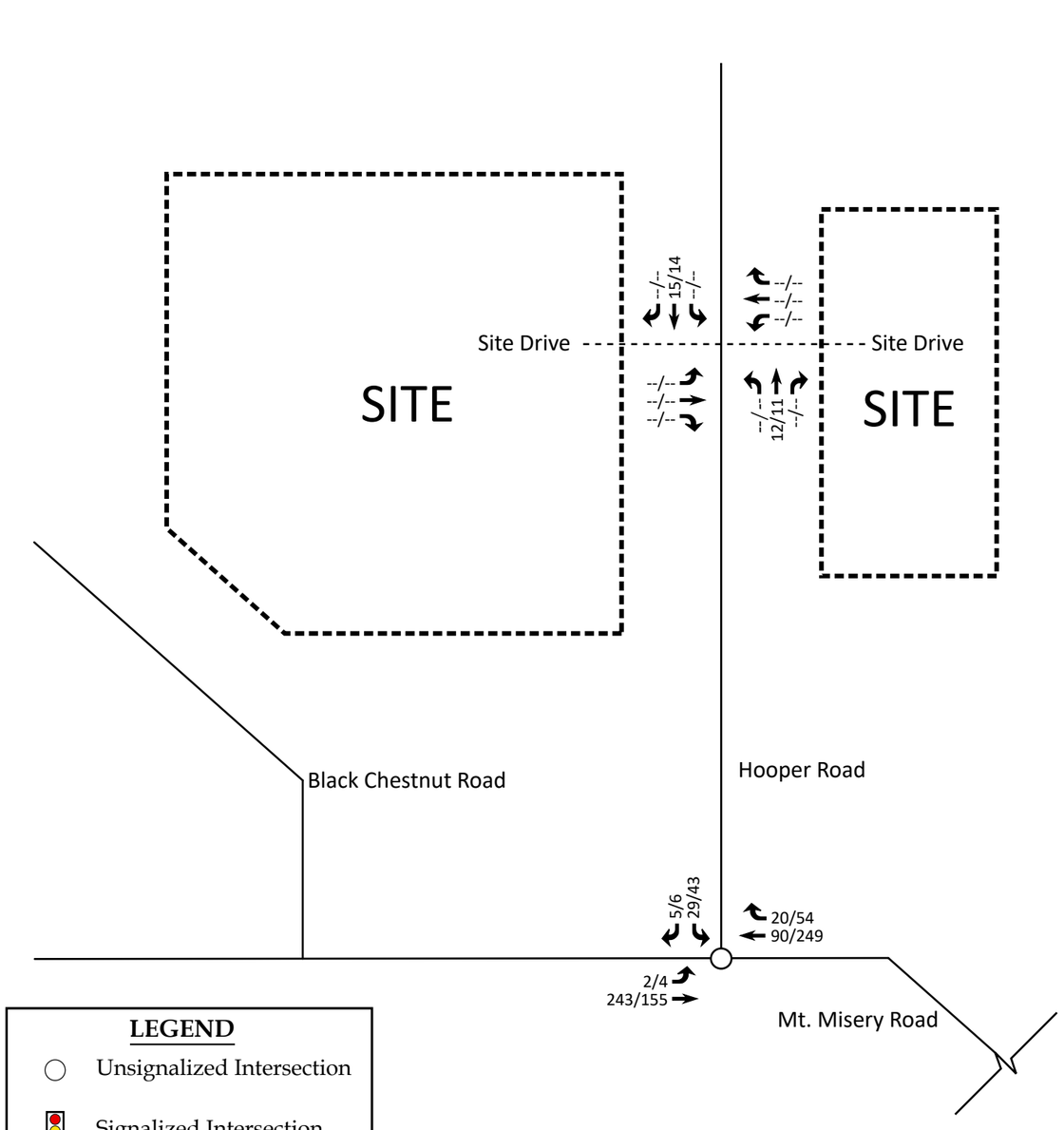


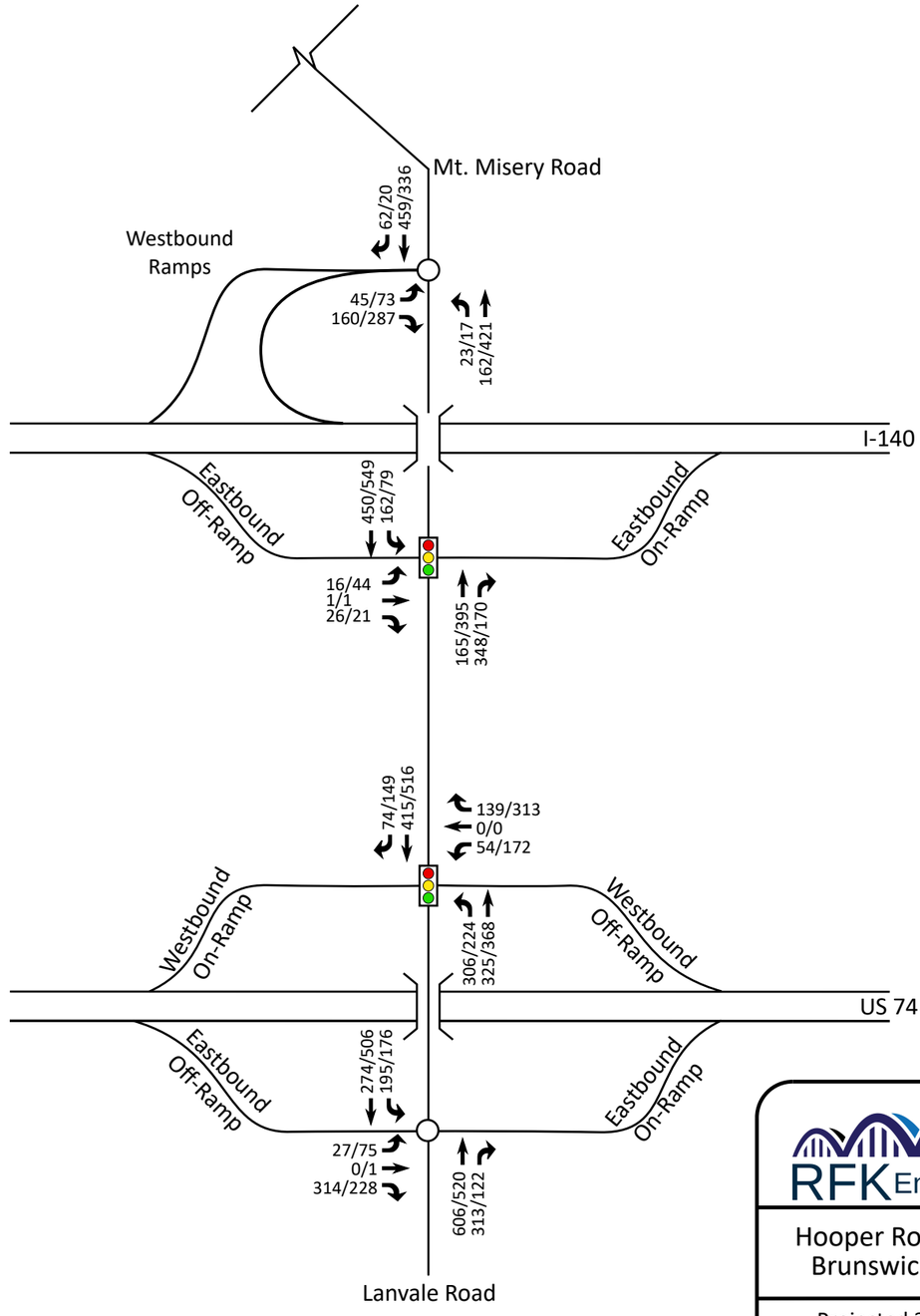
RFK Engineers

Hooper Road Subdivsion
Brunswick County, NC

Projected 2030 Peak Hour Traffic Volumes

Not to Scale | Figure 5B





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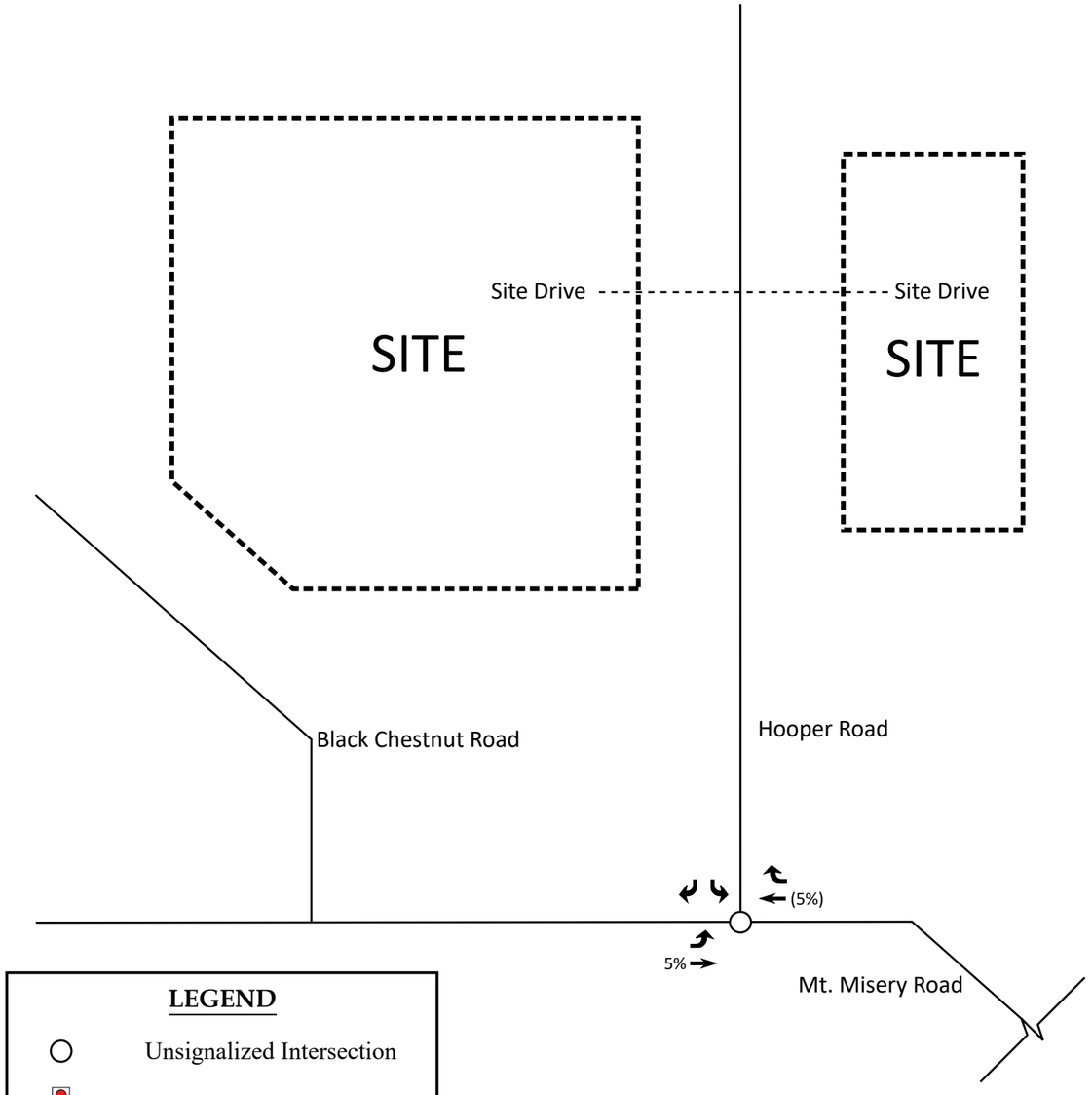
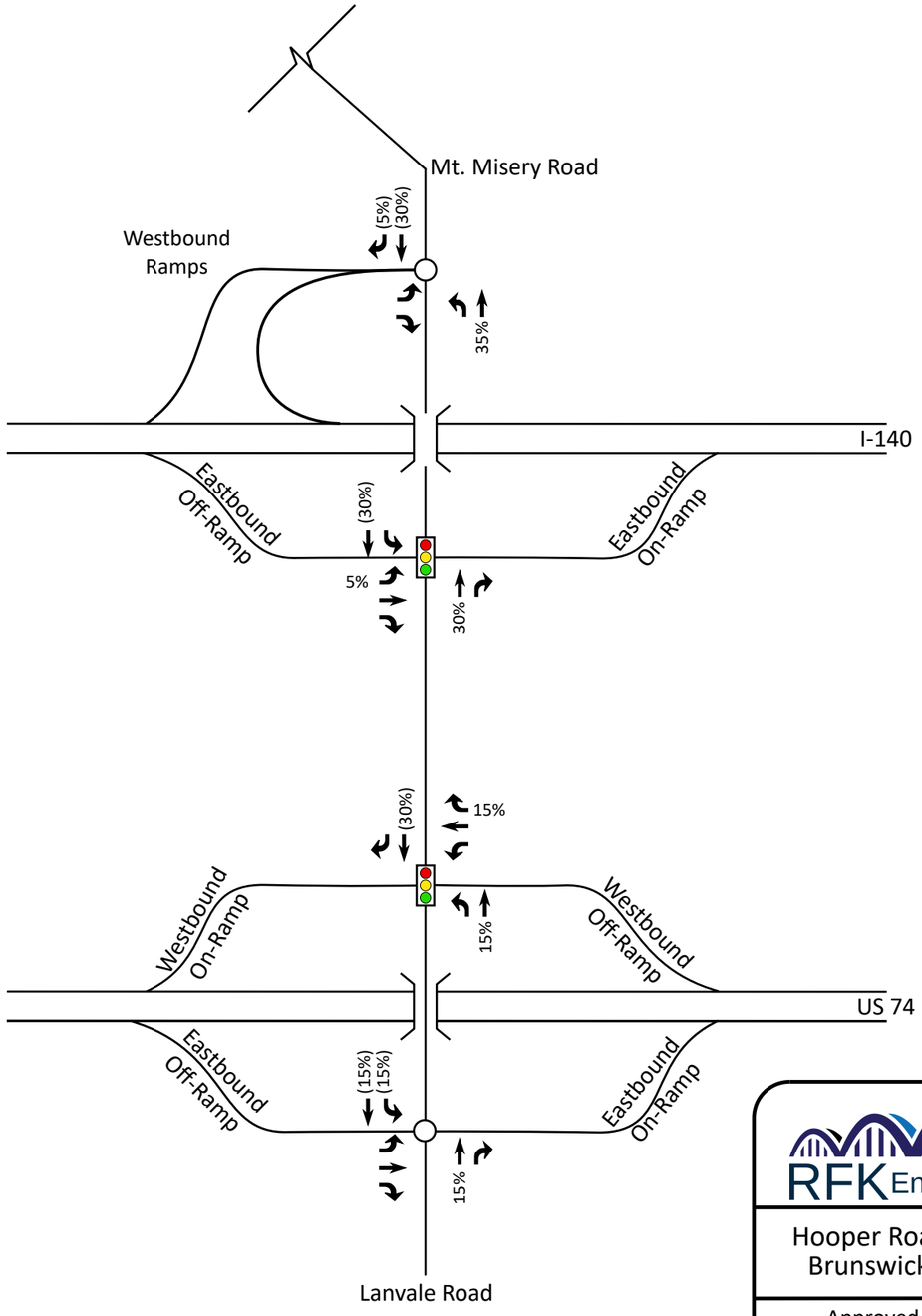
Hooper Road Subdivsion
Brunswick County, NC

Projected 2031 Peak Hour Traffic Volumes

Not to Scale | Figure 5C





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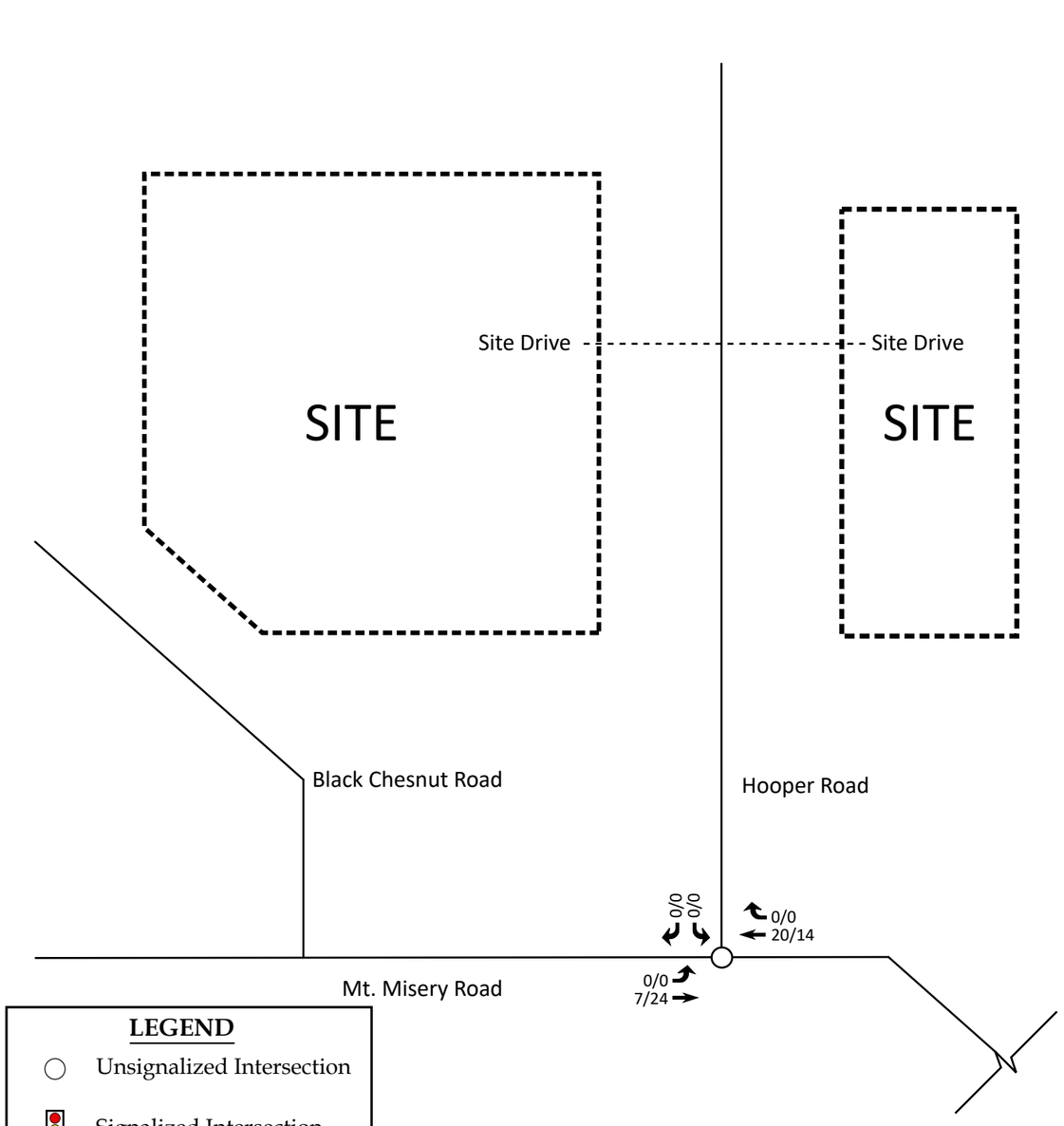
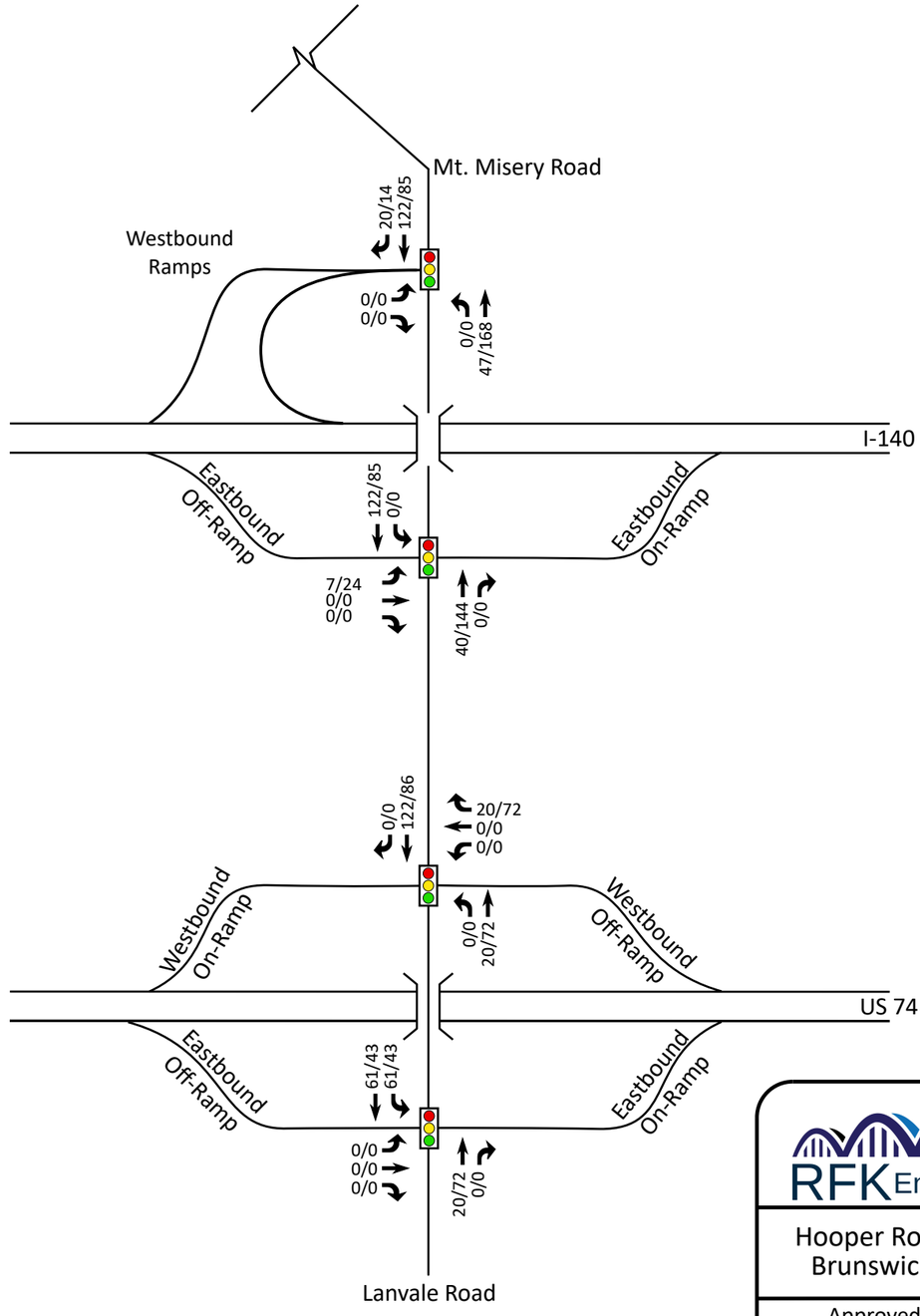
Hooper Road Subdivsion
Brunswick County, NC

Approved Development
Trip Distribution

Not to Scale | Figure 6A





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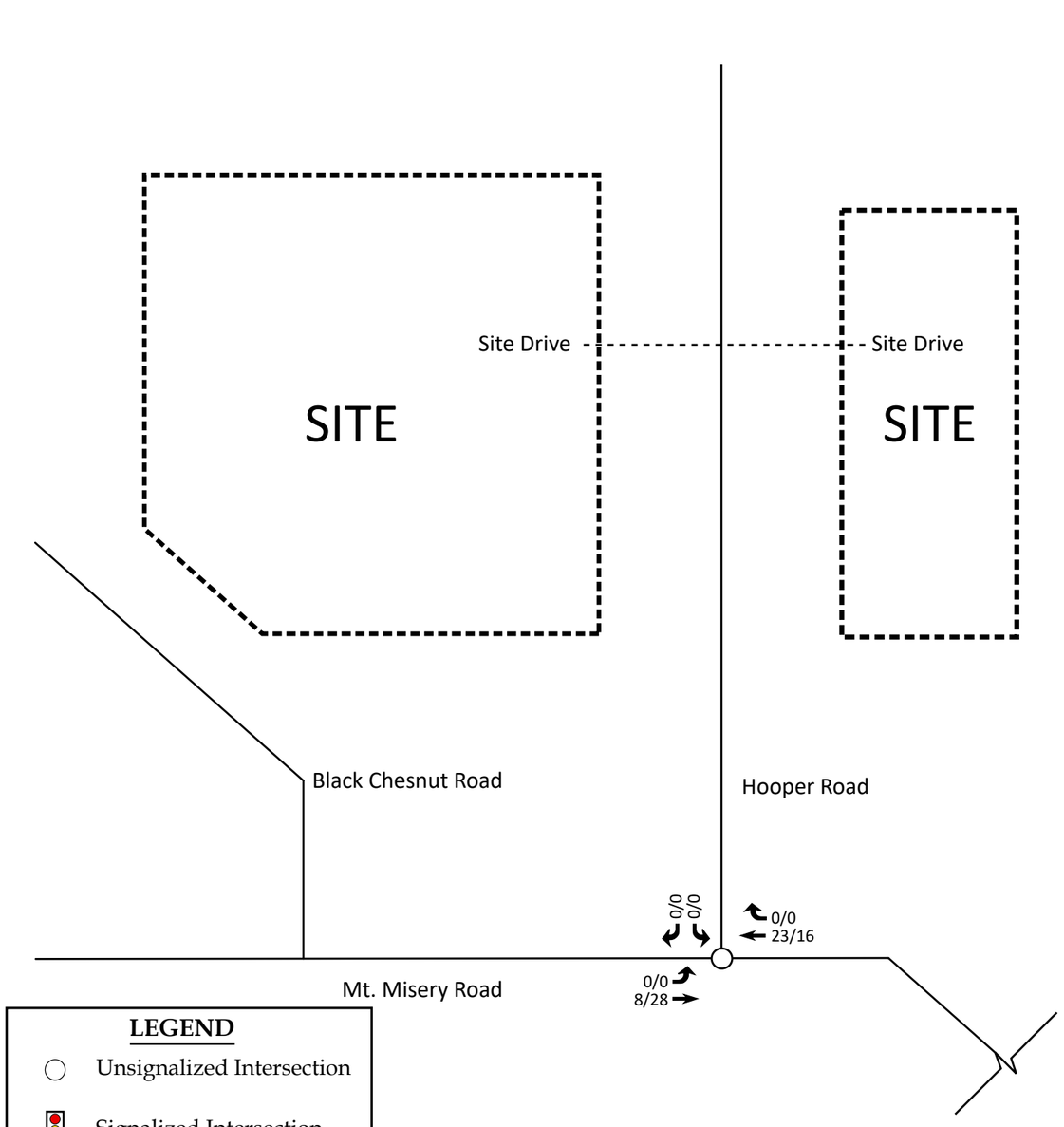
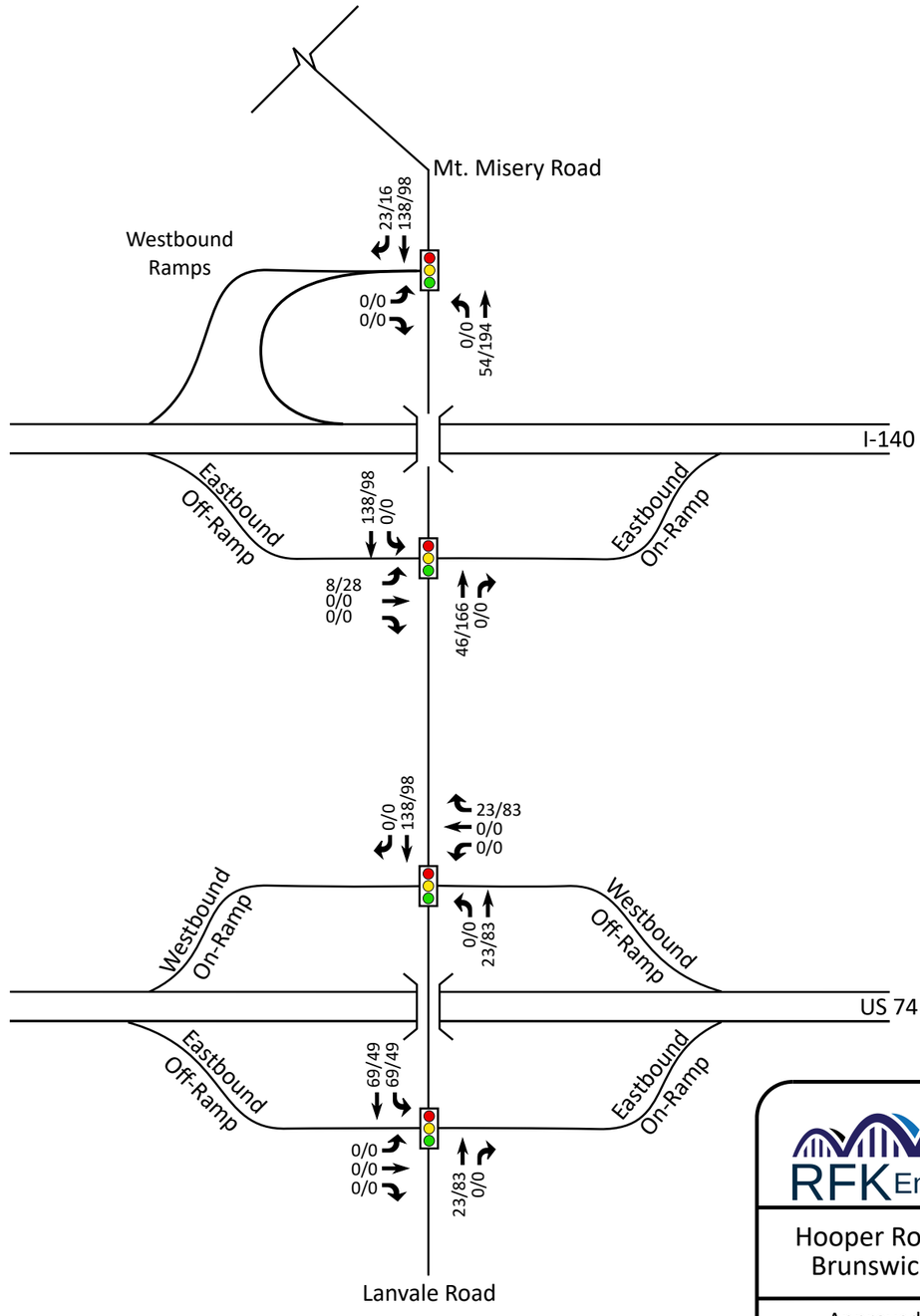
Hooper Road Subdivsion
Brunswick County, NC

Approved Development
Peak Hour Trips (2029)

Not to Scale | Figure 6B





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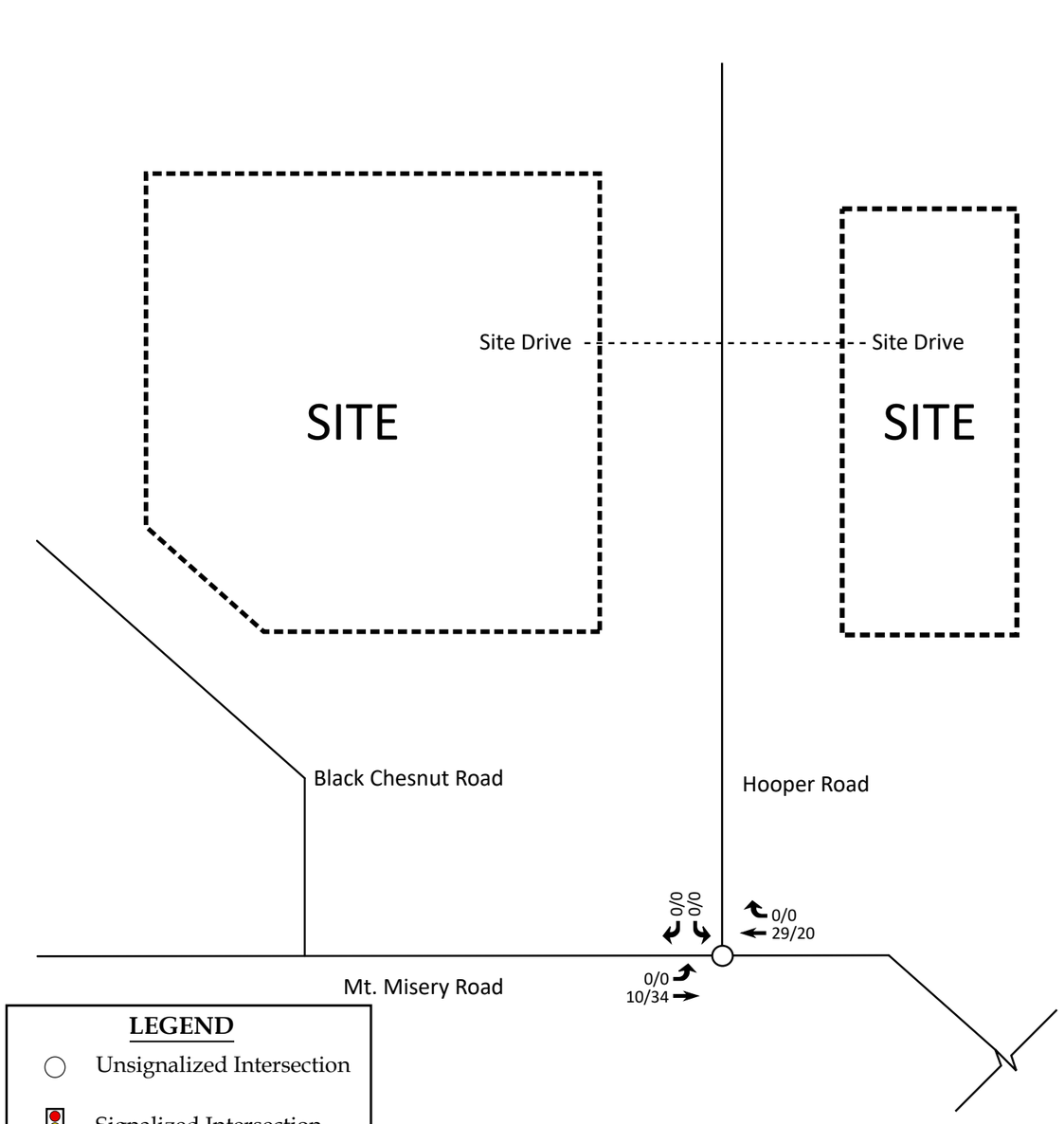
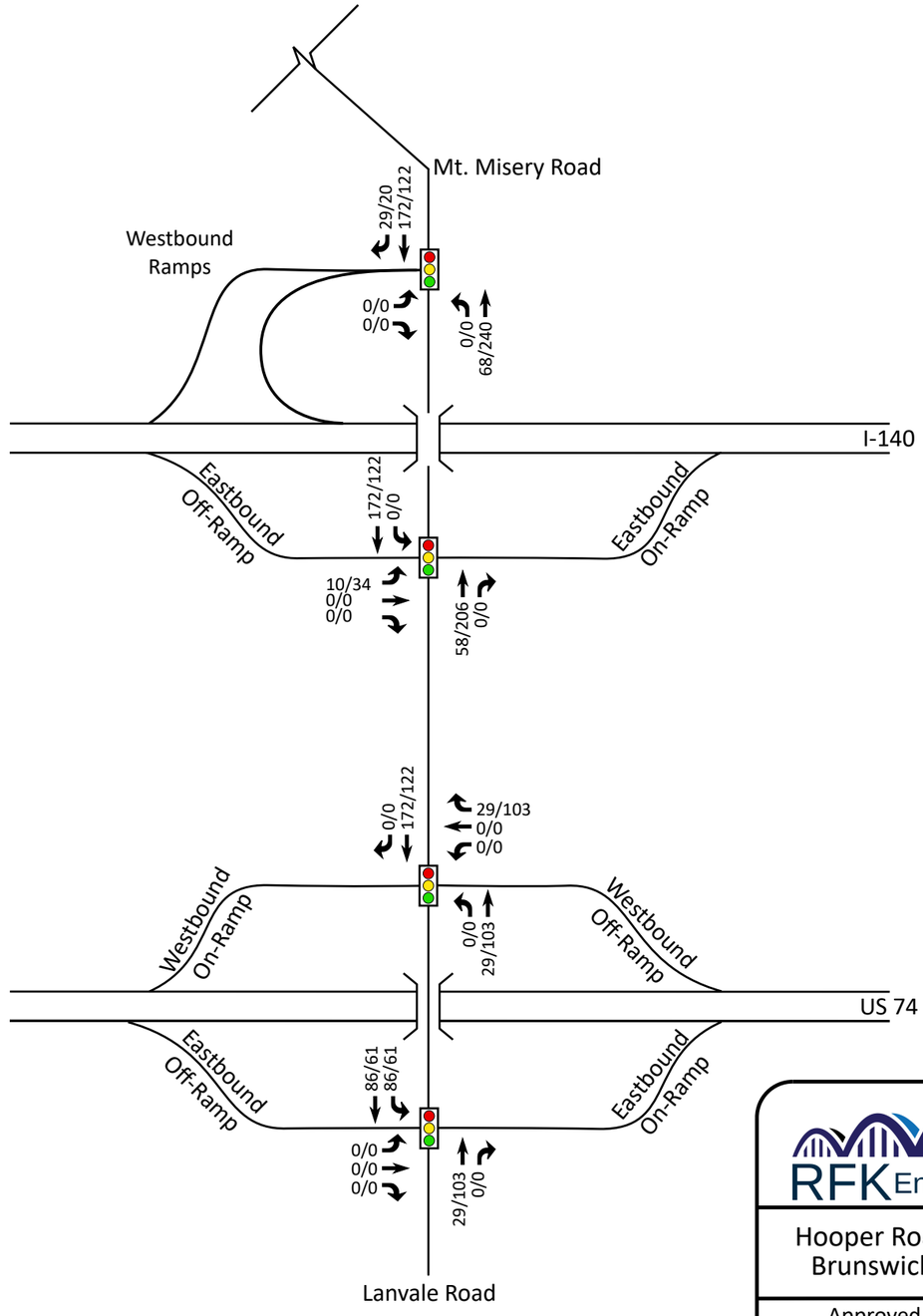
Hooper Road Subdivsion
Brunswick County, NC

Approved Development
Peak Hour Trips (2030)

Not to Scale | Figure 6C





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Hooper Road Subdivsion
Brunswick County, NC

Approved Development
Peak Hour Trips (2031)

Not to Scale | Figure 6D

3.3. Future Roadway Improvements

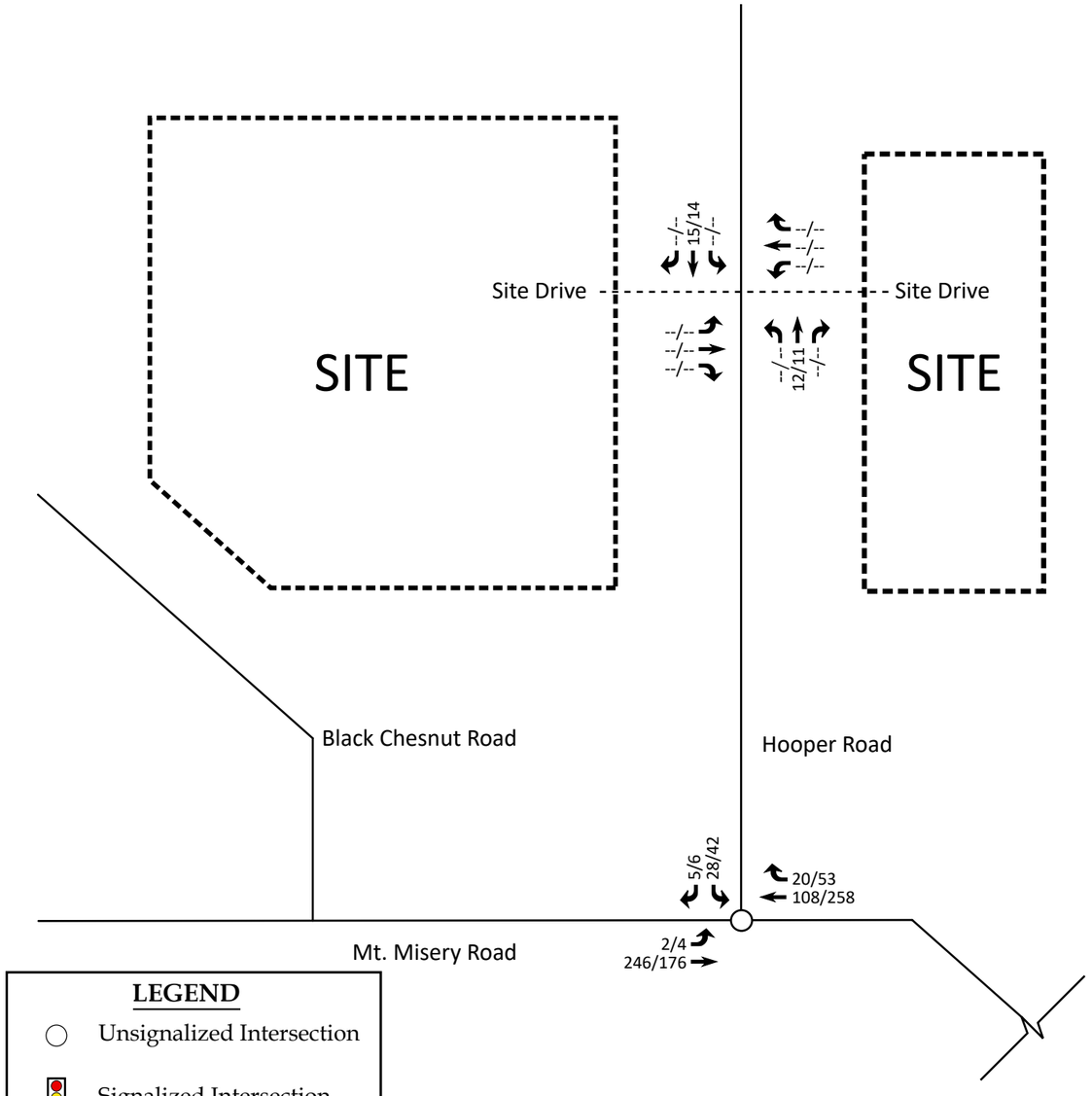
Traffic signals are to be installed at the I-140 Westbound Ramps on Mt. Misery Road and the US 74 Eastbound Ramps on Mt. Misery Road/Lanvale Road. The traffic signal at the I-140 Ramps is to be installed as part of the approved Cedar Hill Landing development, while the traffic signal at the US 74 Ramps is to be installed under State Transportation Improvement Program (STIP) project HS-2003AS. Both signals are expected to be installed and operational prior to the year 2029.

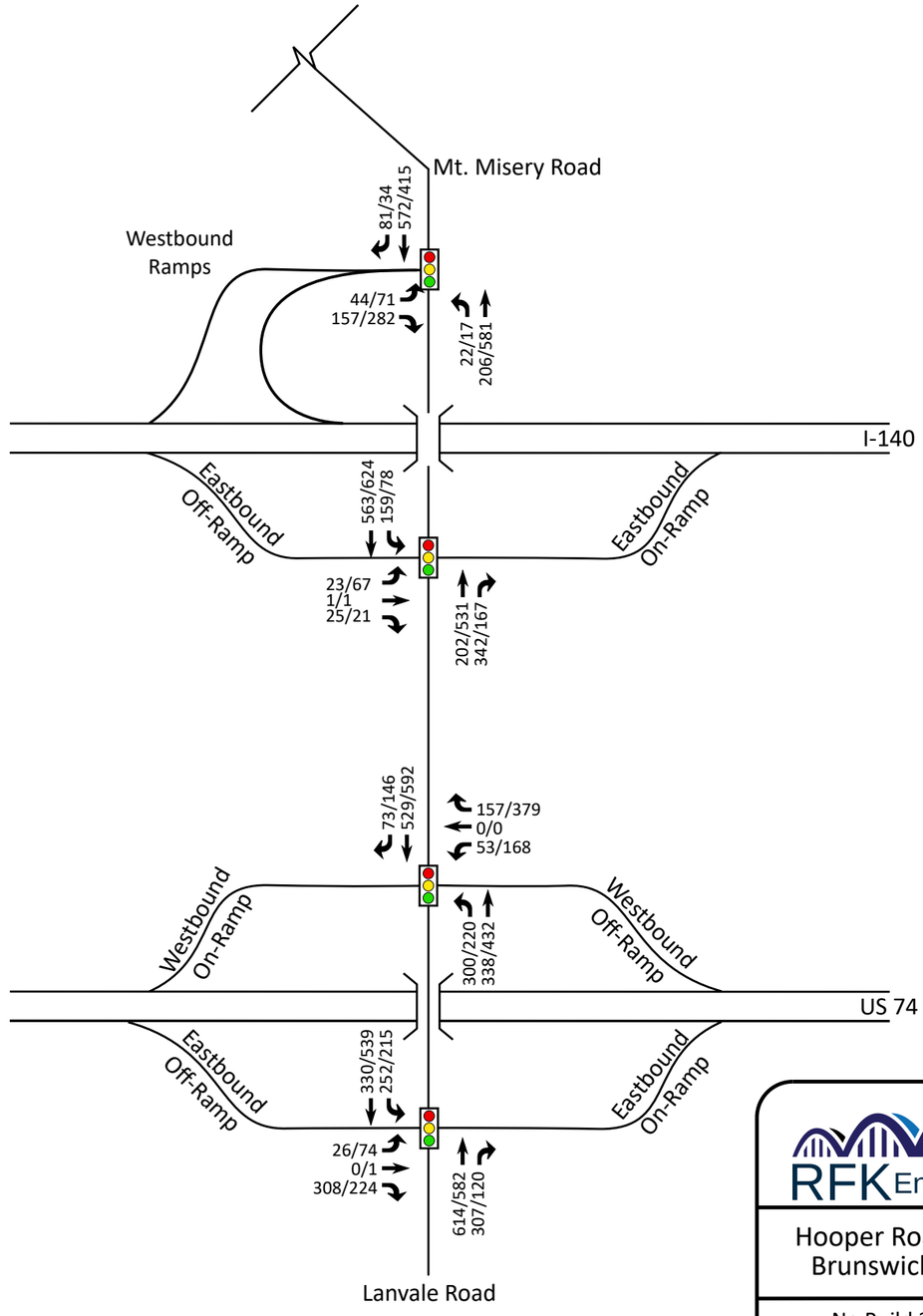
3.4. Future No Build Peak Hour Traffic

The approved development trips were added to the future (2029, 2030, and 2031) projected traffic volumes to determine the future no build traffic volumes. Refer to Figures 7A-7C for an illustration of the future no build peak hour traffic volumes for each horizon year.

3.5. Analysis of Future No Build Peak Hour Traffic

The future no build AM and PM peak hour traffic volumes at the study intersections were analyzed with existing lane configurations and traffic control in addition to the two (2) traffic signals that are to be provided at the I-140 Westbound Ramps [on Mt. Misery Road] and the US 74 Eastbound Ramps [on Mt. Misery Road/Lanvale Road]. The analysis results are presented in Section 7 of this report.





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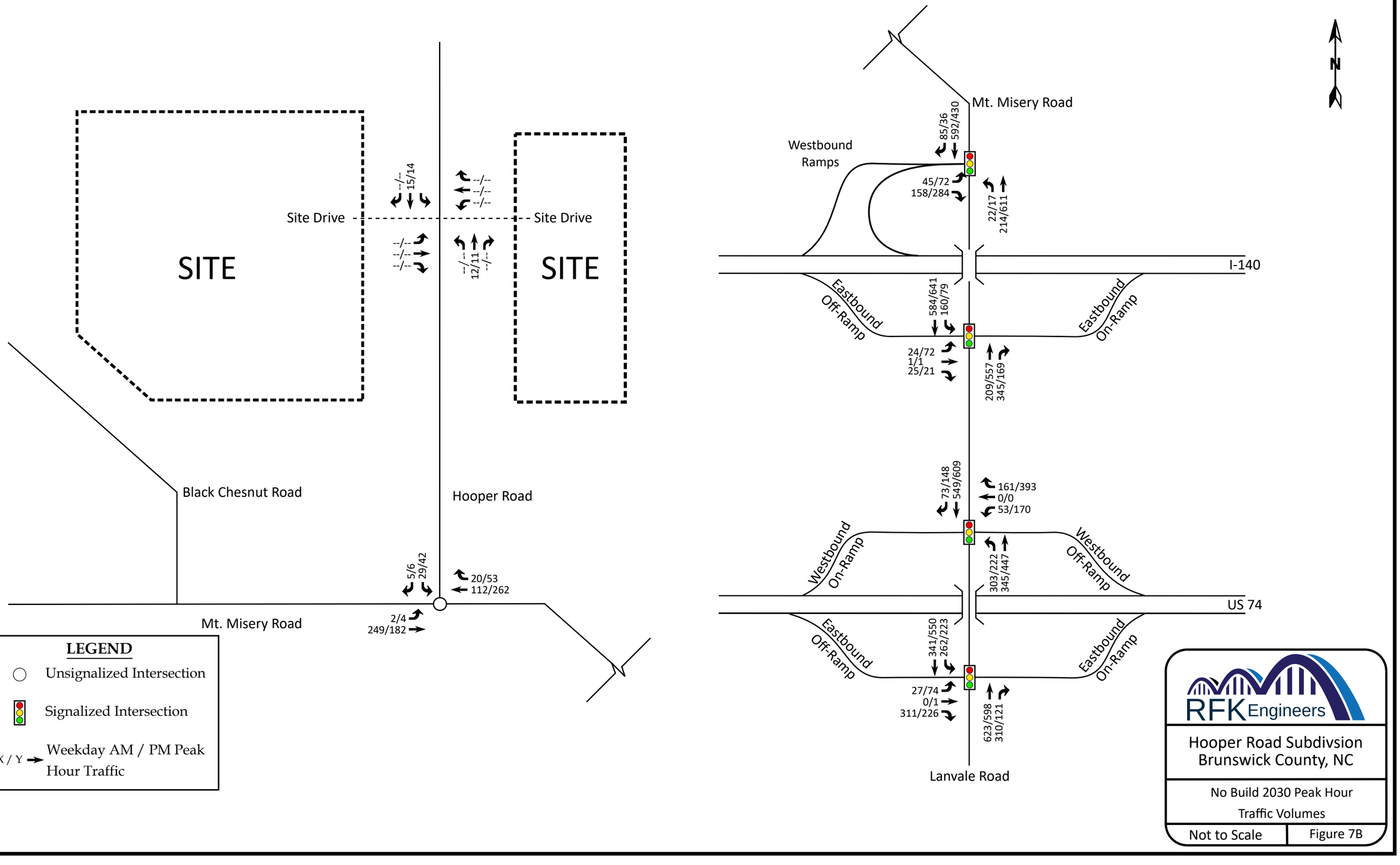
Hooper Road Subdivsion
Brunswick County, NC

No Build 2029 Peak Hour Traffic Volumes

Not to Scale | Figure 7A

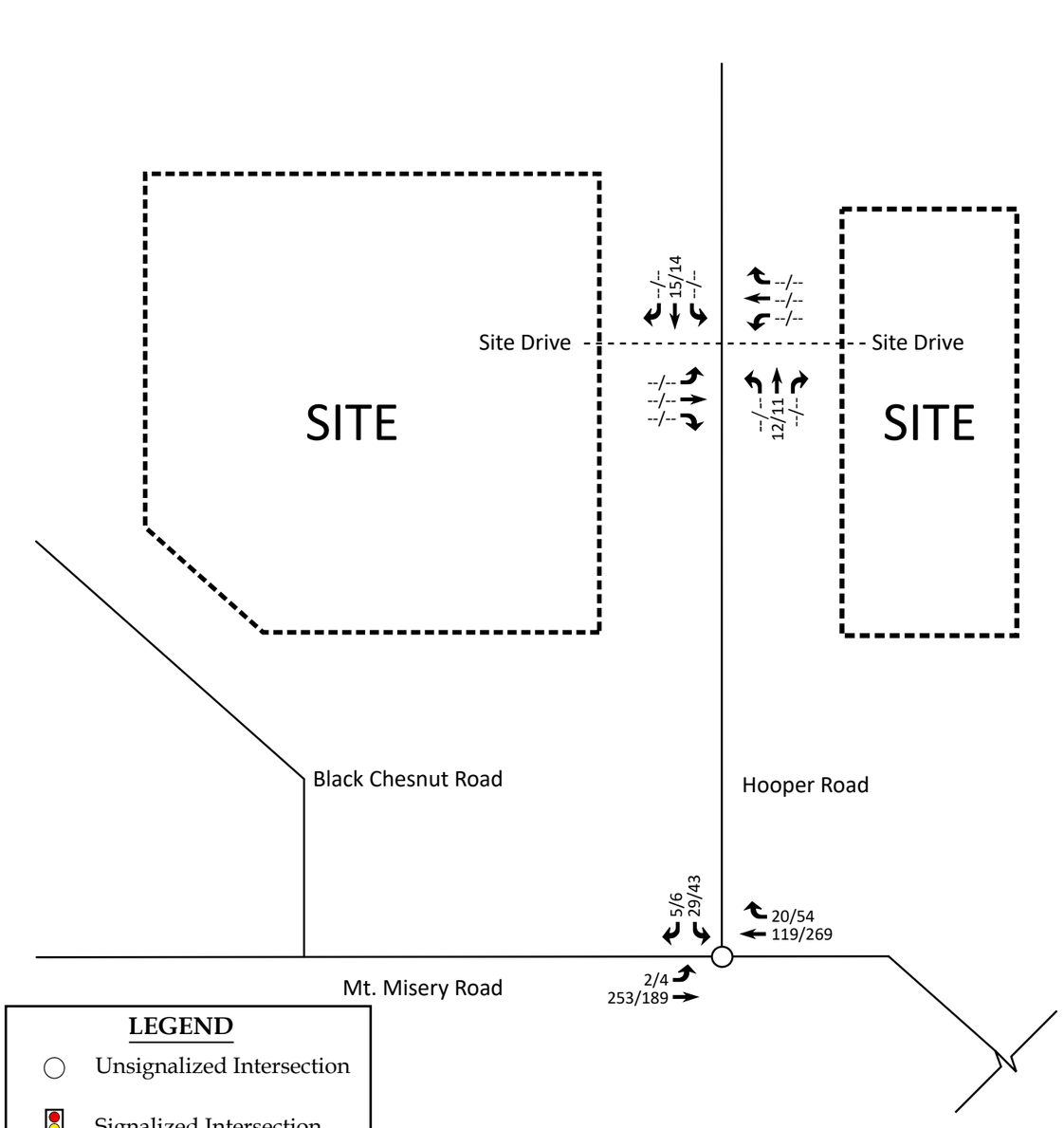


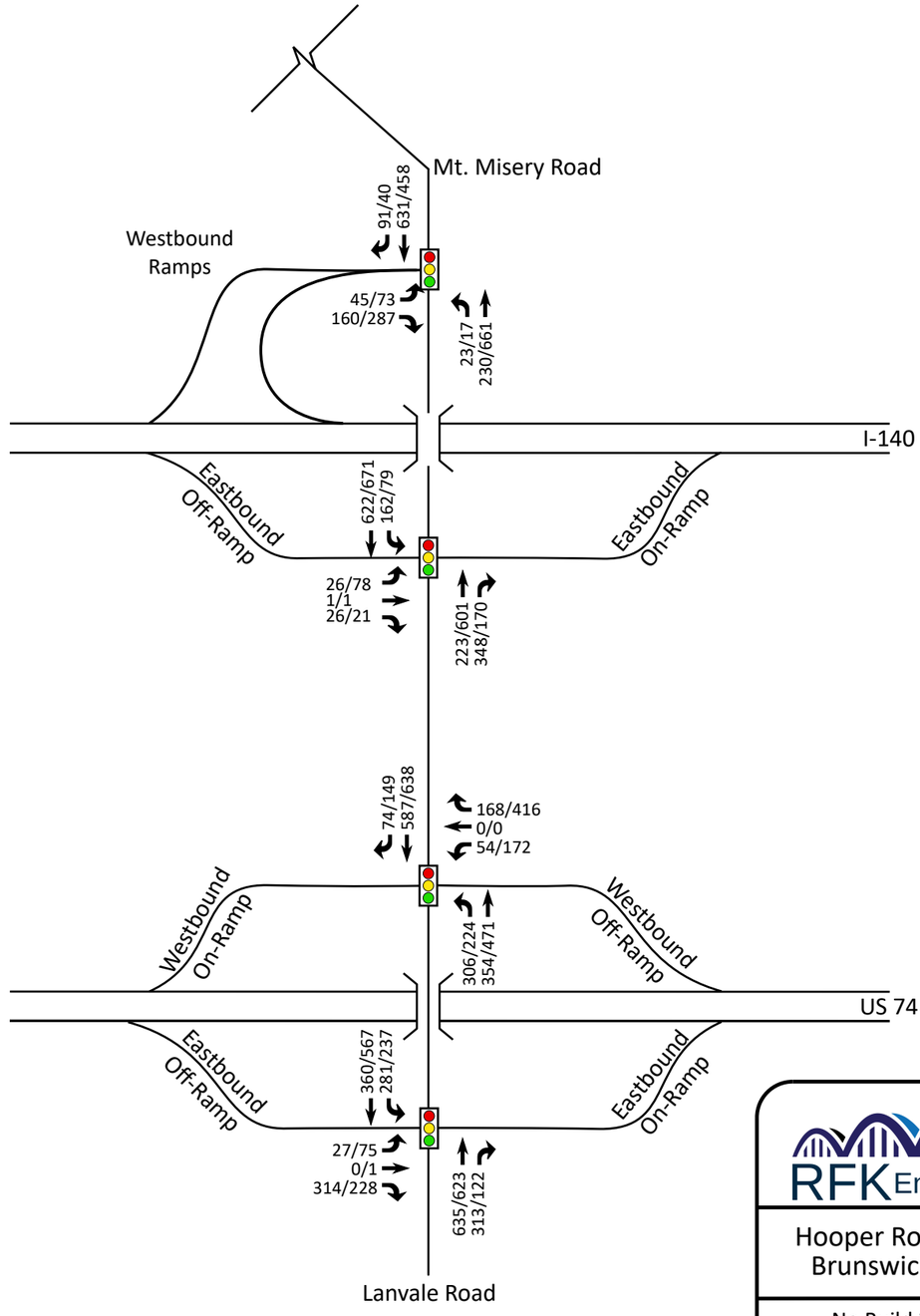
RFK Engineers

Hooper Road Subdivsion
Brunswick County, NC

No Build 2030 Peak Hour Traffic Volumes

Not to Scale | Figure 7B





RFK Engineers

Hooper Road Subdivsion
Brunswick County, NC

No Build 2031 Peak Hour Traffic Volumes

Not to Scale | Figure 7C

4. SITE TRIP GENERATION AND DISTRIBUTION

To determine the future traffic conditions upon build-out of Hooper Road Subdivision, an estimate of traffic generated by the proposed development is required. For the purpose of this analysis, trips were generated separately for the homes built on the east and west sides of Hooper Road.

4.1. Trip Generation

The average weekday daily trips as well as the AM and PM peak hour site trips were calculated utilizing the 11th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. Refer to Table 2 for a detailed breakdown of the site trip generation.

Table 2: Site Trip Generation

ITE Land Use (Code)	Independent Variable	Average Daily Traffic (vpd)	AM Peak Hour (vph)		PM Peak Hour (vph)	
			Enter	Exit	Enter	Exit
East of Hooper Road						
Detached Single-Family (210) – *Phase 1*	440 DU	3,944	72	215	252	148
West of Hooper Road						
Detached Single-Family (210) – *Phase 1*	165 DU	1,600	29	88	100	59
Detached Single-Family (210) – *Phase 2*[1]	697 DU	6,022	109	327	388	228
Detached Single-Family (210) – *Phase 3*[2]	1,282 DU	10,548	190	569	689	404

1. Phase 2 trip generation includes units constructed under Phase 1
2. Phase 3 trip generation includes units constructed under Phase 2

At full build [Phase 1 (east) + Phase 3 (west)], the development is expected to generate 14,492 total daily trips (half entering and half exiting), with 1,046 trips (262 entering and 784 exiting) occurring during the AM peak hour and 1,493 trips (941 entering and 552 exiting) during the PM peak hour.

4.2. Trip Distribution and Assignment

For this study, the following site trip distribution percentages were developed through coordination with the review agencies and based on existing traffic patterns and engineering judgment.

- 10% to/from the west on Mt. Misery Road
- 40% via I-140
- 15% via US 74
- 25% to/from the south on Lanvale Road
- 10% to/from Cedar Hill Road – *not analyzed*

The site trips for the proposed development were assigned to the study intersections and site access utilizing the above distribution percentages. Refer to Figures 8A and 8B for an illustration of the site trip distributions for the east and west sides of the development, respectively. Refer to Figures 9A-9C for an illustration of the total site trip assignment for each phase of development.

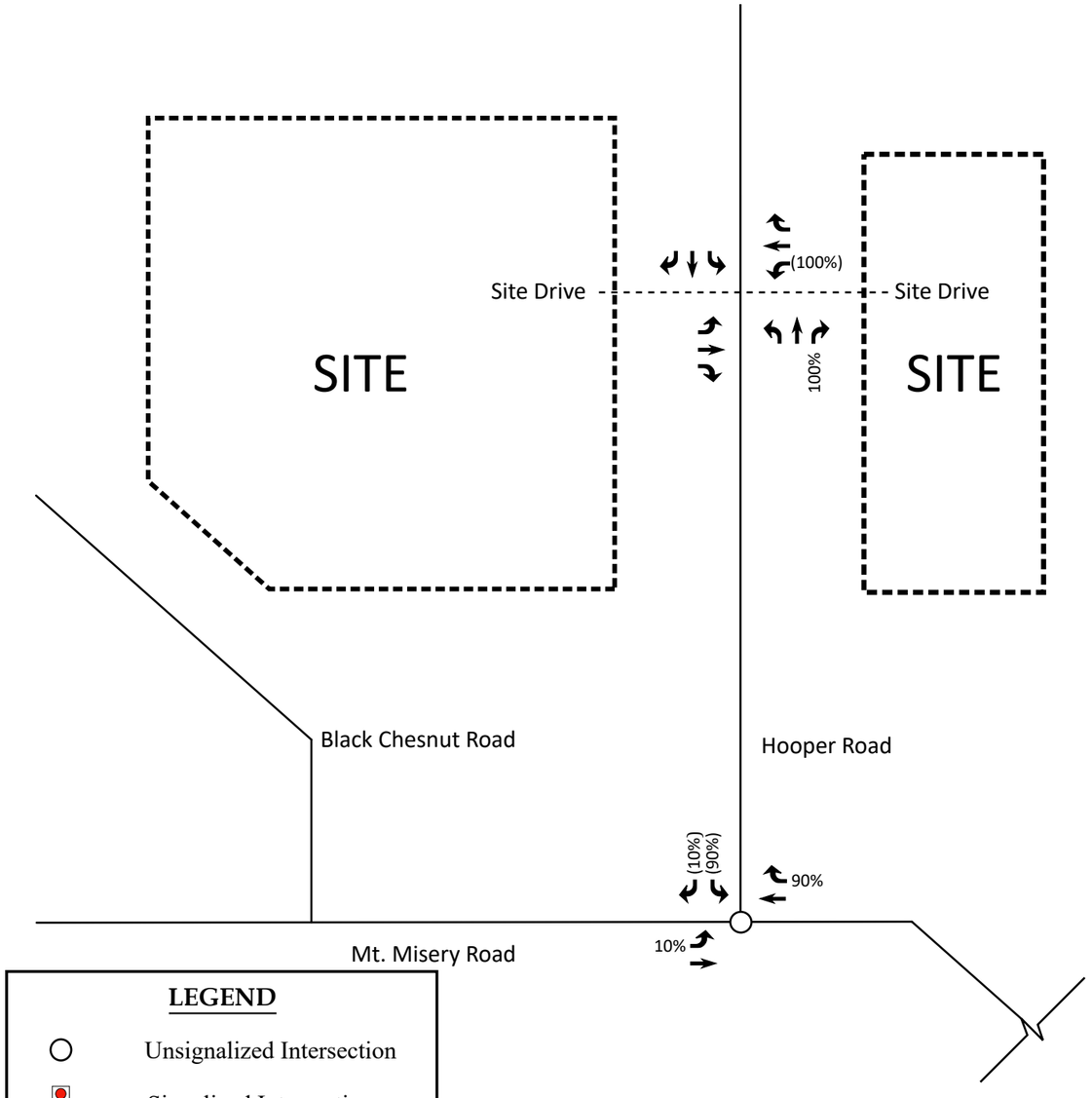
5. FUTURE BUILD TRAFFIC CONDITIONS

5.1. Future Build Peak Hour Traffic

To estimate traffic conditions with the proposed development, the site-generated trips for Phases 1-3 were added to the future (2029, 2030, and 2031) no build traffic volumes to determine the future build traffic volumes. Refer to Figures 10A-10C for an illustration of the future build peak hour traffic volumes for each horizon year.

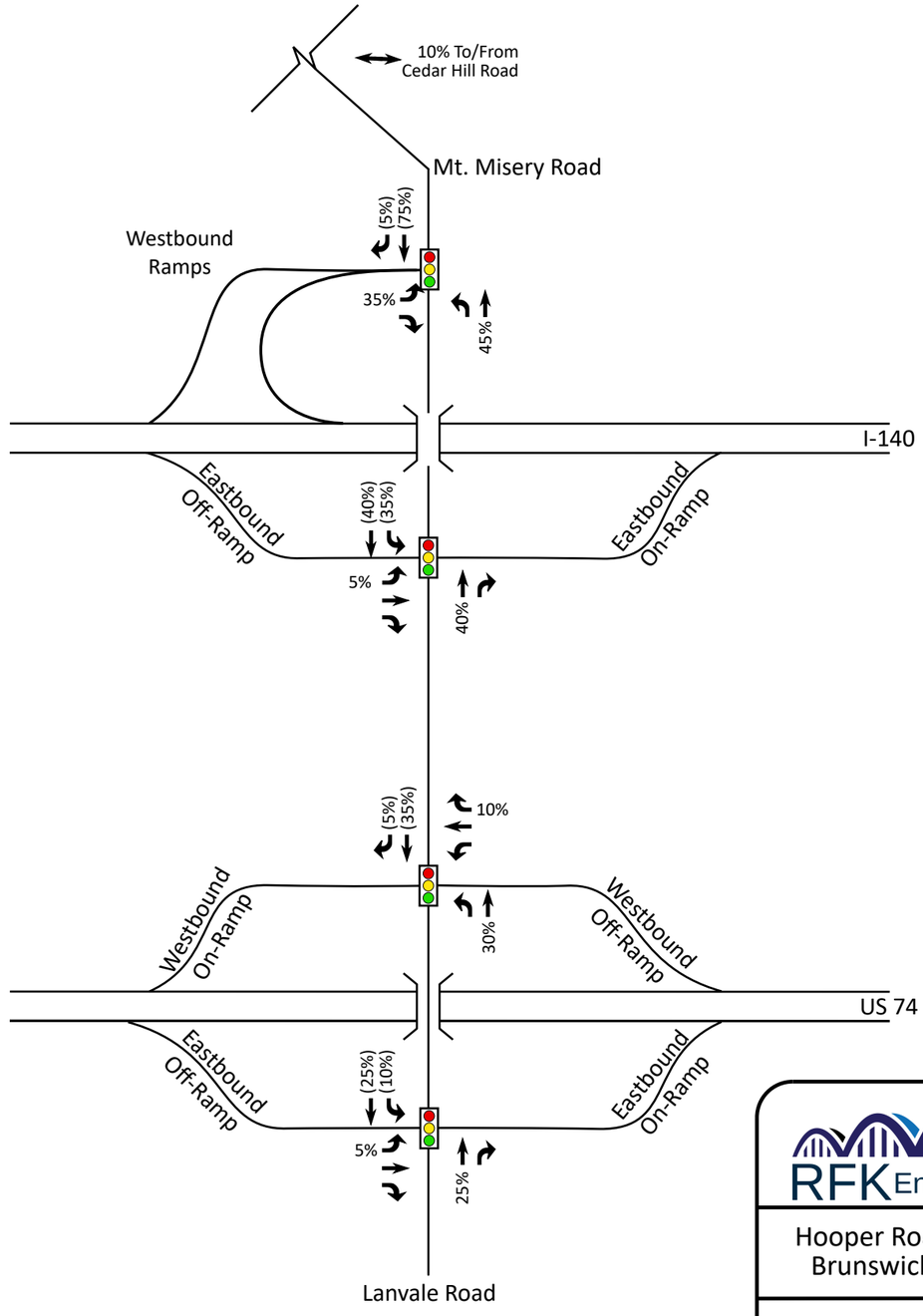
5.2 Analysis of Future Build Peak Hour Traffic

The future build AM and PM peak hour traffic volumes were analyzed using the same methodology previously discussed for future no build traffic conditions. The analysis results are presented in Section 7 of this report.



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X% → Entering Site Trips
- (X%) → Exiting Site Trips



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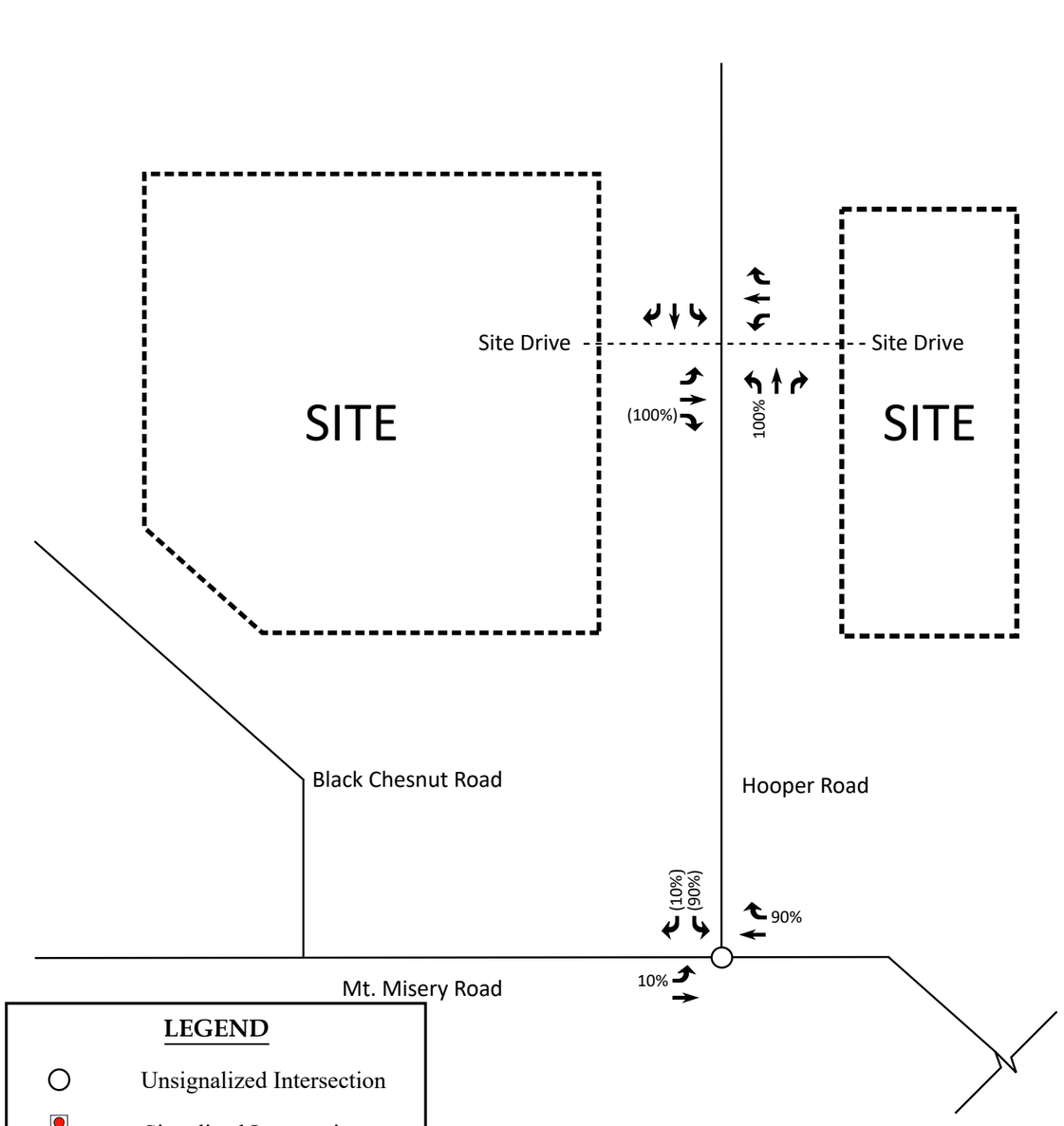
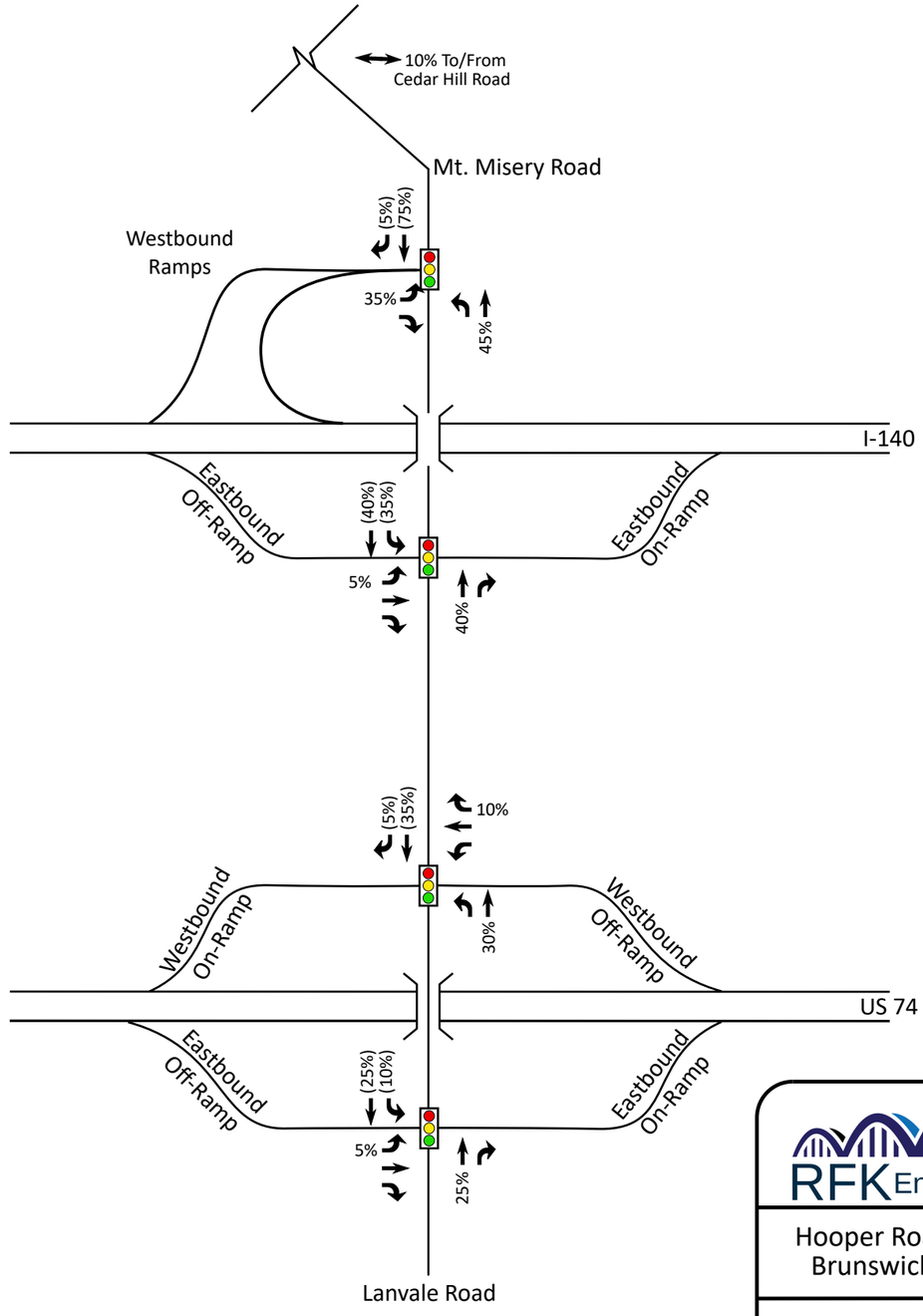
Hooper Road Subdivsion
Brunswick County, NC

Site Trip Distribution - East Side

Not to Scale | Figure 8A





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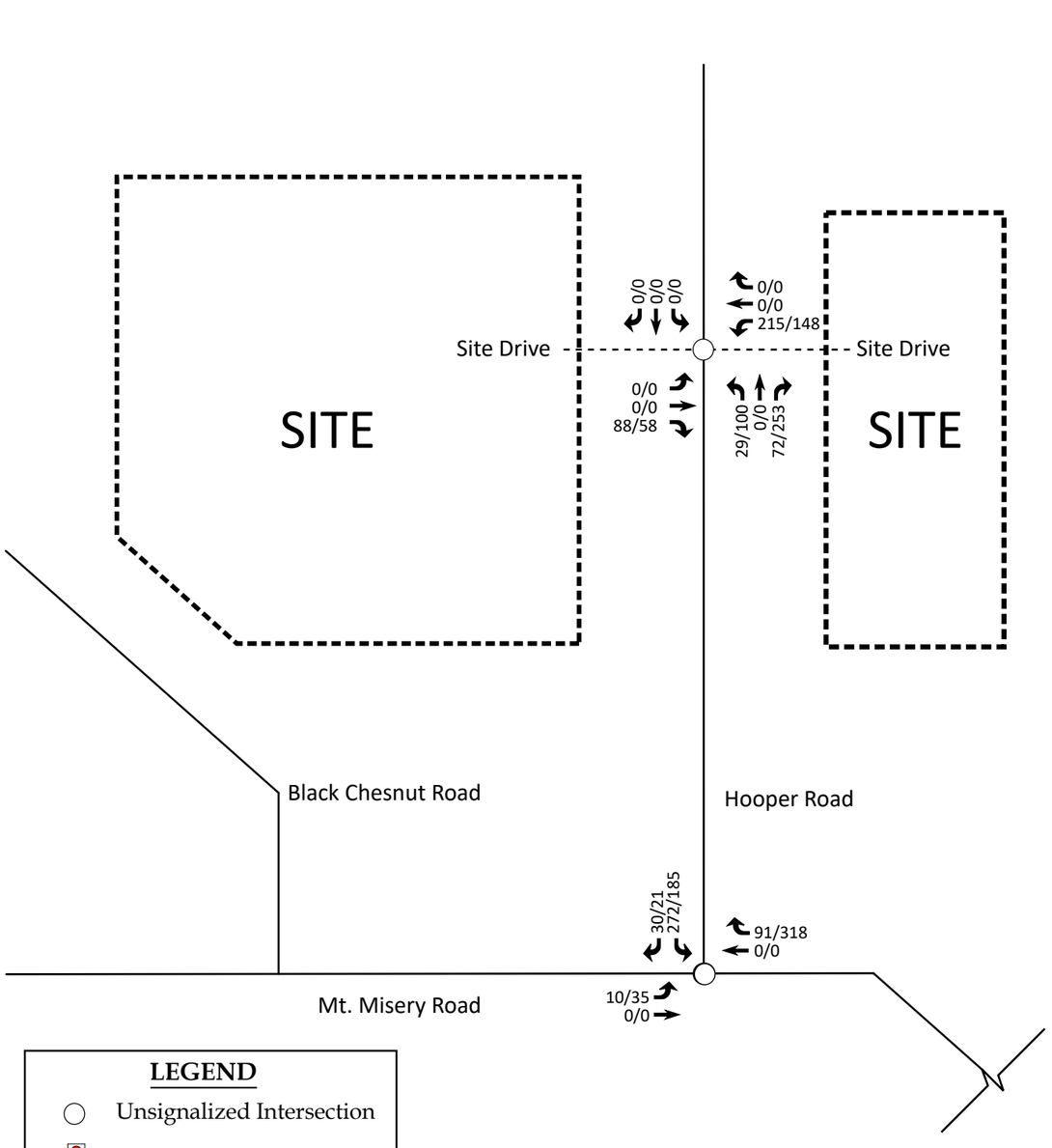
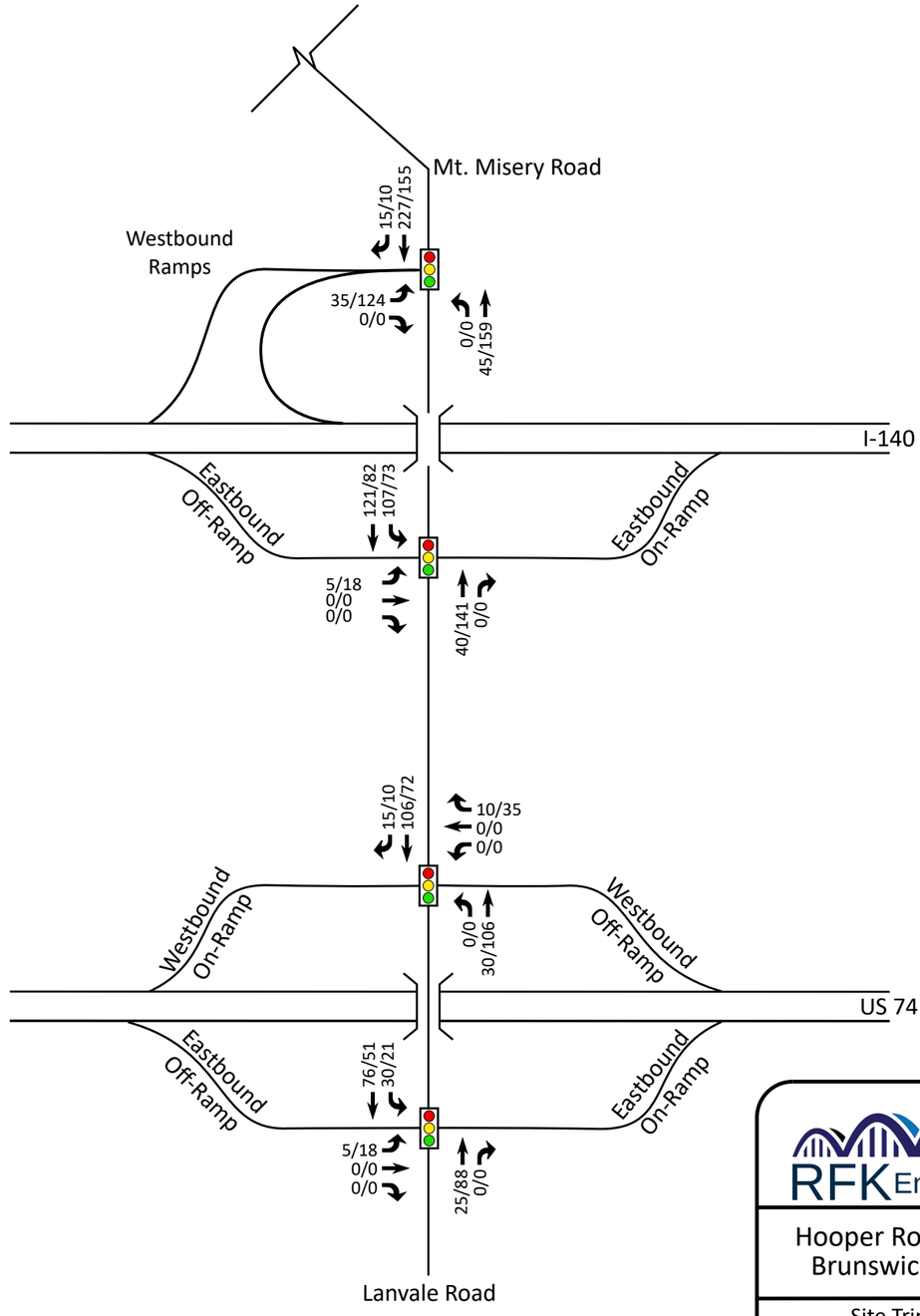
Hooper Road Subdivsion
Brunswick County, NC

Site Trip Distribution - West Side

Not to Scale | Figure 8B





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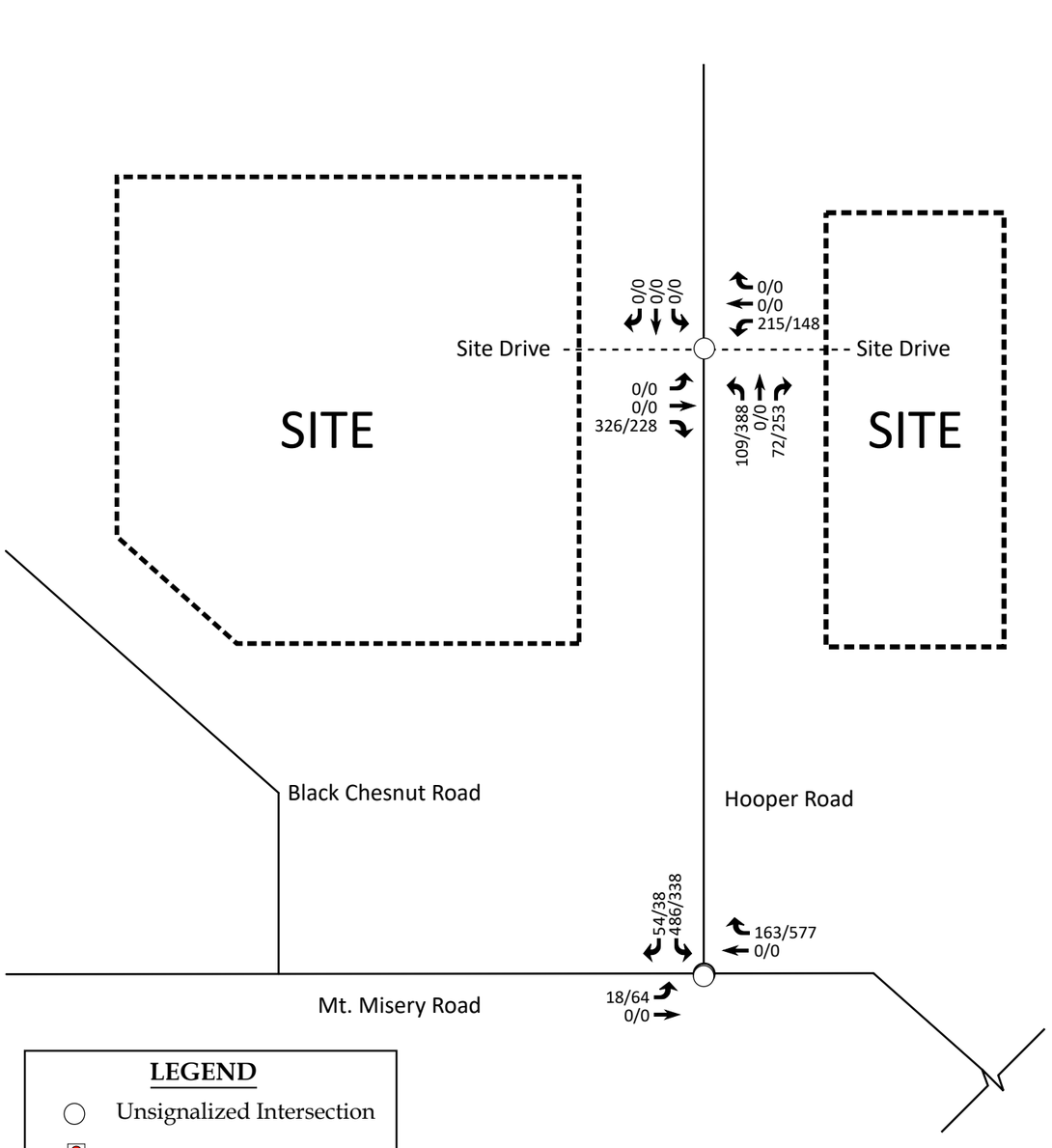
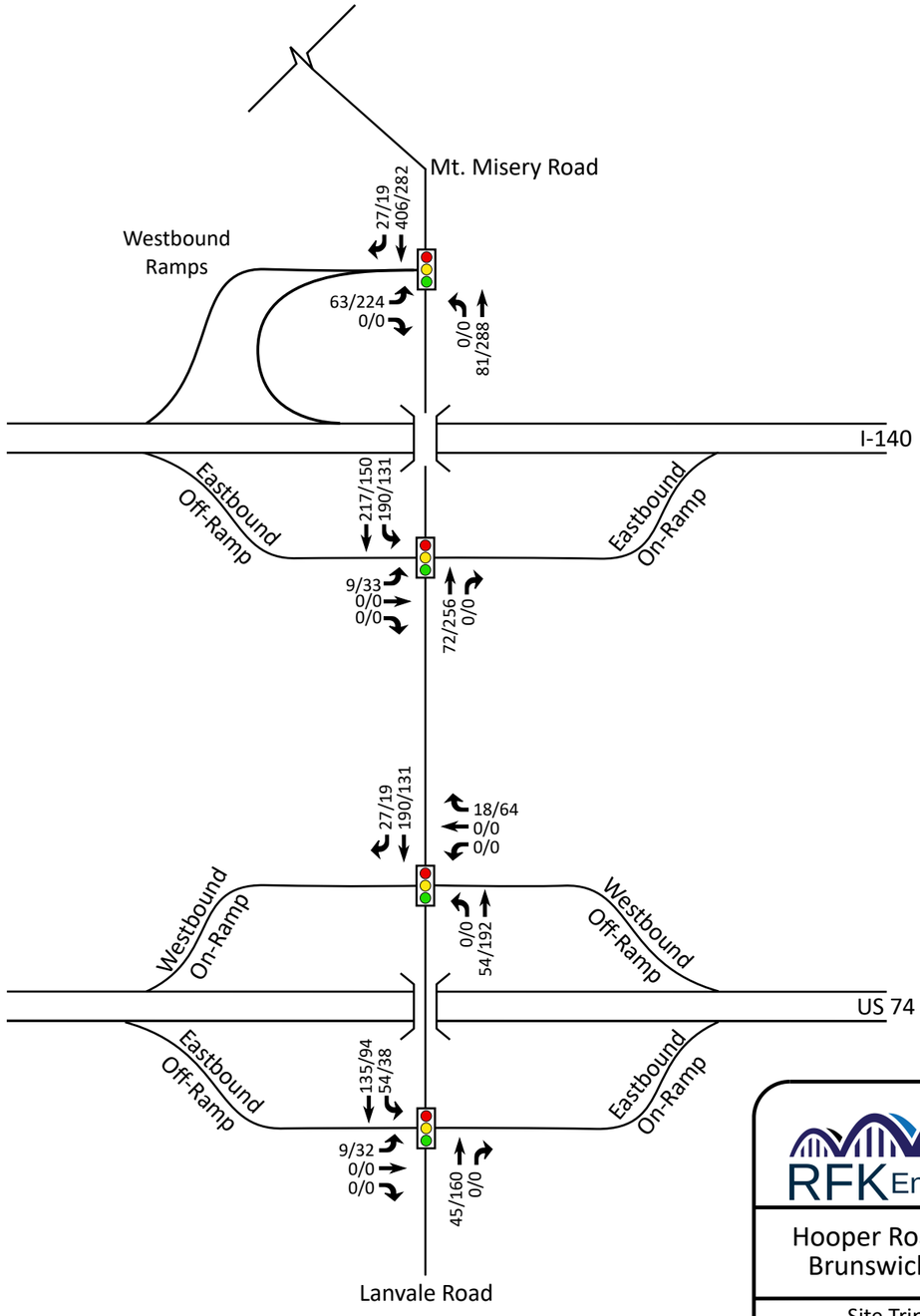
Hooper Road Subdivsion
Brunswick County, NC

Site Trip Assignment
(Phase 1)

Not to Scale | Figure 9A





LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic

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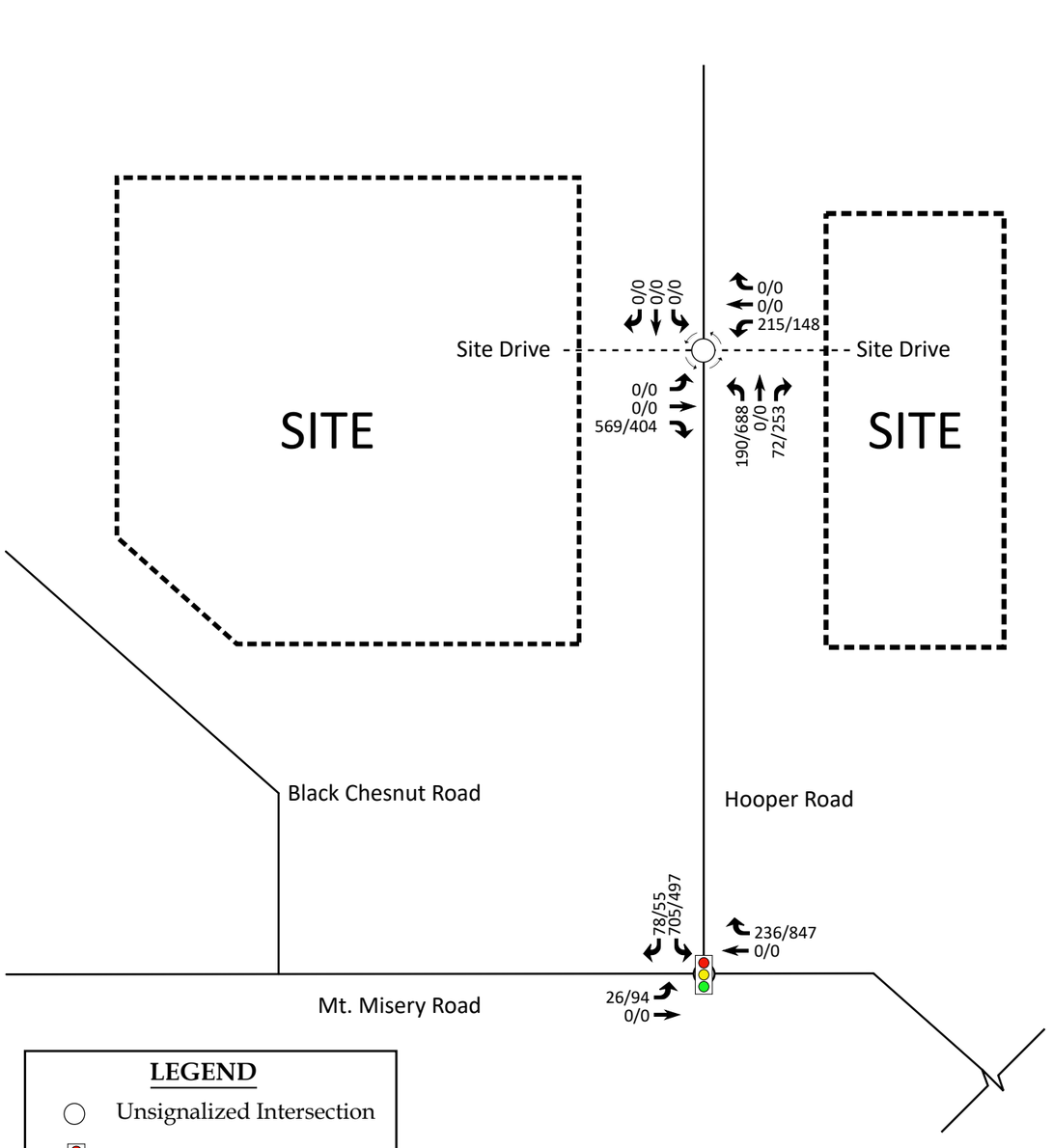
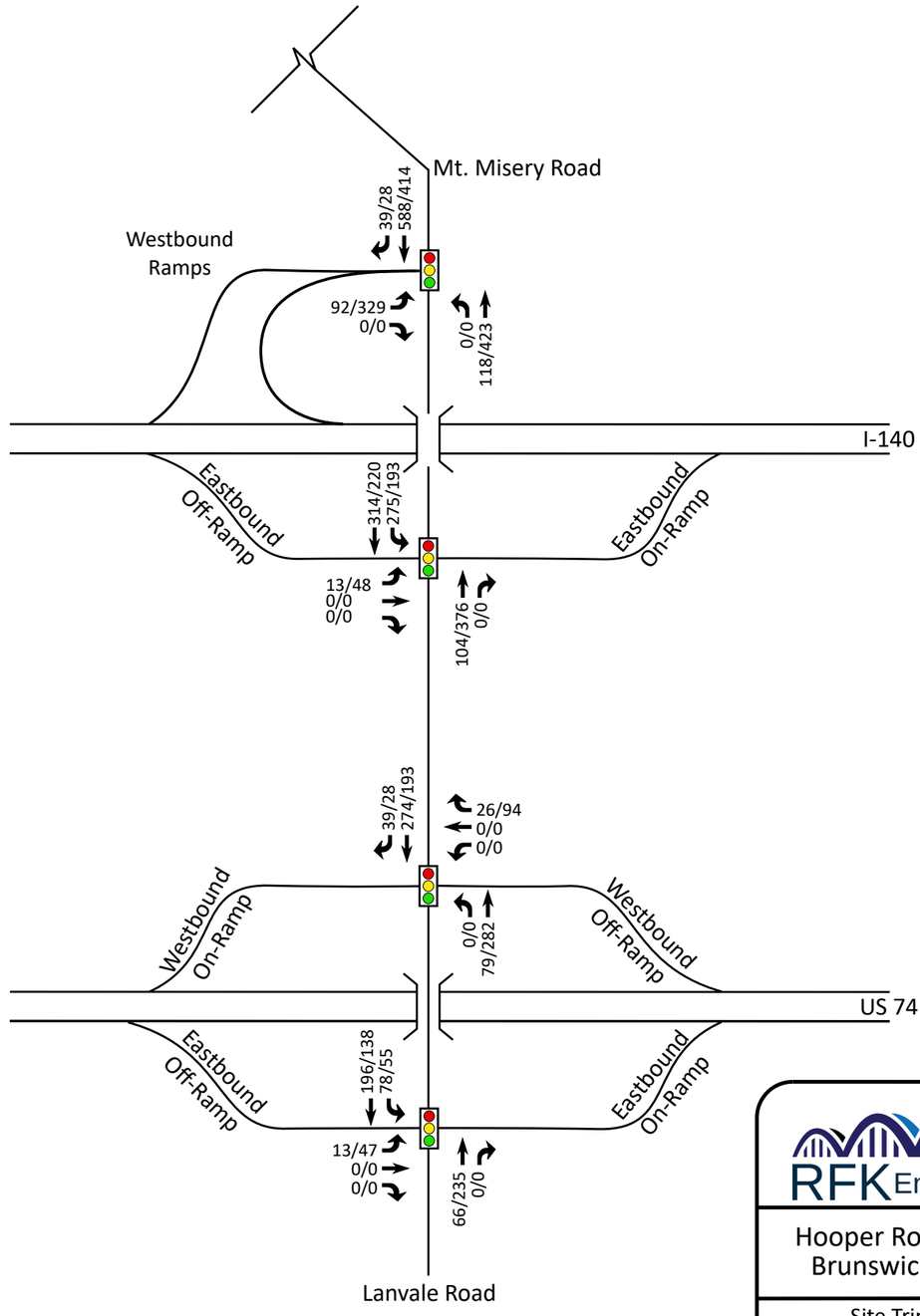
Hooper Road Subdivsion
Brunswick County, NC

Site Trip Assignment
(Phase 2)

Not to Scale | Figure 9B





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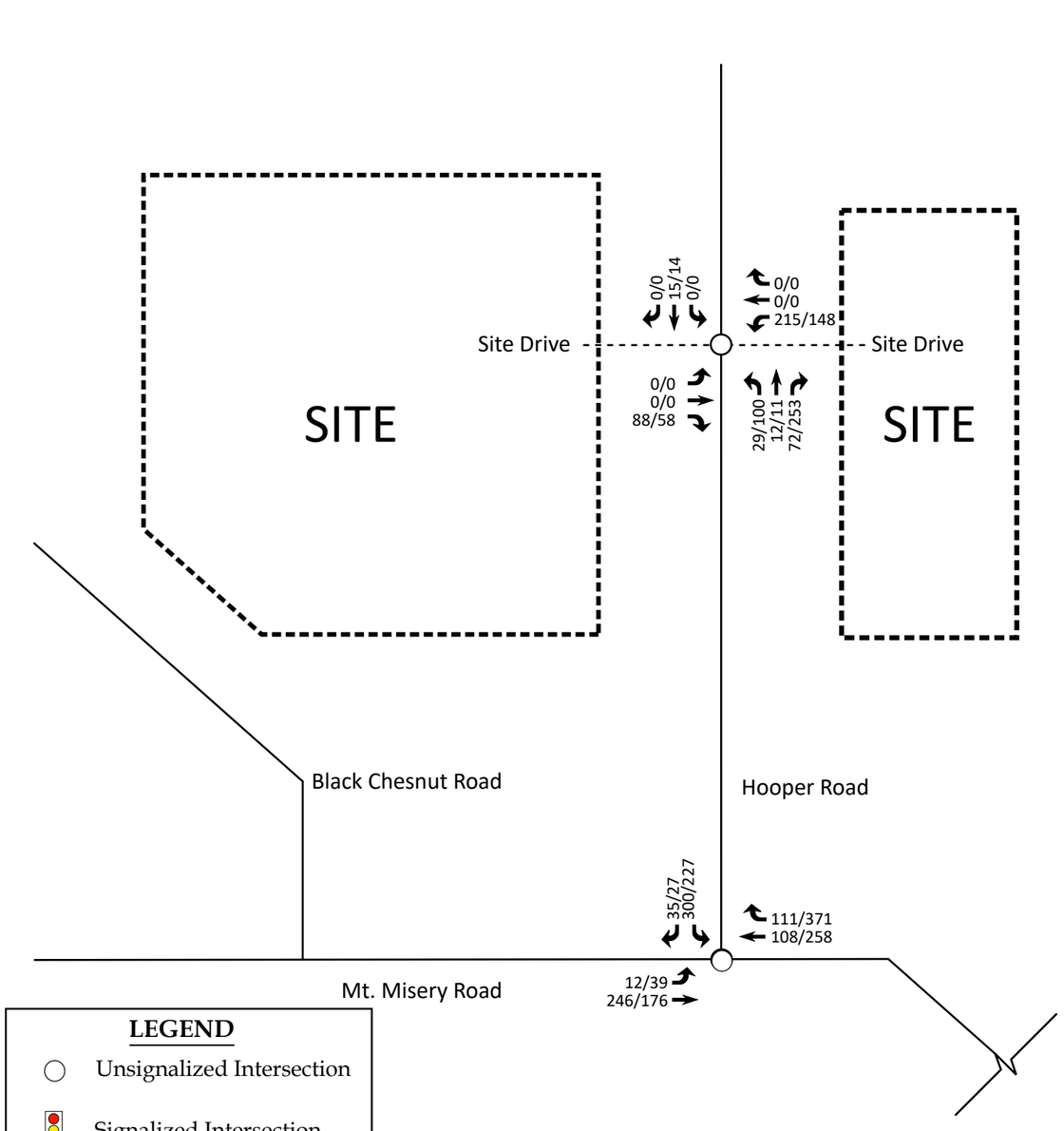
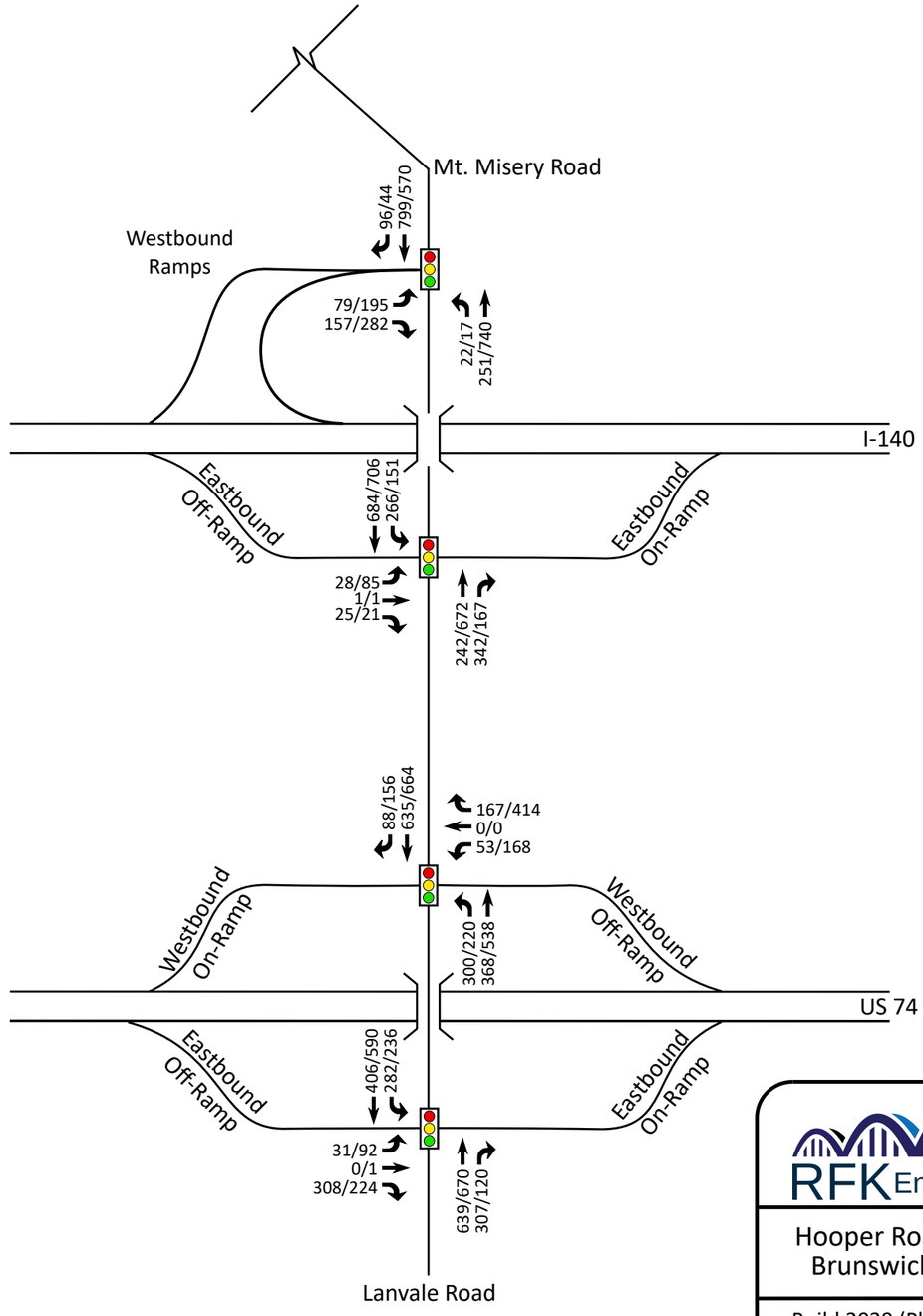
Hooper Road Subdivsion
Brunswick County, NC

Site Trip Assignment
(Phase 3)

Not to Scale | Figure 9C





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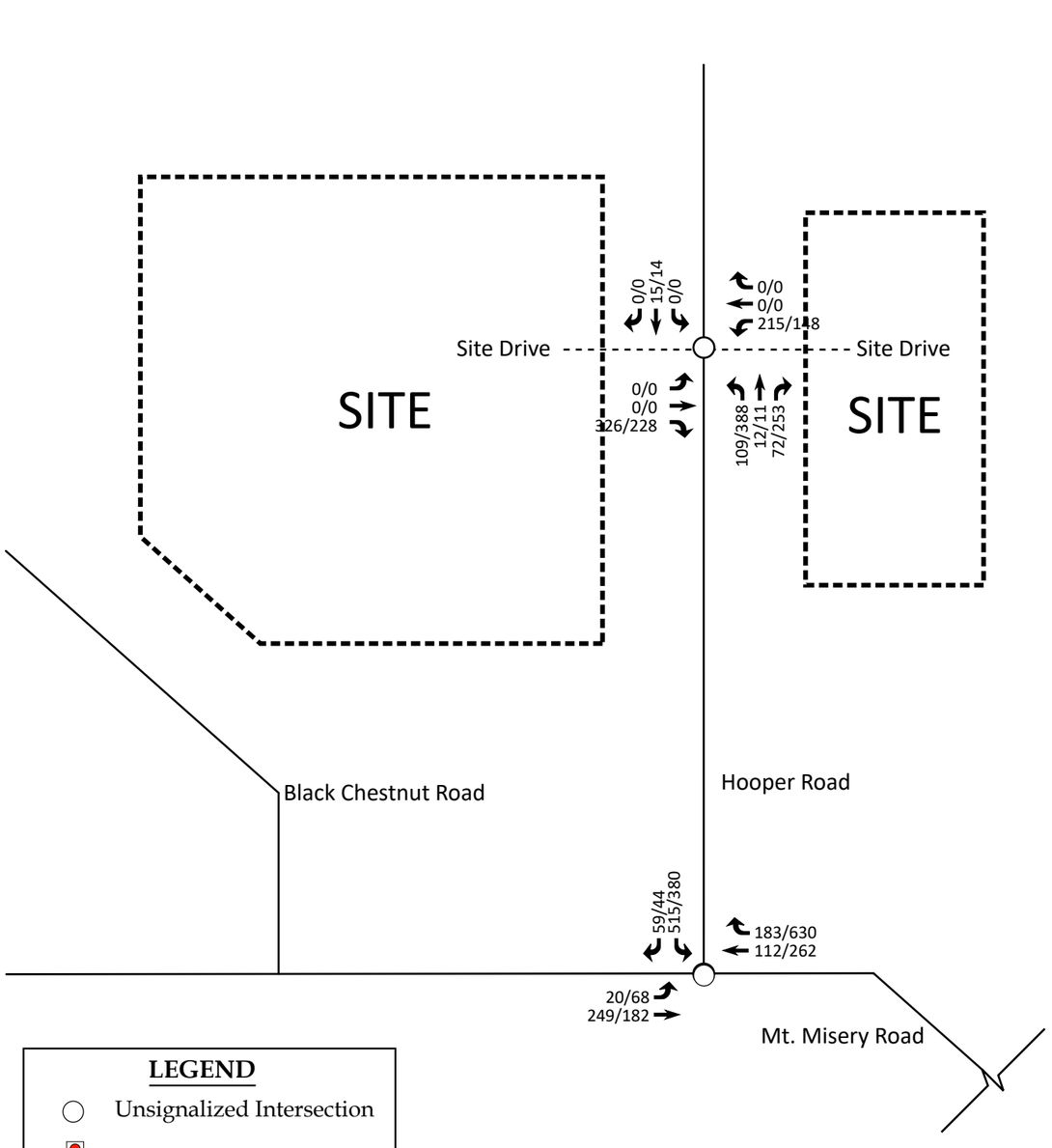
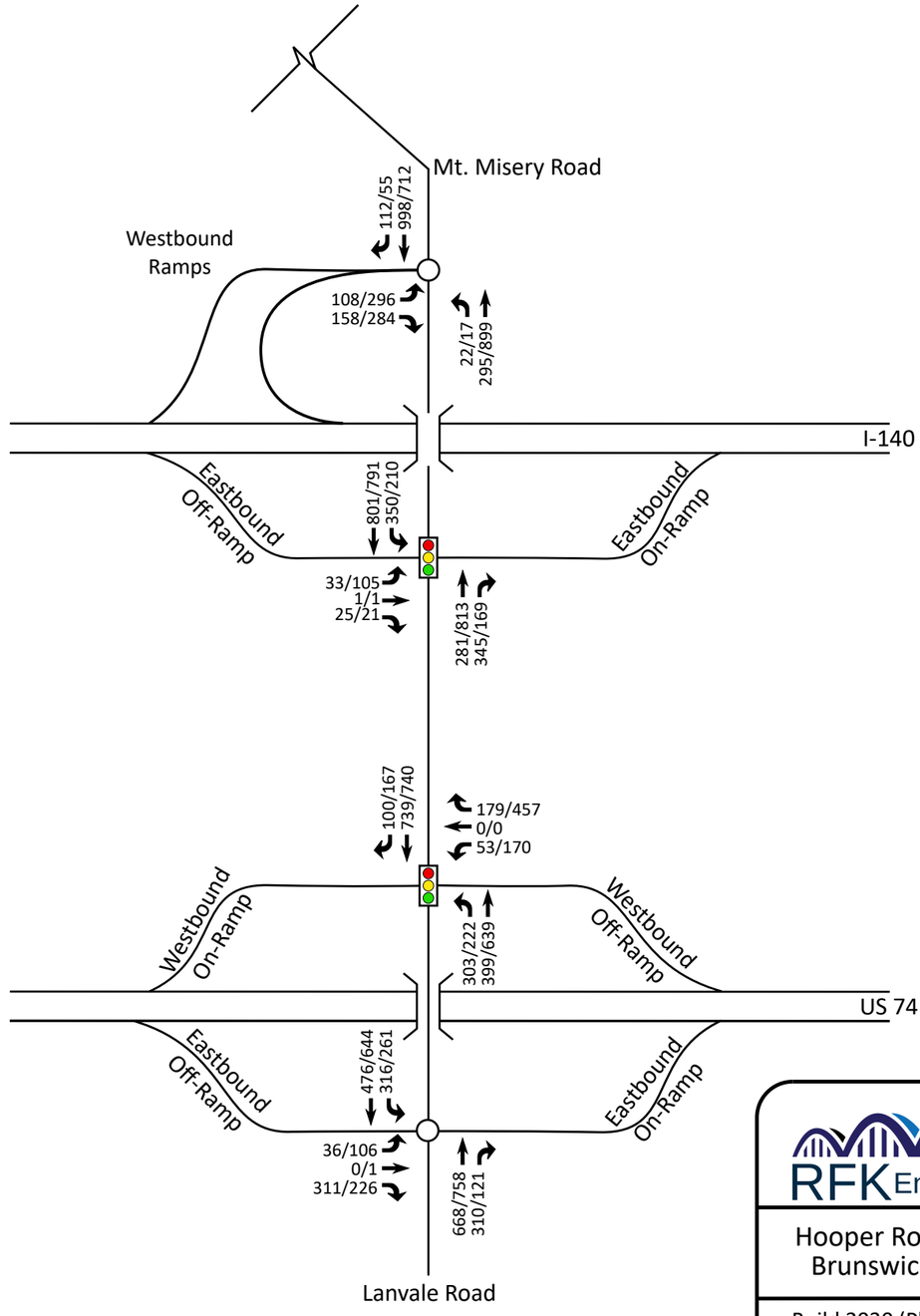
Hooper Road Subdivsion
Brunswick County, NC

Build 2029 (Phase 1) Peak Hour Traffic Volumes

Not to Scale | Figure 10A





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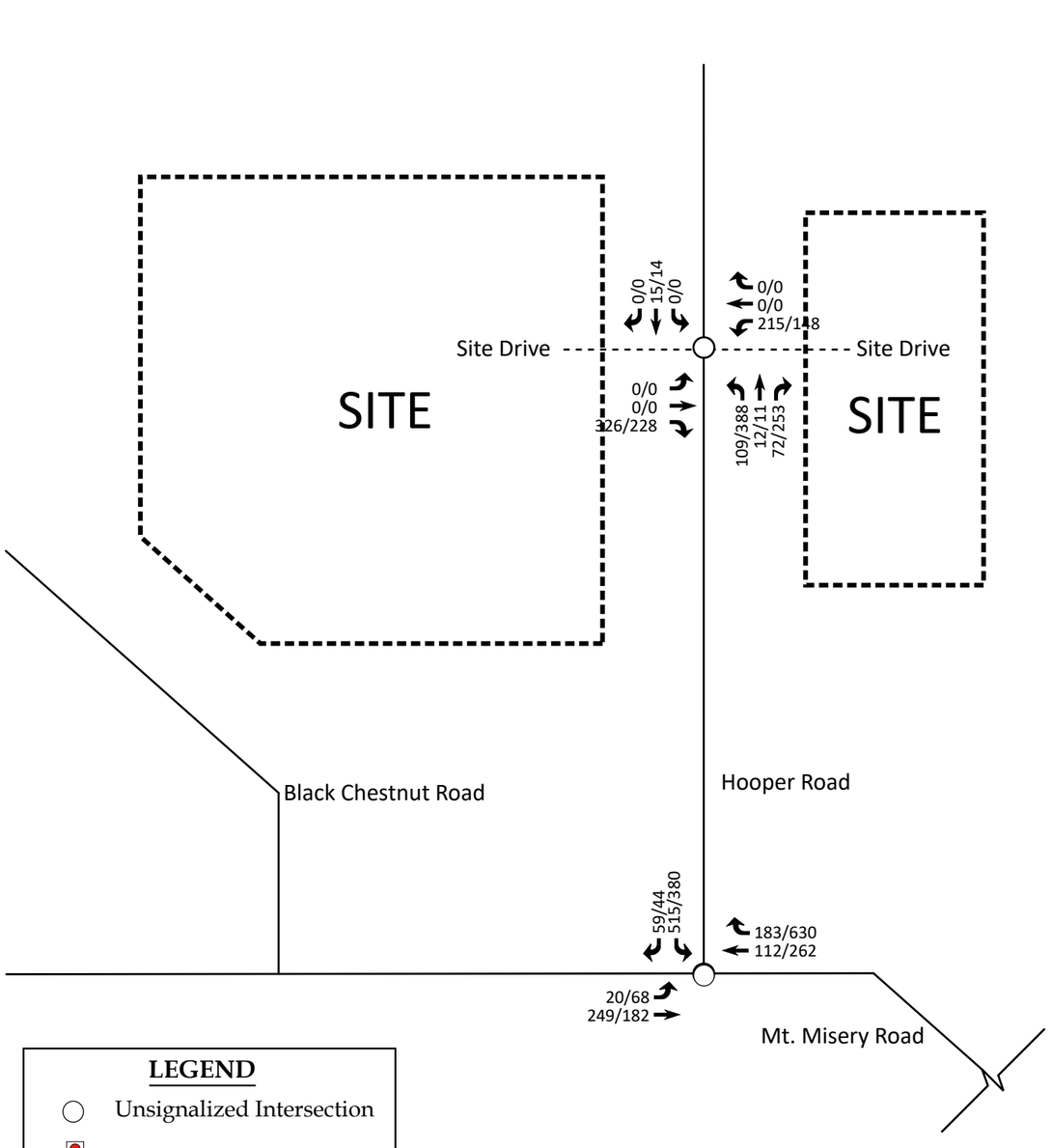
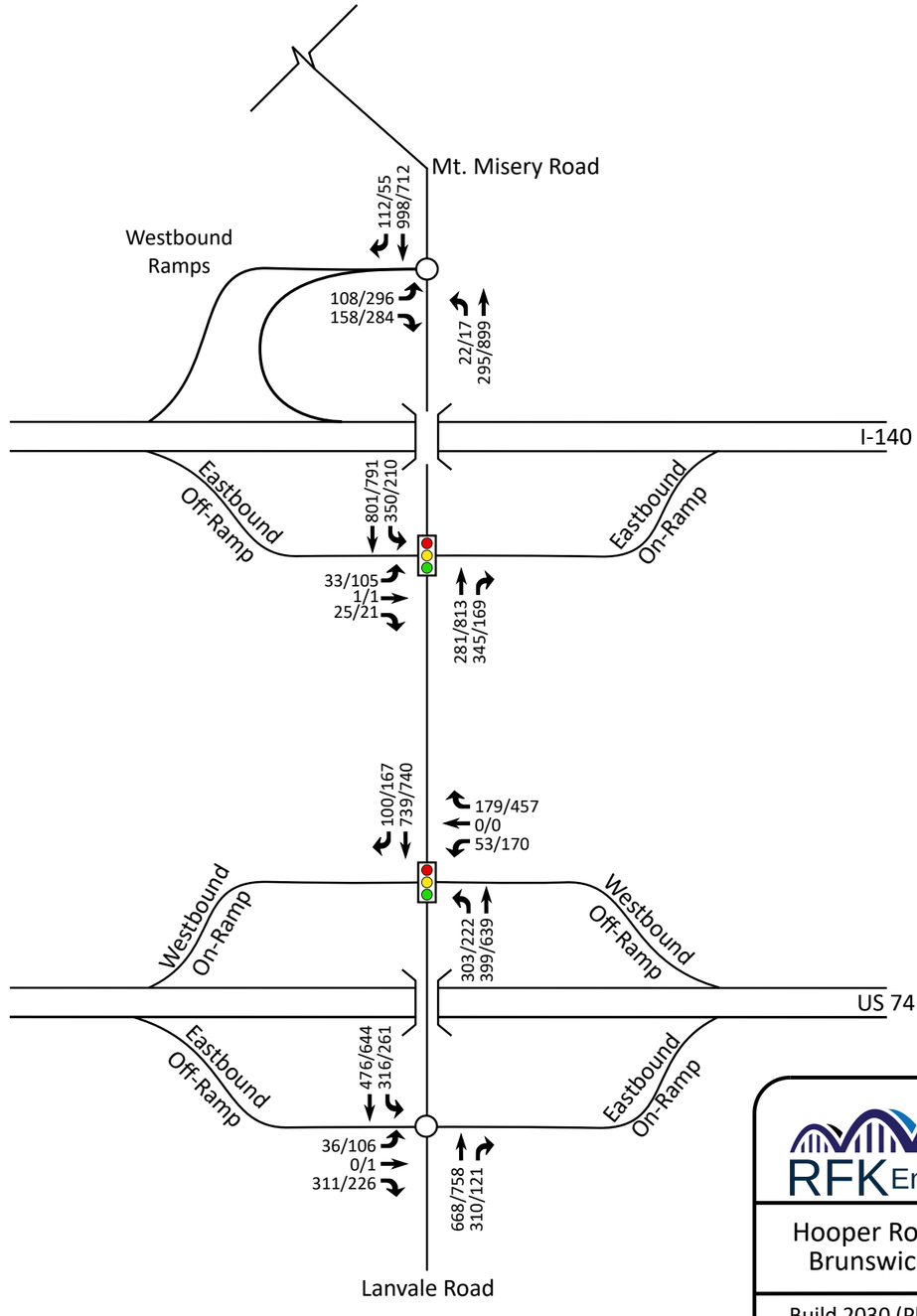
Hooper Road Subdivsion
Brunswick County, NC

Build 2030 (Phase 2) Peak Hour Traffic Volumes

Not to Scale | Figure 10B





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Hooper Road Subdivsion
Brunswick County, NC

Build 2030 (Phase 2) Peak Hour Traffic Volumes

Not to Scale | Figure 10B

6. TRAFFIC ANALYSIS PROCEDURE

All study intersections were analyzed using methodology outlined in the Highway Capacity Manual (HCM) published by the Transportation Research Board. The computer software package, Synchro (Version 11.1), was used to complete all analysis. Synchro allows the user to input data into the software and calculate delays and levels of operation. Analysis results for signalized intersections provide level of service calculations for all lane groups, approaches, and an overall resulting level of service. The capacity analysis for an unsignalized intersection does not provide an overall level of service for the intersection, but rather a level of service for movements and/or lane groups that have conflicting movements. In addition, SIDRA INTERSECTION 9.1 was used to complete all roundabout analysis. Analysis results for roundabouts provide level of service calculations for all lane groups, approaches, and an overall resulting level of service.

The HCM defines capacity as "the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions". Level of service (LOS) is a term used to represent different driving conditions and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers". Level of service varies from Level "A" representing free flow, to Level "F" where greater vehicle delays are experienced. Refer to Table 3 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized/roundabout intersections. Control delay as defined by the HCM includes "initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay". As shown in Table 3, an average control delay of 40 seconds at a signalized intersection results in level of service D.

Table 3: Highway Capacity Manual Levels of Service and Delay

SIGNALIZED INTERSECTION		UNSIGNALIZED INTERSECTION/ROUNDABOUT	
Level Of Service	Average Control Delay Per Vehicle (Seconds)	Level Of Service	Average Control Delay Per Vehicle (Seconds)
A	0-10	A	0-10
B	10-20	B	10-15
C	20-35	C	15-25
D	35-55	D	25-35
E	55-80	E	35-50
F	>80	F	>50

Capacity analysis at all study intersections was completed in accordance with the NCDOT Capacity Analysis Guidelines.

7. CAPACITY ANALYSIS

Under all traffic conditions, the study intersections were analyzed using existing or proposed lane geometrics and traffic control. A peak hour factor (PHF) of 0.90 and 2% heavy vehicles were utilized for all movements at the study intersections. In addition, a peak hour volume of four (4) vehicles was used in the analysis for any movement that is less than 4 vehicles.

7.1. Mt. Misery Road and Hooper Road

The existing unsignalized intersection was analyzed under existing and no build traffic conditions with existing lane configurations. Under build traffic conditions, the intersection was analyzed with [warranted] auxiliary turn lanes on Mt. Misery. Refer to Table 4 for a summary of the capacity analysis results, and Appendix C for copies of the Synchro reports.

Existing Traffic Conditions

Capacity analysis indicates that the eastbound left turn movement on Mt. Misery Road as well as the stop-controlled southbound approach of Hooper Road currently experience minor delays and operate at LOS B or better during the AM and PM peak hours.

Future No Build Traffic Conditions

Under no build conditions for all horizon years, analysis indicates that the eastbound left turn movement on Mt. Misery Road as well as the stop-controlled southbound approach of Hooper Road are expected to continue experiencing minor delays and operating at LOS B or better during the AM and PM peak hours.

Future Build Traffic Conditions

With warranted turn lanes on Mt. Misery Road (refer to Appendix D), capacity analysis indicates that the eastbound left turn movement on Mt. Misery Road is expected to experience minor delays and operate at LOS A during the AM and PM peak hours under 2029 Build Phase 1 conditions, while the stop-controlled southbound approach of Hooper Road is expected to experience moderate overall delays and operate at LOS C. Under 2030 Build Phase 2 conditions, analysis indicates that the eastbound left turn movement is expected to experience minor delays and operate at LOS B or better during the peak hours, but the stop-controlled southbound approach is expected to experience greater delays and operate at LOS F. With the installation of a traffic signal at this intersection, capacity analysis indicates that

the overall intersection is expected to operate at LOS B during the AM and PM peak hours, while the intersection approaches operate at LOS C or better. Under 2031 Build Phase 3 conditions, analysis indicates that the overall intersection is expected to operate at LOS C during the AM and PM peak hours under signalized conditions, while the intersection approaches operate at LOS C or better.

Table 4: Analysis Summary of Mt. Misery Road and Hooper Road

ANALYSIS SCENARIO	LANE GROUP	STORAGE	Weekday AM Peak Hour								Weekday PM Peak Hour							
			Queues (1,2)		Lane		Approach		Overall		Queues (1,2)		Lane		Approach		Overall	
			95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)	95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)
2024 Existing	EBLT	-	0	5	A	7.4	A	7.4	N/A	N/A	0	31	A	7.9	A	7.9	N/A	N/A
	WBTR	-	0	0	-	-	-	-			0	0	-	-	-	-		
	SBLR	-	5	36	B	10.7	B	10.7			8	58	B	11.8	B	11.8		
2029 No-Build	EBLT	-	0	5	A	7.5	A	7.5	N/A	N/A	0	8	A	8.0	A	8.0	N/A	N/A
	WBTR	-	0	0	-	-	-	-			0	0	-	-	-	-		
	SBLR	-	5	52	B	11.1	B	11.1			8	34	B	12.5	B	12.5		
2030 No-Build	EBLT	-	0	13	A	7.5	A	7.5	N/A	N/A	0	24	A	8.0	A	8.0	N/A	N/A
	WBTR	-	0	0	-	-	-	-			0	0	-	-	-	-		
	SBLR	-	5	42	B	11.2	B	11.2			8	52	B	12.6	B	12.6		
2031 No-Build	EBLT	-	0	8	A	7.5	A	7.5	N/A	N/A	0	18	A	8.0	A	8.0	N/A	N/A
	WBTR	-	0	0	-	-	-	-			0	0	-	-	-	-		
	SBLR	-	5	47	B	11.3	B	11.3			10	52	B	12.8	B	12.8		
2029 Build *Phase 1*	EBL	50	0	23	A	7.7	A	7.7	N/A	N/A	5	58	A	9.2	A	9.2	N/A	N/A
	EBT	-	0	0	-	-					0	0	-	-				
	WBT	-	0	0	-	-	-	-			0	0	-	-	-	-		
	WBR	500	0	0	-	-					0	22	-	-				
	SBLR	-	103	177	C	19.8	C	19.8			93	146	C	22.6	C	22.6		
2030 Build *Phase 2*	EBL	100	3	28	A	8.0	A	8.0	N/A	N/A	10	75	B	10.8	B	10.8	N/A	N/A
	EBT	-	0	0	-	-						19	-	-				
	WBT	-	0	0	-	-	-	-				2	-	-	-	-		
	WBR	500	0	4	-	-						52	-	-				
	SBLR	-	478	834	F	90.0	F	90.0			443	1,148	F	123.7	F	123.7		
2030 Build *Phase 2* Mitigated	EBL	100	35	59	C	32.8	C	25.1	B	18.5	86	93	D	36.1	C	21.0	B	17.4
	EBT	-	205	193	C	24.4					118	148	B	15.2				
	WBT	-	120	110	C	29.6	B	12.3			223	303	C	31.3	B	13.4		
	WBR	500	36	71	A	1.8					178	234	A	6.0				
	SBLR	-	358	279	B	18.5	B	18.5			310	249	C	23.5	C	23.5		
2031 Build *Phase 3*	EBL	150	44	56	D	38.8	C	33.9	C	27.7	129	137	D	47.1	C	29.8	C	22.6
	EBT	-	212	256	C	33.3					137	176	C	20.8				
	WBT	-	129	150	D	40.5	B	14.4			268	412	D	42.2	B	17.8		
	WBR	500	51	104	A	2.3					446	484	B	10.5				
	SBLR	-	747	496	C	31.6	C	31.6			524	341	C	28.5	C	28.5		

Notes: (1) 95th percentile queue calculated by Synchro; Maximum queue by SimTraffic
(2) 95th percentile queue at unsignalized intersections based on 25' average vehicle length
(3) Reported LOS and Delay at unsignalized is for minor street approaches and major street Left/U-Turns

Considering that a traffic signal should be warranted prior to its installation and operation, a traffic signal warrant analysis was performed to determine if the installation of a traffic signal at the intersection of Mt. Misery Road and Hooper Road is justified.

The Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) has national standardized criteria for determining the warrants for traffic signals.

Some warrants are based on actual or historical data such as accident history, pedestrian activity, or minor street delay. Other warrants compare the major street and minor street volumes to volume thresholds for various lengths of time for an average weekday.

Signal warrants criteria are based primarily on traffic volumes and vary based on the number of travel lanes on both the major and minor streets and travel speed on the major street. For this analysis, the 85th percentile vehicle speed on Mt. Misery Road is 40 miles per hour (mph) or greater since the posted speed limit is 45 mph.

Existing traffic volumes at the intersection were obtained from 13-hour turning movement counts. The existing traffic volumes were projected to the horizon year 2030 by applying a compounded annual growth rate of 1%, as previously discussed. A summary of the existing and projected hourly traffic volumes can be found in Appendix E.

The intersection was analyzed with the projected (2030) traffic volumes plus the proposed development under Phase 2. A conservative approach was taken with the analysis, and no approved development traffic was included. The existing configuration of the major approaches of Mt. Misery Road consists of 2 or more lanes while the southbound approach of Hooper Road consists of a shared left-right lane. As part of this analysis, the minor approach was analyzed as a one-lane approach with right turn volumes excluded (to be conservative) from the southbound approach. Refer to Table 5 for a summary of the traffic signal warrant analysis results. More detailed information for this analysis can be found in Appendix E of this report.

Table 5: Traffic Signal Warrant Analysis Results

Time Period	Approach Volumes (vph)		Warrants			
	Major	Minor	1A	1B	2	3
6 AM to 7 AM	401	312	N	N	Y	N
7 AM to 8 AM	527	480	Y	N	Y	Y
8 AM to 9 AM	508	416	Y	N	Y	Y
9 AM to 10 AM	371	289	N	N	Y	N
10 AM to 11 AM	463	280	Y	N	Y	N
11 AM to 12 PM	514	254	Y	N	Y	N
12 PM to 1 PM	555	278	Y	N	Y	Y
1 PM to 2 PM	607	288	Y	N	Y	Y
2 PM to 3 PM	671	295	Y	Y	Y	Y
3 PM to 4 PM	851	311	Y	Y	Y	Y
4 PM to 5 PM	958	362	Y	Y	Y	Y
5 PM to 6 PM	962	372	Y	Y	Y	Y
6 PM to 7 PM	762	285	Y	Y	Y	Y
Number of Periods Met			11	5	13	9
Number of Periods Required			8	8	4	1
WARRANTS MET			YES	NO	YES	YES

Based on the results of the traffic signal warrant analysis, Warrants 1A, 2, and 3 are met; therefore, the installation of a traffic signal is warranted at this intersection under Phase 2.

7.2. Mt. Misery Road and I-140 Westbound Ramps

The existing unsignalized intersection was analyzed under existing traffic conditions with existing lane configurations. Under future no build and build traffic conditions, the intersection was analyzed with the traffic signal that is to be installed as part of the approved Cedar Hill Landing development. Refer to Table 6 for a summary of the capacity analysis results, and Appendix F for copies of the Synchro reports.

Table 6: Analysis Summary of Mt. Misery Road and I-140 Westbound Ramps

ANALYSIS SCENARIO	LANE GROUP	STORAGE	Weekday AM Peak Hour								Weekday PM Peak Hour							
			Queues (1,2)		Lane		Approach		Overall		Queues (1,2)		Lane		Approach		Overall	
			95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)	95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)
2024 Existing	EBL	200	10	56	C	15.1	B	13.9	N/A	N/A	20	68	C	18.6	B	14.9	N/A	N/A
	EBR	-	28	82	B	13.5					55	113	B	14.0				
	NBL	400	3	36	A	8.6	A	8.6			0	28	A	8.1	A	8.1		
	NBT	-	0	0	-	-					0	0	-	-				
	SBT	-	0	0	-	-	-	-			0	0	-	-	-	-		
	SBR	200	0	0	-	-					0	0	-	-				
2029 No-Build	EBL	200	50	75	C	29.4	D	37.9	B	11.7	62	92	C	23.8	D	36.0	B	15.0
	EBR	-	144	184	D	40.3					230	207	D	39.0				
	NBL	400	1	41	A	0.5	A	0.8			3	22	A	3.5	A	6.3		
	NBT	-	4	95	A	0.9					59	149	A	6.3				
	SBT	-	267	219	A	8.5	A	7.5			224	130	B	11.2	B	10.3		
	SBR	200	0	33	A	0.1					0	11	A	0.0				
2030 No-Build	EBL	200	51	86	C	29.7	D	38.5	B	11.8	64	130	C	24.0	D	36.7	B	17.0
	EBR	-	148	179	D	41.0					237	283	D	39.8				
	NBL	400	1	48	A	0.6	A	0.9			9	45	A	9.1	B	10.8		
	NBT	-	4	78	A	0.9					202	246	B	10.9				
	SBT	-	272	196	A	8.6	A	7.5			227	198	B	11.2	B	10.3		
	SBR	200	0	42	A	0.1					0	29	A	0.0				
2031 No-Build	EBL	200	51	81	C	29.7	D	38.6	B	11.8	66	94	C	24.4	D	37.5	B	17.4
	EBR	-	150	184	D	41.1					244	270	D	40.8				
	NBL	400	1	49	A	0.7	A	1.0			8	50	A	8.9	B	11.7		
	NBT	-	6	93	A	1.0					204	274	B	11.8				
	SBT	-	300	234	A	9.1	A	8.0			240	236	B	11.4	B	10.5		
	SBR	200	0	36	A	0.1					0	31	A	0.0				
2029 Build *Phase 1*	EBL	200	85	120	C	33.9	D	41.0	B	13.1	162	196	C	30.9	D	37.9	B	16.2
	EBR	-	156	188	D	44.6					247	274	D	42.8				
	NBL	400	0	52	A	0.6	A	0.8			2	38	A	3.3	A	6.5		
	NBT	-	1	71	A	0.8					71	202	A	6.6				
	SBT	-	391	261	B	10.7	A	9.5			306	277	B	12.4	B	11.5		
	SBR	200	0	37	A	0.1					0	30	A	0.0				
2029 Build *Phase 1* Mitigated	EBL	200	89	122	D	35.8	D	43.3	B	13.4	162	183	C	30.9	D	37.9	B	16.2
	EBR	-	163	213	D	47.0					247	271	D	42.8				
	NBL	400	0	65	A	0.5	A	0.8			2	34	A	3.3	A	6.5		
	NBT	-	1	96	A	0.8					71	186	A	6.6				
	SBT	-	403	259	B	10.6	A	9.4			306	241	B	12.4	B	11.5		
	SBR	200	0	65	A	0.1					0	32	A	0.0				
2030 Build *Phase 2*	EBL	200	115	156	D	39.0	D	46.6	B	16.3	315	292	D	51.0	D	54.1	C	21.3
	EBR	-	181	191	D	51.8					333	380	E	57.4				
	NBL	400	0	59	A	1.5	A	0.9			2	49	A	3.8	A	7.3		
	NBT	-	1	89	A	0.9					110	187	A	7.3				
	SBT	-	584	362	B	14.9	B	13.4			445	334	B	14.2	B	13.1		
	SBR	200	0	194	A	0.1					0	110	A	0.1				
2030 Build *Phase 2* Mitigated	EBL	200	120	144	D	40.9	D	48.5	B	16.5	287	297	D	44.5	D	47.7	B	20.0
	EBR	-	184	191	D	53.7					297	334	D	51.0				
	NBL	400	2	63	A	2.1	A	1.2			2	48	A	3.1	A	8.6		
	NBT	-	14	74	A	1.2					103	219	A	8.7				
	SBT	-	600	359	B	14.6	B	13.2			385	299	B	13.4	B	12.5		
	SBR	200	0	168	A	0.1					0	61	A	0.1				
2031 Build *Phase 3*	EBL	200	172	240	E	56.8	E	74.1	C	26.4	639	300	F	86.6	E	76.8	C	33.2
	EBR	-	225	317	F	88.8					405	1,108	E	63.2				
	NBL	400	16	67	B	16.3	A	1.9			3	50	A	5.0	B	16.7		
	NBT	-	1	39	A	0.9					187	276	B	16.9				
	SBT	-	1,015	680	C	25.1	C	22.7			788	555	C	22.1	C	20.5		
	SBR	200	0	273	A	0.1					0	299	A	0.1				
2031 Build *Phase 3* Mitigated	EBLR	200	176	421	E	71.6	E	71.6	C	24.9	325	656	D	49.1	D	49.1	C	20.4
	NBLT	400	74	112	A	4.5	A	4.5			49	150	A	3.8	A	3.8		
	SBT	-	1,002	541	C	22.4	C	20.2			582	424	C	20.2	B	18.7		
	SBR	200	0	250	A	0.1					0	136	A	0.1				

Notes: (1) 95th percentile queue calculated by Synchro; Maximum queue by SimTraffic
(2) 95th percentile queue at unsignalized intersections based on 25' average vehicle length
(3) Reported LOS and Delay at unsignalized is for minor street approaches and major street Left/U-Turns

Existing Traffic Conditions

Capacity analysis indicates that the northbound left turn movement on Mt. Misery Road as well as the stop-controlled eastbound approach of the I-140 Westbound Ramp currently experiences minor delays and operates at LOS B or better during the AM and PM peak hours.

Future No Build Traffic Conditions

This intersection was analyzed under signalized conditions with no right turns on red permitted and permitted phasing provided for the left turn movement on Mt. Misery Road [due to low turning volumes]. Assuming a minimum cycle length of 90 seconds, Synchro's network optimization was utilized to determine cycle lengths, offsets, and phase splits for the actuated traffic signal operating under coordinated conditions with the existing traffic signal at the I-140 Eastbound Ramps. Please note that timings may differ between traffic conditions and peak hours due to the signal's actuated operation.

Under no build conditions for all horizon years, capacity analysis indicates that this intersection is expected to operate at an overall LOS B during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS B or better during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS D. Greater delays and poorer levels of service are not uncommon for minor streets located at a coordinated traffic signal where precedence is typically given to the mainline traffic.

Future Build Traffic Conditions

Under 2029 Build Phase 1 and 2030 Build Phase 2 conditions, capacity analysis indicates that this intersection is expected to operate at an overall LOS C or better during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS B or better during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS D. Under 2031 Build Phase 3 conditions, analysis indicates that this intersection is expected to operate at an overall LOS C during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS C or better during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS E.

While mitigation should be identified if a delay is expected to increase by 25% or more while maintaining the same LOS, or LOS is expected to degrade by at least one level between the no build and build conditions, no mitigation was considered at this intersection under horizon

years 2029 and 2030 since the overall intersection and approaches are expected to operate at acceptable levels of service; however, mitigation measures were identified for the horizon year 2031. With the eastbound approach of the I-140 Westbound Ramp restriped to provide an exclusive left turn lane and shared left-right lane and the northbound approach of Mt. Misery Road restriped to provide a shared left-through lane and through lane, capacity analysis indicates that this intersection could be expected to operate at an overall LOS C during the AM and PM peak hours with reduced overall delays. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS C or better during the peak hours while the eastbound approach of the I-140 Ramp is expected to operate at LOS E during the AM peak hour and LOS D during the PM peak hour with the majority of delays reduced. As previously stated, greater delays and poorer levels of service are not uncommon for minor streets located at a coordinated traffic signal where precedence is typically given to the mainline traffic.

7.3. Mt. Misery Road and I-140 Eastbound Ramps

This intersection was analyzed as a signalized intersection with no right turns on red permitted under existing, no build, and build traffic conditions with existing lane configurations. According to the existing signal plan (refer to Appendix G), protected/permitted phasing is provided for the southbound left turn movement on Mt. Misery Road. However, the left turn movement on Mt. Misery Road was analyzed with protected-only phasing under future no build and build traffic conditions. Refer to Table 7 for a summary of the capacity analysis results, and Appendix H for copies of the Synchro reports.

Existing Traffic Conditions

Assuming a minimum cycle length of 90 seconds, Synchro's intersection optimization was utilized to determine cycle lengths and phase splits for the actuated traffic signal operating under isolated conditions. Please note that timings may differ between traffic conditions and peak hours due to the signal's actuated operation.

Capacity analysis indicates that this intersection operates at an overall LOS B or better during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road operate at LOS B or better during the peak hours, while the eastbound approach of the I-140 Ramp operates at LOS C.

Table 7: Analysis Summary of Mt. Misery Road and I-140 Eastbound Ramps

ANALYSIS SCENARIO	LANE GROUP	STORAGE	Weekday AM Peak Hour								Weekday PM Peak Hour							
			Queues (1,2)		Lane		Approach		Overall		Queues (1,2)		Lane		Approach		Overall	
			95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)	95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)
2024 Existing	EBLTR	-	49	65	C	24.2	C	24.2	B	10.7	58	93	C	22.2	C	22.2	A	9.6
	NBT	-	84	101	B	10.9	B	13.2			187	171	B	11.7	B	11.4		
	NBR	300	192	177	B	14.2					82	115	B	10.8				
	SBL	400	117	176	C	21.6	A	7.6			63	110	C	21.0	A	6.6		
	SBT	-	92	108	A	2.5					133	98	A	4.5				
2029 No-Build	EBLTR	-	68	104	D	44.7	D	44.7	B	13.4	101	106	D	45.8	D	45.8	A	8.3
	NBT	-	114	115	B	10.5	B	12.0			189	162	A	3.9	A	3.4		
	NBR	300	214	211	B	12.9					35	63	A	2.1				
	SBL	400	157	197	D	42.2	B	12.3			95	90	D	49.4	A	8.3		
	SBT	-	200	139	A	3.8					137	103	A	3.2				
2030 No-Build	EBLTR	-	69	108	D	44.7	D	44.7	B	13.4	106	148	D	46.3	D	46.3	A	8.2
	NBT	-	117	131	B	10.6	B	12.1			176	240	A	3.9	A	3.5		
	NBR	300	215	234	B	13.0					31	115	A	2.1				
	SBL	400	157	199	D	41.9	B	12.1			84	124	D	45.8	A	8.0		
	SBT	-	204	159	A	4.0					122	115	A	3.3				
2031 No-Build	EBLTR	-	71	104	D	44.3	D	44.3	B	13.6	113	141	D	47.9	D	47.9	A	8.4
	NBT	-	129	142	B	11.0	B	12.5			196	245	A	4.2	A	3.7		
	NBR	300	225	231	B	13.4					29	115	A	2.2				
	SBL	400	159	198	D	41.2	B	12.2			83	142	D	46.7	A	7.8		
	SBT	-	246	171	A	4.6					93	119	A	3.3				
2029 Build *Phase 1*	EBLTR	-	73	112	D	45.3	D	45.3	B	16.3	122	160	D	53.0	D	53.0	B	17.0
	NBT	-	158	165	B	14.4	B	16.0			440	299	B	18.1	B	16.6		
	NBR	300	246	248	B	17.2					86	128	B	10.3				
	SBL	400	237	260	D	38.5	B	14.8			161	194	D	51.7	B	12.8		
	SBT	-	298	166	A	5.6					194	193	A	4.4				
2029 Build *Phase 1* Mitigated	EBLTR	-	77	117	D	48.6	D	48.6	B	16.6	122	158	D	53.0	D	53.0	B	12.9
	NBT	-	164	178	B	14.5	B	16.1			125	342	A	8.6	A	7.8		
	NBR	300	255	236	B	17.2					34	163	A	4.4				
	SBL	400	246	309	D	40.5	B	15.1			161	188	D	51.7	B	12.8		
	SBT	-	290	214	A	5.2					194	183	A	4.4				
2030 Build *Phase 2*	EBLTR	-	80	110	D	47.6	D	47.6	B	17.5	188	186	E	72.3	E	72.3	C	21.8
	NBT	-	200	200	B	17.9	B	19.6			576	334	C	21.7	B	19.6		
	NBR	300	270	252	C	21.0					81	144	A	9.5				
	SBL	400	232	296	C	32.9	B	14.7			260	269	E	68.0	B	17.5		
	SBT	-	380	175	A	6.8					195	238	A	4.1				
2030 Build *Phase 2* Mitigated	EBLTR	-	80	115	D	47.6	D	47.6	B	15.4	139	190	D	52.4	D	52.4	B	14.5
	NBT	-	165	176	B	11.7	B	12.7			133	414	B	11.0	A	9.8		
	NBR	300	223	234	B	13.6					29	230	A	3.7				
	SBL	200	134	189	D	35.8	B	15.1			103	147	D	46.3	B	14.1		
	SBT	-	377	171	A	6.1					241	202	A	5.6				
2031 Build *Phase 3*	EBLTR	-	87	129	D	52.0	D	52.0	B	18.0	304	311	F	113.0	F	113.0	D	35.6
	NBT	-	246	268	C	21.6	C	23.1			1037	634	D	41.1	D	36.7		
	NBR	300	286	299	C	24.5					85	400	B	12.0				
	SBL	400	236	357	C	28.6	B	13.8			454	460	F	89.5	C	24.5		
	SBT	-	333	153	A	6.8					253	738	A	4.6				
2031 Build *Phase 3* Mitigated	EBLTR	-	84	118	D	47.1	D	47.1	B	13.6	207	206	E	78.6	E	78.6	C	24.3
	NBT	-	79	241	A	6.4	A	6.8			843	571	C	26.8	C	23.7		
	NBR	300	86	235	A	7.2					50	371	A	6.3				
	SBL	200	136	228	D	37.5	B	15.3			114	191	D	53.3	B	17.9		
	SBT	-	235	181	A	4.9					330	244	A	7.1				

Notes: (1) 95th percentile queue calculated by Synchro; Maximum queue by SimTraffic
(2) 95th percentile queue at unsignalized intersections based on 25' average vehicle length
(3) Reported LOS and Delay at unsignalized is for minor street approaches and major street Left/U-Turns

Future No Build Traffic Conditions

Assuming a minimum cycle length of 90 seconds, Synchro's network optimization was utilized to determine cycle lengths, offsets, and phase splits for the actuated traffic signal operating under coordinated conditions with the new traffic signal at the I-140 Westbound Ramps. Please note that timings may differ between traffic conditions and peak hours due to the signal's actuated operation.

Under no build conditions for all horizon years, analysis indicates that this intersection is expected to operate at an overall LOS B or better during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS B or better during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS D.

Future Build Traffic Conditions

Under 2029 Build Phase 1 conditions, capacity analysis indicates that this intersection is expected to operate at an overall LOS B during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS B during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS D. Under 2030 Build Phase 2 conditions, analysis indicates that this intersection is expected to operate at an overall LOS C or better during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS B during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS D during the AM peak hour and LOS E during the PM peak hour. Under 2031 Build Phase 3 conditions, analysis indicates that this intersection is expected to operate at an overall LOS B during the AM peak hour and LOS D during the PM peak hour. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS D during the AM peak hour and LOS F during the PM peak hour.

While mitigation should be identified if a delay is expected to increase by 25% or more while maintaining the same LOS, LOS is expected to degrade by at least one level between the no build and build conditions, or LOS F is expected, no mitigation was considered at this intersection under horizon year 2029 since the overall intersection and approaches are expected to operate at acceptable levels of service; however, mitigation measures were identified for the horizon years 2030 and 2031. With an additional left turn lane provided on

the southbound approach of Mt. Misery Road to provide dual left turn lanes onto the ramp, capacity analysis indicates that this intersection could be expected to operate at an overall LOS C or better during the AM and PM peak hours with reduced overall delays. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS C or better during the peak hours while the eastbound approach of the I-140 Ramp is expected to operate at LOS D except for the PM peak hour in the year 2031 with the majority of delays reduced. As previously stated, greater delays and poorer levels of service are not uncommon for minor streets located at a coordinated traffic signal where precedence is typically given to the mainline traffic.

7.4. Mt. Misery Road and US 74 Westbound Ramps

This intersection was analyzed as a signalized intersection with no right turns on red permitted under existing, no build, and build traffic conditions with existing lane configurations. According to the existing signal plan (refer to Appendix G), protected/permitted phasing is provided for the northbound left turn movement on Mt. Misery Road. However, the left turn movement on Mt. Misery Road was analyzed with protected-only phasing under future no build and build traffic conditions. Refer to Table 8 for a summary of the capacity analysis results, and Appendix I for copies of the Synchro reports.

Existing Traffic Conditions

Assuming a minimum cycle length of 90 seconds, Synchro's intersection optimization was utilized to determine cycle lengths and phase splits for the actuated traffic signal operating under isolated conditions. Please note that timings may differ between traffic conditions and peak hours due to the signal's actuated operation.

Capacity analysis indicates that this intersection operates at an overall LOS C during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road operate at LOS C or better during the peak hours, while the westbound approach of the US 74 Ramp operates at LOS D or better.

Table 8: Analysis Summary of Mt. Misery Road and US 74 Westbound Ramps

ANALYSIS SCENARIO	LANE GROUP	STORAGE	Weekday AM Peak Hour								Weekday PM Peak Hour							
			Queues (1,2)		Lane		Approach		Overall		Queues (1,2)		Lane		Approach		Overall	
			95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)	95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)
2024 Existing	WBLT	-	64	100	C	28.9	C	33.6	C	22.3	142	219	C	28.0	D	38.5	C	30.8
	WBR	150	135	135	D	35.6					290	220	D	44.4				
	NBL	175	244	194	C	30.3	B	17.0			232	178	D	45.9	C	22.9		
	NBT	-	90	117	A	4.6					148	175	A	8.9				
	SBT	-	303	238	C	25.7	C	24.5			390	391	D	35.5	C	32.1		
	SBR	150	60	74	B	18.0					106	250	C	20.4				
2029 No-Build	WBLT	-	71	213	D	37.6	E	55.7	C	23.9	147	367	C	28.6	D	54.6	D	37.3
	WBR	150	183	206	E	62.2					412	240	E	66.4				
	NBL	175	119	245	C	20.4	B	12.8			176	203	D	49.9	C	24.7		
	NBT	-	119	292	A	6.1					277	235	B	11.9				
	SBT	-	431	376	C	25.5	C	24.4			565	392	D	39.9	D	35.6		
	SBR	150	59	231	B	16.4					78	233	B	18.1				
2030 No-Build	WBLT	-	71	185	D	37.4	E	56.2	C	24.5	148	549	C	28.3	E	56.4	D	38.7
	WBR	150	191	186	E	62.9					432	249	E	68.8				
	NBL	175	119	254	C	20.0	B	12.7			185	261	D	54.4	C	25.8		
	NBT	-	121	327	A	6.2					270	403	B	11.6				
	SBT	-	454	461	C	26.9	C	25.7			576	598	D	41.9	D	36.7		
	SBR	150	59	250	B	16.5					83	250	B	15.7				
2031 No-Build	WBLT	-	75	213	D	39.8	E	62.5	C	26.3	149	548	C	28.1	E	64.1	D	44.1
	WBR	150	220	201	E	70.2					465	250	E	79.3				
	NBL	175	126	252	C	21.2	B	13.2			182	261	E	64.3	C	29.8		
	NBT	-	122	313	A	6.3					315	464	B	13.4				
	SBT	-	510	434	C	28.4	C	27.1			612	726	D	47.8	D	41.6		
	SBR	150	59	250	B	16.5					88	250	B	15.6				
2029 Build *Phase 1*	WBLT	-	72	205	D	38.0	E	60.9	C	27.2	176	667	C	33.8	E	64.0	D	45.2
	WBR	150	213	200	E	68.7					544	250	E	76.6				
	NBL	175	131	262	C	23.7	B	14.9			222	258	F	84.3	C	26.1		
	NBT	-	144	326	A	7.8					15	319	A	2.4				
	SBT	-	583	579	C	29.8	C	28.1			778	787	E	55.5	D	49.4		
	SBR	150	64	250	B	15.4					135	250	C	23.2				
2029 Build *Phase 1* Mitigated	WBLT	-	76	101	D	51.4	B	13.1	B	17.9	198	227	E	59.5	B	17.8	B	19.1
	WBR	150	0	0	A	0.2					0	75	A	0.5				
	NBL	175	201	266	D	35.4	B	17.7			150	222	D	39.6	B	17.5		
	NBT	-	84	368	A	3.3					265	249	A	8.5				
	SBT	-	461	387	C	20.6	B	19.5			519	468	C	23.5	C	21.5		
	SBR	150	55	249	B	11.8					68	250	B	12.7				
2030 Build *Phase 2*	WBLT	-	78	249	D	42.1	E	70.8	C	32.0	173	1092	C	32.7	F	82.8	D	54.5
	WBR	150	256	226	E	79.9					607	250	F	101.9				
	NBL	175	154	270	C	20.4	B	15.3			200	269	F	99.3	C	28.7		
	NBT	-	211	344	B	11.4					45	499	A	4.2				
	SBT	-	757	998	D	37.7	D	35.0			866	1247	E	69.1	E	59.3		
	SBR	150	73	250	B	15.4					121	250	B	16.2				
2030 Build *Phase 2* Mitigated	WBLT	-	76	114	D	51.6	B	12.5	B	20.0	212	192	E	65.3	B	18.4	C	20.7
	WBR	150	0	0	A	0.2					0	29	A	0.5				
	NBL	175	196	265	D	39.2	B	18.9			139	216	D	42.1	B	19.1		
	NBT	-	77	308	A	3.4					326	314	B	11.1				
	SBT	-	633	471	C	24.6	C	23.0			642	535	C	26.2	C	23.7		
	SBR	150	59	250	B	11.3					70	250	B	12.5				
2031 Build *Phase 3*	WBLT	-	97	339	D	53.8	F	92.7	D	43.7	213	2753	D	40.2	F	106.7	E	71.9
	WBR	150	348	244	F	104.2					857	250	F	129.5				
	NBL	175	298	271	D	35.9	C	25.0			268	275	F	146.9	D	40.8		
	NBT	-	333	371	B	17.3					103	637	A	9.2				
	SBT	-	1091	1513	D	49.1	D	45.2			1245	2269	F	90.9	E	78.5		
	SBR	150	89	250	B	16.0					151	250	C	20.1				
2031 Build *Phase 3* Mitigated	WBLT	-	76	107	D	52.0	B	12.0	C	21.4	226	239	E	73.2	B	19.2	C	20.3
	WBR	150	0	0	A	0.2					0	124	A	0.6				
	NBL	175	320	269	D	52.3	C	24.8			150	249	E	64.5	B	16.2		
	NBT	-	190	392	A	5.5					22	284	A	1.8				
	SBT	-	776	438	C	23.4	C	21.2			722	632	C	28.1	C	24.9		
	SBR	150	23	248	A	4.5					67	250	B	10.1				

Notes: (1) 95th percentile queue calculated by Synchro; Maximum queue by SimTraffic
(2) 95th percentile queue at unsignalized intersections based on 25' average vehicle length
(3) Reported LOS and Delay at unsignalized is for minor street approaches and major street Left/U-Turns

Future No Build Traffic Conditions

Assuming a minimum cycle length of 90 seconds, Synchro's network optimization was utilized to determine cycle lengths, offsets, and phase splits for the actuated traffic signal operating under coordinated conditions with the new traffic signal at the US 74 Eastbound Ramps. Please note that timings may differ between traffic conditions and peak hours due to the signal's actuated operation.

Under no build conditions for all horizon years, analysis indicates that this intersection is expected to operate at an overall LOS C during the AM peak hour and LOS D during the PM peak hour. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours, while the westbound approach of the US 74 Ramp is expected to operate at LOS E except for the PM peak hour in the year 2029 (LOS D).

Future Build Traffic Conditions

Under 2029 Build Phase 1 conditions, capacity analysis indicates that this intersection is expected to operate at an overall LOS D or better during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours, while the eastbound approach of the I-140 Ramp is expected to operate at LOS E. Under 2030 Build Phase 2 conditions, analysis indicates that this intersection is expected to operate at an overall LOS D or better during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours except for the southbound approach during the PM peak hour, while the westbound approach of the US 74 Ramp is expected to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. Under 2031 Build Phase 3 conditions, analysis indicates that this intersection is expected to operate at an overall LOS D during the AM peak hour and LOS E during the PM peak hour. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours except for the southbound approach during the PM peak hour, while the eastbound approach of the I-140 Ramp is expected to operate at LOS F during the peak hours.

Mitigation should be identified if a delay is expected to increase by 25% or more while maintaining the same LOS, LOS is expected to degrade by at least one level between the no build and build conditions, or LOS F is expected. With the westbound right turn movement removed from signal-control and converted to a free-flow right turn movement, capacity

analysis indicates that this intersection could be expected to operate at an overall LOS C or better with reduced delays. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS C or better during the peak hours while the westbound approach of the US 74 Ramp is expected to operate at LOS B with the majority of delays reduced.

7.5. Mt. Misery Road/Lanvale Road and US 74 Eastbound Ramps

The existing unsignalized intersection was analyzed under existing traffic conditions with existing lane configurations. Under future no build and build traffic conditions, the intersection was analyzed with the traffic signal that is to be installed under STIP project HS-2003AS. Refer to Table 9 for a summary of the capacity analysis results, and Appendix J for copies of the Synchro reports.

Existing Traffic Conditions

Capacity analysis indicates that the southbound left turn movement on Mt. Misery Road currently experiences minor delays and operates at LOS B or better during the AM and PM peak hours, while the stop-controlled eastbound approach of the US 74 Eastbound Ramp currently experiences moderate overall delays and operates at LOS E or better.

Future No Build Traffic Conditions

This intersection was analyzed under signalized conditions with no right turns on red permitted and protected-only phasing provided for the left turn movement on Mt. Misery Road. Assuming a minimum cycle length of 90 seconds, Synchro's network optimization was utilized to determine cycle lengths, offsets, and phase splits for the actuated traffic signal operating under coordinated conditions with the existing traffic signal at the US 74 Westbound Ramps. Please note that timings may differ between traffic conditions and peak hours due to the signal's actuated operation.

Under no build conditions for all horizon years, analysis indicates that this intersection is expected to operate at an overall LOS D during the AM peak hour and LOS C during the PM peak hour. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours, while the eastbound approach of the US 74 Ramp is expected to operate at LOS E or F except for the PM peak hour in the year 2029 (LOS D).

Table 9: Analysis Summary of Mt. Misery Road/Lanvale Road and US 74 Eastbound Ramps

ANALYSIS SCENARIO	LANE GROUP	STORAGE	Weekday AM Peak Hour								Weekday PM Peak Hour							
			Queues (1,2)		Lane		Approach		Overall		Queues (1,2)		Lane		Approach		Overall	
			95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)	95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)
2024 Existing	EBLT	-	30	65	F	57.2	C	17.3	N/A	N/A	103	226	F	102.2	E	38.4	N/A	N/A
	EBR	-	55	130	B	13.3					53	272	C	16.3				
	NBT	-		4	-	-	-	-					-	-	-	-		
	NBR	50		43	-	-						22	-	-				
	SBL	250	28	149	B	11.9	B	11.9			18	88	A	9.9	A	9.9		
	SBT	-			-	-							-	-				
2029 No-Build	EBLT	-	40	120	C	28.7	E	79.4	D	48.4	83	83	C	32.0	D	51.6	C	30.2
	EBR	-	384	494	F	84.3					265	190	E	58.4				
	NBT	-	630	1968	E	55.3	D	45.4			536	371	D	36.9	C	33.4		
	NBR	50	243	150	C	25.5					83	141	B	16.4				
	SBL	250	322	323	E	74.4	D	35.3			149	188	D	47.8	B	18.7		
	SBT	-	42	411	A	5.5					219	142	A	7.0				
2030 No-Build	EBLT	-	41	66	C	28.7	F	81.9	D	51.1	84	123	C	33.1	E	58.4	C	31.5
	EBR	-	390	449	F	87.2					277	293	E	67.0				
	NBT	-	644	3053	E	58.4	D	47.6			546	567	D	36.5	C	33.0		
	NBR	50	246	150	C	25.7					82	150	B	15.8				
	SBL	250	337	339	F	83.1	D	39.1			151	259	D	49.1	B	19.5		
	SBT	-	47	483	A	5.3					247	291	A	7.6				
2031 No-Build	EBLT	-	43	169	C	30.4	F	87.6	D	54.8	85	168	C	33.2	E	59.2	C	33.8
	EBR	-	412	573	F	93.2					279	317	E	68.2				
	NBT	-	692	3415	E	65.3	D	52.7			582	628	D	40.8	D	36.7		
	NBR	50	261	150	C	27.1					82	150	B	15.9				
	SBL	250	358	335	F	84.4	D	40.3			179	335	E	56.5	C	21.4		
	SBT	-	92	462	A	5.8					193	528	A	6.8				
2029 Build *Phase 1*	EBLT	-	44	113	C	29.7	F	90.3	D	53.6	122	151	D	42.9	E	65.1	D	40.4
	EBR	-	393	535	F	97.0					328	307	E	74.5				
	NBT	-	669	3230	E	64.7	D	52.0			753	725	D	44.3	D	40.2		
	NBR	50	243	150	C	25.5					93	150	B	17.6				
	SBL	250	306	345	F	84.9	D	37.4			222	334	D	53.2	C	31.0		
	SBT	-	52	597	A	4.5					437	412	C	22.1				
2029 Build *Phase 1* Mitigated	EBLT	-	51	88	D	49.9	A	5.3	B	17.5	134	155	E	60.7	B	18.3	C	20.6
	EBR	-	0	8	A	0.4					0	8	A	0.3				
	NBT	-	572	709	C	24.4	C	21.5			582	500	C	28.8	C	26.2		
	NBR	50	201	150	B	15.5					70	150	B	12.0				
	SBL	250	293	313	D	42.9	B	18.1			199	253	D	45.5	B	16.2		
	SBT	-	0	370	A	0.9					46	231	A	4.5				
2030 Build *Phase 2*	EBLT	-	54	115	C	33.3	F	99.7	E	59.8	136	172	D	45.0	E	78.3	D	49.2
	EBR	-	435	602	F	108.2					339	369	F	94.4				
	NBT	-	776	5011	F	81.1	E	64.3			862	1448	E	60.8	D	54.6		
	NBR	50	269	150	C	28.1					88	150	B	16.1				
	SBL	250	321	350	F	85.5	D	36.6			230	334	E	67.0	C	33.1		
	SBT	-	78	629	A	4.2					378	440	B	19.4				
2030 Build *Phase 2* Mitigated	EBLT	-	57	76	D	53.2	A	6.4	B	19.3	159	155	E	70.7	C	23.3	C	27.6
	EBR	-	0	17	A	0.4					0	0	A	0.3				
	NBT	-	614	848	C	28.0	C	24.2			686	786	D	36.6	C	33.1		
	NBR	50	203	150	B	16.2					66	150	B	11.1				
	SBL	250	294	320	D	45.8	B	19.1			238	327	E	66.7	C	23.9		
	SBT	-	0	351	A	1.3					156	473	A	6.6				
2031 Build *Phase 3*	EBLT	-	70	244	D	43.4	F	119.2	E	67.3	196	241	E	63.5	F	110.2	E	62.9
	EBR	-	544	786	F	129.6					445	566	F	136.0				
	NBT	-	997	5953	F	88.6	E	71.3			1242	3599	E	79.4	E	71.7		
	NBR	50	325	150	C	32.6					104	150	B	17.9				
	SBL	250	433	350	F	104.0	D	42.6			328	349	F	94.6	D	37.6		
	SBT	-	0	641	A	3.0					303	550	B	14.0				
2031 Build *Phase 3* Mitigated	EBLT	-	60	100	E	55.8	A	7.1	B	15.9	177	223	E	70.3	C	25.2	C	26.4
	EBR	-	0	0	A	0.4					0	8	A	0.3				
	NBT	-	534	558	B	19.4	B	16.9			759	943	C	33.2	C	30.1		
	NBR	50	170	150	B	11.3					56	150	A	8.1				
	SBL	150	115	219	D	44.4	B	18.3			114	245	D	54.0	C	23.1		
	SBT	-	0	212	A	1.5					355	334	B	10.4				

Notes: (1) 95th percentile queue calculated by Synchro; Maximum queue by SimTraffic
(2) 95th percentile queue at unsignalized intersections based on 25' average vehicle length
(3) Reported LOS and Delay at unsignalized is for minor street approaches and major street Left/U-Turns

Future Build Traffic Conditions

Under 2029 Build Phase 1 conditions, capacity analysis indicates that this intersection is expected to operate at an overall LOS D during the AM and PM peak hours. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours, while the eastbound approach of the US 74 Ramp is expected to operate at LOS F during the AM peak hour and LOS E during the PM peak hour. Under 2030 Build Phase 2 conditions, analysis indicates that this intersection is expected to operate at an overall LOS E during the AM peak hour and LOS D during the PM peak hour. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS D or better during the peak hours except for the northbound approach during the AM peak hour, while the eastbound approach of the US 74 Ramp is expected to operate at LOS F during the AM peak hour and LOS E during the PM peak hour. Under 2031 Build Phase 3 conditions, analysis indicates that this intersection is expected to operate at an overall LOS E during the AM and PM peak hours. In addition, the northbound and southbound approaches are expected to operate at LOS E and LOS D, respectively during the peak hours. The eastbound approach of the US 74 Ramp is expected to operate at LOS F during the AM and PM peak hours.

Mitigation should be identified if a delay is expected to increase by 25% or more while maintaining the same LOS, LOS is expected to degrade by at least one level between the no build and build conditions, or LOS F is expected. With the eastbound right turn movement removed from signal-control and converted to a free-flow right turn movement, capacity analysis indicates that this intersection could be expected to operate at an overall LOS C or better with reduced delays under horizon years 2029 and 2030. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS C or better during the peak hours while the eastbound approach of the US 74 Ramp is expected to operate at LOS C or better with delays reduced. With an additional left turn lane provided on the southbound approach of Mt. Misery Road to provide dual left turn lanes onto the ramp, analysis indicates that this intersection could be expected to operate at an overall LOS C or better during the AM and PM peak hours with reduced overall delays under horizon year 2031. In addition, the northbound and southbound approaches of Mt. Misery Road are expected to operate at LOS C or better during the peak hours while the eastbound approach of the US 74 Ramp is expected to operate at LOS C or better during the peak hours in the year 2031 with the majority of delays reduced.

7.6. Hooper Road and Site Drive

This proposed unsignalized intersection was analyzed with [warranted] auxiliary turn lanes on Hooper Road. Refer to Table 10 for a summary of the capacity analysis results, and Appendix K for copies of the Synchro reports.

Table 10: Analysis Summary of Hooper Road and Site Drive

ANALYSIS SCENARIO	LANE GROUP	STORAGE	Weekday AM Peak Hour								Weekday PM Peak Hour							
			Queues (1,2)		Lane		Approach		Overall		Queues (1,2)		Lane		Approach		Overall	
			95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)	95th (ft)	Max (ft)	LOS (3)	Delay (sec) (3)	LOS (3)	Delay (sec) (3)	LOS	Delay (sec)
2029 Build *Phase 1*	EBLTR	-	8	60	A	8.9	A	8.9	N/A	N/A	8	50	A	9.3	A	9.3	N/A	N/A
	WBLTR	-	38	95	B	12.5	B	12.5			33	77	B	13.9	B	13.9		
	NBLT	-	3	15	A	7.3	A	7.3			5	32	A	7.4	A	7.4		
	NBR	175		0	A	0.0					0	4	A	0.0				
	SBLTR	-		8	A	7.4	A	7.4			0	23	A	7.8	A	7.8		
2030 Build Phase 2	EBLTR	-	40	123	B	10.4	B	10.4	N/A	N/A	33	91	B	11.0	B	11.0	N/A	N/A
	WBLTR	-	155	112	E	46.9	E	46.9			303	101	F	306.8	F	306.8		
	NBLT	-	5	35	A	7.4	A	7.4			28	54	A	8.1	A	8.1		
	NBR	350		0	A	0.0					0	2	A	0.0				
	SBLTR	-		7	A	7.4	A	7.4			0	20	A	7.8	A	7.8		
2030 Build *Phase 2* Mitigated	EBLTR	-	48	76	A	7.0	A	7.0	A	5.5	29	53	A	5.3	A	5.3	A	6.3
	WBLTR	-	26	64	A	4.8	A	4.8			22	61	A	6.3	A	6.3		
	NBLTR	-	19	46	A	3.7	A	3.7			116	111	A	6.7	A	6.7		
	SBLTR	-	3	29	A	4.1	A	4.1			3	30	A	5.3	A	5.3		
2031 Build *Phase 3*	EBLTR	-	160	210	B	11.5	B	11.5	A	8.3	61	87	A	7.2	A	7.2	A	8.8
	WBLTR	-	28	75	A	5.5	A	5.5			30	73	A	9.7	A	9.7		
	NBLTR	-	30	54	A	4.2	A	4.2			343	2,205	A	9.3	A	9.3		
	SBLTR	-	3	30	A	4.5	A	4.5			4	30	A	7.6	A	7.6		

Notes: (1) 95th percentile queue calculated by Synchro; Maximum queue by SimTraffic
(2) 95th percentile queue at unsignalized intersections based on 25' average vehicle length
(3) Reported LOS and Delay at unsignalized is for minor street approaches and major street Left/U-Turns

With warranted turn lanes on Hooper Road (refer to Appendix D), capacity analysis indicates that the northbound and southbound left turn movements on Hooper Road is expected to experience minor delays and operate at LOS A during the AM and PM peak hours under 2029 Build Phase 1 conditions, while the stop-controlled eastbound and westbound approaches of the Site Drive is expected to experience minor overall delays and operate at LOS B or better. Under 2030 Build Phase 2 conditions, analysis indicates that the northbound and southbound left turn movements on Hooper Road are expected to experience minor delays and operate at LOS A during the AM and PM peak hours, while the stop-controlled eastbound approach of the Site Drive is expected to experience minor overall delays and operate at LOS B. However, the stop-controlled westbound approach of the Site Drive is expected to experience moderate to greater overall delays and operate at LOS E during the AM peak hour and LOS F during the PM peak hour. With the installation of a roundabout at this intersection, capacity analysis indicates that the overall intersection is expected to operate at LOS A during the AM and PM peak hours, while the intersection approaches operate at LOS A. Under 2031 Build

Phase 3 conditions with the roundabout, analysis indicates that the overall intersection is expected to operate at LOS A during the AM and PM peak hours, while the intersection approaches operate at LOS B or better.

8. QUEUING ANALYSIS

In addition to the capacity analysis, a queuing analysis was performed utilizing SimTraffic to develop traffic simulation models for the AM and PM peak hours under existing, future no build, and future build traffic conditions. The capacity analysis tables presented in the previous section show the anticipated queue lengths. The 95th percentile queues are calculated by Synchro while the SimTraffic maximum queuing results are based on an average of ten (10) traffic simulation runs. Refer to Appendix L for copies of the SimTraffic reports.

Existing Traffic Conditions

Queuing analyses indicate that all 95th percentile and maximum queues do not exceed the length of the existing exclusive turn lanes during the AM and PM peak hours except for the auxiliary turn lanes at the US 74 Westbound Ramps on Mt. Misery Road.

Future No Build Traffic Conditions

With background traffic growth and the addition of approved development trips, queuing analyses indicate that all 95th percentile and maximum queues do not exceed the length of the existing exclusive turn lanes during the AM and PM peak hours except for the auxiliary turn lanes at the US 74 Westbound and Eastbound Ramps on Mt. Misery Road.

Future Build Traffic Conditions

With the addition of the proposed development trips, queuing analyses indicate that 95th percentile and maximum queues may exceed the length of the existing exclusive turn lanes during the AM and PM peak hours for the following lanes at the I-140 and US 74 Ramps on Mt. Misery Road without mitigation.

Mt. Misery Road and I-140 Westbound Ramp

- Eastbound left turn lane: 115 feet (2030) and 439 (2031)
- Southbound right turn lane: 99 feet (2031)

Mt. Misery Road and I-140 Eastbound Ramp

- Northbound right turn lane: 100 feet (2031)
- Southbound left turn lane: 60 feet (2031)

Mt. Misery Road and US 74 Westbound Ramp

- Westbound right turn lane: 394 feet (2029), 457 feet (2030), and 707 feet (2031)
- Northbound left turn lane: 87 feet (2029), 95 feet (2030), and 123 feet (2031)
- Southbound right turn lane: 100 feet (2029, 2030, 2031)

Mt. Misery Road and US 74 Eastbound Ramp

- Northbound right turn lane: 193 feet (2029), 219 feet (2030), and 275 feet (2031)
- Southbound left turn lane: 95 feet (2029), 100 feet (2030), and 183 feet (2031)

With the identified mitigation measures, queuing analyses indicate that 95th percentile and maximum queues may exceed the length of the existing exclusive turn lanes during the AM and PM peak hours for the following lanes at the I-140 and US 74 Ramps on Mt. Misery Road.

Mt. Misery Road and I-140 Westbound Ramp

- Eastbound left turn lane: 97 feet (2030) and 456 (2031)
- Southbound right turn lane: 50 feet (2031)

Mt. Misery Road and I-140 Eastbound Ramp

- Northbound right turn lane: 71 feet (2031)
- Southbound left turn lane: 28 feet (2031)

Mt. Misery Road and US 74 Westbound Ramp

- Northbound left turn lane: 91 feet (2029), 90 feet (2030), and 145 feet (2031)
- Southbound right turn lane: 100 feet (2029, 2030, 2031)

Mt. Misery Road and US 74 Eastbound Ramp

- Northbound right turn lane: 151 feet (2029), 153 feet (2030), and 120 feet (2031)
- Southbound left turn lane: 68 feet (2029), 77 feet (2030), and 95 feet (2031)

Considering that the traffic signals located at the ramps are coordinated and protected/permitted left turn phasing and right turns on red are not permitted under future analysis, longer queues and storage deficiencies are compounded during the peak times with the addition of background traffic growth as well as approved and proposed development traffic.

9. MITIGATION MEASURES

Based on the findings of this study, specific geometric and traffic control improvements have been identified to accommodate the additional traffic generated by the proposed development in addition to background traffic growth and approved development. Refer to Figures 11A-11C for an illustration of the mitigation measures summarized below.

Intersection of Mt. Misery Road and Hooper Road

Phase 1

- Construct an exclusive westbound right turn lane on Mt. Misery Road with a minimum of 500 feet of storage and appropriate bay taper.
- Construct an exclusive eastbound left turn lane on Mt. Misery Road with a minimum of 50 feet of storage and appropriate bay and transitional tapers.

Phase 2

- Install a traffic signal at this intersection.
- Extend exclusive eastbound left turn lane on Mt. Misery Road to provide a minimum of 100 feet of storage with appropriate bay and transitional tapers.

Phase 3

- Extend exclusive eastbound left turn lane on Mt. Misery Road to provide a minimum of 150 feet of storage with appropriate bay and transitional tapers.

Intersection of Mt. Misery Road and I-140 Westbound Ramp

Phase 3

- Restripe the northbound approach of Mt. Misery Road to provide a shared left-through lane and through lane.
- Restripe the eastbound approach of the Westbound I-140 Ramp to provide an exclusive left turn lane and shared left-right lane.
- In order to accommodate these improvements, Mt. Misery Road would need to be widened and/or restriped to provide two (2) outbound travel lanes for an appropriate distance.

Intersection of Mt. Misery Road and I-140 Eastbound Ramp

Phase 2

- Construct an additional left turn lane on the southbound approach of Mt. Misery Road to provide dual left turn lanes onto the I-140 Eastbound Ramp with a minimum of 200 feet of full storage [per lane] and appropriate bay and transitional tapers.
- In order to accommodate these improvements, Mt. Misery Road and the on-ramp would need to be widened and/or restriped to accommodate the dual left turn movement.

Intersection of Mt. Misery Road and US 74 Westbound Ramp

Phase 1

- Widen and/or restripe Mt. Misery Road to provide an additional outbound lane for an appropriate distance north of the US 74 Westbound Ramp to accommodate a free-flow right turn movement from the off-ramp.
- To allow free-flowing conditions, the westbound right turn movement would not operate under signal-control.

Intersection of Mt. Misery Road/Lanvale Road and US 74 Eastbound Ramp

Phase 1

- Widen and/or restripe Mt. Misery Road to provide an additional outbound lane for an appropriate distance south of the US 74 Eastbound Ramp to accommodate a free-flow right turn movement from the off-ramp.
- To allow free-flowing conditions, the eastbound right turn movement would not operate under signal-control.

Phase 3

- Construct an additional left turn lane on the southbound approach of Mt. Misery Road to provide dual left turn lanes onto the US 74 Eastbound Ramp with a minimum of 150 feet of full storage [per lane] and appropriate bay and transitional tapers.
- In order to accommodate these improvements, Mt. Misery Road and the on-ramp would need to be widened and/or restriped to accommodate the dual left turn movement.

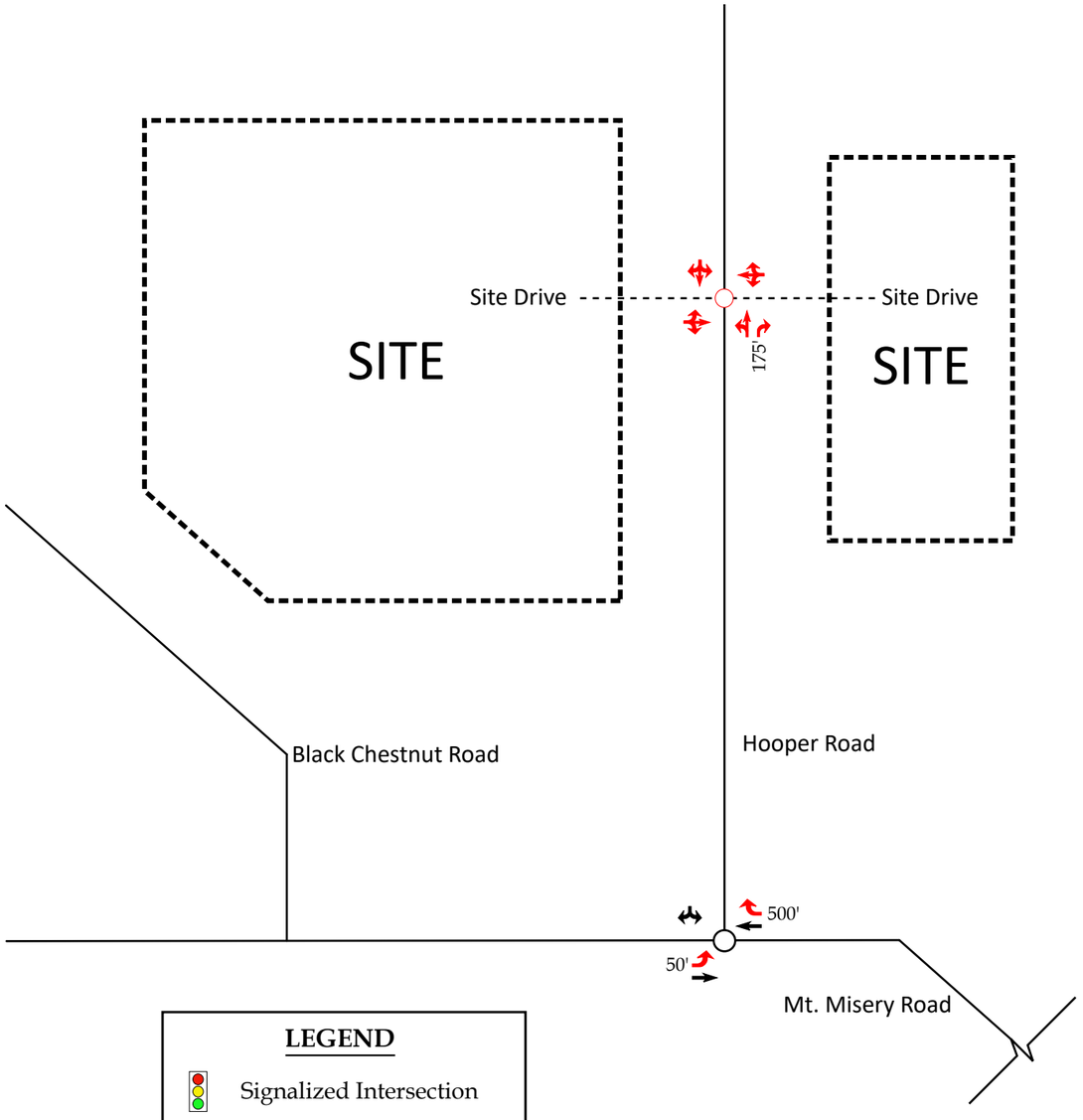
Intersection of Hooper Road and Site Drive

Phase 1

- Construct an exclusive northbound right turn lane on Hooper Road with a minimum of 175 feet of storage and appropriate bay taper.
- Provide a one-lane cross-section for the eastbound and westbound approaches of the Site Drive. Per NCDOT Policy, a minimum of 100 feet of internal protected stem should be provided for the drives.

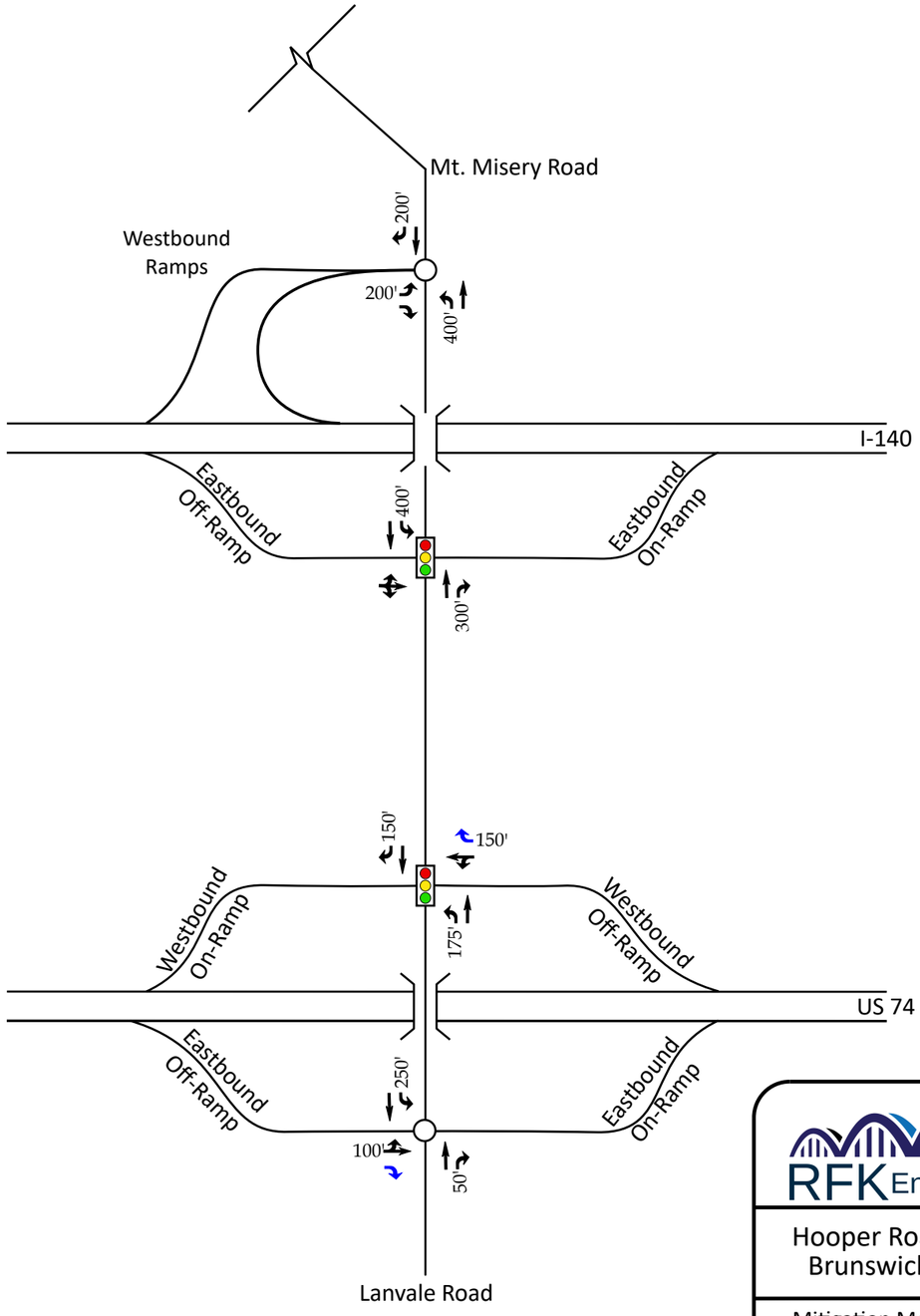
Phase 2

- Construct a roundabout at this intersection.



LEGEND

- Signalized Intersection
- Unsignalized Intersection
- Existing Lane
- Proposed Lane
- X' Storage (In Feet)
- Free-Flow Right Turn

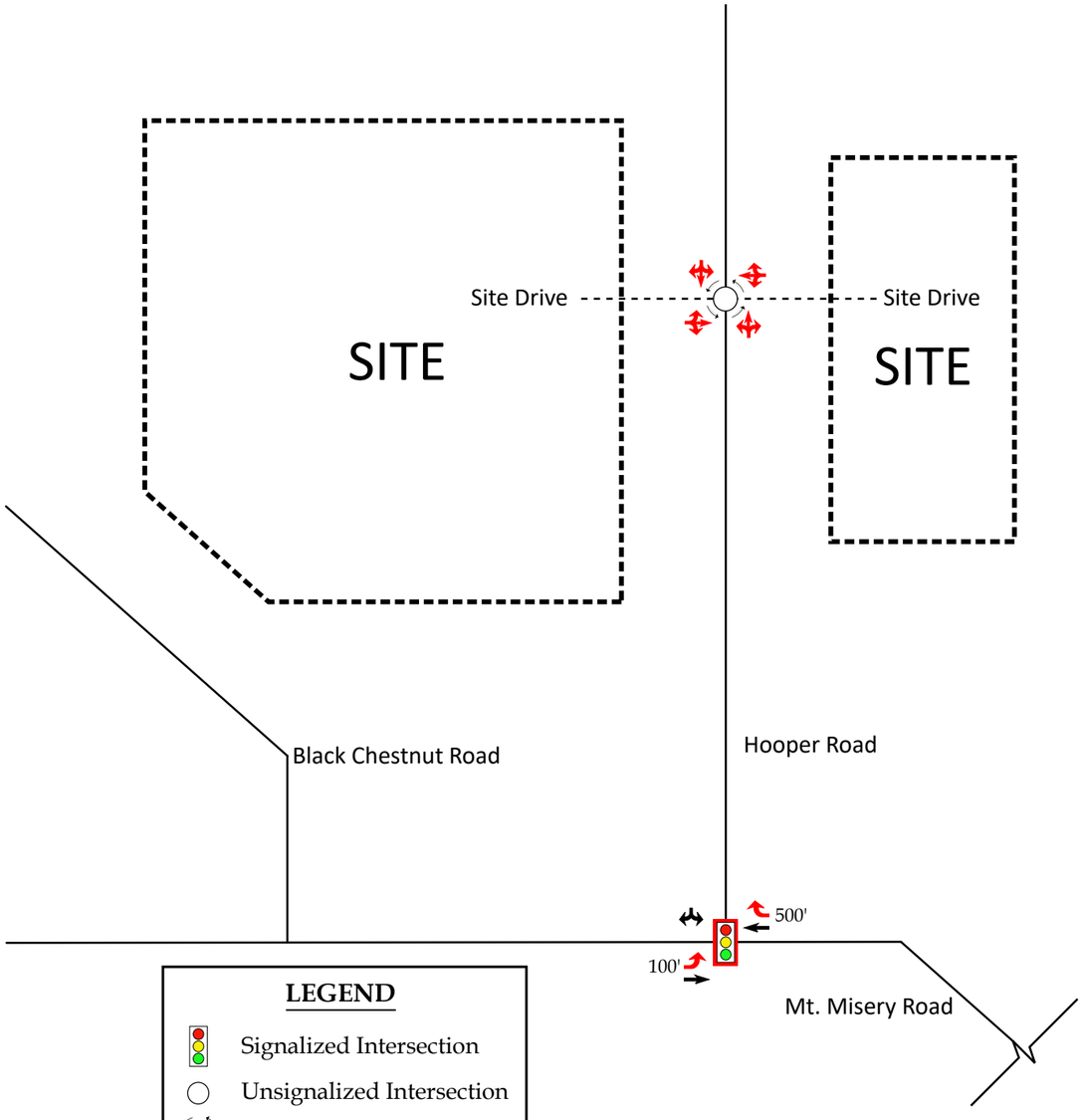


RFK Engineers

Hooper Road Subdivsion
Brunswick County, NC

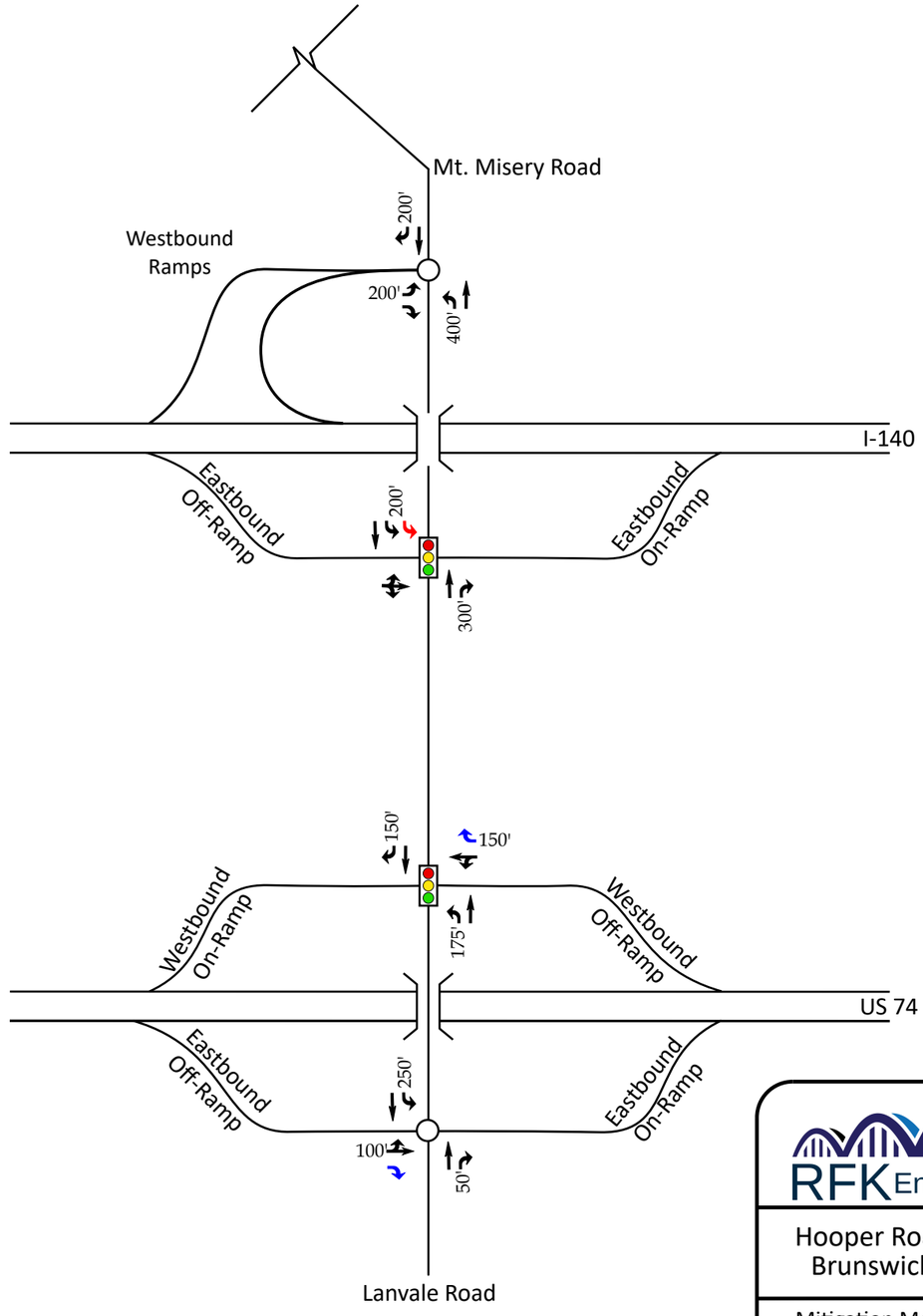
Mitigation Measures Identified under Build 2029 (Phase 1)

Not to Scale | Figure 11A



LEGEND

- Signalized Intersection
- Unsignalized Intersection
- Roundabout Intersection
- Existing Lane
- Proposed Lane
- X' Storage (In Feet)
- Free-Flow Right Turn

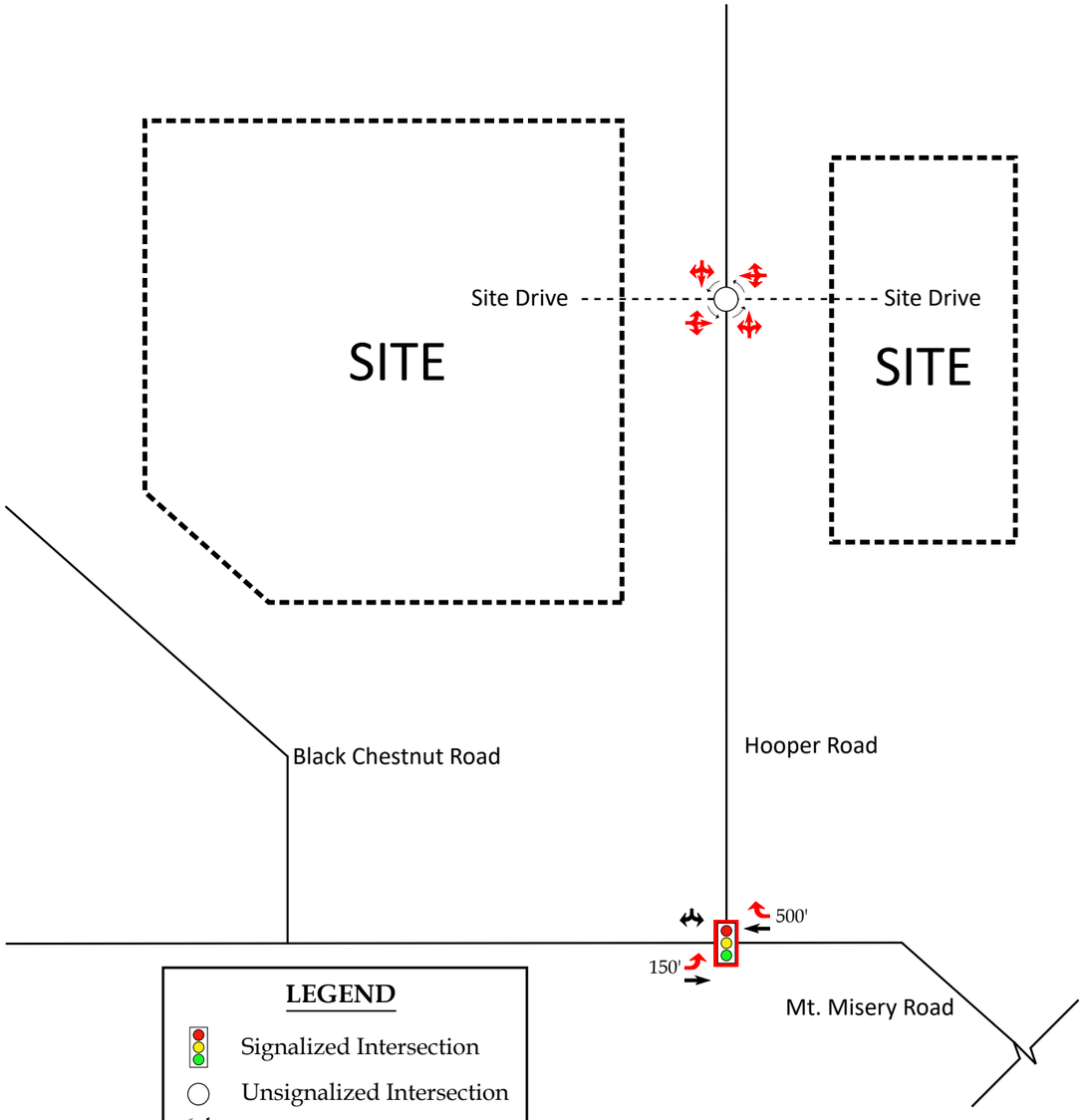


RFK Engineers

Hooper Road Subdivsion
Brunswick County, NC

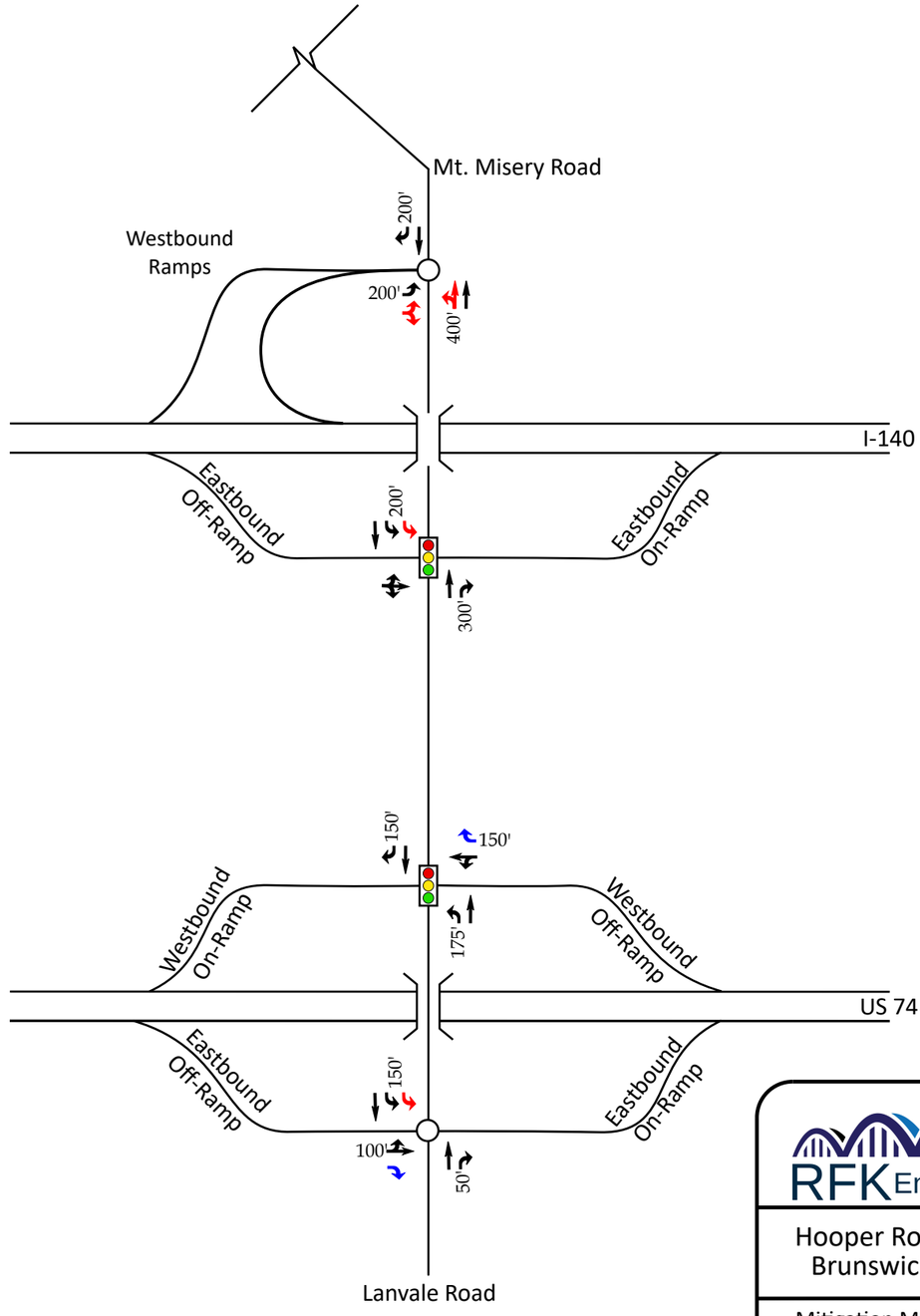
Mitigation Measures Identified under Build 2030 (Phase 2)

Not to Scale | Figure 11B



LEGEND

- Signalized Intersection
- Unsignalized Intersection
- Roundabout Intersection
- Existing Lane
- Proposed Lane
- X' Storage (In Feet)
- Free-Flow Right Turn



RFK Engineers

Hooper Road Subdivsion
Brunswick County, NC

Mitigation Measures Identified under Build 2031 (Phase 3)

Not to Scale | Figure 11C

APPENDIX

APPENDIX A

TIA SCOPING CHECKLIST

WMPO

305 Chestnut Street
PO Box 1810
Wilmington, NC 28402
Ph: (910) 341-3258
Fax: (910) 341-7801
www.wmpo.org

December 12, 2024

Mr. Scott Rosenstock
18300 Redmond Way #120
Redmond, WA 98052

RE: Approved scope of study for the Traffic Impact Analysis associated with the proposed **Hooper Road Subdivision** in Brunswick County, NC

Mr. Rosenstock:

Based on the information provided and conversations held to date, it is our understanding that the proposed **Hooper Road Subdivision** is proposed to be constructed in three (3) phases and will consist of:

Phase 1 (2029)

- ITE Land Use Code 210 Single Family Detached Housing – 614 DU

Phase 2 (2030)

- ITE Land Use Code 210 Single Family Detached Housing – 1,156 DU

Full Build (2031)

- ITE Land Use Code 210 Single Family Detached Housing – 1,722 DU

Following is the scope of study for the Traffic Impact Analysis:

1. **Data collection – Analysis Parameters**
   a. Study Intersections
      i. SR 1427 (Hooper Road NE) at SR 1426 (Mt. Misery Road NE)
      ii. SR 1426 (Mt. Misery Road NE) at I-140 Westbound Ramps
      iii. SR 1426 (Mt. Misery Road NE) at I-140 Eastbound Ramps
      iv. SR 1426 (Mt. Misery Road NE) at US 74/76 (Andrew Jackson Highway) Westbound Ramps
      v. SR 1426 (Mt. Misery Road NE) at US 74/76 (Andrew Jackson Highway) Eastbound Ramps
      vi. SR 1427 (Hooper Road NE) at Proposed Site Access 1
      vii. SR 1745 (Black Chestnut Drive) at Proposed Site Access 2
      viii. SR 1426 (Mt. Misery Road NE) at SR 1745 (Black Chestnut Drive)

b. Traffic Counts

i. For existing intersections, provide turning movement counts for Weekday AM peak hour (7:00am – 9:00am) and Weekday PM peak hour (4:00pm – 6:00pm), signal timing (if applicable), and lane geometry.

ii. Collect 13-hour counts for intersections where signal warrant analyses are anticipated.

c. Site Trip Generation, Site Trip Distribution and Background Traffic Assumptions

i. Site Trip Generation Estimate
- Approved as provided in scoping checklist submitted to WMPO on 11/15/24.

ii. Site Trip Distribution
- To be submitted and approved prior to development of preliminary TIA.

iii. Adjacent Developments (approved but not yet built)
- Cedar Hill Landing

iv. Planned Roadway Improvements
- N/A

v. Background Traffic Assumptions
- Phase 1 – 2029
- Phase 2 - 2030
- Full Build - 2031
- Growth rate – 1%

2. Capacity Analysis: Weekday AM and Weekday PM

a. Study Scenarios

i. 2024 Existing Conditions

i. 2029 Future No-Build Conditions
[existing + 1% background growth + adjacent development]

ii. 2029 Phase 1 Condition (without improvements)
[existing + 1% background growth + site trips+ adjacent development]

iii. 2029 Phase 1 Condition (with improvements)
[existing + 1% background growth + site trips+ adjacent development + improvements]

iv. 2030 Future No-Build Conditions
[existing + 1% background growth + adjacent development]

v. 2030 Phase 2 Conditions (without improvements)
[existing + 1% background growth + site trips+ adjacent development]

vi. 2030 Phase 2 Conditions (with improvements)
[existing + 1% background growth + site trips+ adjacent development + improvements]

vii. 2031 Future No-Build Conditions
[existing + 1% background growth + adjacent development]

viii. 2031 Full Build Condition (without improvements)
[existing + 1% background growth + site trips+ adjacent development]

ix. 2031 Full Build Condition (with improvements)
[existing + 1% background growth + site trips+ adjacent development + improvements]

3. Final Report Submittal:

a. Completed TIA Application
b. Signed and sealed by a Professional Engineer
c. Electronic copy submitted via file share link to include PDF of TIA and Synchro output files as well as digital Synchro files

4. Notes:

a. This scope shall remain valid for three months from the date of this letter
b. Please note that if any changes occur (including but not limited to: land use, intensity, phasing, and/or site access) additional analysis may be required.

Please feel free to contact me at (910) 341-7890 if you have any questions regarding this scope.

Sincerely,

Abby Lorenzo, MPA
Deputy Director
Wilmington Urban Area MPO

Attachments:

Division 3 Traffic Impact Analysis Supplemental Guidelines (updated September 28, 2022)
Scoping request packet provided by RFK Engineers (Dated 11/15/24)
Concept Site Plan provided by RFK Engineers (provided 12/06/24)

EC: Ben Hughes, PE, District Engineer, NCDOT
Jon Roan, Deputy District Engineer, NCDOT
Frank Mike, Assistant District Engineer, NCDOT
Michael Bass, Assistant District Engineer, NCDOT
Stonewall Mathis, PE, Division Traffic Engineer, NCDOT
Madi Lee, PE, Development Review Engineer, NCDOT
Bryce Cox, Assistant Traffic Engineer, NCDOT
Helen Bunch, Long Range Planner, Brunswick County
Marc Pages, Principal Planner, Brunswick County
Bill McDow, Associate Planner, WMPO

Traffic Impact Analysis Supplemental Guidelines

The ***NCDOT Congestion Management Section's Capacity Analysis Guidelines Standards & Best Practices*** shall be the basis for the development of all TIA reports. This Supplement provides a submittal framework for TIAs, as well as direction on certain items within the *Standards & Best Practices*. Any deviations from the any of these documents must be approved prior to preparation of the TIA.

Submittal Framework for TIAs (3 Step process)

Step 1: Scoping Document – A scope approval will be provided no later than 10 business days from receipt of the complete scoping document. Incomplete scoping documents will not be accepted for review and approval. The documents to include for review and approval are:

1. Site Plan/Vicinity Map and a plan overlay on an aerial map
2. Proposed Land Uses and Trip Generation, including Pass-by and Internal Capture
3. Proposed Study Intersections and Types of Accesses
4. Proposed Annual Growth Rate with justification
5. Proposed Build Out Year(s)
6. Study Method for Capacity Analysis – peak periods and conditions
7. Approved Adjacent Developments
8. Committed Improvements

IMPORTANT

If the proposed development is phased, then land uses, trip generation estimates, build out years, roadway improvements and analysis must reflect the proposed phasing. The phase schedule must be submitted for approval prior to use in the TIA.

Step 1.A: Pre-Completeness Check – Documents for Input Verification prior to full TIA submittal – This step is **recommended**, *as these will be the first items checked at Step 2. If the applicant chooses to submit for input verification, then comments or approval will be provided no later than 20 business days from receipt of the documents. This step will result in the reduced likelihood of issues discovered in the Completeness Review and Final Review.*

All or any portion of these items can be submitted for review/approval:

1. Trip Distribution – Traffic counts must be performed prior to submittal of proposed distributions.
2. Proposed Volume Balancing
3. All diagrams – Existing Traffic Volumes, Future No Build Volumes, and Future Build Volumes
4. Synchro / Sidra Network Model Framework – Submit the framework for the Future No Build analysis. This Synchro / Sidra model can be modified for Existing analysis.

Step 2: Completeness Review – TIA Report – A digital submittal of the completed document is to be submitted for Preliminary Review. This review will be conducted to determine the completeness of the TIA report, and comments or approval will be provided no later than 20 business days from receipt of the TIA.

Step 3: Final Sealed TIA Report - After preliminary approval has been provided, a digital and/or hard copy (as requested) of the sealed TIA report is to be submitted. Final review comments or approval will be provided no later than 20 business days from receipt of the TIA.

Supplemental Direction for the Capacity Analysis *Standards & Best Practices*

Background Traffic Assumptions, Site Trip Generation, and Site Trip Distribution

1. Peak Hour Determination – In order to establish an accurate peak hour for analysis, the controlling study intersection shall be determined. Once determined, the controlling intersection's peak hour timeframe shall be used for all other study intersections:
   a) Analyze all study intersection volumes and determine the controlling intersection (intersection with highest total volume).
   b) Identify the relevant peak hours for the controlling intersection (e.g. 7:45-8:45 AM; 4:45-5:45 PM).
   c) Use the volumes from the same peak hour at all other intersections in the study.
   d) Do not use volume balancing without prior approval. Use of the same time period at all intersections will typically reduce the need to perform volume balancing.

2. Site Trip Generation:
   a) Unadjusted Trips – Use the appropriate Land Use Code in the *ITE Trip Generation Manual* (currently the 11th Edition). The *NCDOT Congestion Management Rate vs Equation Spreadsheet* recommends the variable, peak hour type, and type of trip calculation method to use for specific land uses.

   b) Internal Capture - The *Standards* state to limit reductions for internal capture to the "land use categories and time periods in the current *HANDBOOK*." The current ITE Trip Generation Handbook is the 3rd Edition. The *Standards* also state to estimate internal capture rates "using the *NCHRP 684 spreadsheet* referenced in the current *HANDBOOK*." The *Standards* give guidance on using the spreadsheet:

      "Do not use transit or non-motorized splits in spreadsheet.
      Vehicle occupancy "1.1" (NC averages).
      Use Walking Distance between land uses of 4000' *or* the calculated maximum distance between a given pair of land use categories in the proposed site."

      To determine the internal capture entering and exiting per Land Use, use the percentages in *Table 6-P: Internal Capture Percentages by Land Use* with the "Estimated Vehicle-Trips" in *Table 1-P: Base Vehicle-Trip Generation Estimates* (Tables found in the *NCHRP 684 Internal Trip Capture Estimation Tool*).

   c) Pass-by – The *Standards* state "to limit pass-by percentages to retail land uses in [the] *HANDBOOK*." The current *ITE Trip Generation Handbook* is the 3rd Edition. The calculation of the trips should be based on the total peak hour trips with a 50/50 entering/exiting split; they are pass-by trips which means they enter and exit along the same path, in the same direction, within the same hour. *The pass-by will be capped at 10% of the adjacent street traffic.*

3. Site Trip Distribution –
   Determined based on collected traffic count data. Both site trip distribution and pass-by trip distribution should be submitted for approval prior to use in the TIA.

Synchro Signalized Intersection Setup

1. For existing signals, the size and position of the detector loops and the timing chart settings must match the existing signal plans, with exception of:
    a) Yellow Time = 5 sec
    b) Red Time = 2 sec
    c) Specific timing settings provided by the signal timing agency
2. For proposed signals, size and place the detector loops according to Part 1, Section 4 of the *NCDOT Signal Design Manual*.
3. Contact signal timing agency for existing peak hour timings and other operational mode information. Request specific analysis periods to ensure proper information is provided.
4. Existing signal timings shall be "locked" for all scenarios unless signal phasing changes are necessary in the "Future Build with Improvements" scenario.
5. Recall Mode:
    a) If simulating 'free run' operation (Actuated-Uncoordinated), use Min Recall on main street phases.
    b) If simulating 'Coordinated Mode' (Actuated-Coordinate), use C-Max on the coordinated phases.
6. Right-Turn-On-Red (RTOR) shall not be used in existing or future conditions without prior approval. In some circumstances, RTOR may be necessary to minimize Synchro conflict errors.
7. All signalized left turns with a dedicated signal phase will be protected-only movements in all future conditions. Protected-only left turn phasing in future conditions will identify required vehicle storage needs in the event that protected-only phasing is necessary in the future.
8. Permissive-only left-turn phasing should remain permissive in future conditions, except where protected-only phasing is being analyzed as an improvement to the intersection in the Future Build with Improvement condition.

Synchro Analysis and Data Reports

1. Any "Field Condition" analysis that the engineer wishes to include can be provided in a separate supplemental analysis file.
2. The "Future No-Build" and "Future Build" analysis conditions should only include improvements that are a requirement of approved developments or a State/Municipal project to be constructed in the build year for the proposed development. Any other capacity gained from lane improvements shown in the analysis is assumed to be proposed by the developer and should only be included in the "Future Build + Improvements" analysis condition.
3. The TIA shall include a chart that shows the "Level of Service" and "Delay" for each movement, approach, and overall intersection, for every access alternative and build scenario.
4. A SimTraffic "Queuing and Blocking Report" for the network shall be included.
5. A comparison chart listing the Synchro 95th Percentile Queues and the SimTraffic Maximum Queues shall be provided for all exclusive turn lanes. This chart shall include the existing turn lane length for comparison to the reported Queue lengths. A sample chart is included on the last page.

Recommendations of the TIA Report

1. The *NCDOT Policy On Street And Driveway Access to North Carolina Highways* (p. 21-22) states, "The applicant shall be required to identify mitigation improvements to the roadway network if at least one of the following conditions exists when comparing base network conditions to project conditions:
    a) The total average delay at an intersection or individual approach increases by 25% or greater, while maintaining the same Level of Service,
    b) The Level of Service degrades by at least one level, or
    c) Level of Service is "F."
2. In the event that approved developments do not move forward, a revised scenario reflecting the future conditions will be required as directed by the reviewing agencies to reflect the changes in the underlying assumptions of the analysis.
3. The *Best Practices* state, "When performing analyses, providing an adequate overall intersection LOS alone is not sufficient. Items such as queuing, individual movement level of service, and volume-to-capacity ratio should be evaluated and addressed." The information in the charts listed under "Synchro Analysis and Data Reports" in the previous section, should be used when determining the improvements to address the impacts of site-generated traffic.
4. Recommended storage lane lengths shall be provided for all exclusive turn lanes and based on the Synchro 95th Percentile Queue or the SimTraffic Maximum Queue, whichever is larger.
5. If phase changes are recommended as an improvement, then a Synchro analysis for "Future Build + Improvements" shall be included in the TIA.
6. Signal timing adjustments and/or Signal Optimization in Synchro (i.e. "Optimize Splits") shall not be used unless phase changes are recommended as an improvement. Signal timing adjustment and/or Signal Optimization as a sole "improvement" to mitigate the impacts of site-generated traffic will not be permitted.
7. Use the *Manual on Uniform Traffic Control Devices* for proposed full-movement signals to conduct signal warrant analysis based upon a 13-hour turning movement count.
8. Use the *Guidelines for Signalization of Intersections with Two or Three Approaches* (ITRE report dated December 31, 2017) where applicable, to determine possible signalization.

WILMINGTON URBAN AREA
METROPOLITAN PLANNING ORGANIZATION

P.O. Box 1810
Wilmington, North Carolina 28402
910 341 3258 910 341 7801 FAX

Received on 11/15/24

Traffic Impact Analysis (TIA): Procedures and Scoping Checklist

Date Submitted: 11 / 15 / 2024
(To be filled out by applicant)

Date Received by WMPO or NCDOT: ___/___/_____
(To be filled out by the Department)

The purpose of this checklist is to outline and streamline the Traffic Impact Analysis (TIA) scoping process and provide scoping information for WMPO to review and comment prior to developing a TIA.

The review procedures are as follows:

1. Contact the Wilmington Metropolitan Planning Organization (WMPO) to determine if a TIA will be required for the development you are proposing within the WMPO Planning Area Boundary. If a TIA is required, the WMPO will coordinate scoping with the Applicant, NCDOT and the governing planning department.

2. Also, if a TIA is required, the Applicant's Traffic Engineer shall fill out the checklist below in its entirety in as much detail as possible, include all exhibits and documentation as noted in the checklist and provide it to the WMPO representative no later than 7 business days prior to the date of the next scoping meeting. Scoping meetings occur each Wednesday.

3. The Applicant's Traffic Engineer (and other interested representatives from the Applicants Design Team) may attend the scoping meeting as deemed necessary and by WMPO request only.

4. Once the scope has been established and submitted, the WMPO will coordinate with NCDOT and the governing Planning department to finalize and submit a formal ***Scoping Letter*** to the Transportation Engineer (applicant). If the checklist is deemed complete and in sufficient detail, the scoping letter will be issued within 10 business days of the date of the official receipt date. The applicant should review the NCDOT Division 3 TIA Supplemental Guidelines for details on the TIA review process.

5. TIA Submittal: The Applicant shall submit digital copies of the TIA and associated models and files to the WMPO for distribution to NCDOT and governing planning agency for review. The TIA preliminary review comments will be sent within 20 business days of TIA submittal. The 20-day review clock is re-set with each set of comments to the Applicant. The TIA is not considered as final and approved until the ***TIA Approval Letter*** is submitted by the WMPO.

Development Name: Hooper Road Subdivision
WMPO ID # _____

TIA Scoping Checklist:

1. Engineering Firm of Record: RFK Engineers, PLLC

2. Contact information:
   a. Applicant Name: Blue Fern Development - Scott Rosenstock
   b. Email: scott@bluefern.com
   c. Address: 18300 Redmond Way #120, Redmond WA 98052
   d. Phone Number: 425-403-0818

3. Development Name: Hooper Road Subdivision

4. Tax Parcel ID #: 01000021 01000010 0100002101 00600011

5. Site Address(s):

   9321 Hooper Road
   9351 Hooper Road
   9370 Hooper Road

6. Type of Development: List Land Use(s)/Intensity and ITE codes:

   Single Family Residential - 1,722 Dwelling Units

   ITE Land USe Code 210

7. Development Concept:
   a. Provide a site plan or conceptual plan (include road circulation pattern and development access points to public rights of way). SEE ATTACHMENT A
   b. Add scaled site plan on Arial imagery which includes adjacent properties and access points. SEE ATTACHMENT B

8. If this development is intended to be built in multiple phases the TIA is required to accurately reflect the phasing. If the phasing is not included within the TIA, a revision and/or interim TIA's will be required. SEE ATTACHMENT C FOR PHASING PLAN
   a. What is the proposed build out year? BUILD-OUT YEAR - 2031
   b. If the project is phased, specify the build out year for each phase.
      PHASE 1 - 2029; PHASE 2 - 2030; PHASE 3 - 2031

9. Site Trip Generation:
   a. Provide a trip generation estimate using the ITE Trip Generation Manual (latest) by phase, if applicable. SEE ATTACHMENT D for TRIP GENERATION CALCULATIONS

   b. Provide pass-by and internal capture reduction calculations, if applicable.
   N/A ALL RESIDENTIAL DEVELOPMENT
   c. Provide a trip generation on AM / PM and Saturday peak hour.

10. Check to see if any of the following apply:
   a. Proposed TIA is within the area of a known Transportation Improvement Project (TIP)
   HS-2003AS US 74/76 EB RAMP AT SR 1426 (LANVALE ROAD) - INSTALL TRAFFIC SIGNAL - CONSTRUCTION YEAR 2024
   b. Proposed TIA is within a surrounding municipality that has a planned or active transportation projects

11. Approved Adjacent Developments can be found at the following link:
   a. List all approved adjacent developments within the TIA study area:
   SEE ATTACHMENT E FOR LIST OF DEVELOPMENTS AND MAP

   b. Additional developments may be added to the approved scope once reviewed.

12. Roadway and/or Intersection improvements (planned and funded or required by others based on an approved TIA) within the general study area. List the proposed Intersections to be studied. Attached a map with a list that includes streets and intersections labeled as described below.
   SEE ATTACHMENT F FOR INTERSECTIONS PROPOSED TO BE STUDIED
13. Streets and intersections should include State Road Designation (US or State Road Number US/SR #, followed by the local road name in parenthesis. E.g.:

   Market Street should be denoted as US-17-BUS (Market Street).
   Judges Rd should be denoted as SR-2127 (Judges Rd).

   State Road designations can be found via the following link:
   NCDOT State Maintained Network Map

   a. I-140
   b. US 74 (Andrew Jackson Hwy, NE)
   c. SR 1426 (Mt. Misery Rd, NE)
   d. SR 1427 (Hooper Rd, NE)

14. Growth Factor: 1 % (provide supporting methodology/reasoning) SEE ATTACHMENT G FOR CALCULATIONS
15. Hours of Study and Data Collection to be determined once the scoping documents is reviewed.

   Weekday AM Peak Period - 6:00 - 9:00 AM
   Weekday PM Peak Period - 3:00 - 6:00 PM

16. Analysis methods as shown in the NCDOT Congestion Management Capacity Analysis Guidelines.

17. Include Traffic Signal Warrant Analysis for locations with proposed signals. (13 hour counts must be provided.)

    Proposed Signal Locations:
    a. SR 1426 (Mt. Misery Rd, NE)/SR 1427 Hooper Rd, NE_____
    b. _____
    c. _____
    d. _____

18. Note:
    a. The TIA report shall be prepared following NCDOT Congestion Management guidelines and signed and sealed by a Professional Engineer registered in North Carolina. Any deviations must be approved prior to submitting the TIA. Failure to do so will result in an invalid submittal.
    NCDOT Congestion Management Capacity Analysis Guidelines.

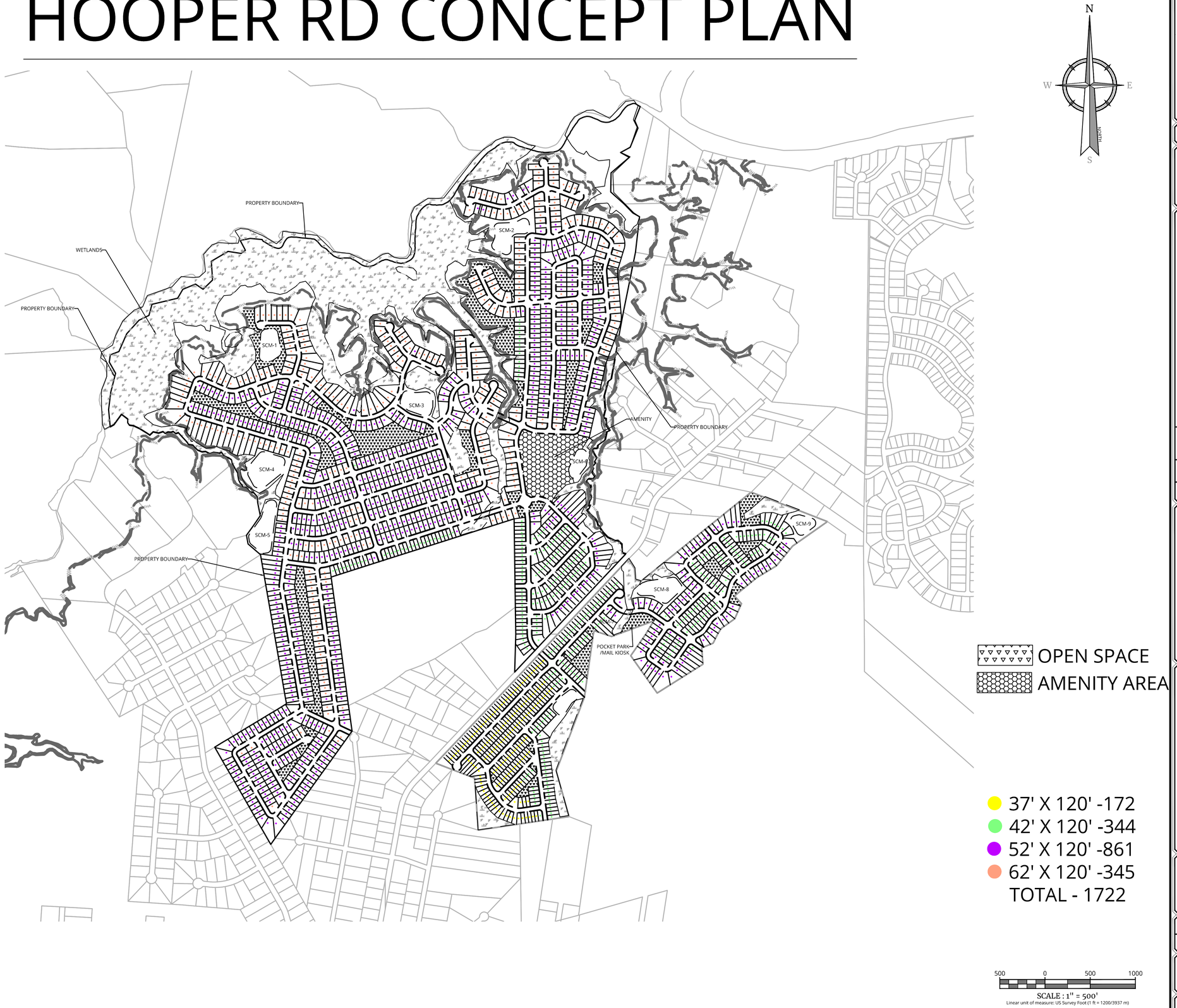
    b. Any improvements shown as needed for the background no-build condition SHALL reflect programmed and funded State/Municipal projects or those required as mitigation for surrounding approved developments. Should improvements outside those listed above be included, the TIA is considered INVALID and will not be returned for resubmission.

    c. If any changes occur (including but not limited to: land use, intensity and/or site access points and configuration) additional scoping and analysis may be required.
    d. Data collected or analysis performed prior to an official scoping letter is issued may be considered invalid.

    e. TIA approved scoping letter remain valid for three months from the date of issuance.

ATTACHMENT A

HOOPER RD CONCEPT PLAN



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REV	DATE	DRAWN BY	DESCRIPTION

CONCEPT PLAN

FOR

REDFISH LAND COMPANY

8015 165TH/ AVE. NE
REDMOND, WA 98052

BRUNSWICK COUNTY
NORTH CAROLINA

Colliers Engineering & Design
HOLMDEL (Headquarters)
101 Crawfords Corner Road, Suite 3400
Holmdel, NJ 07733
Phone: 732.383.1950
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/25/2024	ST	AEM

PROJECT NUMBER:	DRAWING NAME:
24010558A	C-CNPT

SHEET TITLE:
CONCEPT PLAN

SHEET NUMBER:
X.XX

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

ATTACHMENT B

HOOPER RD CONCEPT PLAN

SITE DATA TABLE:

PROJECT NAME : HOOPER ROAD
PROJECT ACREAGE: 594.08 AC
WETLAND ACREAGE: 116.58 AC
AREA WITHIN FLOOD ZONE: 120.08 AC
TAX PARCEL NUMBERS:
- 00600011
- 0100002101
- 01000010
- 010000211

CURRENT ZONING: RR (RURAL RESIDENTIAL)
REQUESTED CHANGE: RR (PLANNED DEVELOPMENT)
PROPOSED LANDUSE: SINGLE FAMILY UNITS

REQUIRED OPEN SPACE: 89.12 AC
PROVIDED OPEN SPACE: 150 AC
REQUIRED RECREATION SPACE: 13.37 AC
PROVIDED RECREATION SPACE: 25 AC
LINK-NODE RATIO REQUIRED: 1.15
LINK-NODE RATIO PROVIDED: 1.40

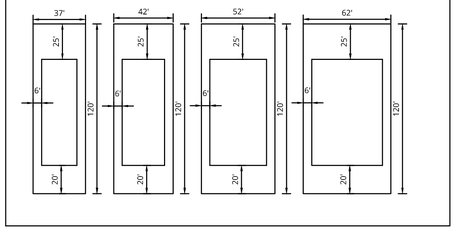
LOT CHART:

TOTAL LOT COUNT: 1722
PROPOSED DENSITY: 2.9 DWELLING UNITS/ ACRE

LOT SIZES:
- 37' X 120' (170-180 UNITS)
- 42' X 120' (340-350 UNITS)
- 52' X 120' (855-870 UNITS)
- 62' X 120' (340-350 UNITS)

SETBACKS:
- FRONT: 20'
- REAR: 25'
- SIDE: 6'
- CORNER: 12'

BUFFER:
- STREET BUFFER: 20'
- PERIPHERAL BUFFER: 30'



PHASE 1A- 96.46 AC- 388 UNITS

PHASE 1B- 58.74 AC- 213 UNITS

PHASE 2A- 96.25 AC- 302 UNITS

PHASE 2B- 59.33 AC- 246 UNITS

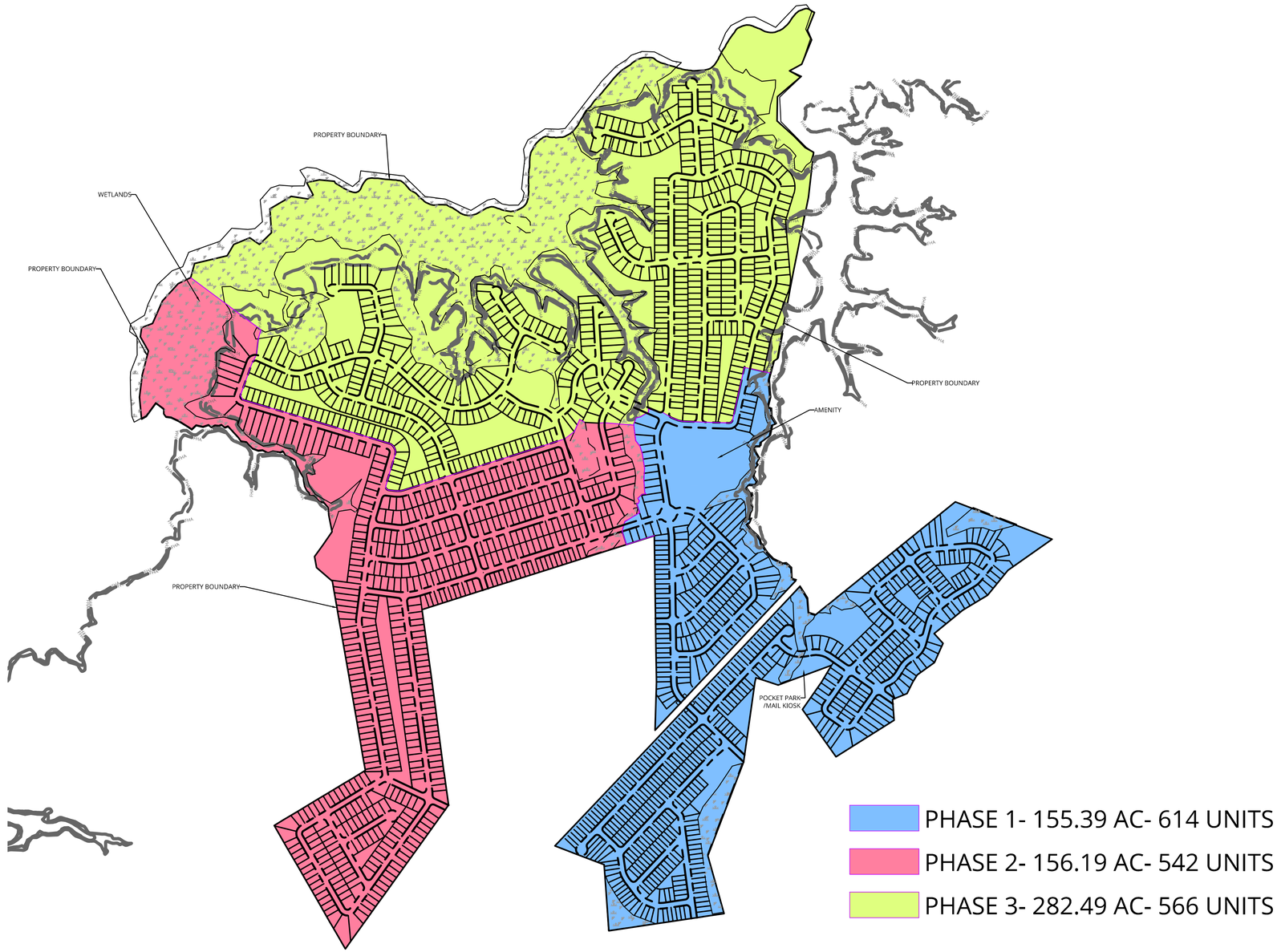
PHASE 3A- 128.29 AC- 311 UNITS

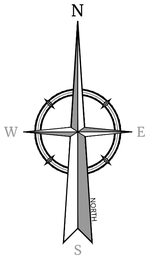
PHASE 3B- 155.02 AC- 262 UNITS

POCKET PARK /KAYAK LAUNCH
PROPERTY BOUNDARY
WETLANDS
PROPERTY BOUNDARY
SCM-1
SCM-2
SCM-3
SCM-4
SCM-5
SCM-6
SCM-7
SCM-8
SCM-9
MAIL KIOSK
MAIL KIOSK
PROPERTY BOUNDARY
MAIL KIOSK
AMENITY
MAIL KIOSK
POCKET PARK /MAIL KIOSK
MAIL KIOSK
MAIL KIOSK
PROPERTY BOUNDARY
SOUTHWOOD CT NE
WILDTREE CT NE
BLUEFIELD CT NE
BLACKBERRY RUN DR NE
SOUTHWOOD CT NE
MARTINGALE CT NE
RIVERCREST CT NE
BLACKBERRY RUN DR NE
ROCKFORD OAK CT NE
COTTONWOOD TRAIL NE
HIGHWOOD CT NE
BLACKBERRY RUN DR NE
W RED OAK DR
W RED OAK DR
E RED OAK DR
HAWKS BILL DR NE
HAWKS BILL LN NE
HOOPERBRIDGE NE
HOOPERBRIDGE NE
FINCH DRIVE
HOOPER RD NE
HOOPER RD NE
HOOPERBRIDGE NE
HOOPERBRIDGE NE
HOOPERBRIDGE

ATTACHMENT C

HOOPER RD PHASING PLAN





500 0 500 1000

SCALE : 1" = 500'

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/31/2024	ST	AEM

PROJECT NUMBER:	DRAWING NAME:
24010558A	C-CNPT

SHEET TITLE:

PHASING PLAN

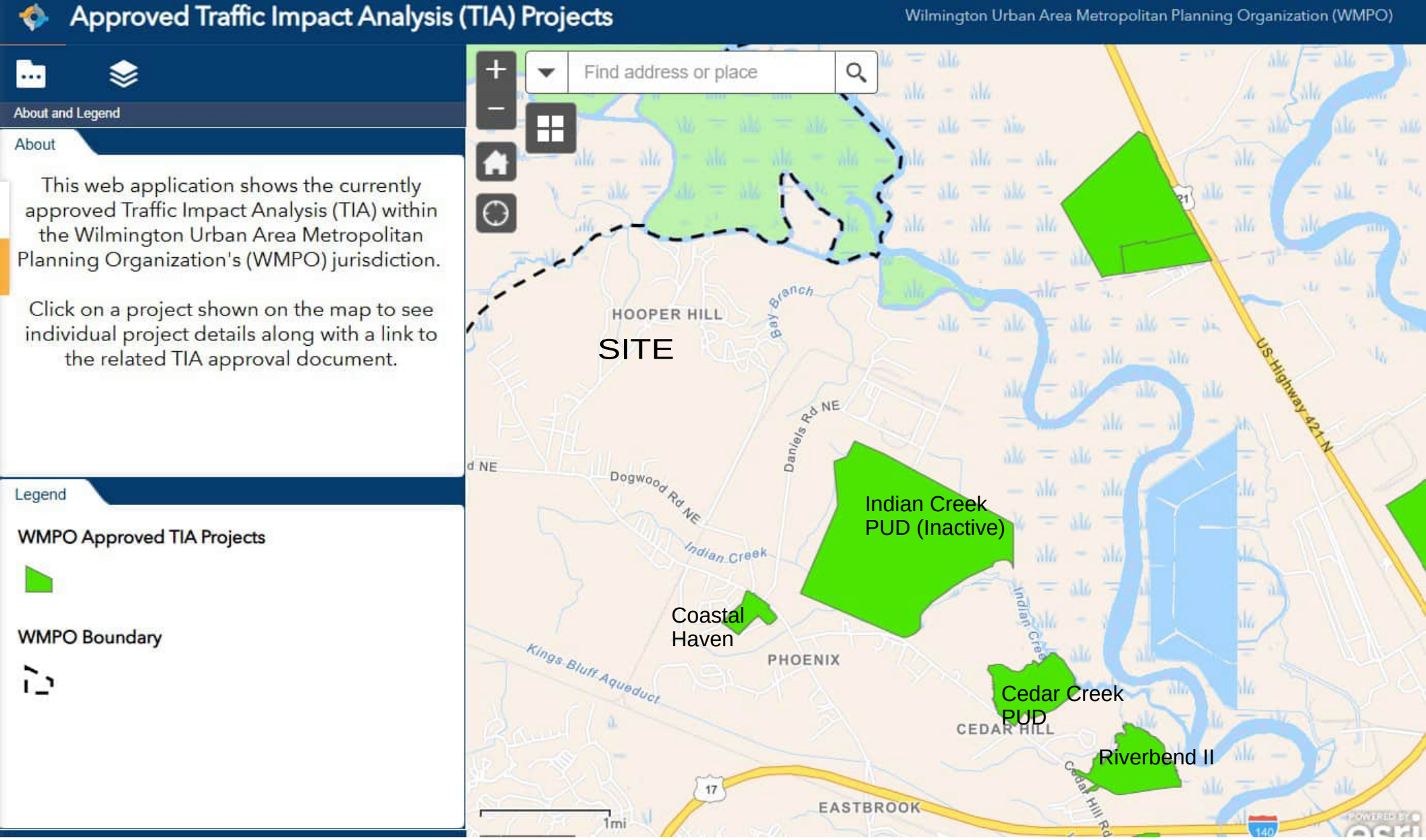
SHEET NUMBER:

X.XX

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Attachment D
Weekday Trip Generation Analysis
Hooper Road Subdivision

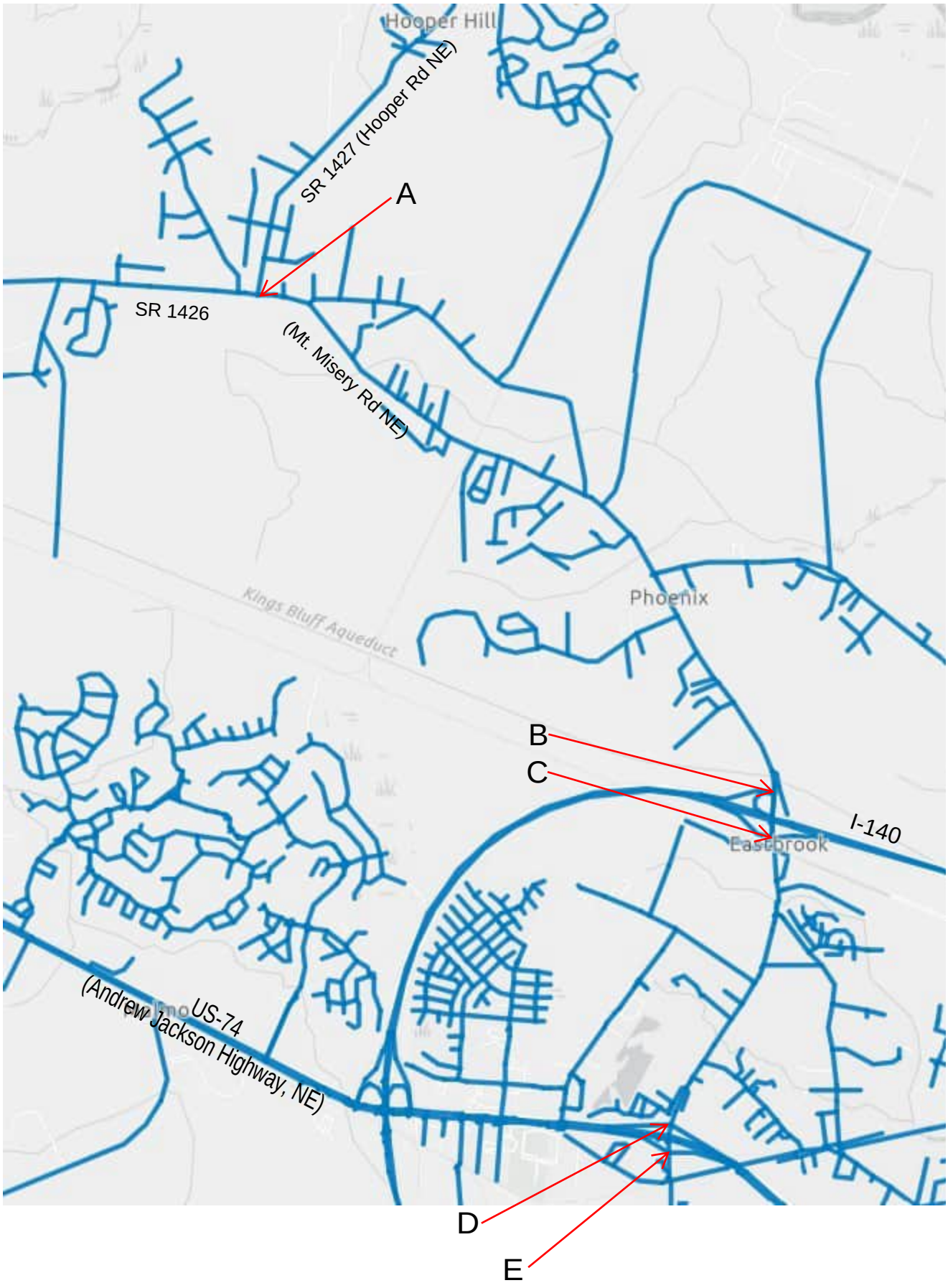
Land Use	Size	Units	Daily In	Daily Out	Daily Total	AM Peak In	AM Peak Out	AM Peak Total	PM Peak In	PM Peak Out	PM Peak Total
210 Single Family Dwelling Units											
East Parcels											
Phase 1	614	DU's	2,679	2,679	5,358	97	291	388	345	202	547
West Parcels											
Phase 2	542	DU's	2,389	2,389	4,778	87	260	347	307	180	487
Phase 3 (Includes Phase 2)	1,108	DU's	4,612	4,612	9,224	166	499	665	600	353	953
TOTAL East and West Parcels	1,722	DU's	7,291	7,291	14,582	263	790	1,053	945	555	1,500



Attachment E - Approved Development Projects

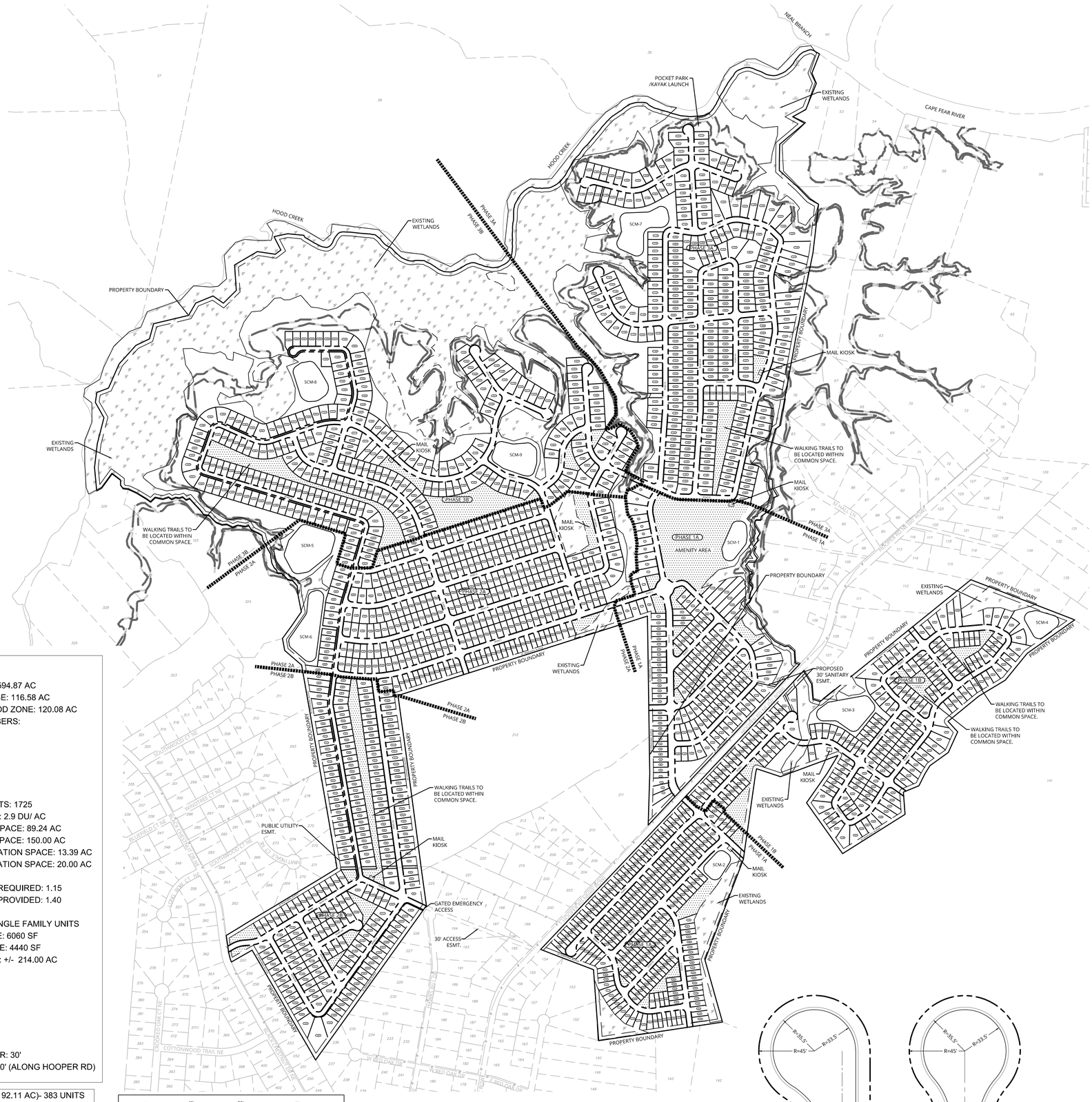
Attachment F Intersections Proposed to be Studied

A. SR 1426 (Mt. Misery Rd, NE)/SR 1427 (Hooper Rd, NE)
B. I-140 WB Ramps/SR 1426 (Mt. Misery Rd, NE)
C. I-140 EB Ramps/SR 1426 (Mt. Misery Rd, NE)
D. US 74 (Andrew Jackson Hwy, NE) WB Ramps/SR 1426 (Mt. Misery Rd, NE)
E. US 74 (Andrew Jackson Hwy, NE) EB Ramps/SR 1426 (Lanvale Rd, NE)



Attachment G
Hooper Road Subdivision
Traffic Growth Calculations

Year	2013	2023	Calculated	Growth Per Year
Mt. Misery Road South of Cedar Hill Road	6200	6800	6800	0.93%
Mt. Misery Road East of Northwest Road NE	1400	1600	1600	1.35%
Total	7600	8400	8400	1.01%



VICINITY MAP

NOT TO SCALE

NOTES:

1. THIS PROPERTY IS CURRENTLY ZONED RURAL RESIDENTIAL (RR) AND IS BEING SUBMITTED FOR MASTER PLAN APPROVAL AS A PLANNED DEVELOPMENT (PD).
2. DEVELOPMENT OF THE PROJECT WILL BE CONSTRUCTED IN PHASES.
3. ALL UTILITY AND DRAINAGE EASEMENTS SHOWN ON THIS PLAN IS FOR MASTER PLAN SUBMITTAL ONLY AND MAY BE MODIFIED PRIOR TO THE FINAL PLAT RECORDATION.
4. AREAS OF OPEN SPACE WILL PROVIDE CORRIDORS FOR WALKING TRAILS AND GREENWAYS THROUGHOUT THE COMMUNITY.
5. ANY REVISIONS TO THE MASTER PLAN WILL BE SUBJECT TO REVIEW AND APPROVAL BY BRUNSWICK COUNTY'S PLANNING AND ZONING DEPARTMENT AND/OR THE PLANNING BOARD.
6. ALL STREETS WITHIN THIS DEVELOPMENT ARE TO BE PRIVATE.
7. THE WATER AND SEWER SYSTEMS SHOWN ON THIS PLAN IS FOR MASTER PLAN SUBMITTAL ONLY AND WILL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE BRUNSWICK COUNTY ENGINEERING AND PUBLIC UTILITIES DEPARTMENT.
8. FOR MASTER PLAN REVIEW AND APPROVAL ONLY, THE SANITARY SEWER SYSTEM IS BEING PROPOSED AS A GRAVITY COLLECTION SYSTEMS WITH 8" PVC PIPES TO CONVEY FLOW TO A PUMP STATION. FLOW WILL THEN BE CONVEYED THROUGH A PROPOSED 8" FORCE MAIN, APPROXIMATLEY 3 MILES IN LENGTH, TO AN EXISTING 12" HIGH PRESSURE FORCE MAIN LOCATED IN THE R/W OF MT. MISERY ROAD AT THE INTERSECTION OF MT. MISERY ROAD AND DOGWOOD ROAD.
9. FOR MASTER PLAN REVIEW AND APPROVAL ONLY, FLOW RECEIVED IN PUMP STATIONS 2 AND 3 WILL BE CONVEYED THROUGH A PROPOSED 4" FORCE MAIN EACH TO THE NEAREST SANITARY SEWER GRAVITY MANHOLE AND WILL THEN FLOW TO PUMP STATION 1. PUMP STATION 1 WILL THEN PUMP TO AN OFFSITE CONNECTION POINT AS SPECIFIED PREVIOUSLY.
10. FOR MASTER PLAN REVIEW AND APPROVAL ONLY, THE WATER SYSTEM TO SERVE THE PROJECT IS PROPOSED AS 8" PVC PIPES THROUGHOUT THE COMMUNITY. ALL FIRE HYDRANTS ARE TO HAVE A MAXIMUM SEPARATION OF 500' BETWEEN FIRE HYDRANTS.
11. STREETLIGHTS WILL BE INSTALLED PER BRUNSWICK COUNTY'S UNIFIED DEVELOPMENT ORDINANACE (UDO).
12. A HOMEOWNER'S ASSOCIATION WILL BE FORMED TO ACCEPT RESPONSIBILITY FOR THE MAINTENANCE AND UPKEEP OF ALL STORMWATER DEVICES, OPEN SPACE, AND AMENITY SITE.
13. A 10' UTILITY EASEMENT (DUE) IS TO BE RECORDED ON EACH LOT ALONG THE OUTSIDE OF THE STREET RIGHT-OF-WAY.
14. THE DEVELOPER RESERVES THE RIGHT TO MODIFY THE FINAL AMENITY PLANS PRIOR TO APPROVAL FOR CONSTRUCTION.
15. PROJECT TO BE BUILT PER BRUNSWICK COUNTY SPECIFICATIONS IN REGARD TO ALL UTILITIES. PLANS MUST BE ENGINEERED AND SUBMITTED TO BRUNSWICK COUNTY ENGINEERING AND THE FIRE MARSHAL FOR REVIEW AND APPROVAL PRIOR TO ANY CONSTRUCTION.
16. COUNTY AND/OR STATE (NCDEQ) STORMWATER PERMITS MUST BE OBTAINED PRIOR TO ANY CONSTRUCTION. NO NATURAL DRAINAGE AREAS WILL BE CUTOFF OR DISTURBED BEFORE OBTAINING PERMITS.
17. STORMWATER RUNOFF SHALL BE CONVEYED THROUGH A COLLECTION SYSTEM TO A STORMWATER POND (SCM) FOR TREATMENT AND TO MEET COUNTY REQUIREMENTS FOR PRE-POST RUNOFF. STORMWATER PONDS WILL BE DESIGNED TO CONTROL RUNOFF FROM A 100-YEAR STORM EVENT.
18. THERE SHALL BE A NOTE ON THE FINAL PLATS, MASTER COVENANTS, AND DEEDS SHOWING THE LOCATION OF WETLANDS AND NOTING THAT THOSE AREAS MAY NOT BE FILLED, DISTURBED, OR ALTERED IN ANY WAY UNLESS PROPERLY PERMITTED BY THE NC DEPARTMENT OF NATURAL RESOURCES AND/OR THE U.S. ARMY CORP OF ENGINEERS.
19. A HOMEOWNER'S ASSOCIATION WILL BE FORMED PRIOR TO THE SALE OF LOTS AND MEMBERSHIP WILL BE AUTOMATIC UPON PURCHASE WITHIN THE DEVELOPMENT. THE HOMEOWNER'S ASSOCIATION WILL COMPLY WITH THE STANDARDS SET FORTH IN SECTION 6.11.2.1. OF THE UNIFIED DEVELOPMENT ORDINANCE.
20. ALL ROADS WILL BE BUILT TO NCDOT MINIMUM PAVING STANDARDS FOR SUBDIVISION ROADS.
21. A 30' PERIPHERY BUFFER TO REMAIN ALONG THE PERIMETER OF THE PROJECT BOUNDARY.
22. A 20' STREET BUFFER IS REQUIRED ALONG HOOPER ROAD.
23. WALKING TRAILS WILL BE DESIGNED AND CONSTRUCTED THROUGHOUT THE DEVELOPMENT WITHIN COMMON AREAS TO CONNECT TO THE SIDEWALK WITHIN THE STREET RIGHT-OF-WAY TO PROMOTE WALKABILITY THROUGHOUT THE COMMUNITY.
24. OPEN SPACE/COMMON AREAS THROUGHOUT THE COMMUNITY WILL BE DESIGNED BY A LANDSCAPE ARCHITECT FOR VARIOUS ACTIVE AND PASSIVE USES.
25. FOR MASTER PLAN REVIEW AND APPROVAL ONLY, PROPOSED DRAINAGE AREAS HAVE BEEN DELINEATED WITHIN THE PROJECT BOUNDARY. THE CONTOURS SHOWN ON THE PRELIMINARY DRAINAGE PLAN WERE TAKEN FOR BRUNSWICK COUNTY GIS. A TOPOGRAPHIC SURVEY WILL BE PERFORMED TO COLLECT THE EXISTING TOPOGRAPHY FOR A MORE ACCURATE DESIGN PRIOR TO SUBMITTAL FOR REVIEW AND APPROVAL BY BRUNSWICK COUNTY AND NCDEQ.

SITE DATA:

TOTAL ACREAGE: 594.87 AC
WETLAND ACREAGE: 116.58 AC
AREA WITHIN FLOOD ZONE: 120.08 AC
TAX PARCEL NUMBERS:
- 00600011
- 0100002101
- 01000010
- 010000211
- 010JE023

SINGLE FAMILY LOTS: 1725
PROJECT DENSITY: 2.9 DU/ AC
REQUIRED OPEN SPACE: 89.24 AC
PROVIDED OPEN SPACE: 150.00 AC
REQUIRED RECREATION SPACE: 13.39 AC
PROVIDED RECREATION SPACE: 20.00 AC

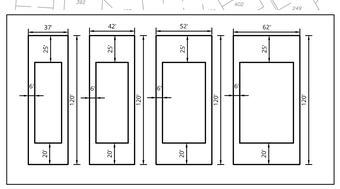
LINK-NODE RATIO REQUIRED: 1.15
LINK-NODE RATIO PROVIDED: 1.40

HOUSING TYPE: SINGLE FAMILY UNITS
AVERAGE LOT SIZE: 6060 SF
SMALLEST LOT SIZE: 4440 SF
IMPERVIOUS AREA: +/- 214.00 AC

SETBACKS:
- FRONT: 20'
- REAR: 25'
- SIDE: 6'
- CORNER: 12'

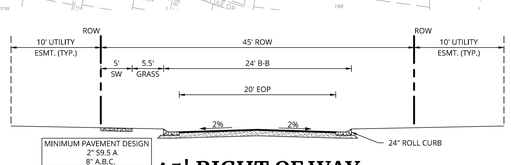
PERIPHERY BUFFER: 30'
STREET BUFFER: 20' (ALONG HOOPER RD)

PHASE 1A- (+/- 92.11 AC)-	383 UNITS
PHASE 1B- (+/- 58.69 AC)-	214 UNITS
PHASE 2A- (+/- 73.95 AC)-	303 UNITS
PHASE 2B- (+/- 55.04 AC)-	237 UNITS
PHASE 3A- (+/- 133.06 AC)-	317 UNITS
PHASE 3B- (+/- 182.01 AC)-	271 UNITS



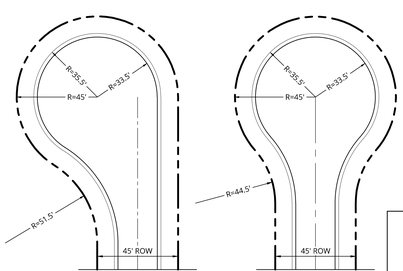
TYPICAL LOT DETAIL

SCALE:1" = 50'



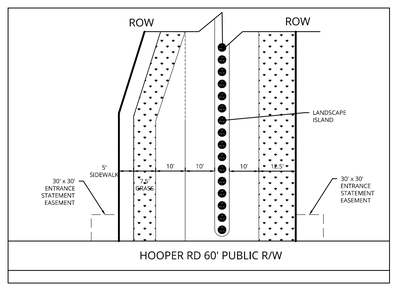
45' RIGHT OF WAY 24' ROADWAY SECTION

NOT TO SCALE



CUL-DE-SAC DETAIL

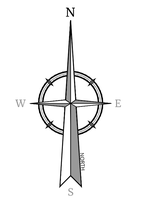
SCALE:1" = 30'



TYPICAL ENTRANCE DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION



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REV	DATE	DRAWN BY	DESCRIPTION

REV	DATE	DRAWN BY	DESCRIPTION

REV	DATE	DRAWN BY	DESCRIPTION

PLANNED DEVELOPMENT MASTER PLAN
FOR
HOOPER ROAD TRACT

BLUE FERN DEVELOPMENT
AND
REDFISH LAND COMPANY
8015 165TH/AVE.NE
REDMOND, WA 98052

LELAND
BRUNSWICK COUNTY
NORTH CAROLINA

Colliers
Engineering & Design,
Architecture, Landscape Architecture, Surveying, PA P.C.
RALEIGH
2000 Regency Parkway, Suite 295
Cary, NC 27518
Phone: 919.439.6082
COLLIERS ENGINEERING & DESIGN, ARCHITECTURE, LANDSCAPE ARCHITECTURE, SURVEYING, CT P.C. LICENSED TO DO BUSINESS AS MASER CONSULTING P.A.

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/05/2024	ST	AEM
PROJECT NUMBER: 25010558	DRAWING NAME: C-LAYT		

SHEET TITLE
PLANNED DEVELOPMENT MASTER SITE PLAN

SHEET NUMBER
C-300

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2025\25010558\Engineering\Site Plans\Layt Plans\C-3 LAYT.dwg 12/5/2024 8:47:39 AM ST

APPENDIX B

TRAFFIC COUNT DATA

13-Hour Traffic Count
Intersection 1: Mt. Misery Road at Hooper Road
Day/Date: Thursday November 21, 2024

	Hooper Road Southbound		Mt Misery Road Westbound		Mt Misery Road Eastbound		TOTAL
Start Time	Left	Right	Thru	Right	Left	Thru	
6:00:00 AM	10	0	9	2	1	39	61
6:15:00 AM	9	1	20	0	1	45	76
6:30:00 AM	15	1	25	4	3	54	102
6:45:00 AM	11	1	18	6	0	56	92
7:00:00 AM	7	1	15	2	0	75	100
7:15:00 AM	8	2	20	5	0	69	104
7:30:00 AM	4	1	22	6	2	46	81
7:45:00 AM	8	1	27	6	0	37	79
8:00:00 AM	12	3	25	7	0	49	96
8:15:00 AM	5	1	28	2	2	62	100
8:30:00 AM	5	1	17	5	1	32	61
8:45:00 AM	6	1	18	5	1	26	57
9:00:00 AM	3	1	17	2	3	18	44
9:15:00 AM	3	0	15	3	0	25	46
9:30:00 AM	14	2	16	5	0	29	66
9:45:00 AM	6	1	16	1	2	18	44
10:00:00 AM	8	1	19	2	1	26	57
10:15:00 AM	1	0	21	4	0	29	55
10:30:00 AM	10	1	22	4	0	26	63
10:45:00 AM	8	1	20	6	0	29	64
11:00:00 AM	6	6	18	7	0	27	64
11:15:00 AM	9	1	24	1	2	15	52
11:30:00 AM	4	1	18	5	1	36	65
11:45:00 AM	5	0	20	9	1	20	55
12:00:00 PM	5	1	31	10	0	24	71
12:15:00 PM	2	0	18	4	2	25	51
12:30:00 PM	8	0	36	3	0	26	73
12:45:00 PM	4	2	25	5	0	20	56
1:00:00 PM	4	2	31	4	0	26	67
1:15:00 PM	6	0	41	6	0	35	88
1:30:00 PM	5	1	31	6	0	20	63
1:45:00 PM	2	7	22	6	4	30	71
2:00:00 PM	10	3	29	2	0	37	81
2:15:00 PM	4	0	38	11	2	29	84
2:30:00 PM	3	4	29	1	8	29	74
2:45:00 PM	2	1	32	8	2	20	65
3:00:00 PM	9	3	51	7	3	24	97
3:15:00 PM	4	1	44	7	2	25	83
3:30:00 PM	9	0	38	15	3	43	108
3:45:00 PM	6	0	58	15	2	26	107
4:00:00 PM	4	2	48	6	2	40	102
4:15:00 PM	10	4	62	13	3	33	125
4:30:00 PM	9	3	52	16	1	28	109
4:45:00 PM	6	4	45	9	0	28	92
5:00:00 PM	13	1	61	10	1	38	124
5:15:00 PM	15	2	51	9	1	38	116
5:30:00 PM	10	0	56	14	1	34	115
5:45:00 PM	2	3	64	17	1	35	122
6:00:00 PM	6	1	42	11	3	27	90
6:15:00 PM	5	2	52	7	1	22	89
6:30:00 PM	3	1	41	16	0	28	89
6:45:00 PM	7	2	35	7	0	19	70

System Peak Hours: 7:00 - 8:00 AM (US 74 EB Ramps at Lanvale Road)
5:00 - 6:00 PM (US 74 WB Ramps at Mt. Misery Road)

13-Hour Traffic Count
Intersection 1: Mt. Misery Road at Hooper Road
Day/Date: Thursday November 21, 2024

		Hooper Road Southbound		Mt Misery Road Westbound		Mt Misery Road Eastbound		TOTAL
Start Time		Left	Right	Thru	Right	Left	Thru	
6:00:00 AM -	7:00:00 AM	45	3	72	12	5	194	331
6:15:00 AM -	7:15:00 AM	42	4	78	12	4	230	370
6:30:00 AM -	7:30:00 AM	41	5	78	17	3	254	398
6:45:00 AM -	7:45:00 AM	30	5	75	19	2	246	377
7:00:00 AM -	8:00:00 AM	27	5	84	19	2	227	364
7:15:00 AM -	8:15:00 AM	32	7	94	24	2	201	360
7:30:00 AM -	8:30:00 AM	29	6	102	21	4	194	356
7:45:00 AM -	8:45:00 AM	30	6	97	20	3	180	336
8:00:00 AM -	9:00:00 AM	28	6	88	19	4	169	314
8:15:00 AM -	9:15:00 AM	19	4	80	14	7	138	262
8:30:00 AM -	9:30:00 AM	17	3	67	15	5	101	208
8:45:00 AM -	9:45:00 AM	26	4	66	15	4	98	213
9:00:00 AM -	10:00:00 AM	26	4	64	11	5	90	200
9:15:00 AM -	10:15:00 AM	31	4	66	11	3	98	213
9:30:00 AM -	10:30:00 AM	29	4	72	12	3	102	222
9:45:00 AM -	10:45:00 AM	25	3	78	11	3	99	219
10:00:00 AM -	11:00:00 AM	27	3	82	16	1	110	239
10:15:00 AM -	11:15:00 AM	25	8	81	21	0	111	246
10:30:00 AM -	11:30:00 AM	33	9	84	18	2	97	243
10:45:00 AM -	11:45:00 AM	27	9	80	19	3	107	245
11:00:00 AM -	12:00:00 PM	24	8	80	22	4	98	236
11:15:00 AM -	12:15:00 PM	23	3	93	25	4	95	243
11:30:00 AM -	12:30:00 PM	16	2	87	28	4	105	242
11:45:00 AM -	12:45:00 PM	20	1	105	26	3	95	250
12:00:00 PM -	1:00:00 PM	19	3	110	22	2	95	251
12:15:00 PM -	1:15:00 PM	18	4	110	16	2	97	247
12:30:00 PM -	1:30:00 PM	22	4	133	18	0	107	284
12:45:00 PM -	1:45:00 PM	19	5	128	21	0	101	274
1:00:00 PM -	2:00:00 PM	17	10	125	22	4	111	289
1:15:00 PM -	2:15:00 PM	23	11	123	20	4	122	303
1:30:00 PM -	2:30:00 PM	21	11	120	25	6	116	299
1:45:00 PM -	2:45:00 PM	19	14	118	20	14	125	310
2:00:00 PM -	3:00:00 PM	19	8	128	22	12	115	304
2:15:00 PM -	3:15:00 PM	18	8	150	27	15	102	320
2:30:00 PM -	3:30:00 PM	18	9	156	23	15	98	319
2:45:00 PM -	3:45:00 PM	24	5	165	37	10	112	353
3:00:00 PM -	4:00:00 PM	28	4	191	44	10	118	395
3:15:00 PM -	4:15:00 PM	23	3	188	43	9	134	400
3:30:00 PM -	4:30:00 PM	29	6	206	49	10	142	442
3:45:00 PM -	4:45:00 PM	29	9	220	50	8	127	443
4:00:00 PM -	5:00:00 PM	29	13	207	44	6	129	428
4:15:00 PM -	5:15:00 PM	38	12	220	48	5	127	450
4:30:00 PM -	5:30:00 PM	43	10	209	44	3	132	441
4:45:00 PM -	5:45:00 PM	44	7	213	42	3	138	447
5:00:00 PM -	6:00:00 PM	40	6	232	50	4	145	477
5:15:00 PM -	6:15:00 PM	33	6	213	51	6	134	443
5:30:00 PM -	6:30:00 PM	23	6	214	49	6	118	416
5:45:00 PM -	6:45:00 PM	16	7	199	51	5	112	390
6:00:00 PM -	7:00:00 PM	21	6	170	41	4	96	338

System Peak Hours: 7:00 - 8:00 AM (US 74 EB Ramps at Lanvale Road)
5:00 - 6:00 PM (US 74 WB Ramps at Mt. Misery Road)

Peak Period Traffic Count
Intersection 2: I-140 WB Ramps at Mt. Misery Road
Day/Date: Thursday November 21, 2024

		Mt Misery Road Southbound			Mt Misery Road Northbound			I-140 WB Ramps Eastbound			TOTAL
Start Time		UTrn	Thru	Right	UTrn	Left	Thru	UTrn	Left	Right	
6:00:00 AM		0	55	15	0	3	17	0	1	15	106
6:15:00 AM		0	72	16	0	4	24	0	5	20	141
6:30:00 AM		0	106	7	0	3	22	0	8	14	160
6:45:00 AM		0	116	13	0	2	39	0	5	30	205
7:00:00 AM		0	126	19	0	2	32	0	12	35	226
7:15:00 AM		0	121	20	0	10	26	0	10	47	234
7:30:00 AM		0	88	11	0	2	50	0	7	28	186
7:45:00 AM		0	93	8	0	7	43	0	13	39	203
8:00:00 AM		0	100	13	0	10	41	0	6	31	201
8:15:00 AM		0	97	10	1	0	50	0	18	33	209
8:30:00 AM		0	86	12	0	6	36	0	11	18	169
8:45:00 AM		0	63	3	0	2	51	0	9	23	151
6:00:00 AM -	7:00:00 AM	0	349	51	0	12	102	0	19	79	612
6:15:00 AM -	7:15:00 AM	0	420	55	0	11	117	0	30	99	732
6:30:00 AM -	7:30:00 AM	0	469	59	0	17	119	0	35	126	825
6:45:00 AM -	7:45:00 AM	0	451	63	0	16	147	0	34	140	851
7:00:00 AM -	8:00:00 AM	0	428	58	0	21	151	0	42	149	849
7:15:00 AM -	8:15:00 AM	0	402	52	0	29	160	0	36	145	824
7:30:00 AM -	8:30:00 AM	0	378	42	1	19	184	0	44	131	799
7:45:00 AM -	8:45:00 AM	0	376	43	1	23	170	0	48	121	782
8:00:00 AM -	9:00:00 AM	0	346	38	1	18	178	0	44	105	730
3:00:00 PM		0	70	5	0	3	72	0	9	29	188
3:15:00 PM		0	62	6	0	2	69	0	17	43	199
3:30:00 PM		0	78	13	0	3	76	0	7	39	216
3:45:00 PM		0	56	3	1	6	78	0	17	47	208
4:00:00 PM		0	79	6	0	14	90	0	12	34	235
4:15:00 PM		0	61	5	0	3	103	0	18	56	246
4:30:00 PM		0	86	2	0	3	91	0	19	39	240
4:45:00 PM		0	72	5	0	9	71	0	13	60	230
5:00:00 PM		0	84	7	0	7	84	0	21	64	267
5:15:00 PM		0	88	2	0	2	104	0	12	73	281
5:30:00 PM		0	69	5	1	5	99	0	16	76	271
5:45:00 PM		0	72	5	1	2	106	0	19	55	260
3:00:00 PM -	4:00:00 PM	0	266	27	1	14	295	0	50	158	811
3:15:00 PM -	4:15:00 PM	0	275	28	1	25	313	0	53	163	858
3:30:00 PM -	4:30:00 PM	0	274	27	1	26	347	0	54	176	905
3:45:00 PM -	4:45:00 PM	0	282	16	1	26	362	0	66	176	929
4:00:00 PM -	5:00:00 PM	0	298	18	0	29	355	0	62	189	951
4:15:00 PM -	5:15:00 PM	0	303	19	0	22	349	0	71	219	983
4:30:00 PM -	5:30:00 PM	0	330	16	0	21	350	0	65	236	1018
4:45:00 PM -	5:45:00 PM	0	313	19	1	23	358	0	62	273	1049
5:00:00 PM -	6:00:00 PM	0	313	19	2	16	393	0	68	268	1079

System Peak Hours: 7:00 - 8:00 AM (US 74 EB Ramps at Lanvale Road)
5:00 - 6:00 PM (US 74 WB Ramps at Mt. Misery Road)

Peak Period Traffic Count
Intersection 3: I-140 EB Ramps at Mt. Misery Road
Day/Date: Thursday November 21, 2024

	Mt Misery Road Southbound			I-140 EB Ramps Westbound			Mt Misery Road Northbound			I-140 EB Ramps Eastbound			TOTAL
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
6:00:00 AM	14	53	0	0	0	0	0	18	35	2	0	1	123
6:15:00 AM	24	63	0	0	0	0	0	18	52	9	0	1	167
6:30:00 AM	44	78	0	0	0	0	0	22	78	3	0	3	228
6:45:00 AM	34	112	0	0	0	0	0	32	65	10	0	7	260
7:00:00 AM	39	122	0	0	0	0	0	27	68	4	0	0	260
7:15:00 AM	37	129	0	0	0	0	0	36	69	2	0	6	279
7:30:00 AM	40	76	0	0	0	0	0	44	106	5	1	8	280
7:45:00 AM	35	93	0	0	0	0	0	47	82	4	0	10	271
8:00:00 AM	25	107	0	0	0	0	0	46	68	5	1	5	257
8:15:00 AM	21	112	0	0	0	0	0	45	55	8	0	2	243
8:30:00 AM	26	79	0	0	0	0	0	37	53	4	0	8	207
8:45:00 AM	12	74	0	0	0	0	0	48	32	4	0	2	172
6:00:00 AM - 7:00:00 AM	116	306	0	0	0	0	0	90	230	24	0	12	778
6:15:00 AM - 7:15:00 AM	141	375	0	0	0	0	0	99	263	26	0	11	915
6:30:00 AM - 7:30:00 AM	154	441	0	0	0	0	0	117	280	19	0	16	1027
6:45:00 AM - 7:45:00 AM	150	439	0	0	0	0	0	139	308	21	1	21	1079
7:00:00 AM - 8:00:00 AM	151	420	0	0	0	0	0	154	325	15	1	24	1090
7:15:00 AM - 8:15:00 AM	137	405	0	0	0	0	0	173	325	16	2	29	1087
7:30:00 AM - 8:30:00 AM	121	388	0	0	0	0	0	182	311	22	2	25	1051
7:45:00 AM - 8:45:00 AM	107	391	0	0	0	0	0	175	258	21	1	25	978
8:00:00 AM - 9:00:00 AM	84	372	0	0	0	0	0	176	208	21	1	17	879
3:00:00 PM	17	87	0	0	0	0	0	69	27	5	0	4	209
3:15:00 PM	13	95	0	0	0	0	0	67	35	4	0	8	222
3:30:00 PM	15	103	0	0	0	0	0	73	28	6	0	4	229
3:45:00 PM	6	92	0	0	0	0	0	75	27	10	0	4	214
4:00:00 PM	24	90	0	0	0	0	0	96	42	8	0	5	265
4:15:00 PM	16	106	0	0	0	0	0	97	39	8	1	4	271
4:30:00 PM	26	98	0	0	0	0	0	83	58	12	0	2	279
4:45:00 PM	16	113	0	0	0	0	0	70	35	9	0	4	247
5:00:00 PM	20	129	0	0	0	0	0	84	62	7	0	3	305
5:15:00 PM	21	137	0	0	0	0	0	97	30	9	1	5	300
5:30:00 PM	15	134	0	0	0	0	0	89	36	16	0	6	296
5:45:00 PM	18	112	0	0	0	0	0	98	31	9	0	6	274
3:00:00 PM - 4:00:00 PM	51	377	0	0	0	0	0	284	117	25	0	20	874
3:15:00 PM - 4:15:00 PM	58	380	0	0	0	0	0	311	132	28	0	21	930
3:30:00 PM - 4:30:00 PM	61	391	0	0	0	0	0	341	136	32	1	17	979
3:45:00 PM - 4:45:00 PM	72	386	0	0	0	0	0	351	166	38	1	15	1029
4:00:00 PM - 5:00:00 PM	82	407	0	0	0	0	0	346	174	37	1	15	1062
4:15:00 PM - 5:15:00 PM	78	446	0	0	0	0	0	334	194	36	1	13	1102
4:30:00 PM - 5:30:00 PM	83	477	0	0	0	0	0	334	185	37	1	14	1131
4:45:00 PM - 5:45:00 PM	72	513	0	0	0	0	0	340	163	41	1	18	1148
5:00:00 PM - 6:00:00 PM	74	512	0	0	0	0	0	368	159	41	1	20	1175

System Peak Hours: 7:00 - 8:00 AM (US 74 EB Ramps at Lanvale Road)
5:00 - 6:00 PM (US 74 WB Ramps at Mt. Misery Road)

Peak Period Traffic Count
Intersection 4: US 74 Westbound Ramps at Mt. Misery Road
Day/Date: Thursday November 21, 2024

		Mt Misery Road Southbound			US 74 WB Ramps Westbound			Mt Misery Road Northbound			US 74 WB Ramps Eastbound			TOTAL
Start Time		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
6:00:00 AM		0	41	15	2	0	11	23	37	0	0	0	0	129
6:15:00 AM		0	57	16	8	0	5	38	46	0	0	0	0	170
6:30:00 AM		0	71	12	5	0	17	39	65	0	0	0	0	209
6:45:00 AM		0	77	12	7	0	26	44	65	0	0	0	0	231
7:00:00 AM		0	114	16	9	0	22	69	58	0	0	0	0	288
7:15:00 AM		0	119	22	7	0	29	78	64	0	0	0	0	319
7:30:00 AM		0	80	13	17	0	36	86	101	0	0	0	0	333
7:45:00 AM		0	74	18	17	0	43	52	80	0	0	0	0	284
8:00:00 AM		0	101	19	11	0	25	34	71	0	0	0	0	261
8:15:00 AM		0	84	17	10	0	19	27	53	0	0	0	0	210
8:30:00 AM		0	89	13	8	0	19	30	51	0	0	0	0	210
8:45:00 AM		0	61	13	10	0	24	30	34	0	0	0	0	172
6:00:00 AM -	7:00:00 AM	0	246	55	22	0	59	144	213	0	0	0	0	739
6:15:00 AM -	7:15:00 AM	0	319	56	29	0	70	190	234	0	0	0	0	898
6:30:00 AM -	7:30:00 AM	0	381	62	28	0	94	230	252	0	0	0	0	1047
6:45:00 AM -	7:45:00 AM	0	390	63	40	0	113	277	288	0	0	0	0	1171
7:00:00 AM -	8:00:00 AM	0	387	69	50	0	130	285	303	0	0	0	0	1224
7:15:00 AM -	8:15:00 AM	0	374	72	52	0	133	250	316	0	0	0	0	1197
7:30:00 AM -	8:30:00 AM	0	339	67	55	0	123	199	305	0	0	0	0	1088
7:45:00 AM -	8:45:00 AM	0	348	67	46	0	106	143	255	0	0	0	0	965
8:00:00 AM -	9:00:00 AM	0	335	62	39	0	87	121	209	0	0	0	0	853
3:00:00 PM		0	89	39	18	0	37	63	72	0	0	0	0	318
3:15:00 PM		0	96	17	22	0	51	53	65	0	0	0	0	304
3:30:00 PM		0	93	27	29	0	54	48	69	0	0	0	0	320
3:45:00 PM		0	102	31	24	0	66	48	56	0	0	0	0	327
4:00:00 PM		0	113	32	26	0	61	47	81	0	0	0	0	360
4:15:00 PM		0	123	30	33	1	68	48	88	0	0	0	0	391
4:30:00 PM		0	122	35	33	1	55	52	69	0	0	0	0	367
4:45:00 PM		0	125	48	44	0	51	56	71	0	0	0	0	395
5:00:00 PM		0	120	31	31	0	67	56	83	0	0	0	0	388
5:15:00 PM		0	133	36	45	0	74	48	89	0	0	0	0	425
5:30:00 PM		0	109	34	42	0	77	49	89	0	0	0	0	400
5:45:00 PM		0	119	38	42	0	74	56	82	0	0	0	0	411
3:00:00 PM -	4:00:00 PM	0	380	114	93	0	208	212	262	0	0	0	0	1269
3:15:00 PM -	4:15:00 PM	0	404	107	101	0	232	196	271	0	0	0	0	1311
3:30:00 PM -	4:30:00 PM	0	431	120	112	1	249	191	294	0	0	0	0	1398
3:45:00 PM -	4:45:00 PM	0	460	128	116	2	250	195	294	0	0	0	0	1445
4:00:00 PM -	5:00:00 PM	0	483	145	136	2	235	203	309	0	0	0	0	1513
4:15:00 PM -	5:15:00 PM	0	490	144	141	2	241	212	311	0	0	0	0	1541
4:30:00 PM -	5:30:00 PM	0	500	150	153	1	247	212	312	0	0	0	0	1575
4:45:00 PM -	5:45:00 PM	0	487	149	162	0	269	209	332	0	0	0	0	1608
5:00:00 PM -	6:00:00 PM	0	481	139	160	0	292	209	343	0	0	0	0	1624

System Peak Hours: 7:00 - 8:00 AM (US 74 EB Ramps at Lanvale Road)
5:00 - 6:00 PM (US 74 WB Ramps at Mt. Misery Road)

Peak Period Traffic Count
Intersection 5: US 74 Eastbound Ramps at Lanvale Road
Day/Date: Thursday November 21, 2024

	Lanvale Road Southbound			US 74 EB Ramps Westbound			Lanvale Road Northbound			US 74 EB Ramps Eastbound			TOTAL
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
6:00:00 AM	24	19	0	0	0	0	0	55	27	4	0	13	142
6:15:00 AM	34	32	0	0	0	0	0	77	41	4	0	18	206
6:30:00 AM	46	28	0	0	0	0	0	103	51	2	0	52	282
6:45:00 AM	48	35	0	0	0	0	0	102	59	10	0	65	319
7:00:00 AM	49	73	0	0	0	0	0	125	61	3	0	68	379
7:15:00 AM	54	69	0	0	0	0	0	148	82	2	0	86	441
7:30:00 AM	37	61	0	0	0	0	0	181	96	4	0	68	447
7:45:00 AM	42	53	0	0	0	0	0	111	53	16	0	71	346
8:00:00 AM	46	65	0	0	0	0	0	99	35	7	0	55	307
8:15:00 AM	44	49	0	0	0	0	0	75	34	4	0	41	247
8:30:00 AM	51	48	0	0	0	0	0	77	54	4	0	41	275
8:45:00 AM	33	36	0	0	0	0	0	61	40	4	0	38	212
6:00:00 AM - 7:00:00 AM	152	114	0	0	0	0	0	337	178	20	0	148	949
6:15:00 AM - 7:15:00 AM	177	168	0	0	0	0	0	407	212	19	0	203	1186
6:30:00 AM - 7:30:00 AM	197	205	0	0	0	0	0	478	253	17	0	271	1421
6:45:00 AM - 7:45:00 AM	188	238	0	0	0	0	0	556	298	19	0	287	1586
7:00:00 AM - 8:00:00 AM	182	256	0	0	0	0	0	565	292	25	0	293	1613
7:15:00 AM - 8:15:00 AM	179	248	0	0	0	0	0	539	266	29	0	280	1541
7:30:00 AM - 8:30:00 AM	169	228	0	0	0	0	0	466	218	31	0	235	1347
7:45:00 AM - 8:45:00 AM	183	215	0	0	0	0	0	362	176	31	0	208	1175
8:00:00 AM - 9:00:00 AM	174	198	0	0	0	0	0	312	163	19	0	175	1041
3:00:00 PM	41	67	0	0	0	0	0	129	26	9	1	47	320
3:15:00 PM	42	78	0	0	0	0	0	99	34	16	0	65	334
3:30:00 PM	31	86	0	0	0	0	0	102	26	13	0	50	308
3:45:00 PM	41	85	0	0	0	0	0	96	29	14	1	40	306
4:00:00 PM	53	84	0	0	0	0	0	114	41	13	0	69	374
4:15:00 PM	47	113	0	0	0	0	0	115	32	16	0	47	370
4:30:00 PM	49	103	0	0	0	0	0	112	36	16	0	42	358
4:45:00 PM	50	120	0	0	0	0	0	102	30	23	0	59	384
5:00:00 PM	48	97	0	0	0	0	0	128	24	15	0	55	367
5:15:00 PM	44	136	0	0	0	0	0	122	36	15	1	57	411
5:30:00 PM	34	120	0	0	0	0	0	123	27	23	0	54	381
5:45:00 PM	38	119	0	0	0	0	0	112	27	17	0	47	360
3:00:00 PM - 4:00:00 PM	155	316	0	0	0	0	0	426	115	52	2	202	1268
3:15:00 PM - 4:15:00 PM	167	333	0	0	0	0	0	411	130	56	1	224	1322
3:30:00 PM - 4:30:00 PM	172	368	0	0	0	0	0	427	128	56	1	206	1358
3:45:00 PM - 4:45:00 PM	190	385	0	0	0	0	0	437	138	59	1	198	1408
4:00:00 PM - 5:00:00 PM	199	420	0	0	0	0	0	443	139	68	0	217	1486
4:15:00 PM - 5:15:00 PM	194	433	0	0	0	0	0	457	122	70	0	203	1479
4:30:00 PM - 5:30:00 PM	191	456	0	0	0	0	0	464	126	69	1	213	1520
4:45:00 PM - 5:45:00 PM	176	473	0	0	0	0	0	475	117	76	1	225	1543
5:00:00 PM - 6:00:00 PM	164	472	0	0	0	0	0	485	114	70	1	213	1519

System Peak Hours: 7:00 - 8:00 AM (US 74 EB Ramps at Lanvale Road)
5:00 - 6:00 PM (US 74 WB Ramps at Mt. Misery Road)

Daily Vehicle Volume Report

Study Date: Wednesday, 12/04/2024
Unit ID: Hooper
Location: Location 6 - Hooper Road at Proposed Site Access

	Southbound Volume	Northbound Volume	Total Volume
00:00 - 00:59	0	0	**0**
01:00 - 01:59	0	0	**0**
02:00 - 02:59	0	0	**0**
03:00 - 03:59	0	0	**0**
04:00 - 04:59	0	0	**0**
05:00 - 05:59	7	0	**7**
06:00 - 06:59	16	8	**24**
07:00 - 07:59	14	11	**25**
08:00 - 08:59	14	6	**20**
09:00 - 09:59	10	7	**17**
10:00 - 10:59	6	11	**17**
11:00 - 11:59	17	14	**31**
12:00 - 12:59	23	11	**34**
13:00 - 13:59	14	15	**29**
14:00 - 14:59	7	16	**23**
15:00 - 15:59	17	13	**30**
16:00 - 16:59	20	22	**42**
17:00 - 17:59	13	10	**23**
18:00 - 18:59	11	14	**25**
19:00 - 19:59	7	9	**16**
20:00 - 20:59	2	8	**10**
21:00 - 21:59	0	3	**3**
22:00 - 22:59	5	3	**8**
23:00 - 23:59	0	5	**5**
Totals	**203**	**186**	**389**
AM Peak Time	**06:08 - 07:07**	**10:13 - 11:12**	**07:38 - 08:37**
AM Peak Volume	**19**	**14**	**31**
PM Peak Time	**12:00 - 12:59**	**15:49 - 16:48**	**15:50 - 16:49**
PM Peak Volume	**23**	**23**	**44**

System Peak Hours:
7:00 - 8:00 AM (US 74 EB Ramps at Lanvale Road)
5:00 - 6:00 PM (US 74 WB Ramps at Mt. Misery Road)

APPENDIX C

SYNCHRO ANALYSIS REPORTS

MT. MISERY ROAD
AND
HOOPER ROAD

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	227	84	19	27	5
Future Vol, veh/h	4	227	84	19	27	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	252	93	21	30	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	114	0	-	0	364	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	260	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1475	-	-	-	635	951
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	783	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1475	-	-	-	633	951
Mov Cap-2 Maneuver	-	-	-	-	633	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	783	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1475	-	-	-	668
HCM Lane V/C Ratio	0.003	-	-	-	0.053
HCM Control Delay (s)	7.4	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	145	232	50	40	6
Future Vol, veh/h	4	145	232	50	40	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	161	258	56	44	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	314	0	-	0	455	286
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	563	753
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	861	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1246	-	-	-	561	753
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	861	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1246	-	-	-	580
HCM Lane V/C Ratio	0.004	-	-	-	0.088
HCM Control Delay (s)	7.9	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	246	108	20	28	5
Future Vol, veh/h	4	246	108	20	28	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	273	120	22	31	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	142	0	-	0	412	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	281	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1441	-	-	-	596	919
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	767	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1441	-	-	-	594	919
Mov Cap-2 Maneuver	-	-	-	-	594	-
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	767	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1441	-	-	-	628
HCM Lane V/C Ratio	0.003	-	-	-	0.058
HCM Control Delay (s)	7.5	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	176	258	53	42	6
Future Vol, veh/h	4	176	258	53	42	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	196	287	59	47	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	346	0	-	0	521	317
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	204	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1213	-	-	-	516	724
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	830	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1213	-	-	-	514	724
Mov Cap-2 Maneuver	-	-	-	-	514	-
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	830	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1213	-	-	-	533
HCM Lane V/C Ratio	0.004	-	-	-	0.1
HCM Control Delay (s)	8	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	249	112	20	29	5
Future Vol, veh/h	4	249	112	20	29	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	277	124	22	32	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	146	0	-	0	420	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1436	-	-	-	590	914
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1436	-	-	-	588	914
Mov Cap-2 Maneuver	-	-	-	-	588	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	763	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1436	-	-	-	621
HCM Lane V/C Ratio	0.003	-	-	-	0.061
HCM Control Delay (s)	7.5	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	182	262	53	42	6
Future Vol, veh/h	4	182	262	53	42	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	202	291	59	47	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	350	0	-	0	531	321
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	210	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1209	-	-	-	509	720
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1209	-	-	-	507	720
Mov Cap-2 Maneuver	-	-	-	-	507	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1209	-	-	-	526
HCM Lane V/C Ratio	0.004	-	-	-	0.101
HCM Control Delay (s)	8	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	253	119	20	29	5
Future Vol, veh/h	4	253	119	20	29	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	281	132	22	32	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	154	0	-	0	432	143
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1426	-	-	-	581	905
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1426	-	-	-	579	905
Mov Cap-2 Maneuver	-	-	-	-	579	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1426	-	-	-	611
HCM Lane V/C Ratio	0.003	-	-	-	0.062
HCM Control Delay (s)	7.5	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	189	269	54	43	6
Future Vol, veh/h	4	189	269	54	43	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	210	299	60	48	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	359	0	-	0	547	329
Stage 1	-	-	-	-	329	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1200	-	-	-	498	712
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	818	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1200	-	-	-	496	712
Mov Cap-2 Maneuver	-	-	-	-	496	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	818	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1200	-	-	-	515
HCM Lane V/C Ratio	0.004	-	-	-	0.106
HCM Control Delay (s)	8	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	246	108	111	300	35
Future Vol, veh/h	12	246	108	111	300	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	500	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	273	120	123	333	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	419	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	299	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1323	-	-	-	591	931
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	585	931
Mov Cap-2 Maneuver	-	-	-	-	585	-
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1323	-	-	-	609
HCM Lane V/C Ratio	0.01	-	-	-	0.611
HCM Control Delay (s)	7.7	-	-	-	19.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	4.1

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	39	176	258	371	227	27
Future Vol, veh/h	39	176	258	371	227	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	500	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	196	287	412	252	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	699	0	-	0	569	287
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	282	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	898	-	-	-	484	752
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	898	-	-	-	461	752
Mov Cap-2 Maneuver	-	-	-	-	461	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	766	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	22.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	898	-	-	-	481
HCM Lane V/C Ratio	0.048	-	-	-	0.587
HCM Control Delay (s)	9.2	-	-	-	22.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	3.7

Intersection	
Int Delay, s/veh	45.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	249	112	183	515	59
Future Vol, veh/h	20	249	112	183	515	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	500	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	277	124	203	572	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	327	0	-	0	445	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	321	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1233	-	-	-	~ 571	927
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	735	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1233	-	-	-	~ 561	927
Mov Cap-2 Maneuver	-	-	-	-	~ 561	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	90
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1233	-	-	-	585
HCM Lane V/C Ratio	0.018	-	-	-	1.09
HCM Control Delay (s)	8	-	-	-	90
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	19.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	34

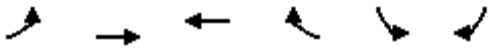
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	68	182	262	630	380	44
Future Vol, veh/h	68	182	262	630	380	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	500	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	202	291	700	422	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	991	0	-	0	645	291
Stage 1	-	-	-	-	291	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	698	-	-	-	437	748
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	698	-	-	-	~ 389	748
Mov Cap-2 Maneuver	-	-	-	-	~ 389	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	710	-

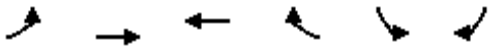
Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	123.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	698	-	-	-	409
HCM Lane V/C Ratio	0.108	-	-	-	1.152
HCM Control Delay (s)	10.8	-	-	-	123.7
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	17.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



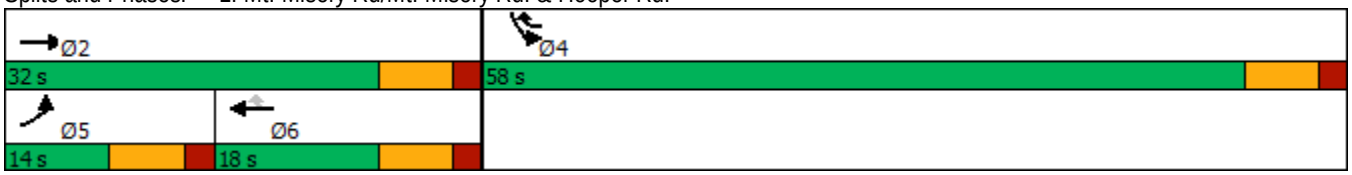
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	249	112	183	515	59
Future Volume (vph)	20	249	112	183	515	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	9	9
Storage Length (ft)	100			500	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.986	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1770	1863	1863	1583	1582	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1770	1863	1863	1583	1582	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		45	45		45	
Link Distance (ft)		1636	1144		2306	
Travel Time (s)		24.8	17.3		34.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	277	124	203	572	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	277	124	203	638	0
Turn Type	Prot	NA	NA	pm+ov	Prot	
Protected Phases	5	2	6	4	4	
Permitted Phases				6		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	
Minimum Split (s)	14.0	17.0	17.0	14.0	14.0	
Total Split (s)	14.0	32.0	18.0	58.0	58.0	
Total Split (%)	15.6%	35.6%	20.0%	64.4%	64.4%	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	10.0	17.8	13.7	55.9	32.5	
Actuated g/C Ratio	0.16	0.29	0.22	0.91	0.53	
v/c Ratio	0.08	0.51	0.30	0.14	0.76	
Control Delay	32.8	24.4	29.6	1.8	18.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	32.8	24.4	29.6	1.8	18.5	
LOS	C	C	C	A	B	
Approach Delay		25.1	12.3		18.5	
Approach LOS		C	B		B	
Queue Length 50th (ft)	6	75	31	0	129	

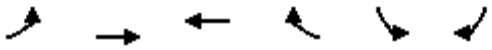


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	35	205	120	36	358	
Internal Link Dist (ft)		1556	1064		2226	
Turn Bay Length (ft)	100			500		
Base Capacity (vph)	287	906	438	1478	1346	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.08	0.31	0.28	0.14	0.47	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 61.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.



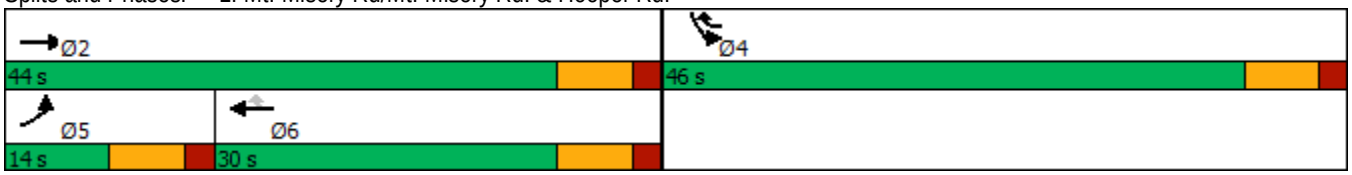


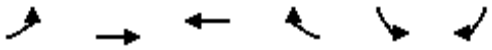
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	68	182	262	630	380	44
Future Volume (vph)	68	182	262	630	380	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	9	9
Storage Length (ft)	100			500	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.986	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1770	1863	1863	1583	1582	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1770	1863	1863	1583	1582	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		45	45		45	
Link Distance (ft)		1636	1144		2306	
Travel Time (s)		24.8	17.3		34.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	76	202	291	700	422	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	202	291	700	471	0
Turn Type	Prot	NA	NA	pm+ov	Prot	
Protected Phases	5	2	6	4	4	
Permitted Phases				6		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	
Minimum Split (s)	14.0	17.0	17.0	14.0	14.0	
Total Split (s)	14.0	44.0	30.0	46.0	46.0	
Total Split (%)	15.6%	48.9%	33.3%	51.1%	51.1%	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	9.9	27.5	17.3	53.0	28.4	
Actuated g/C Ratio	0.15	0.41	0.26	0.79	0.42	
v/c Ratio	0.29	0.26	0.61	0.56	0.70	
Control Delay	36.1	15.2	31.3	6.0	23.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.1	15.2	31.3	6.0	23.5	
LOS	D	B	C	A	C	
Approach Delay		21.0	13.4		23.5	
Approach LOS		C	B		C	
Queue Length 50th (ft)	29	52	112	114	157	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	86	118	223	178	310	
Internal Link Dist (ft)		1556	1064		2226	
Turn Bay Length (ft)	100			500		
Base Capacity (vph)	262	1169	766	1419	1028	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.29	0.17	0.38	0.49	0.46	

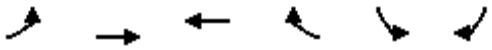
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 67			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	253	119	256	734	83
Future Volume (vph)	28	253	119	256	734	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	9	9
Storage Length (ft)	150			500	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.986	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1770	1863	1863	1583	1582	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1770	1863	1863	1583	1582	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		45	45		45	
Link Distance (ft)		1636	1144		2306	
Travel Time (s)		24.8	17.3		34.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	281	132	284	816	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	281	132	284	908	0
Turn Type	Prot	NA	NA	pm+ov	Prot	
Protected Phases	5	2	6	4	4	
Permitted Phases				6		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	
Minimum Split (s)	14.0	17.0	17.0	14.0	14.0	
Total Split (s)	14.0	31.0	17.0	59.0	59.0	
Total Split (%)	15.6%	34.4%	18.9%	65.6%	65.6%	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	9.2	20.3	12.7	70.9	50.7	
Actuated g/C Ratio	0.11	0.25	0.16	0.87	0.62	
v/c Ratio	0.15	0.60	0.45	0.21	0.92	
Control Delay	38.8	33.3	40.5	2.3	31.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.8	33.3	40.5	2.3	31.6	
LOS	D	C	D	A	C	
Approach Delay		33.9	14.4		31.6	
Approach LOS		C	B		C	
Queue Length 50th (ft)	16	133	71	31	444	

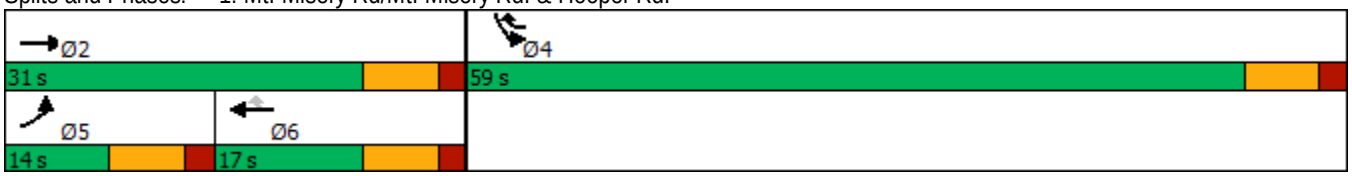


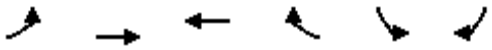
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	44	212	129	51	#747	
Internal Link Dist (ft)		1556	1064		2226	
Turn Bay Length (ft)	150			500		
Base Capacity (vph)	201	611	291	1370	1078	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.46	0.45	0.21	0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 81.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

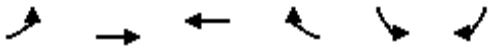
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	98	189	269	901	540	61
Future Volume (vph)	98	189	269	901	540	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	9	9
Storage Length (ft)	150			500	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.986	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1770	1863	1863	1583	1582	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1770	1863	1863	1583	1582	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		45	45		45	
Link Distance (ft)		1636	1144		2306	
Travel Time (s)		24.8	17.3		34.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	210	299	1001	600	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	109	210	299	1001	668	0
Turn Type	Prot	NA	NA	pm+ov	Prot	
Protected Phases	5	2	6	4	4	
Permitted Phases				6		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	
Minimum Split (s)	14.0	17.0	17.0	14.0	14.0	
Total Split (s)	14.0	39.0	25.0	51.0	51.0	
Total Split (%)	15.6%	43.3%	27.8%	56.7%	56.7%	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	9.7	27.7	17.6	64.5	39.8	
Actuated g/C Ratio	0.12	0.35	0.22	0.82	0.51	
v/c Ratio	0.50	0.32	0.72	0.77	0.83	
Control Delay	47.1	20.8	42.2	10.5	28.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	47.1	20.8	42.2	10.5	28.5	
LOS	D	C	D	B	C	
Approach Delay		29.8	17.8		28.5	
Approach LOS		C	B		C	
Queue Length 50th (ft)	60	82	158	246	298	

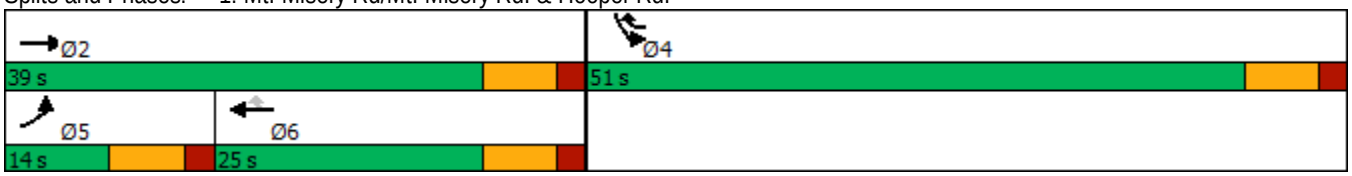


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	#129	137	#268	446	#524	
Internal Link Dist (ft)		1556	1064		2226	
Turn Bay Length (ft)	150			500		
Base Capacity (vph)	219	870	512	1333	990	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.50	0.24	0.58	0.75	0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.3			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 22.6		Intersection LOS: C	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

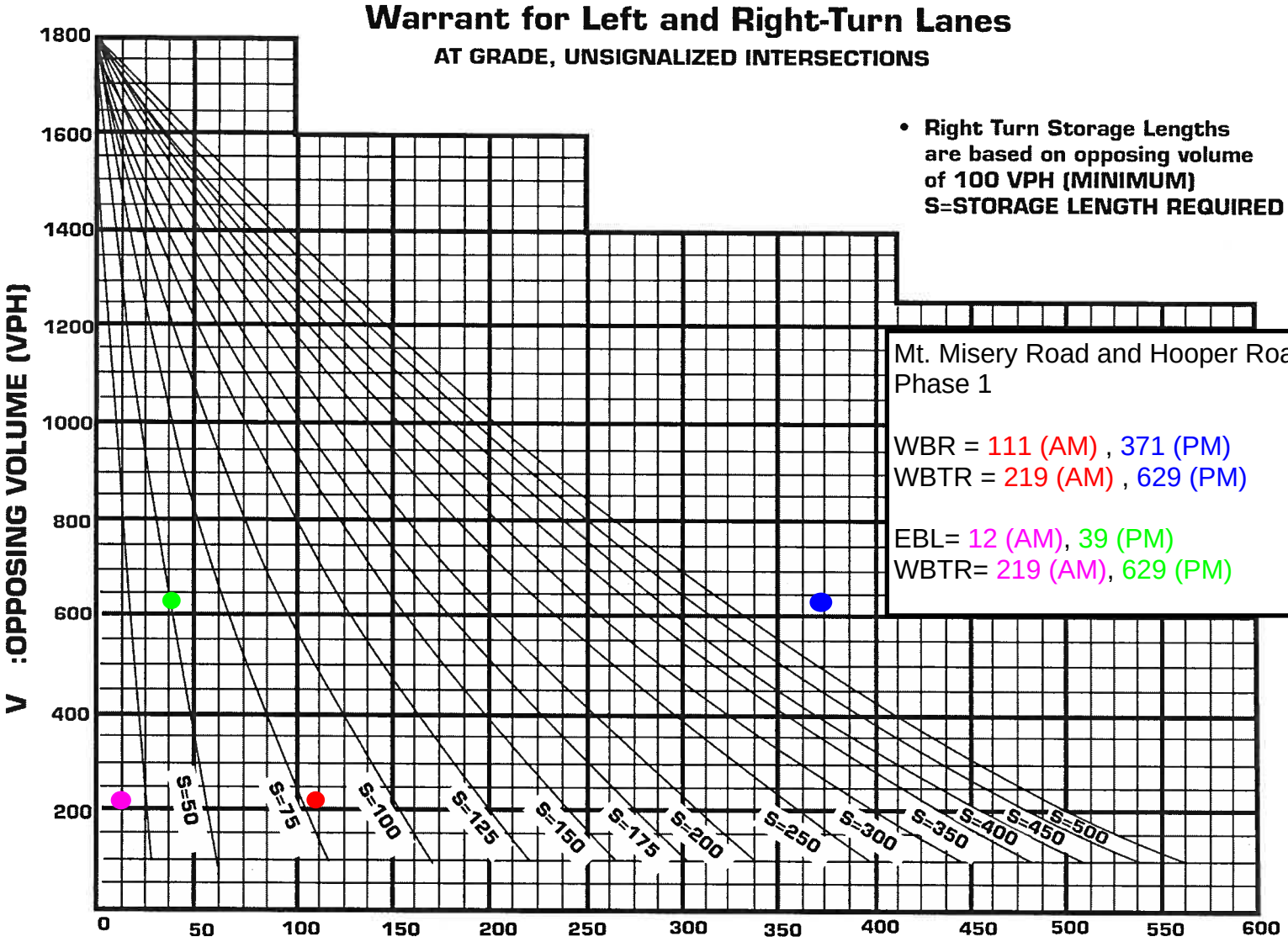
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

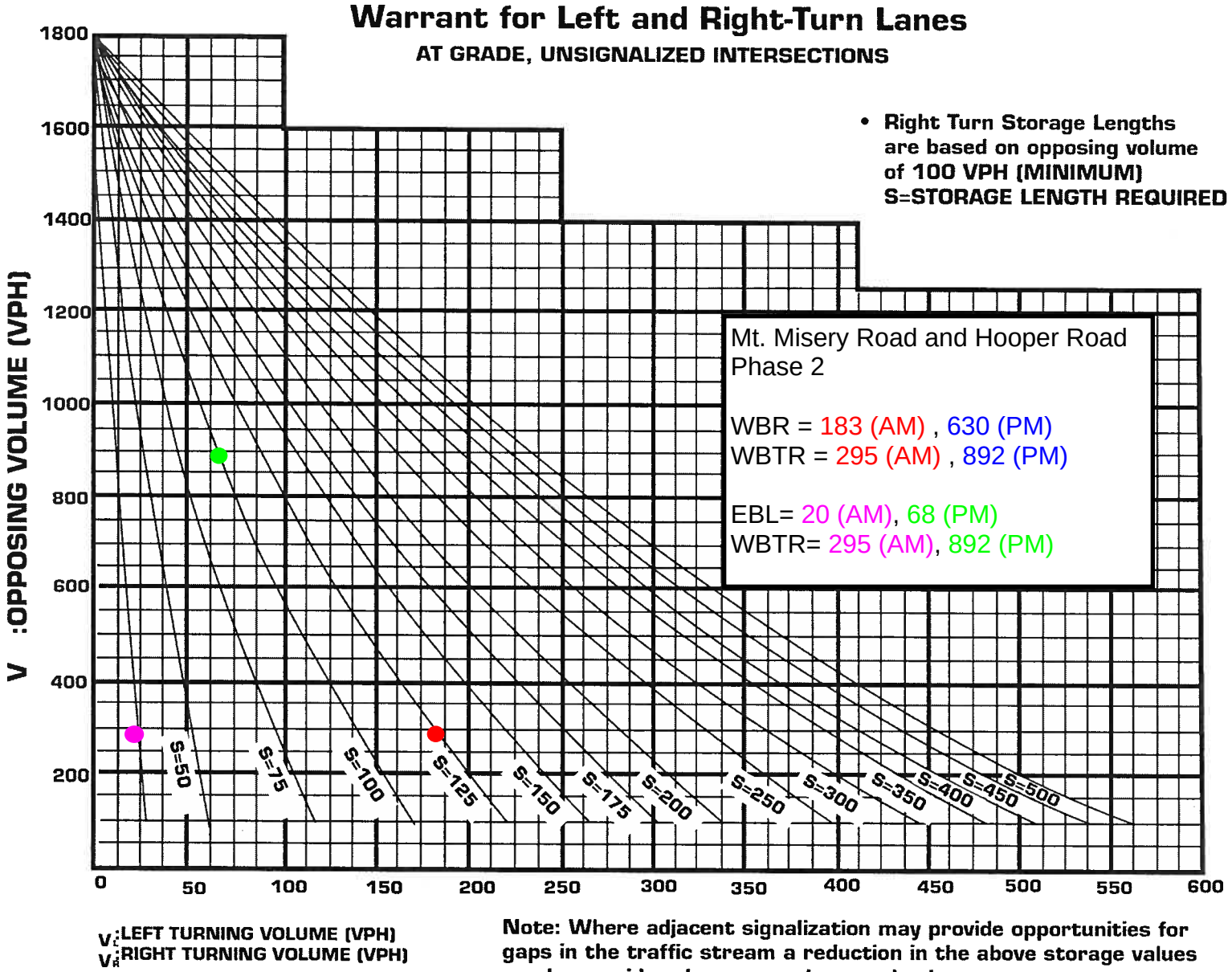
Splits and Phases: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

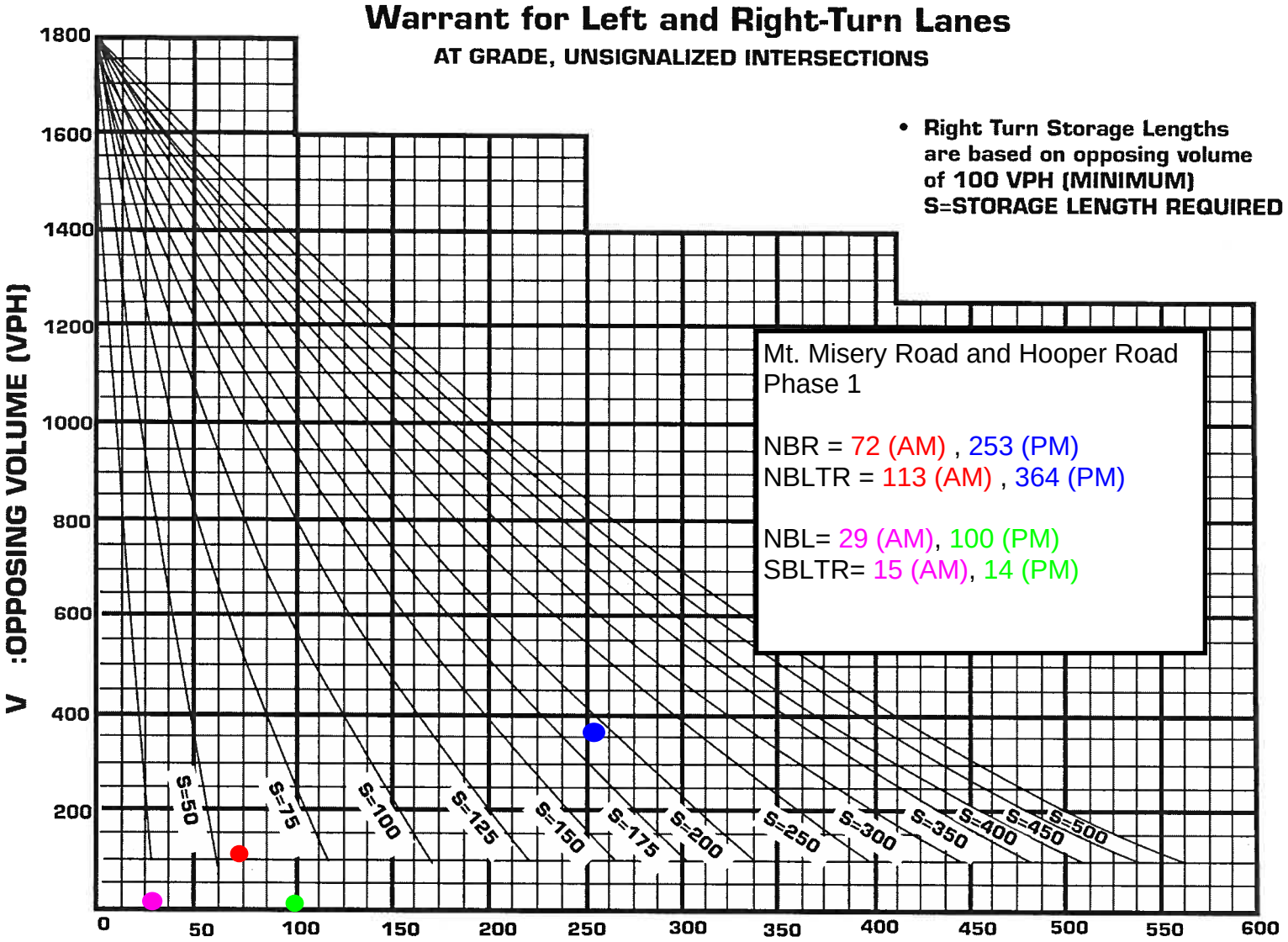


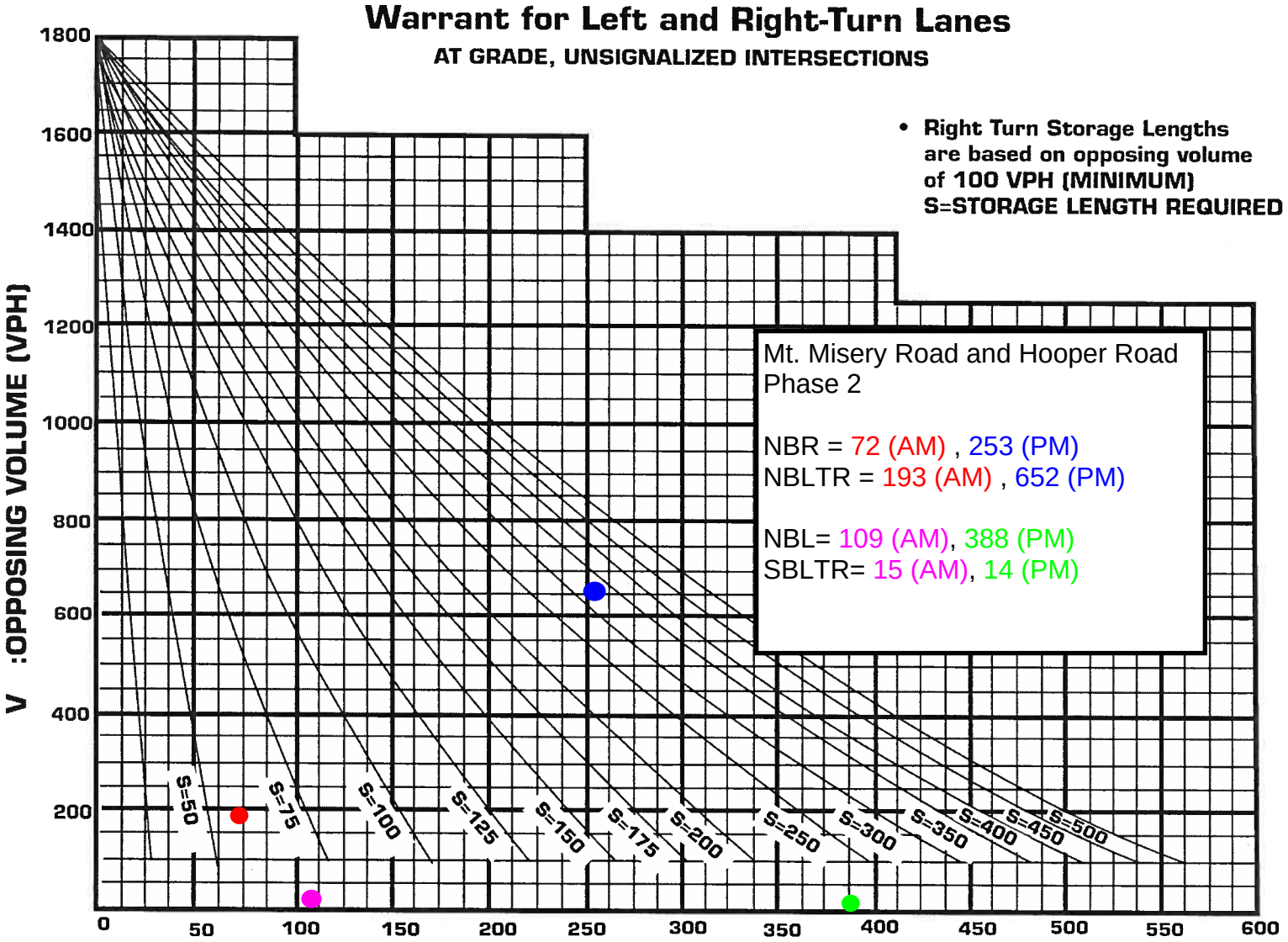
APPENDIX D

TURN LANE WARRANTS


Warrant for Left and Right-Turn Lanes
AT GRADE, UNSIGNALIZED INTERSECTIONS
• Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
S=STORAGE LENGTH REQUIRED
Mt. Misery Road and Hooper Road
Phase 1
WBR = 111 (AM) , 371 (PM)
WBTR = 219 (AM) , 629 (PM)
EBL= 12 (AM), 39 (PM)
WBTR= 219 (AM), 629 (PM)
V :OPPOSING VOLUME (VPH)
1800
1600
1400
1200
1000
800
600
400
200
0
50
100
150
200
250
300
350
400
450
500
550
600
S=50
S=75
S=100
S=125
S=150
S=175
S=200
S=250
S=300
S=350
S=400
S=450
S=500
VL:LEFT TURNING VOLUME (VPH)
VR:RIGHT TURNING VOLUME (VPH)
Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.


Warrant for Left and Right-Turn Lanes
AT GRADE, UNSIGNALIZED INTERSECTIONS
• Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
S=STORAGE LENGTH REQUIRED
Mt. Misery Road and Hooper Road
Phase 2
WBR = 183 (AM) , 630 (PM)
WBTR = 295 (AM) , 892 (PM)
EBL= 20 (AM), 68 (PM)
WBTR= 295 (AM), 892 (PM)
V :OPPOSING VOLUME (VPH)
1800
1600
1400
1200
1000
800
600
400
200
0
50
100
150
200
250
300
350
400
450
500
550
600
S=50
S=75
S=100
S=125
S=150
S=175
S=200
S=250
S=300
S=350
S=400
S=450
S=500
VL:LEFT TURNING VOLUME (VPH)
VR:RIGHT TURNING VOLUME (VPH)
Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.


Warrant for Left and Right-Turn Lanes
AT GRADE, UNSIGNALIZED INTERSECTIONS
• Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
S=STORAGE LENGTH REQUIRED
Mt. Misery Road and Hooper Road
Phase 1
NBR = 72 (AM) , 253 (PM)
NBLTR = 113 (AM) , 364 (PM)
NBL= 29 (AM), 100 (PM)
SBLTR= 15 (AM), 14 (PM)
V :OPPOSING VOLUME (VPH)
1800
1600
1400
1200
1000
800
600
400
200
0
50
100
150
200
250
300
350
400
450
500
550
600
S=50
S=75
S=100
S=125
S=150
S=175
S=200
S=250
S=300
S=350
S=400
S=450
S=500
VL:LEFT TURNING VOLUME (VPH)
VR:RIGHT TURNING VOLUME (VPH)
Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.


Warrant for Left and Right-Turn Lanes
AT GRADE, UNSIGNALIZED INTERSECTIONS
• Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
S=STORAGE LENGTH REQUIRED
Mt. Misery Road and Hooper Road
Phase 2
NBR = 72 (AM) , 253 (PM)
NBLTR = 193 (AM) , 652 (PM)
NBL= 109 (AM), 388 (PM)
SBLTR= 15 (AM), 14 (PM)
V :OPPOSING VOLUME (VPH)
1800
1600
1400
1200
1000
800
600
400
200
0
50
100
150
200
250
300
350
400
450
500
550
600
S=50
S=75
S=100
S=125
S=150
S=175
S=200
S=250
S=300
S=350
S=400
S=450
S=500
VL:LEFT TURNING VOLUME (VPH)
VR:RIGHT TURNING VOLUME (VPH)
Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

APPENDIX E

TRAFFIC SIGNAL WARRANT ANALYSIS

2024

Time Period	SB Left	SB Right	WB Thru	WB Right	EB Left	EB Thru
6:00 AM	47	4	79	17	6	203
7:00 AM	31	6	94	20	4	235
8:00 AM	31	7	94	23	4	181
9:00 AM	29	7	75	11	5	101
10:00 AM	28	3	95	18	2	123
11:00 AM	24	8	91	24	5	110
12:00 PM	22	3	120	23	2	109
1:00 PM	18	10	134	24	5	122
2:00 PM	19	9	140	22	12	123
3:00 PM	29	6	205	47	10	130
4:00 PM	29	14	215	45	7	142
5:00 PM	41	6	233	50	6	148
6:00 PM	21	6	174	42	4	97

2030

Time Period	SB Left	SB Right	WB Thru	WB Right	EB Left	EB Thru
6:00 AM	50	4	84	18	6	215
7:00 AM	33	6	100	21	4	249
8:00 AM	33	7	100	24	4	192
9:00 AM	31	7	80	12	5	107
10:00 AM	30	3	101	19	2	131
11:00 AM	25	8	97	25	5	117
12:00 PM	23	3	127	24	2	116
1:00 PM	19	11	142	25	5	130
2:00 PM	20	10	149	23	13	131
3:00 PM	31	6	218	50	11	138
4:00 PM	31	15	228	48	7	151
5:00 PM	44	6	247	53	6	157
6:00 PM	22	6	185	45	4	103

Site

Time Period	SB Left	SB Right	WB Thru	WB Right	EB Left	EB Thru
6:00 AM	262	29	0	70	8	0
7:00 AM	447	50	0	138	15	0
8:00 AM	383	42	0	169	19	0
9:00 AM	258	29	0	150	17	0
10:00 AM	250	28	0	189	21	0
11:00 AM	229	25	0	243	27	0
12:00 PM	255	28	0	257	29	0
1:00 PM	269	30	0	275	30	0
2:00 PM	275	30	0	320	35	0
3:00 PM	280	31	0	391	43	0
4:00 PM	331	37	0	472	52	0
5:00 PM	328	36	0	449	50	0
6:00 PM	263	29	0	383	42	0

Build

Time Period	SB Left	SB Right	WB Thru	WB Right	EB Left	EB Thru
6:00 AM	312	33	84	88	14	215
7:00 AM	480	56	100	159	19	249
8:00 AM	416	49	100	193	23	192
9:00 AM	289	36	80	162	22	107
10:00 AM	280	31	101	208	23	131
11:00 AM	254	33	97	268	32	117
12:00 PM	278	31	127	281	31	116
1:00 PM	288	41	142	300	35	130
2:00 PM	295	40	149	343	48	131
3:00 PM	311	37	218	441	54	138
4:00 PM	362	52	228	520	59	151
5:00 PM	372	42	247	502	56	157
6:00 PM	285	35	185	428	46	103

Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	Hooper Road
Project/File #	24-029
Scenario	2030 Build

Intersection Information			
Major Street (E/W Road)	Mt. Misery Road	Minor Street (N/S Road)	Hooper Road
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	8150 vehicles	Total Approach Volume	4738 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	100 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

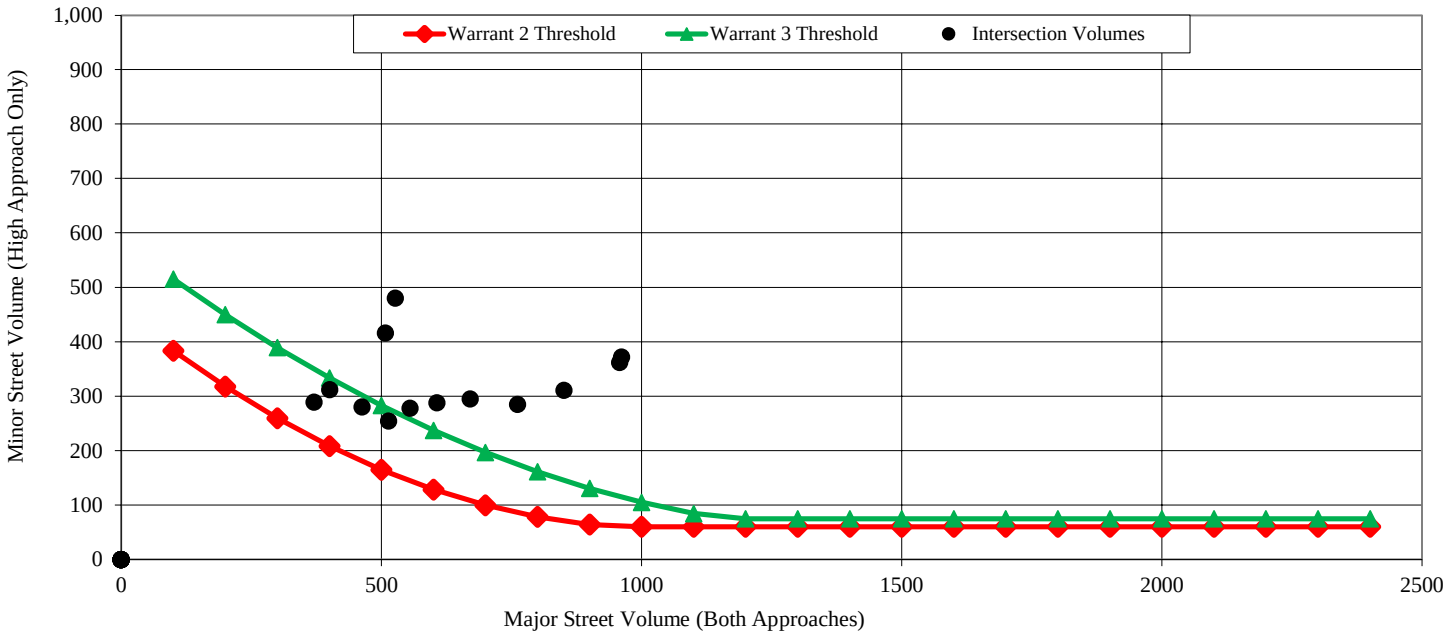
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Satisfied	Not Satisfied	Satisfied
Required values reached for	11 hours	5 hours	13 (Cond. A) & 10 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Satisfied
Required values reached for	13 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Examined	Satisfied
Required values reached for		9 hours
Criteria - Total Approach Volume (veh in one hour)		See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)		
Criteria - Minor Street High Side Delay (veh-hrs)		

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



APPENDIX F

SYNCHRO ANALYSIS REPORTS

MT. MISERY ROAD
AND
I-140 WESTBOUND RAMPS

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	149	21	151	428	58
Future Vol, veh/h	42	149	21	151	428	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	400	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	166	23	168	476	64

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	690	476	540	0	-	0
Stage 1	476	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	411	589	1028	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	402	589	1028	-	-	-
Mov Cap-2 Maneuver	402	-	-	-	-	-
Stage 1	611	-	-	-	-	-
Stage 2	822	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1028	-	402	589	-	-
HCM Lane V/C Ratio	0.023	-	0.116	0.281	-	-
HCM Control Delay (s)	8.6	-	15.1	13.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	1.1	-	-

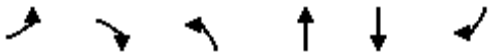
Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	68	268	16	393	313	19
Future Vol, veh/h	68	268	16	393	313	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	400	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	298	18	437	348	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	821	348	369	0	-	0
Stage 1	348	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	344	695	1190	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	339	695	1190	-	-	-
Mov Cap-2 Maneuver	339	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	627	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1190	-	339	695	-	-
HCM Lane V/C Ratio	0.015	-	0.223	0.428	-	-
HCM Control Delay (s)	8.1	-	18.6	14	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	2.2	-	-

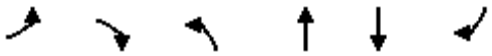


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	157	22	206	572	81
Future Volume (vph)	44	157	22	206	572	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.357			
Satd. Flow (perm)	1770	1583	665	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	174	24	229	636	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	174	24	229	636	90
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	28.0	28.0	62.0	62.0	62.0	28.0
Total Split (%)	31.1%	31.1%	68.9%	68.9%	68.9%	31.1%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	17.1	17.1	62.9	62.9	62.9	90.0
Actuated g/C Ratio	0.19	0.19	0.70	0.70	0.70	1.00
v/c Ratio	0.15	0.58	0.05	0.18	0.49	0.06
Control Delay	29.4	40.3	0.5	0.9	8.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	40.3	0.5	0.9	8.5	0.1
LOS	C	D	A	A	A	A
Approach Delay	37.9			0.8	7.5	
Approach LOS	D			A	A	
Queue Length 50th (ft)	23	91	0	1	142	0
Queue Length 95th (ft)	50	144	1	4	267	0

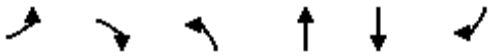
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	452	404	464	1302	1302	1560
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.43	0.05	0.18	0.49	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 12 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 11.7		Intersection LOS: B	
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



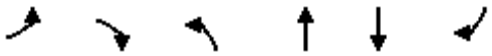
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	282	17	581	415	34
Future Volume (vph)	71	282	17	581	415	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.436			
Satd. Flow (perm)	1770	1583	812	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	79	313	19	646	461	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	79	313	19	646	461	38
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	36.0	36.0	54.0	54.0	54.0	36.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	40.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	24.6	24.6	55.4	55.4	55.4	90.0
Actuated g/C Ratio	0.27	0.27	0.62	0.62	0.62	1.00
v/c Ratio	0.16	0.72	0.04	0.56	0.40	0.02
Control Delay	23.8	39.0	3.5	6.3	11.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	39.0	3.5	6.3	11.2	0.0
LOS	C	D	A	A	B	A
Approach Delay	36.0			6.3	10.3	
Approach LOS	D			A	B	
Queue Length 50th (ft)	34	160	0	46	123	0
Queue Length 95th (ft)	62	230	m3	59	224	0



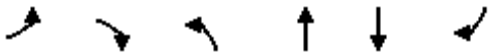
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	609	545	500	1146	1146	1575
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.57	0.04	0.56	0.40	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 48 (53%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



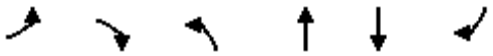
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	158	22	214	592	85
Future Volume (vph)	45	158	22	214	592	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.345			
Satd. Flow (perm)	1770	1583	643	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	50	176	24	238	658	94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	176	24	238	658	94
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	27.0	27.0	63.0	63.0	63.0	27.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	30.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	17.0	17.0	63.0	63.0	63.0	90.0
Actuated g/C Ratio	0.19	0.19	0.70	0.70	0.70	1.00
v/c Ratio	0.15	0.59	0.05	0.18	0.50	0.06
Control Delay	29.7	41.0	0.6	0.9	8.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	41.0	0.6	0.9	8.6	0.1
LOS	C	D	A	A	A	A
Approach Delay	38.5			0.9	7.5	
Approach LOS	D			A	A	
Queue Length 50th (ft)	24	92	0	1	150	0
Queue Length 95th (ft)	51	148	1	4	272	0



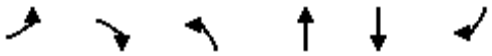
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	432	386	450	1304	1304	1573
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.46	0.05	0.18	0.50	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 11 (12%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 49.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



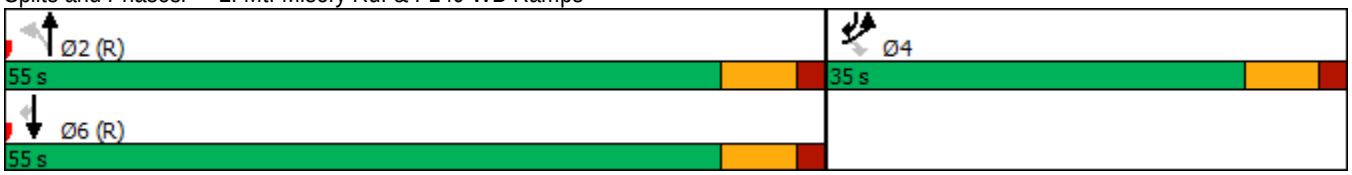
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	72	284	17	611	430	36
Future Volume (vph)	72	284	17	611	430	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.424			
Satd. Flow (perm)	1770	1583	790	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	80	316	19	679	478	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	316	19	679	478	40
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	35.0	35.0	55.0	55.0	55.0	35.0
Total Split (%)	38.9%	38.9%	61.1%	61.1%	61.1%	38.9%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	24.5	24.5	55.5	55.5	55.5	90.0
Actuated g/C Ratio	0.27	0.27	0.62	0.62	0.62	1.00
v/c Ratio	0.17	0.73	0.04	0.59	0.42	0.03
Control Delay	24.0	39.8	9.1	10.9	11.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	39.8	9.1	10.9	11.2	0.0
LOS	C	D	A	B	B	A
Approach Delay	36.7			10.8	10.3	
Approach LOS	D			B	B	
Queue Length 50th (ft)	34	161	4	139	131	0
Queue Length 95th (ft)	64	237	m9	202	227	0

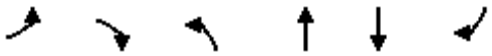


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	590	527	487	1149	1149	1571
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.60	0.04	0.59	0.42	0.03

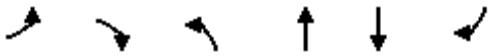
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 31 (34%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps





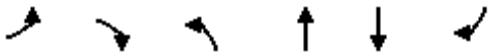
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	160	23	230	631	91
Future Volume (vph)	45	160	23	230	631	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.321			
Satd. Flow (perm)	1770	1583	598	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	50	178	26	256	701	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	178	26	256	701	101
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	27.0	27.0	63.0	63.0	63.0	27.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	30.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	17.0	17.0	63.0	63.0	63.0	90.0
Actuated g/C Ratio	0.19	0.19	0.70	0.70	0.70	1.00
v/c Ratio	0.15	0.60	0.06	0.20	0.54	0.06
Control Delay	29.7	41.1	0.7	1.0	9.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	41.1	0.7	1.0	9.1	0.1
LOS	C	D	A	A	A	A
Approach Delay	38.6			1.0	8.0	
Approach LOS	D			A	A	
Queue Length 50th (ft)	24	93	0	1	166	0
Queue Length 95th (ft)	51	150	1	6	300	0



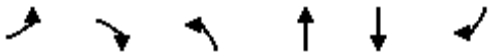
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	432	386	418	1303	1303	1572
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.46	0.06	0.20	0.54	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 12 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 51.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



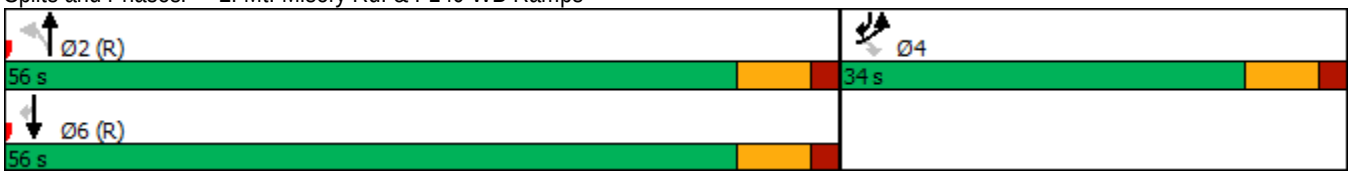
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	73	287	17	661	458	40
Future Volume (vph)	73	287	17	661	458	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.403			
Satd. Flow (perm)	1770	1583	751	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	81	319	19	734	509	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	81	319	19	734	509	44
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	34.0	34.0	56.0	56.0	56.0	34.0
Total Split (%)	37.8%	37.8%	62.2%	62.2%	62.2%	37.8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	24.3	24.3	55.7	55.7	55.7	90.0
Actuated g/C Ratio	0.27	0.27	0.62	0.62	0.62	1.00
v/c Ratio	0.17	0.75	0.04	0.64	0.44	0.03
Control Delay	24.4	40.8	8.9	11.8	11.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	40.8	8.9	11.8	11.4	0.0
LOS	C	D	A	B	B	A
Approach Delay	37.5			11.7	10.5	
Approach LOS	D			B	B	
Queue Length 50th (ft)	35	163	4	161	142	0
Queue Length 95th (ft)	66	244	m8	204	240	0

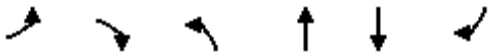


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	570	510	464	1152	1152	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.63	0.04	0.64	0.44	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 28 (31%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



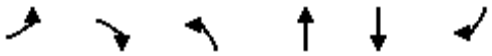


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	79	157	22	251	799	96
Future Volume (vph)	79	157	22	251	799	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.230			
Satd. Flow (perm)	1770	1583	428	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	174	24	279	888	107
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	174	24	279	888	107
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	23.0	23.0	67.0	67.0	67.0	23.0
Total Split (%)	25.6%	25.6%	74.4%	74.4%	74.4%	25.6%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	15.7	15.7	64.3	64.3	64.3	90.0
Actuated g/C Ratio	0.17	0.17	0.71	0.71	0.71	1.00
v/c Ratio	0.28	0.63	0.08	0.21	0.67	0.07
Control Delay	33.9	44.6	0.6	0.8	10.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	44.6	0.6	0.8	10.7	0.1
LOS	C	D	A	A	B	A
Approach Delay	41.0			0.8	9.5	
Approach LOS	D			A	A	
Queue Length 50th (ft)	43	91	0	1	248	0
Queue Length 95th (ft)	85	156	0	1	391	0

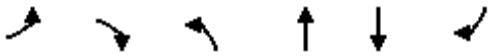
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	354	316	305	1330	1330	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.55	0.08	0.21	0.67	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 4 (4%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



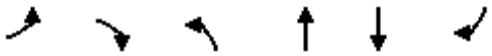
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	195	282	17	740	570	44
Future Volume (vph)	195	282	17	740	570	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.326			
Satd. Flow (perm)	1770	1583	607	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	217	313	19	822	633	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	217	313	19	822	633	49
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	32.0	32.0	58.0	58.0	58.0	32.0
Total Split (%)	35.6%	35.6%	64.4%	64.4%	64.4%	35.6%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	23.5	23.5	56.5	56.5	56.5	90.0
Actuated g/C Ratio	0.26	0.26	0.63	0.63	0.63	1.00
v/c Ratio	0.47	0.76	0.05	0.70	0.54	0.03
Control Delay	30.9	42.8	3.3	6.6	12.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	42.8	3.3	6.6	12.4	0.0
LOS	C	D	A	A	B	A
Approach Delay	37.9			6.5	11.5	
Approach LOS	D			A	B	
Queue Length 50th (ft)	102	160	1	58	192	0
Queue Length 95th (ft)	162	247	m2	71	306	0



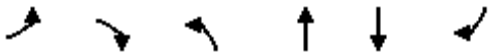
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	531	474	381	1170	1170	1573
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.66	0.05	0.70	0.54	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 12 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



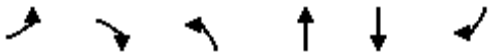
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	79	157	22	251	799	96
Future Volume (vph)	79	157	22	251	799	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.234			
Satd. Flow (perm)	1770	1583	436	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	174	24	279	888	107
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	174	24	279	888	107
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	24.0	24.0	71.0	71.0	71.0	24.0
Total Split (%)	25.3%	25.3%	74.7%	74.7%	74.7%	25.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	16.4	16.4	68.6	68.6	68.6	95.0
Actuated g/C Ratio	0.17	0.17	0.72	0.72	0.72	1.00
v/c Ratio	0.29	0.64	0.08	0.21	0.66	0.07
Control Delay	35.8	47.0	0.5	0.8	10.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	47.0	0.5	0.8	10.6	0.1
LOS	D	D	A	A	B	A
Approach Delay	43.3			0.8	9.4	
Approach LOS	D			A	A	
Queue Length 50th (ft)	46	97	0	1	255	0
Queue Length 95th (ft)	89	163	0	1	403	0



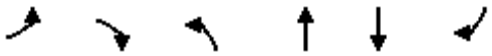
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	354	316	314	1344	1344	1567
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.55	0.08	0.21	0.66	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 3 (3%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



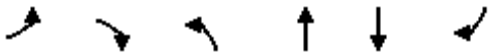
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	195	282	17	740	570	44
Future Volume (vph)	195	282	17	740	570	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.326			
Satd. Flow (perm)	1770	1583	607	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	217	313	19	822	633	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	217	313	19	822	633	49
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	32.0	32.0	58.0	58.0	58.0	32.0
Total Split (%)	35.6%	35.6%	64.4%	64.4%	64.4%	35.6%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	23.5	23.5	56.5	56.5	56.5	90.0
Actuated g/C Ratio	0.26	0.26	0.63	0.63	0.63	1.00
v/c Ratio	0.47	0.76	0.05	0.70	0.54	0.03
Control Delay	30.9	42.8	3.3	6.6	12.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	42.8	3.3	6.6	12.4	0.0
LOS	C	D	A	A	B	A
Approach Delay	37.9			6.5	11.5	
Approach LOS	D			A	B	
Queue Length 50th (ft)	102	160	1	58	192	0
Queue Length 95th (ft)	162	247	m2	71	306	0



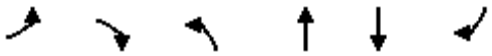
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	531	474	381	1170	1170	1573
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.66	0.05	0.70	0.54	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 12 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



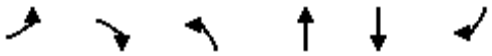
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	108	158	22	295	998	112
Future Volume (vph)	108	158	22	295	998	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.131			
Satd. Flow (perm)	1770	1583	244	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	120	176	24	328	1109	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	176	24	328	1109	124
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	20.0	20.0	70.0	70.0	70.0	20.0
Total Split (%)	22.2%	22.2%	77.8%	77.8%	77.8%	22.2%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	14.3	14.3	65.7	65.7	65.7	90.0
Actuated g/C Ratio	0.16	0.16	0.73	0.73	0.73	1.00
v/c Ratio	0.43	0.70	0.13	0.24	0.82	0.08
Control Delay	39.0	51.8	1.5	0.9	14.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	51.8	1.5	0.9	14.9	0.1
LOS	D	D	A	A	B	A
Approach Delay	46.6			0.9	13.4	
Approach LOS	D			A	B	
Queue Length 50th (ft)	62	95	0	1	362	0
Queue Length 95th (ft)	115	#181	m0	1	584	0



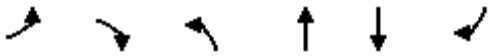
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	295	263	178	1359	1359	1578
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.67	0.13	0.24	0.82	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



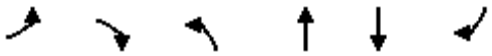
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	296	284	17	899	712	55
Future Volume (vph)	296	284	17	899	712	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.248			
Satd. Flow (perm)	1770	1583	462	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	329	316	19	999	791	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	329	316	19	999	791	61
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	34.0	34.0	76.0	76.0	76.0	34.0
Total Split (%)	30.9%	30.9%	69.1%	69.1%	69.1%	30.9%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	26.7	26.7	73.3	73.3	73.3	110.0
Actuated g/C Ratio	0.24	0.24	0.67	0.67	0.67	1.00
v/c Ratio	0.77	0.82	0.06	0.80	0.64	0.04
Control Delay	51.0	57.4	3.8	7.3	14.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	57.4	3.8	7.3	14.2	0.1
LOS	D	E	A	A	B	A
Approach Delay	54.1			7.3	13.1	
Approach LOS	D			A	B	
Queue Length 50th (ft)	210	206	2	92	315	0
Queue Length 95th (ft)	315	#333	m2	110	445	0



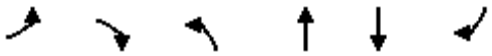
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	466	417	308	1241	1241	1577
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.76	0.06	0.80	0.64	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 12 (11%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



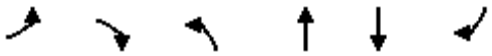
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	108	158	22	295	998	112
Future Volume (vph)	108	158	22	295	998	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.135			
Satd. Flow (perm)	1770	1583	251	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	120	176	24	328	1109	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	176	24	328	1109	124
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	21.0	21.0	74.0	74.0	74.0	21.0
Total Split (%)	22.1%	22.1%	77.9%	77.9%	77.9%	22.1%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	15.0	15.0	70.0	70.0	70.0	95.0
Actuated g/C Ratio	0.16	0.16	0.74	0.74	0.74	1.00
v/c Ratio	0.43	0.70	0.13	0.24	0.81	0.08
Control Delay	40.9	53.7	2.1	1.2	14.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	53.7	2.1	1.2	14.6	0.1
LOS	D	D	A	A	B	A
Approach Delay	48.5			1.2	13.2	
Approach LOS	D			A	B	
Queue Length 50th (ft)	65	100	0	2	382	0
Queue Length 95th (ft)	120	#184	2	14	600	0



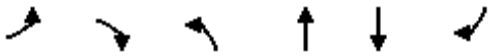
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	298	266	184	1372	1372	1565
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.66	0.13	0.24	0.81	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 4 (4%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



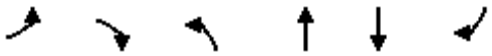
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	296	284	17	899	712	55
Future Volume (vph)	296	284	17	899	712	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.241			
Satd. Flow (perm)	1770	1583	449	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	329	316	19	999	791	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	329	316	19	999	791	61
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	28.0	28.0	62.0	62.0	62.0	28.0
Total Split (%)	31.1%	31.1%	68.9%	68.9%	68.9%	31.1%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	21.8	21.8	58.2	58.2	58.2	90.0
Actuated g/C Ratio	0.24	0.24	0.65	0.65	0.65	1.00
v/c Ratio	0.77	0.82	0.07	0.83	0.66	0.04
Control Delay	44.5	51.0	3.1	8.7	13.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	51.0	3.1	8.7	13.4	0.1
LOS	D	D	A	A	B	A
Approach Delay	47.7			8.6	12.5	
Approach LOS	D			A	B	
Queue Length 50th (ft)	171	167	0	74	258	0
Queue Length 95th (ft)	#287	#297	m2	#103	385	0



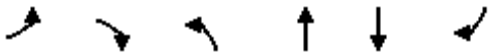
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	452	404	290	1203	1203	1567
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.78	0.07	0.83	0.66	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 12 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 20.0		Intersection LOS: B	
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



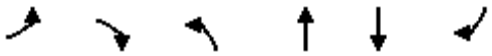
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	137	160	23	348	1219	130
Future Volume (vph)	137	160	23	348	1219	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.058			
Satd. Flow (perm)	1770	1583	108	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	152	178	26	387	1354	144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	178	26	387	1354	144
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	16.0	16.0	74.0	74.0	74.0	16.0
Total Split (%)	17.8%	17.8%	82.2%	82.2%	82.2%	17.8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	11.0	11.0	69.0	69.0	69.0	90.0
Actuated g/C Ratio	0.12	0.12	0.77	0.77	0.77	1.00
v/c Ratio	0.70	0.92	0.32	0.27	0.95	0.09
Control Delay	56.8	88.8	16.3	0.9	25.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	88.8	16.3	0.9	25.1	0.1
LOS	E	F	B	A	C	A
Approach Delay	74.1			1.9	22.7	
Approach LOS	E			A	C	
Queue Length 50th (ft)	84	102	1	1	518	0
Queue Length 95th (ft)	#172	#225	m16	1	#1015	0



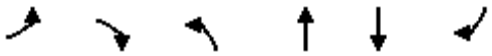
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	216	193	82	1428	1428	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.92	0.32	0.27	0.95	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 26.4		Intersection LOS: C	
Intersection Capacity Utilization 82.4%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



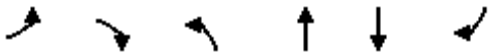
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	402	287	17	1084	872	68
Future Volume (vph)	402	287	17	1084	872	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.147			
Satd. Flow (perm)	1770	1583	274	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	447	319	19	1204	969	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	447	319	19	1204	969	76
Turn Type	Prot	Perm	Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	21.0	21.0	21.0	14.0
Total Split (s)	43.0	43.0	102.0	102.0	102.0	43.0
Total Split (%)	29.7%	29.7%	70.3%	70.3%	70.3%	29.7%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	38.0	38.0	97.0	97.0	97.0	145.0
Actuated g/C Ratio	0.26	0.26	0.67	0.67	0.67	1.00
v/c Ratio	0.97	0.77	0.10	0.97	0.78	0.05
Control Delay	86.6	63.2	5.0	16.2	22.1	0.1
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	86.6	63.2	5.0	16.9	22.1	0.1
LOS	F	E	A	B	C	A
Approach Delay	76.8			16.7	20.5	
Approach LOS	E			B	C	
Queue Length 50th (ft)	420	280	2	139	590	0
Queue Length 95th (ft)	#639	#405	m3	m#187	788	0



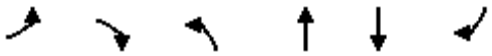
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200		400			200
Base Capacity (vph)	463	414	183	1246	1246	1583
Starvation Cap Reductn	0	0	0	6	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.77	0.10	0.97	0.78	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 145			
Offset: 42 (29%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 33.2		Intersection LOS: C	
Intersection Capacity Utilization 87.7%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



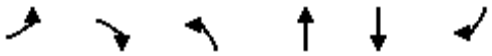
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	137	160	23	348	1219	130
Future Volume (vph)	137	160	23	348	1219	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	0	0	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.95	0.95	0.95	1.00	1.00
Frt	0.919					0.850
Flt Protected	0.977			0.997		
Satd. Flow (prot)	3245	0	0	3529	1863	1583
Flt Permitted	0.977			0.731		
Satd. Flow (perm)	3245	0	0	2587	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	152	178	26	387	1354	144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	0	0	413	1354	144
Turn Type	Prot		Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases			2			6
Detector Phase	4		2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0		14.0	14.0	14.0	7.0
Minimum Split (s)	14.0		21.0	21.0	21.0	14.0
Total Split (s)	15.0		75.0	75.0	75.0	15.0
Total Split (%)	16.7%		83.3%	83.3%	83.3%	16.7%
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0			-2.0	-2.0	-2.0
Total Lost Time (s)	5.0			5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max	C-Max	C-Max	None
Act Effct Green (s)	10.0			70.0	70.0	90.0
Actuated g/C Ratio	0.11			0.78	0.78	1.00
v/c Ratio	0.99dr			0.21	0.93	0.09
Control Delay	71.6			4.5	22.4	0.1
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	71.6			4.5	22.4	0.1
LOS	E			A	C	A
Approach Delay	71.6			4.5	20.2	
Approach LOS	E			A	C	
Queue Length 50th (ft)	97			34	484	0
Queue Length 95th (ft)	#176			74	#1002	0



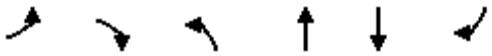
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200					200
Base Capacity (vph)	360			2012	1449	1583
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.92			0.21	0.93	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 14 (16%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 81.5%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
dr Defacto Right Lane. Recode with 1 though lane as a right lane.			

Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	402	287	17	1084	872	68
Future Volume (vph)	402	287	17	1084	872	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	400			200
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Lane Util. Factor	0.97	0.95	0.95	0.95	1.00	1.00
Frt	0.938					0.850
Flt Protected	0.972			0.999		
Satd. Flow (prot)	3295	0	0	3536	1863	1583
Flt Permitted	0.972			0.886		
Satd. Flow (perm)	3295	0	0	3136	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	1335			1098	1373	
Travel Time (s)	26.0			16.6	20.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	447	319	19	1204	969	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	766	0	0	1223	969	76
Turn Type	Prot		Perm	NA	NA	pm+ov
Protected Phases	4			2	6	4
Permitted Phases			2			6
Detector Phase	4		2	2	6	4
Switch Phase						
Minimum Initial (s)	7.0		14.0	14.0	14.0	7.0
Minimum Split (s)	14.0		21.0	21.0	21.0	14.0
Total Split (s)	28.0		62.0	62.0	62.0	28.0
Total Split (%)	31.1%		68.9%	68.9%	68.9%	31.1%
Yellow Time (s)	5.0		5.0	5.0	5.0	5.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0			-2.0	-2.0	-2.0
Total Lost Time (s)	5.0			5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max	C-Max	C-Max	None
Act Effct Green (s)	23.0			57.0	57.0	90.0
Actuated g/C Ratio	0.26			0.63	0.63	1.00
v/c Ratio	0.91			0.62	0.82	0.05
Control Delay	49.1			3.8	20.2	0.1
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	49.1			3.8	20.2	0.1
LOS	D			A	C	A
Approach Delay	49.1			3.8	18.7	
Approach LOS	D			A	B	
Queue Length 50th (ft)	218			46	379	0
Queue Length 95th (ft)	#325			m49	582	0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1255			1018	1293	
Turn Bay Length (ft)	200					200
Base Capacity (vph)	842			1986	1179	1583
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.91			0.62	0.82	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 23 (26%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 74.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

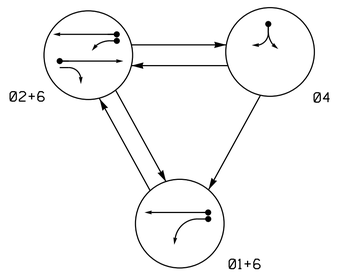
Splits and Phases: 2: Mt. Misery Rd. & I-140 WB Ramps

APPENDIX G

EXISTING SIGNAL PLANS

PROJECT REFERENCE NO.	SHEET NO.
	Sig.1.0

PHASING DIAGRAM



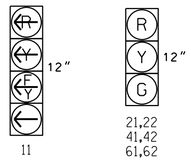
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION				
SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 04	FLASH
11	~~←~~	~~F Y~~	~~R~~	~~Y~~
21,22	R	G	R	Y
41,42	R	R	G	R
61,62	G	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



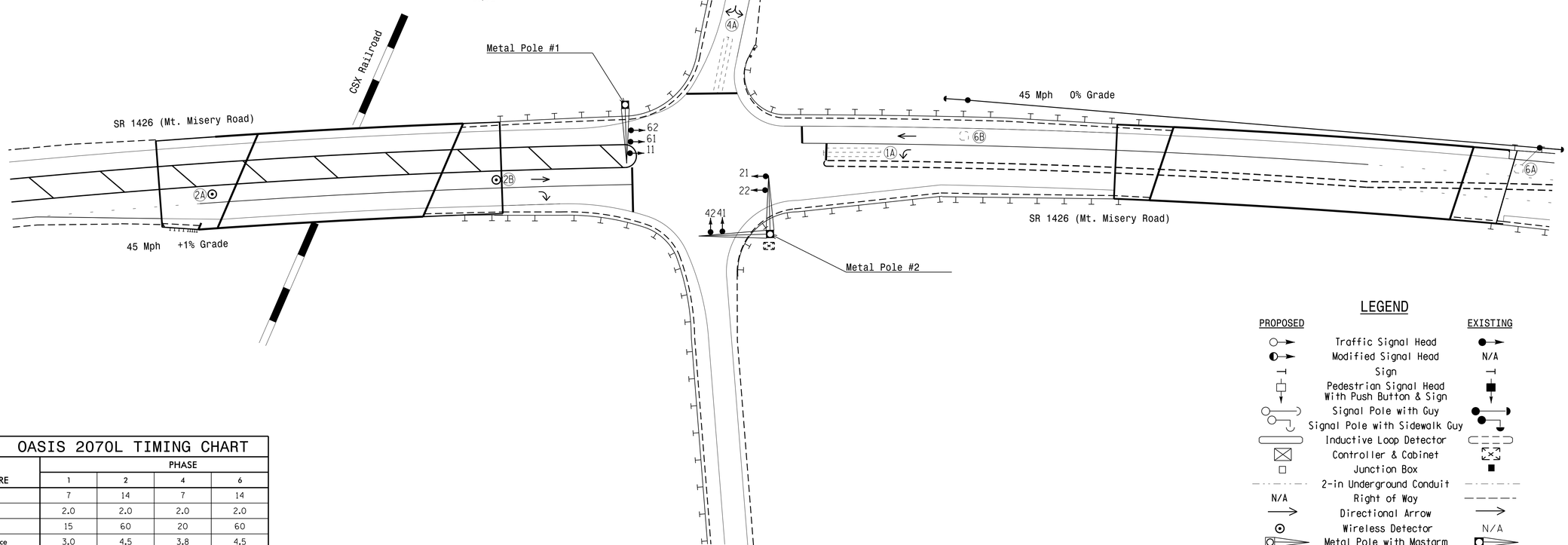
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
					6	Y	Y	Y	-	3	-	Y
2A	✳	300	✳	-	2	Y	Y	-	1.6	-	-	Y
2B	✳	90	✳	-	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
6A	6X6	500	5	-	6	Y	Y	-	6.7	-	-	Y
6B	6X6	110	5	-	6	Y	Y	-	-	-	-	Y

✳ Wireless Detection

3 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Wireless Detector	N/A
	Metal Pole with Mastarm	

OASIS 2070L TIMING CHART				
FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	7	14	7	14
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	15	60	20	60
Yellow Clearance	3.0	4.5	3.8	4.5
Red Clearance	3.3	1.8	1.7	1.8
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	-	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared In the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 17 NB Ramp
at
SR 1426 (Mt. Misery Road)

Division 3 Brunswick County Malmo

PLAN DATE: January 2021 REVIEWED BY: ZML
PREPARED BY: X. Han REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE 0 40 1"=40'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030530 ENGINEER ZACHARY M. LITTLE

DocuSigned by: Zachary Little 2/25/2021
DATE

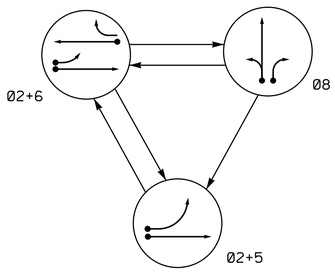
SIG. INVENTORY NO. 03-1071

01-MAR-2021 15:30
S:\HTS\SIGNALS\Signal Design Section\Eastern Region\Div-03\03-1071\2021-01\031071_sig_dsn_2021mmdd.dgn
xgrhan

DocuSign Envelope ID: E67FCB6F-1AAE-4FE2-86F3-BCE3E4E728F5

PROJECT REFERENCE NO.	SHEET NO.
36249.4304	Sig. 1

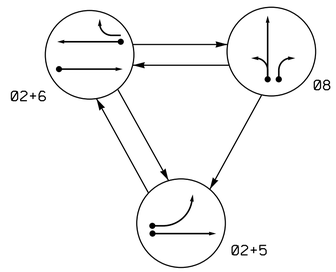
DEFAULT PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 02+5	PHASE 02+6	PHASE 08	PHASE FLASH
21,22	↑	↑	R	Y
23	G	G	R	Y
51	←	F ↓	~~R~~	~~Y~~
61	R	↑	R	Y
62, 63	R	G	R	Y
81, 82, 84	R	R	G	R
83	R	R	F ↓	R

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 02+5	PHASE 02+6	PHASE 08	PHASE FLASH
21,22	↑	↑	R	Y
23	G	G	R	Y
51	←	~~R~~	~~R~~	~~Y~~
61	R	↑	R	Y
62, 63	R	G	R	Y
81, 82, 84	R	R	G	R
83	R	R	F ↓	R

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15*	-	Y
					2**	Y	Y	Y	-	3	-	Y
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	15	-	Y
8C	6X6	0	3	Y	8	Y	Y	-	-	15	-	Y

* Reduce delay to 3 seconds during Alternate Phasing Operation.
** Disable Phase call for loop during Alternate Phasing Operation.

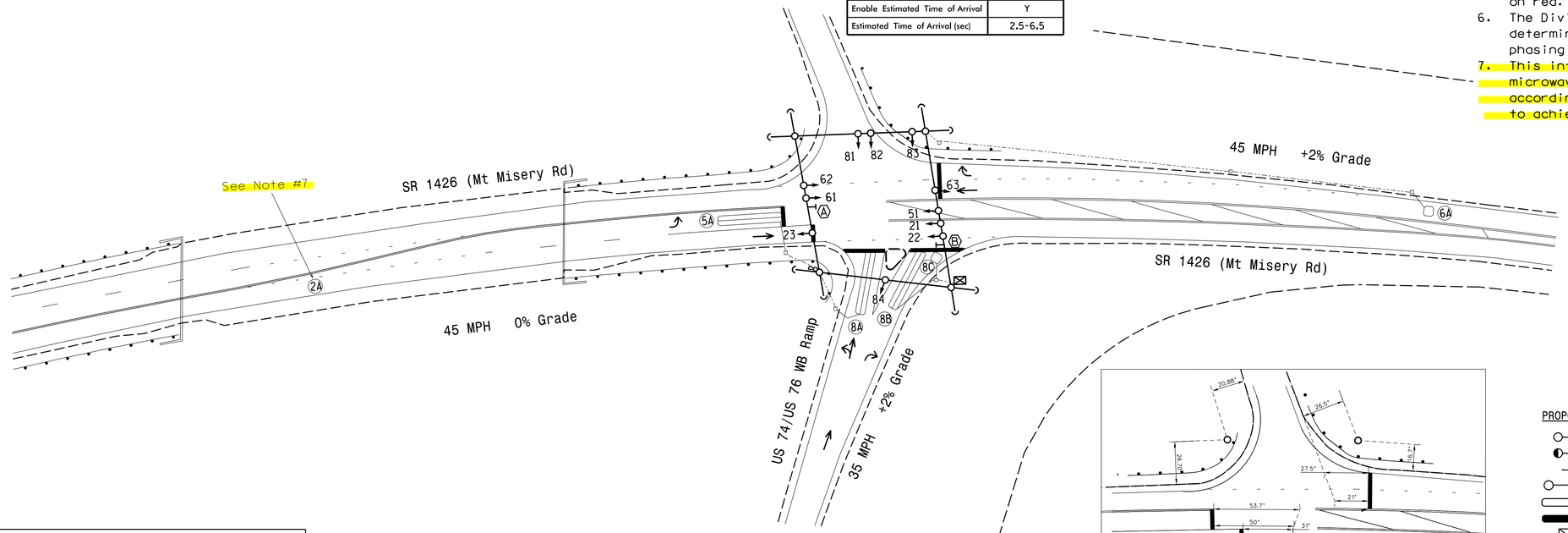
RADAR DETECTION SYSTEM

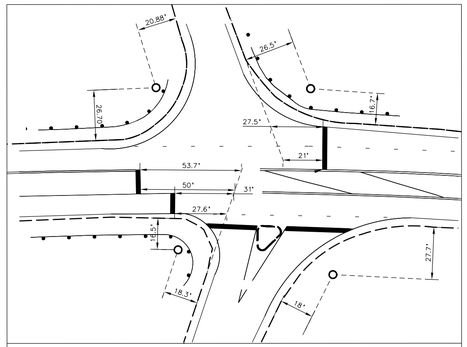
FUNCTION	Sensor 1 (2A)
Channel	1
Phase	2
Direction of Travel	NB
Detection Zone (ft)	500-100
Enable Speed	Y
Speed Range (mph)	35-100
Enable Estimated Time of Arrival	Y
Estimated Time of Arrival (sec)	2.5-6.5

3 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sectrions of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. The Division Traffic Engineer will determine the hours of use for each phasing plan.
7. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.





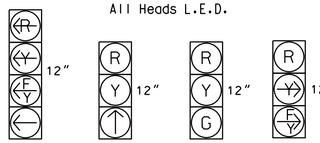
PROPOSED STOP LINE AND POLE LOCATION DIAGRAM
Not to Scale

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
○	Signal Pole with Guy	●
▭	Inductive Loop Detector	▭
▬	Multizone Microwave Detection	N/A
⊠	Controller & Cabinet	⊠
□	Junction Box	■
-·-·-	2-in Underground Conduit	-·-·-
→	Directional Arrow	→
N/A	Right of Way	—R/W—
·—·	Guardrail	·—·
Ⓐ	No Left Turn Sign (R3-2)	Ⓐ
Ⓑ	No Right Turn Sign (R3-1)	Ⓑ

SIGNAL FACE I.D.

All Heads L.E.D.



51 | 21,22 61 | 23 62,63 81,82,84 | 83

OASIS 2070 TIMING CHART

FEATURE	PHASE 2	PHASE 5	PHASE 6	PHASE 8
Min Green 1 *	12	7	12	7
Extension 1 *	2.0	2.0	6.0	2.0
Max Green 1 *	60	20	60	30
Yellow Clearance	4.5	3.0	4.5	3.7
Red Clearance	1.3	2.4	1.3	1.2
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	2.5	-
Max Variable Initial *	-	-	34	-
Time Before Reduction *	-	-	15	-
Time To Reduce *	-	-	30	-
Minimum Gap	-	-	3.0	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

New Installation

NC Dept of Transportation
Division of Highways
Final Drawing Date: 06/02/2022
Designed by: Zachary M. Kibbe
ITS & Signals Unit

Project #: 190258

DAVENPORT
HOME OFFICE:
119 BROOKSTOWN AVENUE, SUITE PH1
WINSTON-SALEM, NC 27101
336.744.1636 www.davenportworld.com
NCBELS FIRM LICENSE NO. C-2522

Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1426 (Mt Misery Road)
at
US 74/US 76 WB Ramp

Division 3 Brunswick County Leland

PLAN DATE:	April 2022	REVIEWED BY:	L. Boyer
PREPARED BY:	T.S. Warren	REVIEWED BY:	D. Bennett

SCALE: 0 40 1"=40'

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 020608 ENGINEER DONALD R. BENNETT, II

DocuSigned by: Donald R. Bennett, II 4/7/2022
SIGNATURE DATE

SIG. INVENTORY NO. 03-1173

APPENDIX H

SYNCHRO ANALYSIS REPORTS

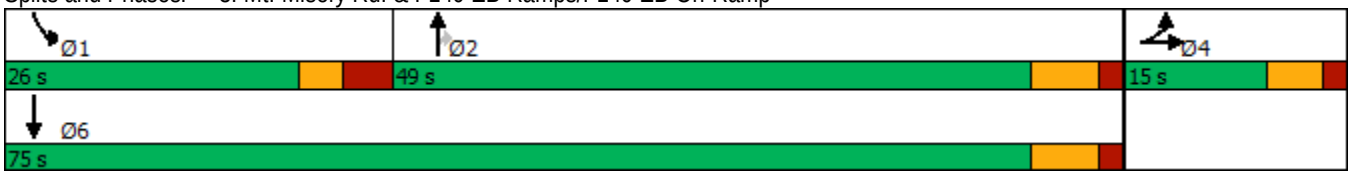
MT. MISERY ROAD
AND
I-140 EASTBOUND RAMPS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	24	0	0	0	0	154	325	151	420	0
Future Volume (vph)	15	4	24	0	0	0	0	154	325	151	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.924							0.850			
Flt Protected		0.983								0.950		
Satd. Flow (prot)	0	1692	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.983								0.950		
Satd. Flow (perm)	0	1692	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	4	27	0	0	0	0	171	361	168	467	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	0	0	0	171	361	168	467	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	15.0	15.0						49.0	49.0	26.0	75.0	
Total Split (%)	16.7%	16.7%						54.4%	54.4%	28.9%	83.3%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						Min	Min	None	Min	
Act Effct Green (s)		8.3						23.4	23.4	11.5	44.2	
Actuated g/C Ratio		0.17						0.47	0.47	0.23	0.89	
v/c Ratio		0.17						0.20	0.49	0.41	0.28	
Control Delay		24.2						10.9	14.2	21.6	2.5	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		24.2						10.9	14.2	21.6	2.5	
LOS		C						B	B	C	A	
Approach Delay		24.2						13.2			7.6	
Approach LOS		C						B			A	
Queue Length 50th (ft)		8						19	48	27	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		49						84	192	117	92	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		365						1586	1348	802	1853	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.13						0.11	0.27	0.21	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 49.9			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

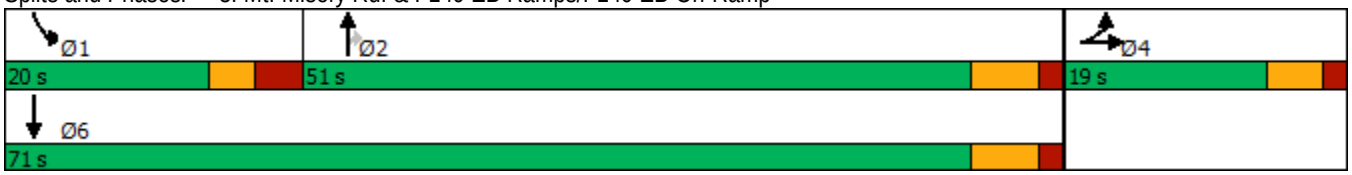


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	4	20	0	0	0	0	368	159	74	512	0
Future Volume (vph)	41	4	20	0	0	0	0	368	159	74	512	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.959							0.850			
Flt Protected		0.969								0.950		
Satd. Flow (prot)	0	1731	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.969								0.950		
Satd. Flow (perm)	0	1731	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	46	4	22	0	0	0	0	409	177	82	569	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	0	0	0	0	0	409	177	82	569	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	19.0	19.0						51.0	51.0	20.0	71.0	
Total Split (%)	21.1%	21.1%						56.7%	56.7%	22.2%	78.9%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						Min	Min	None	Min	
Act Effct Green (s)		8.5						29.0	29.0	9.5	36.5	
Actuated g/C Ratio		0.18						0.63	0.63	0.21	0.79	
v/c Ratio		0.23						0.35	0.18	0.22	0.39	
Control Delay		22.2						11.7	10.8	21.0	4.5	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		22.2						11.7	10.8	21.0	4.5	
LOS		C						B	B	C	A	
Approach Delay		22.2						11.4			6.6	
Approach LOS		C						B			A	
Queue Length 50th (ft)		17						91	34	19	65	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		58						187	82	63	133	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		563						1697	1443	617	1863	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.13						0.24	0.12	0.13	0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 46			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 43.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

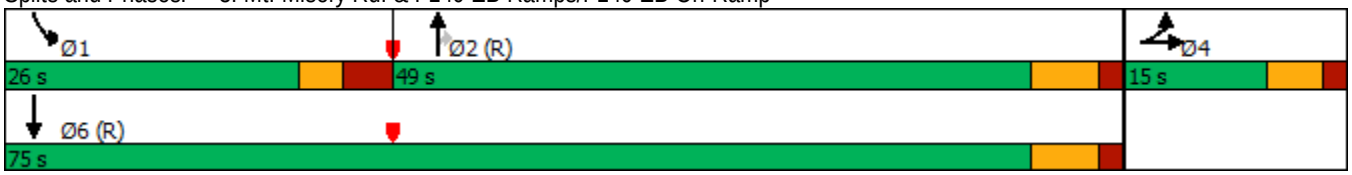


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	4	25	0	0	0	0	202	342	159	563	0
Future Volume (vph)	23	4	25	0	0	0	0	202	342	159	563	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.935							0.850			
Flt Protected		0.978								0.950		
Satd. Flow (prot)	0	1703	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.978								0.950		
Satd. Flow (perm)	0	1703	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	4	28	0	0	0	0	224	380	177	626	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	0	0	0	0	0	224	380	177	626	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	15.0	15.0						49.0	49.0	26.0	75.0	
Total Split (%)	16.7%	16.7%						54.4%	54.4%	28.9%	83.3%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		8.4						54.5	54.5	14.6	75.1	
Actuated g/C Ratio		0.09						0.61	0.61	0.16	0.83	
v/c Ratio		0.36						0.20	0.40	0.62	0.40	
Control Delay		44.7						10.5	12.9	42.2	3.8	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		44.7						10.5	12.9	42.2	3.8	
LOS		D						B	B	D	A	
Approach Delay		44.7						12.0			12.3	
Approach LOS		D						B			B	
Queue Length 50th (ft)		32						56	110	99	56	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		68						114	214	157	200	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		189						1121	953	413	1553	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.31						0.20	0.40	0.43	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



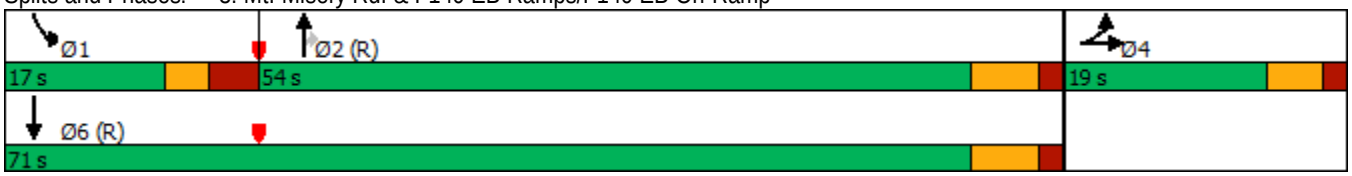
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	4	21	0	0	0	0	531	167	78	624	0
Future Volume (vph)	67	4	21	0	0	0	0	531	167	78	624	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.969							0.850			
Flt Protected		0.965								0.950		
Satd. Flow (prot)	0	1742	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.965								0.950		
Satd. Flow (perm)	0	1742	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	4	23	0	0	0	0	590	186	87	693	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	101	0	0	0	0	0	590	186	87	693	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	19.0	19.0						54.0	54.0	17.0	71.0	
Total Split (%)	21.1%	21.1%						60.0%	60.0%	18.9%	78.9%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		10.3						60.7	60.7	10.1	73.2	
Actuated g/C Ratio		0.11						0.67	0.67	0.11	0.81	
v/c Ratio		0.51						0.47	0.18	0.44	0.46	
Control Delay		45.8						3.9	2.1	49.4	3.2	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		45.8						3.9	2.1	49.4	3.2	
LOS		D						A	A	D	A	
Approach Delay		45.8						3.4			8.3	
Approach LOS		D						A			A	
Queue Length 50th (ft)		55						55	10	50	52	

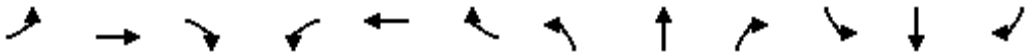
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		101						m189	m35	m95	137	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		270						1250	1062	236	1514	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.37						0.47	0.18	0.37	0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 32 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



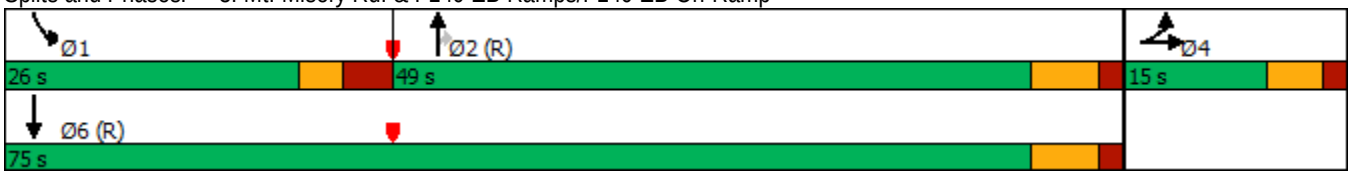


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	4	25	0	0	0	0	209	345	160	584	0
Future Volume (vph)	24	4	25	0	0	0	0	209	345	160	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.936							0.850			
Flt Protected		0.978								0.950		
Satd. Flow (prot)	0	1705	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.978								0.950		
Satd. Flow (perm)	0	1705	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	27	4	28	0	0	0	0	232	383	178	649	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	0	0	0	0	0	232	383	178	649	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	15.0	15.0						49.0	49.0	26.0	75.0	
Total Split (%)	16.7%	16.7%						54.4%	54.4%	28.9%	83.3%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		8.5						54.4	54.4	14.7	75.0	
Actuated g/C Ratio		0.09						0.60	0.60	0.16	0.83	
v/c Ratio		0.37						0.21	0.40	0.62	0.42	
Control Delay		44.7						10.6	13.0	41.9	4.0	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		44.7						10.6	13.0	41.9	4.0	
LOS		D						B	B	D	A	
Approach Delay		44.7						12.1			12.1	
Approach LOS		D						B			B	
Queue Length 50th (ft)		32						58	112	99	59	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		69						117	215	157	204	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		189						1119	951	413	1553	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.31						0.21	0.40	0.43	0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



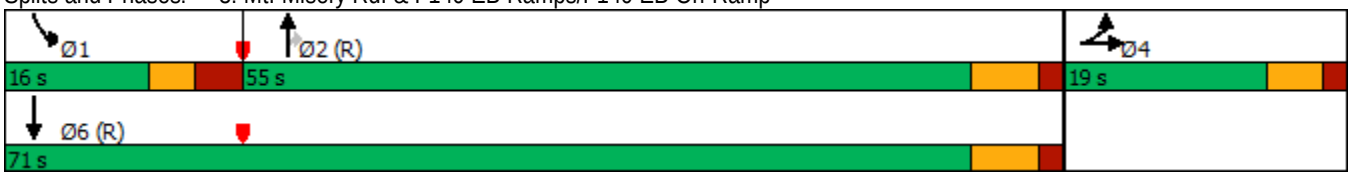
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	4	21	0	0	0	0	557	169	79	641	0
Future Volume (vph)	72	4	21	0	0	0	0	557	169	79	641	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.971							0.850			
Flt Protected		0.964								0.950		
Satd. Flow (prot)	0	1744	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.964								0.950		
Satd. Flow (perm)	0	1744	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	80	4	23	0	0	0	0	619	188	88	712	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	0	0	0	0	0	619	188	88	712	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	19.0	19.0						55.0	55.0	16.0	71.0	
Total Split (%)	21.1%	21.1%						61.1%	61.1%	17.8%	78.9%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		10.5						60.7	60.7	9.9	73.0	
Actuated g/C Ratio		0.12						0.67	0.67	0.11	0.81	
v/c Ratio		0.53						0.50	0.18	0.45	0.47	
Control Delay		46.3						3.9	2.1	45.8	3.3	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		46.3						3.9	2.1	45.8	3.3	
LOS		D						A	A	D	A	
Approach Delay		46.3						3.5			8.0	
Approach LOS		D						A			A	
Queue Length 50th (ft)		58						41	7	42	44	

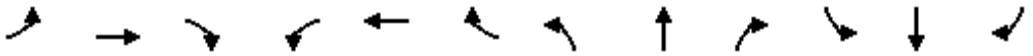
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		106						m176	m31	m84	122	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		271						1250	1062	219	1510	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.39						0.50	0.18	0.40	0.47	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 33 (37%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



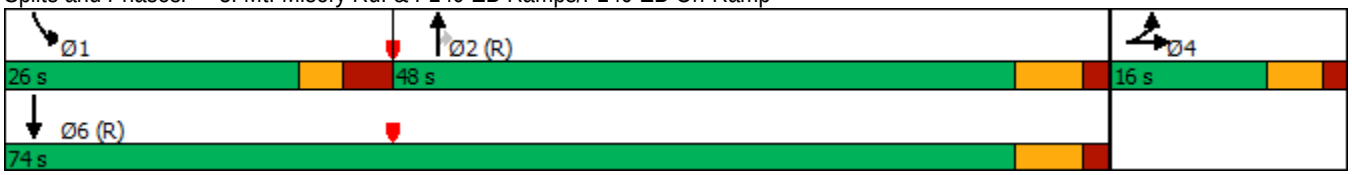


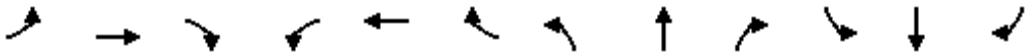
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	4	26	0	0	0	0	223	348	162	622	0
Future Volume (vph)	26	4	26	0	0	0	0	223	348	162	622	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.937							0.850			
Flt Protected		0.977								0.950		
Satd. Flow (prot)	0	1705	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.977								0.950		
Satd. Flow (perm)	0	1705	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	29	0	0	0	0	248	387	180	691	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	0	0	0	248	387	180	691	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	16.0	16.0						48.0	48.0	26.0	74.0	
Total Split (%)	17.8%	17.8%						53.3%	53.3%	28.9%	82.2%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		8.7						54.0	54.0	14.8	74.8	
Actuated g/C Ratio		0.10						0.60	0.60	0.16	0.83	
v/c Ratio		0.38						0.22	0.41	0.62	0.45	
Control Delay		44.3						11.0	13.4	41.2	4.6	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		44.3						11.0	13.4	41.2	4.6	
LOS		D						B	B	D	A	
Approach Delay		44.3						12.5			12.2	
Approach LOS		D						B			B	
Queue Length 50th (ft)		34						64	114	100	67	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		71						129	225	159	246	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		208						1111	945	413	1547	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.30						0.22	0.41	0.44	0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp





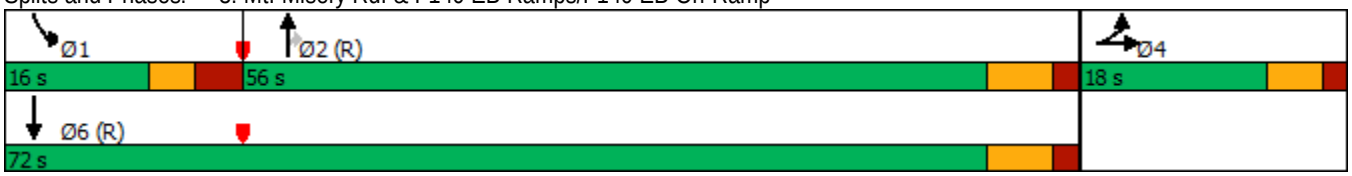
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	4	21	0	0	0	0	601	170	79	671	0
Future Volume (vph)	78	4	21	0	0	0	0	601	170	79	671	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.973							0.850			
Flt Protected		0.963								0.950		
Satd. Flow (prot)	0	1745	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.963								0.950		
Satd. Flow (perm)	0	1745	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	87	4	23	0	0	0	0	668	189	88	746	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	114	0	0	0	0	0	668	189	88	746	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	18.0	18.0						56.0	56.0	16.0	72.0	
Total Split (%)	20.0%	20.0%						62.2%	62.2%	17.8%	80.0%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		10.5						60.7	60.7	9.9	73.0	
Actuated g/C Ratio		0.12						0.67	0.67	0.11	0.81	
v/c Ratio		0.56						0.53	0.18	0.45	0.49	
Control Delay		47.9						4.2	2.2	46.7	3.3	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		47.9						4.2	2.2	46.7	3.3	
LOS		D						A	A	D	A	
Approach Delay		47.9						3.7			7.8	
Approach LOS		D						A			A	
Queue Length 50th (ft)		62						24	4	43	50	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		113						m196	m29	m83	93	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		252						1250	1063	218	1510	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.45						0.53	0.18	0.40	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 29 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

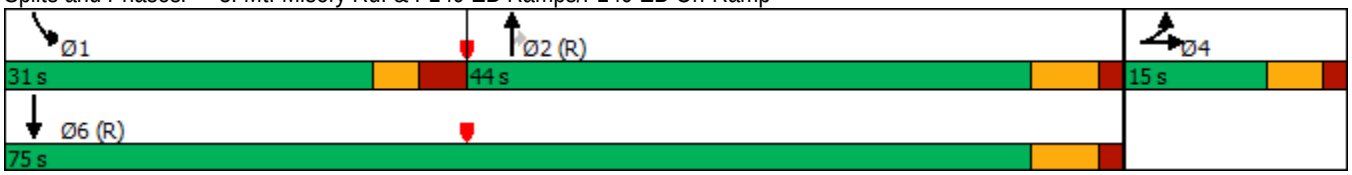


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	4	25	0	0	0	0	242	342	266	684	0
Future Volume (vph)	28	4	25	0	0	0	0	242	342	266	684	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.940							0.850			
Flt Protected		0.976								0.950		
Satd. Flow (prot)	0	1709	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.976								0.950		
Satd. Flow (perm)	0	1709	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	4	28	0	0	0	0	269	380	296	760	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	0	0	0	269	380	296	760	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	15.0	15.0						44.0	44.0	31.0	75.0	
Total Split (%)	16.7%	16.7%						48.9%	48.9%	34.4%	83.3%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		8.5						48.6	48.6	20.3	75.0	
Actuated g/C Ratio		0.09						0.54	0.54	0.23	0.83	
v/c Ratio		0.39						0.27	0.45	0.74	0.49	
Control Delay		45.3						14.4	17.2	38.5	5.6	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		45.3						14.4	17.2	38.5	5.6	
LOS		D						B	B	D	A	
Approach Delay		45.3						16.0			14.8	
Approach LOS		D						B			B	
Queue Length 50th (ft)		34						83	132	162	135	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		73						158	246	237	298	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		189						1001	850	511	1551	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.33						0.27	0.45	0.58	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



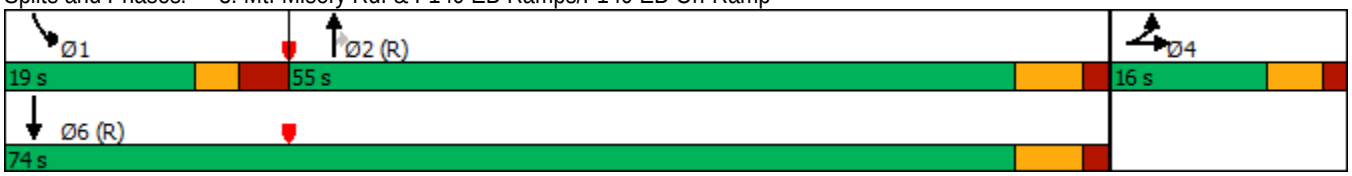
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	4	21	0	0	0	0	672	167	151	706	0
Future Volume (vph)	85	4	21	0	0	0	0	672	167	151	706	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.974							0.850			
Flt Protected		0.963								0.950		
Satd. Flow (prot)	0	1747	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.963								0.950		
Satd. Flow (perm)	0	1747	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	94	4	23	0	0	0	0	747	186	168	784	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	0	0	0	0	747	186	168	784	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	16.0	16.0						55.0	55.0	19.0	74.0	
Total Split (%)	17.8%	17.8%						61.1%	61.1%	21.1%	82.2%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		9.9						52.5	52.5	12.6	70.1	
Actuated g/C Ratio		0.11						0.58	0.58	0.14	0.78	
v/c Ratio		0.63						0.69	0.20	0.68	0.54	
Control Delay		53.0						18.1	10.3	51.7	4.4	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		53.0						18.1	10.3	51.7	4.4	
LOS		D						B	B	D	A	
Approach Delay		53.0						16.6			12.8	
Approach LOS		D						B			B	
Queue Length 50th (ft)		66						296	50	97	77	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		122						440	86	m161	194	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		213						1080	918	275	1450	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.57						0.69	0.20	0.61	0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

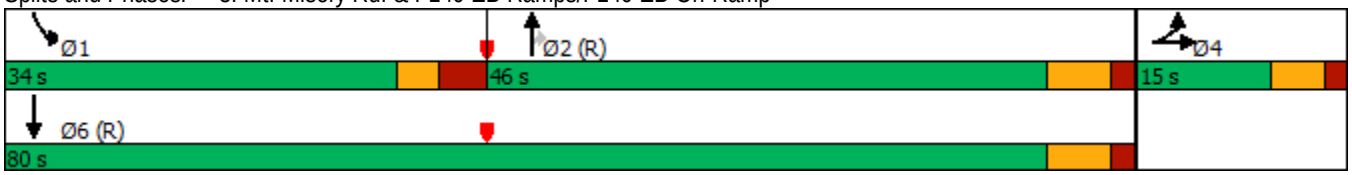


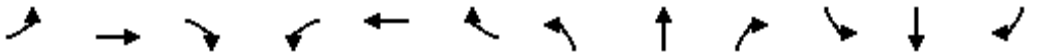
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	4	25	0	0	0	0	242	342	266	684	0
Future Volume (vph)	28	4	25	0	0	0	0	242	342	266	684	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.940							0.850			
Flt Protected		0.976								0.950		
Satd. Flow (prot)	0	1709	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.976								0.950		
Satd. Flow (perm)	0	1709	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	4	28	0	0	0	0	269	380	296	760	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	0	0	0	269	380	296	760	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	15.0	15.0						46.0	46.0	34.0	80.0	
Total Split (%)	15.8%	15.8%						48.4%	48.4%	35.8%	84.2%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		8.6						52.4	52.4	21.5	79.9	
Actuated g/C Ratio		0.09						0.55	0.55	0.23	0.84	
v/c Ratio		0.41						0.26	0.44	0.74	0.49	
Control Delay		48.6						14.5	17.2	40.5	5.2	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		48.6						14.5	17.2	40.5	5.2	
LOS		D						B	B	D	A	
Approach Delay		48.6						16.1			15.1	
Approach LOS		D						B			B	
Queue Length 50th (ft)		37						85	136	172	122	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		77						164	255	246	290	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		179						1021	868	540	1566	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.35						0.26	0.44	0.55	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 92 (97%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp





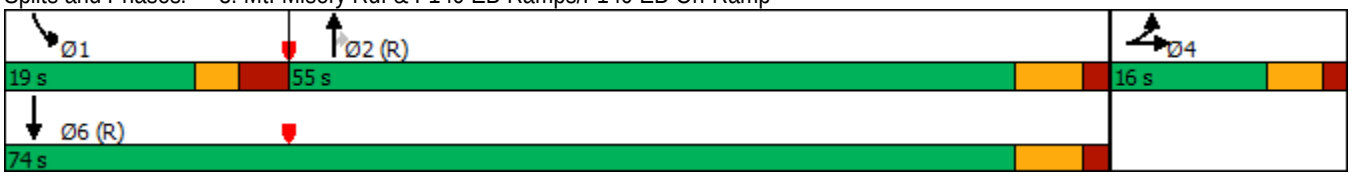
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	4	21	0	0	0	0	672	167	151	706	0
Future Volume (vph)	85	4	21	0	0	0	0	672	167	151	706	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.974							0.850			
Flt Protected		0.963								0.950		
Satd. Flow (prot)	0	1747	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.963								0.950		
Satd. Flow (perm)	0	1747	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	94	4	23	0	0	0	0	747	186	168	784	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	0	0	0	0	747	186	168	784	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	16.0	16.0						55.0	55.0	19.0	74.0	
Total Split (%)	17.8%	17.8%						61.1%	61.1%	21.1%	82.2%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		9.9						52.5	52.5	12.6	70.1	
Actuated g/C Ratio		0.11						0.58	0.58	0.14	0.78	
v/c Ratio		0.63						0.69	0.20	0.68	0.54	
Control Delay		53.0						8.6	4.4	51.7	4.4	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		53.0						8.6	4.4	51.7	4.4	
LOS		D						A	A	D	A	
Approach Delay		53.0						7.8			12.8	
Approach LOS		D						A			B	
Queue Length 50th (ft)		66						94	20	97	77	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		122						125	34	m161	194	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		213						1080	918	275	1450	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.57						0.69	0.20	0.61	0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 12.9		Intersection LOS: B	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



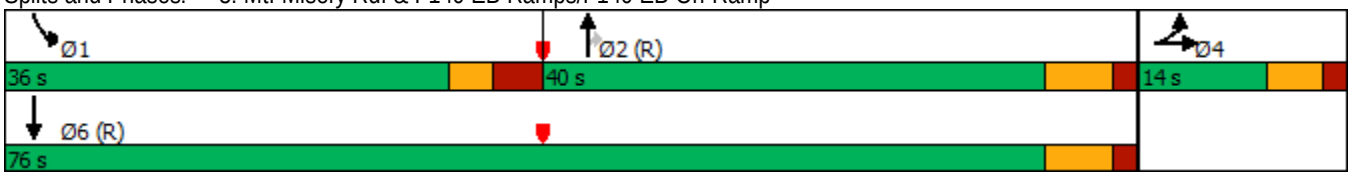
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	4	25	0	0	0	0	281	345	350	801	0
Future Volume (vph)	33	4	25	0	0	0	0	281	345	350	801	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.945							0.850			
Flt Protected		0.974								0.950		
Satd. Flow (prot)	0	1715	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.974								0.950		
Satd. Flow (perm)	0	1715	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	4	28	0	0	0	0	312	383	389	890	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	0	0	0	0	0	312	383	389	890	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	14.0	14.0						40.0	40.0	36.0	76.0	
Total Split (%)	15.6%	15.6%						44.4%	44.4%	40.0%	84.4%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		8.3						44.2	44.2	25.0	75.2	
Actuated g/C Ratio		0.09						0.49	0.49	0.28	0.84	
v/c Ratio		0.44						0.34	0.50	0.79	0.57	
Control Delay		47.6						17.9	21.0	32.9	6.8	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		47.6						17.9	21.0	32.9	6.8	
LOS		D						B	C	C	A	
Approach Delay		47.6						19.6			14.7	
Approach LOS		D						B			B	
Queue Length 50th (ft)		38						112	152	209	245	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		80						200	270	m232	380	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		171						909	773	609	1556	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.40						0.34	0.50	0.64	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 48 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



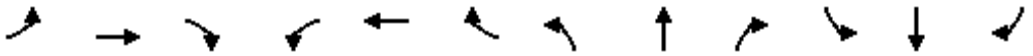
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	4	21	0	0	0	0	813	169	210	791	0
Future Volume (vph)	105	4	21	0	0	0	0	813	169	210	791	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.978							0.850			
Flt Protected		0.961								0.950		
Satd. Flow (prot)	0	1751	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.961								0.950		
Satd. Flow (perm)	0	1751	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	117	4	23	0	0	0	0	903	188	233	879	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	144	0	0	0	0	0	903	188	233	879	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	18.0	18.0						68.0	68.0	24.0	92.0	
Total Split (%)	16.4%	16.4%						61.8%	61.8%	21.8%	83.6%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		12.0						65.3	65.3	17.7	88.0	
Actuated g/C Ratio		0.11						0.59	0.59	0.16	0.80	
v/c Ratio		0.76						0.82	0.20	0.82	0.59	
Control Delay		72.3						21.7	9.5	68.0	4.1	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		72.3						21.7	9.5	68.0	4.1	
LOS		E						C	A	E	A	
Approach Delay		72.3						19.6			17.5	
Approach LOS		E						B			B	
Queue Length 50th (ft)		99						494	64	165	113	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#188						m576	m81	m#260	195	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		206						1100	935	305	1491	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.70						0.82	0.20	0.76	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



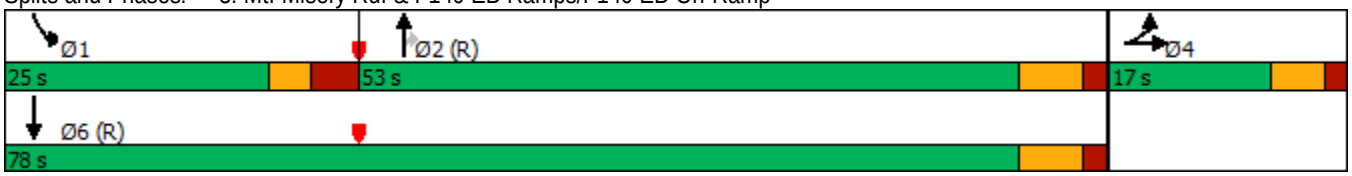
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	4	25	0	0	0	0	281	345	350	801	0
Future Volume (vph)	33	4	25	0	0	0	0	281	345	350	801	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	200		0
Storage Lanes	0		0	0		0	0		1	2		0
Taper Length (ft)	100			100			100			200		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.945							0.850			
Flt Protected		0.974								0.950		
Satd. Flow (prot)	0	1715	0	0	0	0	0	1853	1575	3433	1863	0
Flt Permitted		0.974								0.950		
Satd. Flow (perm)	0	1715	0	0	0	0	0	1853	1575	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	4	28	0	0	0	0	312	383	389	890	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	0	0	0	0	0	312	383	389	890	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	17.0	17.0						53.0	53.0	25.0	78.0	
Total Split (%)	17.9%	17.9%						55.8%	55.8%	26.3%	82.1%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		9.2						57.1	57.1	16.2	79.3	
Actuated g/C Ratio		0.10						0.60	0.60	0.17	0.83	
v/c Ratio		0.42						0.28	0.40	0.66	0.57	
Control Delay		47.6						11.7	13.6	35.8	6.1	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		47.6						11.7	13.6	35.8	6.1	
LOS		D						B	B	D	A	
Approach Delay		47.6						12.7			15.1	
Approach LOS		D						B			B	
Queue Length 50th (ft)		40						89	120	117	188	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		80						165	223	m134	377	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	200		
Base Capacity (vph)		216						1113	946	722	1555	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.32						0.28	0.40	0.54	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 94 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 56.3%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	4	21	0	0	0	0	813	169	210	791	0
Future Volume (vph)	105	4	21	0	0	0	0	813	169	210	791	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	200		0
Storage Lanes	0		0	0		0	0		1	2		0
Taper Length (ft)	100			100			100			200		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.978							0.850			
Flt Protected		0.961								0.950		
Satd. Flow (prot)	0	1751	0	0	0	0	0	1853	1575	3433	1863	0
Flt Permitted		0.961								0.950		
Satd. Flow (perm)	0	1751	0	0	0	0	0	1853	1575	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	117	4	23	0	0	0	0	903	188	233	879	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	144	0	0	0	0	0	903	188	233	879	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	18.0	18.0						58.0	58.0	14.0	72.0	
Total Split (%)	20.0%	20.0%						64.4%	64.4%	15.6%	80.0%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		11.2						54.4	54.4	9.4	68.8	
Actuated g/C Ratio		0.12						0.60	0.60	0.10	0.76	
v/c Ratio		0.66						0.81	0.20	0.65	0.62	
Control Delay		52.4						11.0	3.7	46.3	5.6	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		52.4						11.0	3.7	46.3	5.6	
LOS		D						B	A	D	A	
Approach Delay		52.4						9.8			14.1	
Approach LOS		D						A			B	
Queue Length 50th (ft)		78						102	18	69	107	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		139						#133	29	m103	241	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	200		
Base Capacity (vph)		252						1120	952	360	1424	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.57						0.81	0.20	0.65	0.62	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

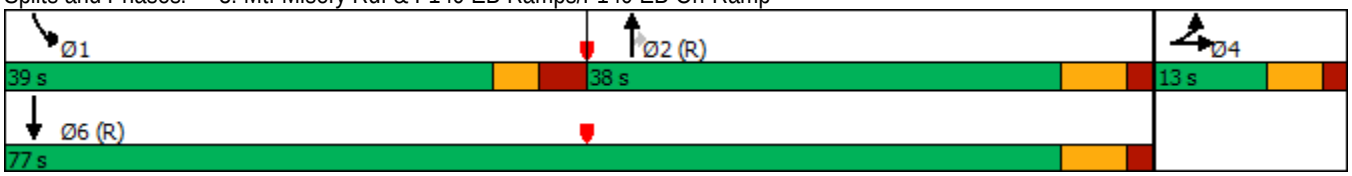
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	4	26	0	0	0	0	327	348	437	936	0
Future Volume (vph)	39	4	26	0	0	0	0	327	348	437	936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.948							0.850			
Flt Protected		0.972								0.950		
Satd. Flow (prot)	0	1716	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.972								0.950		
Satd. Flow (perm)	0	1716	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	4	29	0	0	0	0	363	387	486	1040	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	0	0	0	0	363	387	486	1040	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	13.0	13.0						38.0	38.0	39.0	77.0	
Total Split (%)	14.4%	14.4%						42.2%	42.2%	43.3%	85.6%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		7.8						40.4	40.4	29.3	75.7	
Actuated g/C Ratio		0.09						0.45	0.45	0.33	0.84	
v/c Ratio		0.51						0.44	0.55	0.84	0.66	
Control Delay		52.0						21.6	24.5	28.6	6.8	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		52.0						21.6	24.5	28.6	6.8	
LOS		D						C	C	C	A	
Approach Delay		52.0						23.1			13.8	
Approach LOS		D						C			B	
Queue Length 50th (ft)		42						149	169	247	331	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		87						246	286	m236	m333	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		152						830	706	668	1567	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.50						0.44	0.55	0.73	0.66	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



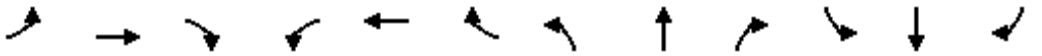
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	4	21	0	0	0	0	977	170	272	891	0
Future Volume (vph)	126	4	21	0	0	0	0	977	170	272	891	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	400		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt		0.981							0.850			
Flt Protected		0.960								0.950		
Satd. Flow (prot)	0	1754	0	0	0	0	0	1853	1575	1770	1863	0
Flt Permitted		0.960								0.950		
Satd. Flow (perm)	0	1754	0	0	0	0	0	1853	1575	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	140	4	23	0	0	0	0	1086	189	302	990	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	167	0	0	0	0	0	1086	189	302	990	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	20.0	20.0						94.0	94.0	31.0	125.0	
Total Split (%)	13.8%	13.8%						64.8%	64.8%	21.4%	86.2%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		15.0						89.1	89.1	25.9	120.0	
Actuated g/C Ratio		0.10						0.61	0.61	0.18	0.83	
v/c Ratio		0.92						0.95	0.20	0.96	0.64	
Control Delay		113.0						34.7	12.0	89.5	4.4	
Queue Delay		0.0						6.4	0.0	0.0	0.3	
Total Delay		113.0						41.1	12.0	89.5	4.6	
LOS		F						D	B	F	A	
Approach Delay		113.0						36.7			24.5	
Approach LOS		F						D			C	
Queue Length 50th (ft)		159						956	70	281	164	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#304						m1037	m85	m#454	253	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	400		
Base Capacity (vph)		181						1138	967	317	1541	
Starvation Cap Reductn		0						0	0	0	127	
Spillback Cap Reductn		0						46	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.92						0.99	0.20	0.95	0.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 145			
Offset: 35 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 35.6		Intersection LOS: D	
Intersection Capacity Utilization 87.5%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	4	26	0	0	0	0	327	348	437	936	0
Future Volume (vph)	39	4	26	0	0	0	0	327	348	437	936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	200		0
Storage Lanes	0		0	0		0	0		1	2		0
Taper Length (ft)	100			100			100			200		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.948							0.850			
Flt Protected		0.972								0.950		
Satd. Flow (prot)	0	1716	0	0	0	0	0	1853	1575	3433	1863	0
Flt Permitted		0.972								0.950		
Satd. Flow (perm)	0	1716	0	0	0	0	0	1853	1575	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	4	29	0	0	0	0	363	387	486	1040	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	0	0	0	0	363	387	486	1040	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	15.0	15.0						50.0	50.0	25.0	75.0	
Total Split (%)	16.7%	16.7%						55.6%	55.6%	27.8%	83.3%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		8.8						51.0	51.0	17.7	74.7	
Actuated g/C Ratio		0.10						0.57	0.57	0.20	0.83	
v/c Ratio		0.46						0.35	0.43	0.72	0.67	
Control Delay		47.1						6.4	7.2	37.5	4.9	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		47.1						6.4	7.2	37.5	4.9	
LOS		D						A	A	D	A	
Approach Delay		47.1						6.8			15.3	
Approach LOS		D						A			B	
Queue Length 50th (ft)		41						50	59	127	184	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		84						79	86	m136	m235	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	200		
Base Capacity (vph)		190						1051	893	762	1546	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.40						0.35	0.43	0.64	0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 64 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	4	21	0	0	0	0	977	170	272	891	0
Future Volume (vph)	126	4	21	0	0	0	0	977	170	272	891	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			1%			0%	
Storage Length (ft)	0		0	0		0	0		300	200		0
Storage Lanes	0		0	0		0	0		1	2		0
Taper Length (ft)	100			100			100			200		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.981							0.850			
Flt Protected		0.960								0.950		
Satd. Flow (prot)	0	1754	0	0	0	0	0	1853	1575	3433	1863	0
Flt Permitted		0.960								0.950		
Satd. Flow (perm)	0	1754	0	0	0	0	0	1853	1575	3433	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1062			1363			2135			1098	
Travel Time (s)		20.7			26.6			32.3			16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	140	4	23	0	0	0	0	1086	189	302	990	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	167	0	0	0	0	0	1086	189	302	990	0
Turn Type	Split	NA						NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						14.0	14.0	7.0	14.0	
Minimum Split (s)	12.5	12.5						20.3	20.3	13.3	20.3	
Total Split (s)	15.0	15.0						61.0	61.0	14.0	75.0	
Total Split (%)	16.7%	16.7%						67.8%	67.8%	15.6%	83.3%	
Yellow Time (s)	3.8	3.8						4.5	4.5	3.0	4.5	
All-Red Time (s)	1.7	1.7						1.8	1.8	3.3	1.8	
Lost Time Adjust (s)		-0.5						-1.3	-1.3	-1.3	-1.3	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		10.0						56.0	56.0	9.0	70.0	
Actuated g/C Ratio		0.11						0.62	0.62	0.10	0.78	
v/c Ratio		0.87						0.94	0.19	0.88	0.68	
Control Delay		78.6						26.8	6.3	53.3	7.1	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		78.6						26.8	6.3	53.3	7.1	
LOS		E						C	A	D	A	
Approach Delay		78.6						23.7			17.9	
Approach LOS		E						C			B	
Queue Length 50th (ft)		95						293	29	91	218	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#207						#843	50	m#114	m330	
Internal Link Dist (ft)		982			1283			2055			1018	
Turn Bay Length (ft)									300	200		
Base Capacity (vph)		194						1152	980	344	1450	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.86						0.94	0.19	0.88	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 7 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 24.3		Intersection LOS: C	
Intersection Capacity Utilization 80.2%		ICU Level of Service D	
Analysis Period (min) 15			

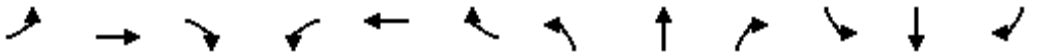
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

APPENDIX I

SYNCHRO ANALYSIS REPORTS

MT. MISERY ROAD
AND
US 74 WESTBOUND RAMPS

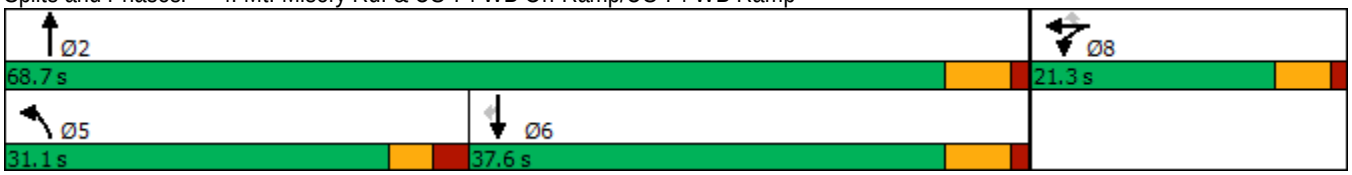


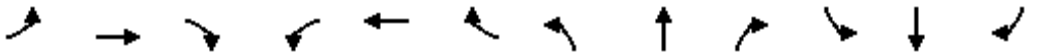
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	50	4	130	285	303	0	0	387	69
Future Volume (vph)	0	0	0	50	4	130	285	303	0	0	387	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	56	4	144	317	337	0	0	430	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	60	144	317	337	0	0	430	77
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				21.3	21.3	21.3	31.1	68.7			37.6	37.6
Total Split (%)				23.7%	23.7%	23.7%	34.6%	76.3%			41.8%	41.8%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	Min			Min	Min
Act Effct Green (s)					11.2	11.2	17.0	46.5			21.8	21.8
Actuated g/C Ratio					0.18	0.18	0.27	0.75			0.35	0.35
v/c Ratio					0.19	0.51	0.66	0.24			0.67	0.14
Control Delay					28.9	35.6	30.3	4.6			25.7	18.0
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					28.9	35.6	30.3	4.6			25.7	18.0
LOS					C	D	C	A			C	B
Approach Delay					33.6			17.0			24.5	
Approach LOS					C			B			C	
Queue Length 50th (ft)					20	51	108	41			140	20

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					64	135	244	90			303	60
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					521	463	839	1699			1083	921
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.12	0.31	0.38	0.20			0.40	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 62.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





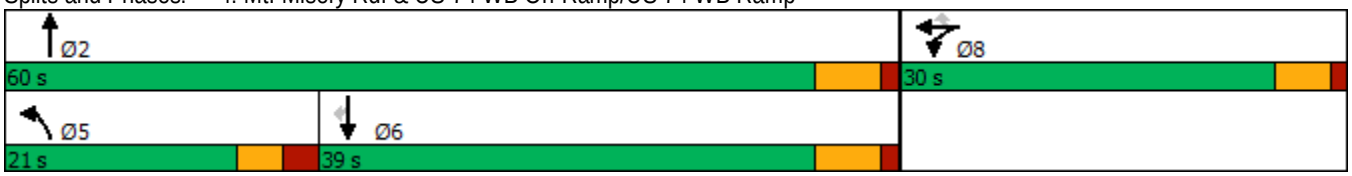
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	160	4	292	209	343	0	0	481	139
Future Volume (vph)	0	0	0	160	4	292	209	343	0	0	481	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	178	4	324	232	381	0	0	534	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	182	324	232	381	0	0	534	154
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				30.0	30.0	30.0	21.0	60.0			39.0	39.0
Total Split (%)				33.3%	33.3%	33.3%	23.3%	66.7%			43.3%	43.3%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	Min			Min	Min
Act Effct Green (s)					19.4	19.4	13.8	45.5			26.4	26.4
Actuated g/C Ratio					0.26	0.26	0.18	0.60			0.35	0.35
v/c Ratio					0.40	0.80	0.72	0.34			0.83	0.28
Control Delay					28.0	44.4	45.9	8.9			35.5	20.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					28.0	44.4	45.9	8.9			35.5	20.4
LOS					C	D	D	A			D	C
Approach Delay					38.5			22.9			32.1	
Approach LOS					D			C			C	
Queue Length 50th (ft)					75	152	109	85			242	55

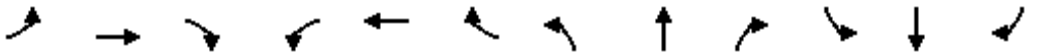
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					142	#290	#232	148			#390	106
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					612	546	394	1388			874	742
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.30	0.59	0.59	0.27			0.61	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.4			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 30.8		Intersection LOS: C	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





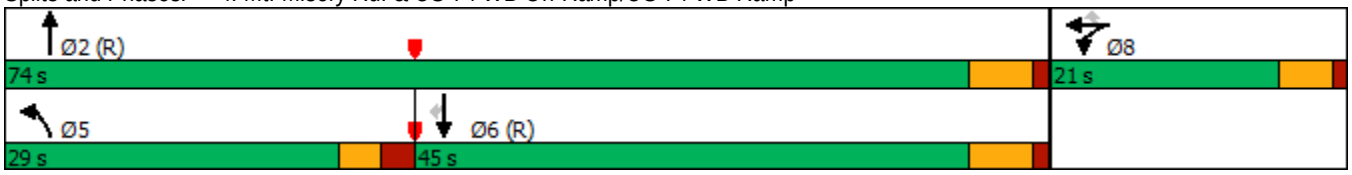
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	4	157	300	338	0	0	529	73
Future Volume (vph)	0	0	0	53	4	157	300	338	0	0	529	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	59	4	174	333	376	0	0	588	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	174	333	376	0	0	588	81
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				21.0	21.0	21.0	29.0	74.0			45.0	45.0
Total Split (%)				22.1%	22.1%	22.1%	30.5%	77.9%			47.4%	47.4%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					13.6	13.6	21.2	71.4			45.2	45.2
Actuated g/C Ratio					0.14	0.14	0.22	0.75			0.48	0.48
v/c Ratio					0.25	0.78	0.85	0.27			0.67	0.11
Control Delay					37.6	62.2	20.4	6.1			25.5	16.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					37.6	62.2	20.4	6.1			25.5	16.4
LOS					D	E	C	A			C	B
Approach Delay					55.7			12.8			24.4	
Approach LOS					E			B			C	
Queue Length 50th (ft)					34	101	113	104			280	28

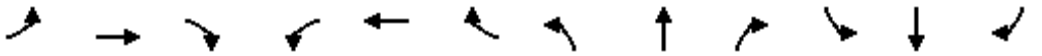
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					71	#183	m119	m119			431	59
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					296	263	447	1400			877	745
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.21	0.66	0.74	0.27			0.67	0.11

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 55 (58%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 23.9 Intersection LOS: C
Intersection Capacity Utilization 69.8% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





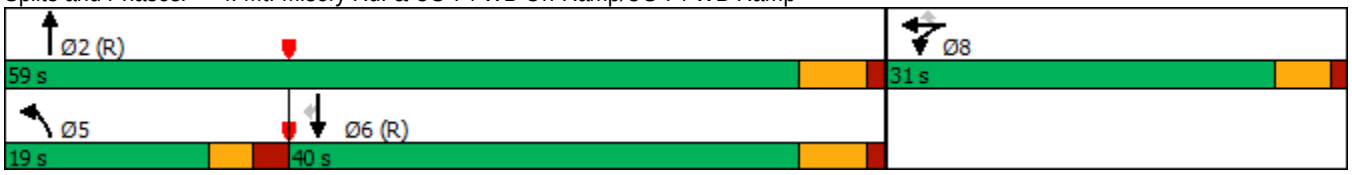
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	168	4	379	220	432	0	0	592	146
Future Volume (vph)	0	0	0	168	4	379	220	432	0	0	592	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	187	4	421	244	480	0	0	658	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	191	421	244	480	0	0	658	162
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				31.0	31.0	31.0	19.0	59.0			40.0	40.0
Total Split (%)				34.4%	34.4%	34.4%	21.1%	65.6%			44.4%	44.4%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					25.4	25.4	13.8	54.6			35.9	35.9
Actuated g/C Ratio					0.28	0.28	0.15	0.61			0.40	0.40
v/c Ratio					0.39	0.95	0.90	0.42			0.90	0.26
Control Delay					28.6	66.4	49.9	11.9			39.9	18.1
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					28.6	66.4	49.9	11.9			39.9	18.1
LOS					C	E	D	B			D	B
Approach Delay					54.6			24.7			35.6	
Approach LOS					D			C			D	
Queue Length 50th (ft)					86	232	118	245			324	56

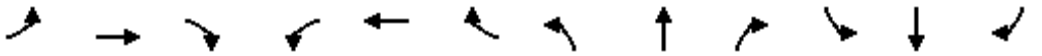
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					147	#412	m#176	m277			#565	78
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					507	452	275	1130			735	624
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.38	0.93	0.89	0.42			0.90	0.26

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 37.3 Intersection LOS: D
Intersection Capacity Utilization 65.6% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





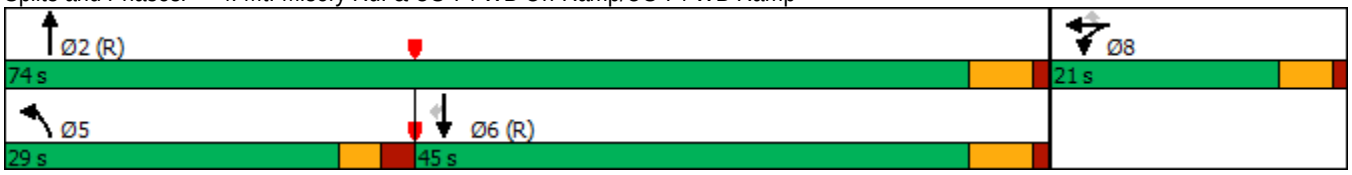
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	4	161	303	345	0	0	549	73
Future Volume (vph)	0	0	0	53	4	161	303	345	0	0	549	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	59	4	179	337	383	0	0	610	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	179	337	383	0	0	610	81
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				21.0	21.0	21.0	29.0	74.0			45.0	45.0
Total Split (%)				22.1%	22.1%	22.1%	30.5%	77.9%			47.4%	47.4%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					13.8	13.8	21.3	71.2			44.8	44.8
Actuated g/C Ratio					0.15	0.15	0.22	0.75			0.47	0.47
v/c Ratio					0.25	0.79	0.85	0.27			0.70	0.11
Control Delay					37.4	62.9	20.0	6.2			26.9	16.5
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					37.4	62.9	20.0	6.2			26.9	16.5
LOS					D	E	C	A			C	B
Approach Delay					56.2			12.7			25.7	
Approach LOS					E			B			C	
Queue Length 50th (ft)					33	103	115	110			300	28

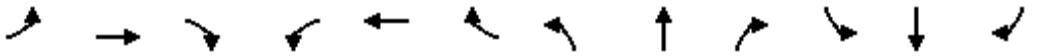
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					71	#191	m119	m121			454	59
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					296	263	447	1395			870	739
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.21	0.68	0.75	0.27			0.70	0.11

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 52 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 24.5 Intersection LOS: C
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





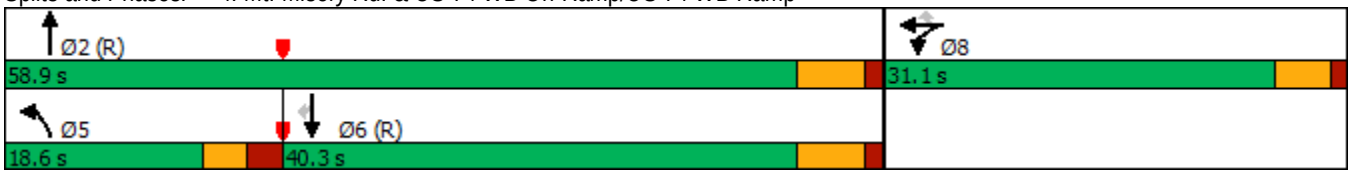
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	4	393	222	447	0	0	609	148
Future Volume (vph)	0	0	0	170	4	393	222	447	0	0	609	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	189	4	437	247	497	0	0	677	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	193	437	247	497	0	0	677	164
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				31.1	31.1	31.1	18.6	58.9			40.3	40.3
Total Split (%)				34.6%	34.6%	34.6%	20.7%	65.4%			44.8%	44.8%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					25.9	25.9	13.6	54.1			35.4	35.4
Actuated g/C Ratio					0.29	0.29	0.15	0.60			0.39	0.39
v/c Ratio					0.38	0.97	0.92	0.44			0.93	0.27
Control Delay					28.3	68.8	54.4	11.6			41.9	15.7
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					28.3	68.8	54.4	11.6			41.9	15.7
LOS					C	E	D	B			D	B
Approach Delay					56.4			25.8			36.7	
Approach LOS					E			C			D	
Queue Length 50th (ft)					87	244	118	251			298	36

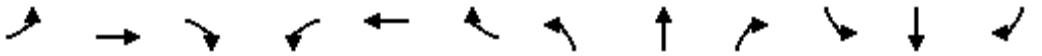
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					148	#432	m#185	m270			#576	83
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					509	454	268	1118			725	616
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.38	0.96	0.92	0.44			0.93	0.27

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 45 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 38.7 Intersection LOS: D
Intersection Capacity Utilization 67.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





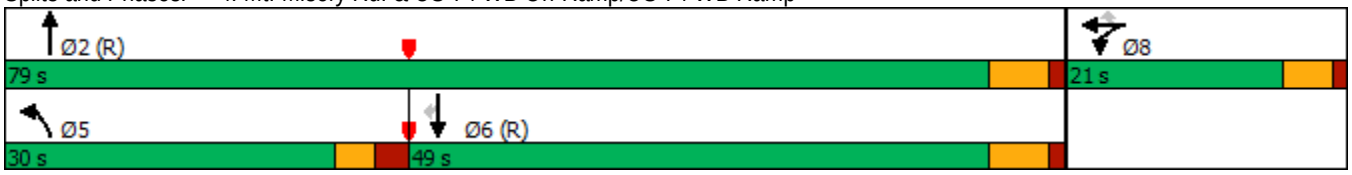
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	4	168	306	354	0	0	587	74
Future Volume (vph)	0	0	0	54	4	168	306	354	0	0	587	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	60	4	187	340	393	0	0	652	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	64	187	340	393	0	0	652	82
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				21.0	21.0	21.0	30.0	79.0			49.0	49.0
Total Split (%)				21.0%	21.0%	21.0%	30.0%	79.0%			49.0%	49.0%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					14.5	14.5	22.4	75.5			48.1	48.1
Actuated g/C Ratio					0.14	0.14	0.22	0.76			0.48	0.48
v/c Ratio					0.25	0.83	0.86	0.28			0.74	0.11
Control Delay					39.8	70.2	21.2	6.3			28.4	16.5
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					39.8	70.2	21.2	6.3			28.4	16.5
LOS					D	E	C	A			C	B
Approach Delay					62.5			13.2			27.1	
Approach LOS					E			B			C	
Queue Length 50th (ft)					36	115	130	120			345	30

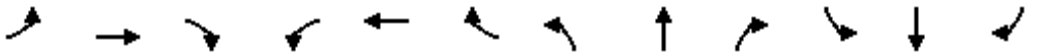
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					75	#220	m126	m122			#510	59
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					281	250	442	1407			887	754
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.23	0.75	0.77	0.28			0.74	0.11

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 56 (56%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 26.3 Intersection LOS: C
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	172	4	416	224	471	0	0	638	149
Future Volume (vph)	0	0	0	172	4	416	224	471	0	0	638	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	191	4	462	249	523	0	0	709	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	195	462	249	523	0	0	709	166
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				31.2	31.2	31.2	18.0	58.8			40.8	40.8
Total Split (%)				34.7%	34.7%	34.7%	20.0%	65.3%			45.3%	45.3%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					26.2	26.2	13.0	53.8			35.8	35.8
Actuated g/C Ratio					0.29	0.29	0.14	0.60			0.40	0.40
v/c Ratio					0.38	1.01	0.98	0.47			0.97	0.27
Control Delay					28.1	79.3	64.3	13.4			47.8	15.6
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					28.1	79.3	64.3	13.4			47.8	15.6
LOS					C	E	E	B			D	B
Approach Delay					64.1			29.8			41.6	
Approach LOS					E			C			D	
Queue Length 50th (ft)					88	~268	122	277			312	38

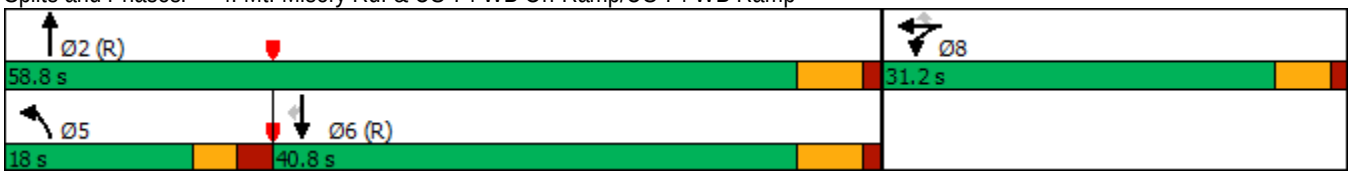
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					149	#465	m#182	m315			#612	88
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					511	456	255	1113			733	623
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.38	1.01	0.98	0.47			0.97	0.27

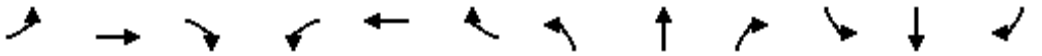
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 43 (48%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 44.1 Intersection LOS: D
Intersection Capacity Utilization 69.4% ICU Level of Service C
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





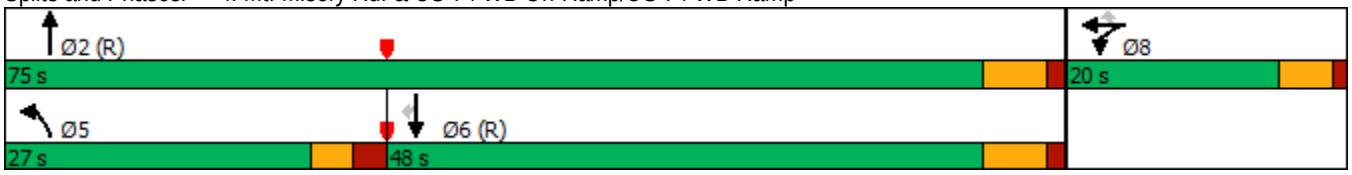
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	4	167	300	368	0	0	635	88
Future Volume (vph)	0	0	0	53	4	167	300	368	0	0	635	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	59	4	186	333	409	0	0	706	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	186	333	409	0	0	706	98
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				20.0	20.0	20.0	27.0	75.0			48.0	48.0
Total Split (%)				21.1%	21.1%	21.1%	28.4%	78.9%			50.5%	50.5%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					13.6	13.6	20.4	71.4			46.0	46.0
Actuated g/C Ratio					0.14	0.14	0.21	0.75			0.48	0.48
v/c Ratio					0.25	0.83	0.88	0.29			0.79	0.13
Control Delay					38.0	68.7	23.7	7.8			29.8	15.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					38.0	68.7	23.7	7.8			29.8	15.4
LOS					D	E	C	A			C	B
Approach Delay					60.9			14.9			28.1	
Approach LOS					E			B			C	
Queue Length 50th (ft)					34	108	128	140			366	33

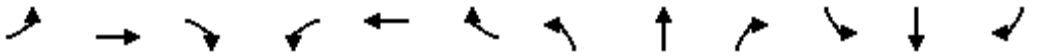
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					72	#213	m131	m144			#583	64
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					278	247	409	1399			891	758
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.23	0.75	0.81	0.29			0.79	0.13

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 51 (54%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 27.2 Intersection LOS: C
Intersection Capacity Utilization 73.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





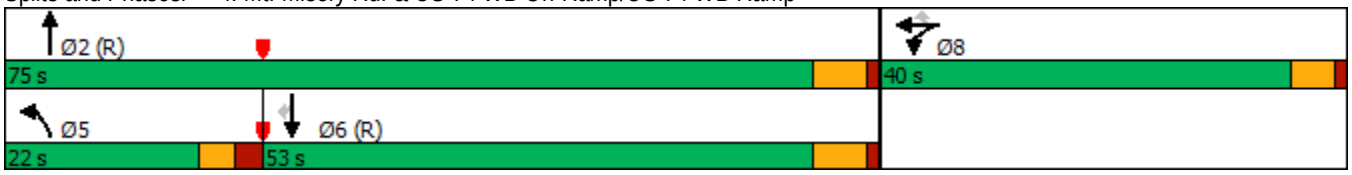
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	168	4	414	220	538	0	0	664	156
Future Volume (vph)	0	0	0	168	4	414	220	538	0	0	664	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	187	4	460	244	598	0	0	738	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	191	460	244	598	0	0	738	173
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				40.0	40.0	40.0	22.0	75.0			53.0	53.0
Total Split (%)				34.8%	34.8%	34.8%	19.1%	65.2%			46.1%	46.1%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					34.6	34.6	17.0	70.4			48.4	48.4
Actuated g/C Ratio					0.30	0.30	0.15	0.61			0.42	0.42
v/c Ratio					0.36	0.98	0.94	0.52			0.95	0.26
Control Delay					33.8	76.6	84.3	1.7			55.5	23.2
Queue Delay					0.0	0.0	0.0	0.7			0.0	0.0
Total Delay					33.8	76.6	84.3	2.4			55.5	23.2
LOS					C	E	F	A			E	C
Approach Delay					64.0			26.1			49.4	
Approach LOS					E			C			D	
Queue Length 50th (ft)					110	335	162	7			521	82

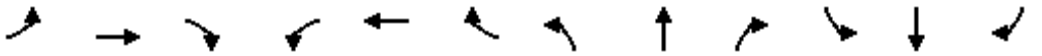
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					176	#544	m#222	m15			#778	135
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					534	476	261	1140			776	660
Starvation Cap Reductn					0	0	0	246			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.36	0.97	0.93	0.67			0.95	0.26

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 33 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 45.2 Intersection LOS: D
Intersection Capacity Utilization 72.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





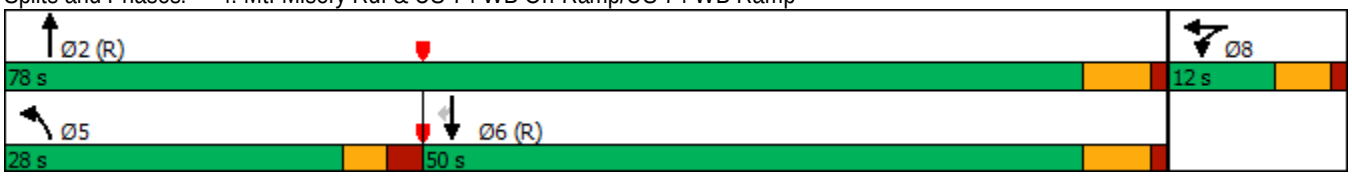
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	4	167	300	368	0	0	635	88
Future Volume (vph)	0	0	0	53	4	167	300	368	0	0	635	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1000	
Travel Time (s)		30.4			27.3			10.1			15.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	59	4	186	333	409	0	0	706	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	186	333	409	0	0	706	98
Turn Type				Split	NA	Free	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						Free						6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9		12.4	17.8			17.8	17.8
Total Split (s)				12.0	12.0		28.0	78.0			50.0	50.0
Total Split (%)				13.3%	13.3%		31.1%	86.7%			55.6%	55.6%
Yellow Time (s)				3.7	3.7		3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2		2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1		-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Max			C-Max	C-Max
Act Effct Green (s)					7.0	90.0	20.2	76.4			50.2	50.2
Actuated g/C Ratio					0.08	1.00	0.22	0.85			0.56	0.56
v/c Ratio					0.46	0.12	0.84	0.26			0.69	0.11
Control Delay					51.4	0.2	35.4	3.3			20.6	11.8
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					51.4	0.2	35.4	3.3			20.6	11.8
LOS					D	A	D	A			C	B
Approach Delay					13.1			17.7			19.5	
Approach LOS					B			B			B	
Queue Length 50th (ft)					35	0	111	63			300	27

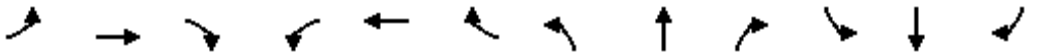
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					76	0	m201	m84			461	55
Internal Link Dist (ft)		1480			1319			589			920	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					136	1567	452	1582			1028	873
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.46	0.12	0.74	0.26			0.69	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





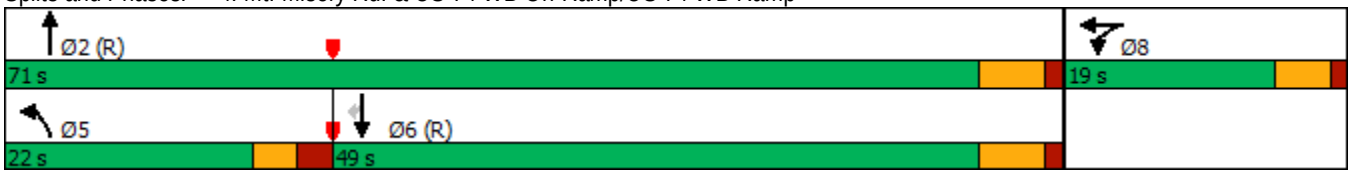
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	168	4	414	220	538	0	0	664	156
Future Volume (vph)	0	0	0	168	4	414	220	538	0	0	664	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1000	
Travel Time (s)		30.4			27.3			10.1			15.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	187	4	460	244	598	0	0	738	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	191	460	244	598	0	0	738	173
Turn Type				Split	NA	Free	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						Free						6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9		12.4	17.8			17.8	17.8
Total Split (s)				19.0	19.0		22.0	71.0			49.0	49.0
Total Split (%)				21.1%	21.1%		24.4%	78.9%			54.4%	54.4%
Yellow Time (s)				3.7	3.7		3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2		2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1		-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Max			C-Max	C-Max
Act Effct Green (s)					12.5	90.0	15.4	67.5			47.0	47.0
Actuated g/C Ratio					0.14	1.00	0.17	0.75			0.52	0.52
v/c Ratio					0.78	0.29	0.81	0.43			0.77	0.21
Control Delay					59.5	0.5	39.6	8.5			23.5	12.7
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					59.5	0.5	39.6	8.5			23.5	12.7
LOS					E	A	D	A			C	B
Approach Delay					17.8			17.5			21.5	
Approach LOS					B			B			C	
Queue Length 50th (ft)					104	0	104	248			318	49

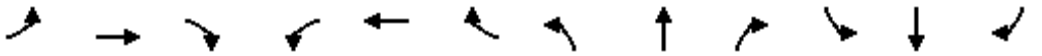
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					#198	0	m150	m265			#519	68
Internal Link Dist (ft)		1480			1319			589			920	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					273	1567	334	1396			963	819
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.70	0.29	0.73	0.43			0.77	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





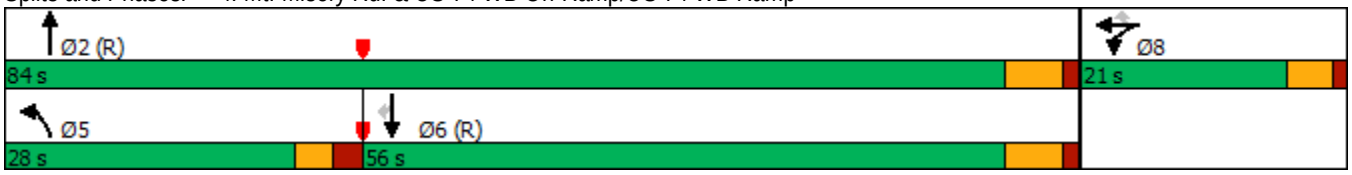
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	4	179	303	399	0	0	739	100
Future Volume (vph)	0	0	0	53	4	179	303	399	0	0	739	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	59	4	199	337	443	0	0	821	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	199	337	443	0	0	821	111
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				21.0	21.0	21.0	28.0	84.0			56.0	56.0
Total Split (%)				20.0%	20.0%	20.0%	26.7%	80.0%			53.3%	53.3%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					15.2	15.2	22.1	79.8			52.7	52.7
Actuated g/C Ratio					0.14	0.14	0.21	0.76			0.50	0.50
v/c Ratio					0.25	0.88	0.91	0.31			0.89	0.14
Control Delay					42.1	79.9	20.4	11.4			37.7	15.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					42.1	79.9	20.4	11.4			37.7	15.4
LOS					D	E	C	B			D	B
Approach Delay					70.8			15.3			35.0	
Approach LOS					E			B			D	
Queue Length 50th (ft)					38	131	162	227			493	40

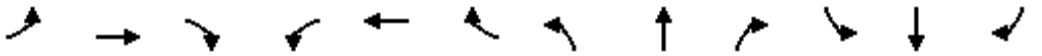
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					78	#256	m154	m211			#757	73
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					268	238	387	1415			925	786
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.24	0.84	0.87	0.31			0.89	0.14

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 58 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 32.0 Intersection LOS: C
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	4	457	222	639	0	0	740	167
Future Volume (vph)	0	0	0	170	4	457	222	639	0	0	740	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1288	
Travel Time (s)		30.4			27.3			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	189	4	508	247	710	0	0	822	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	193	508	247	710	0	0	822	186
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				38.1	38.1	38.1	20.0	71.9			51.9	51.9
Total Split (%)				34.6%	34.6%	34.6%	18.2%	65.4%			47.2%	47.2%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					33.1	33.1	15.0	66.9			46.9	46.9
Actuated g/C Ratio					0.30	0.30	0.14	0.61			0.43	0.43
v/c Ratio					0.37	1.08	1.02	0.63			1.05	0.28
Control Delay					32.7	101.9	99.3	3.2			69.1	16.2
Queue Delay					0.0	0.0	0.0	1.0			0.0	0.0
Total Delay					32.7	101.9	99.3	4.2			69.1	16.2
LOS					C	F	F	A			E	B
Approach Delay					82.8			28.7			59.3	
Approach LOS					F			C			E	
Queue Length 50th (ft)					107	~401	~172	29			~639	73

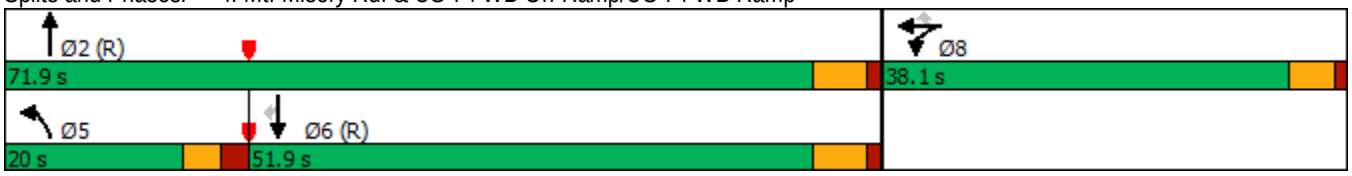
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					173	#607	m#200	m45			#866	m121
Internal Link Dist (ft)		1480			1319			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					528	471	241	1133			786	668
Starvation Cap Reductn					0	0	0	198			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.37	1.08	1.02	0.76			1.05	0.28

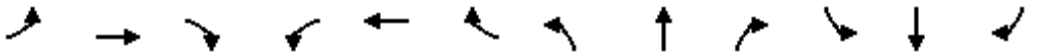
Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 25 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 54.5 Intersection LOS: D
Intersection Capacity Utilization 79.7% ICU Level of Service D
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





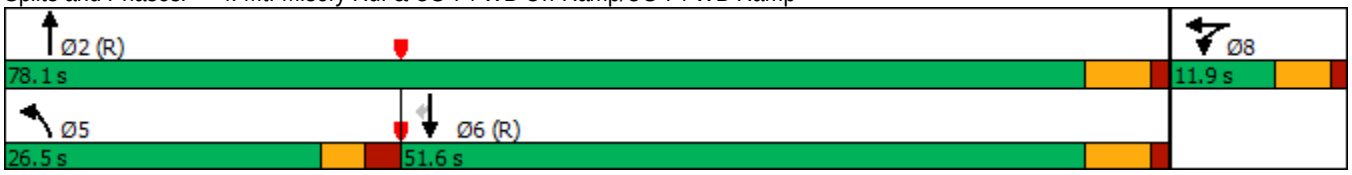
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	4	179	303	399	0	0	739	100
Future Volume (vph)	0	0	0	53	4	179	303	399	0	0	739	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1000	
Travel Time (s)		30.4			27.3			10.1			15.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	59	4	199	337	443	0	0	821	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	199	337	443	0	0	821	111
Turn Type				Split	NA	Free	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						Free						6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9		12.4	17.8			17.8	17.8
Total Split (s)				11.9	11.9		26.5	78.1			51.6	51.6
Total Split (%)				13.2%	13.2%		29.4%	86.8%			57.3%	57.3%
Yellow Time (s)				3.7	3.7		3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2		2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1		-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Max			C-Max	C-Max
Act Effct Green (s)					6.9	90.0	19.8	76.5			50.7	50.7
Actuated g/C Ratio					0.08	1.00	0.22	0.85			0.56	0.56
v/c Ratio					0.47	0.13	0.87	0.28			0.79	0.13
Control Delay					51.6	0.2	39.2	3.4			24.6	11.3
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					51.6	0.2	39.2	3.4			24.6	11.3
LOS					D	A	D	A			C	B
Approach Delay					12.5			18.9			23.0	
Approach LOS					B			B			C	
Queue Length 50th (ft)					35	0	123	60			385	31

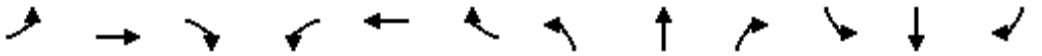
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					76	0	m196	m77			#633	59
Internal Link Dist (ft)		1480			1319			589			920	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					135	1567	422	1583			1037	882
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.47	0.13	0.80	0.28			0.79	0.13

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 20.0 Intersection LOS: B
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





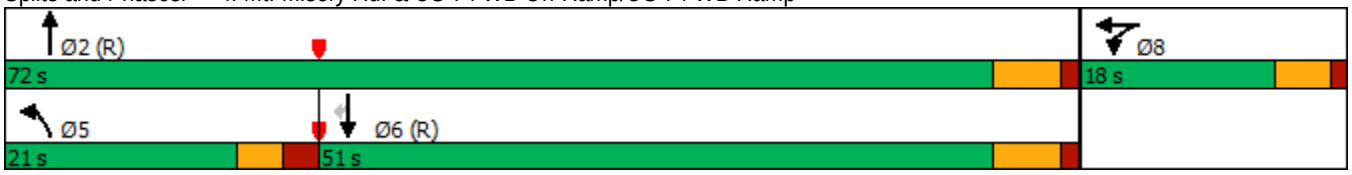
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	4	457	222	639	0	0	740	167
Future Volume (vph)	0	0	0	170	4	457	222	639	0	0	740	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			1399			669			1000	
Travel Time (s)		30.4			27.3			10.1			15.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	189	4	508	247	710	0	0	822	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	193	508	247	710	0	0	822	186
Turn Type				Split	NA	Free	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						Free						6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9		12.4	17.8			17.8	17.8
Total Split (s)				18.0	18.0		21.0	72.0			51.0	51.0
Total Split (%)				20.0%	20.0%		23.3%	80.0%			56.7%	56.7%
Yellow Time (s)				3.7	3.7		3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2		2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1		-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Max			C-Max	C-Max
Act Effct Green (s)					12.1	90.0	15.0	67.9			47.9	47.9
Actuated g/C Ratio					0.13	1.00	0.17	0.75			0.53	0.53
v/c Ratio					0.82	0.32	0.84	0.51			0.84	0.22
Control Delay					65.3	0.5	42.1	9.8			26.2	12.5
Queue Delay					0.0	0.0	0.0	1.3			0.0	0.0
Total Delay					65.3	0.5	42.1	11.1			26.2	12.5
LOS					E	A	D	B			C	B
Approach Delay					18.4			19.1			23.7	
Approach LOS					B			B			C	
Queue Length 50th (ft)					107	0	117	307			374	55

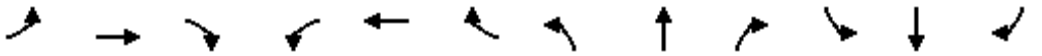
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					#212	0	m139	m326			#642	70
Internal Link Dist (ft)		1480			1319			589			920	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					253	1567	314	1405			982	834
Starvation Cap Reductn					0	0	0	459			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.76	0.32	0.79	0.75			0.84	0.22

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 3 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 20.7 Intersection LOS: C
Intersection Capacity Utilization 79.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





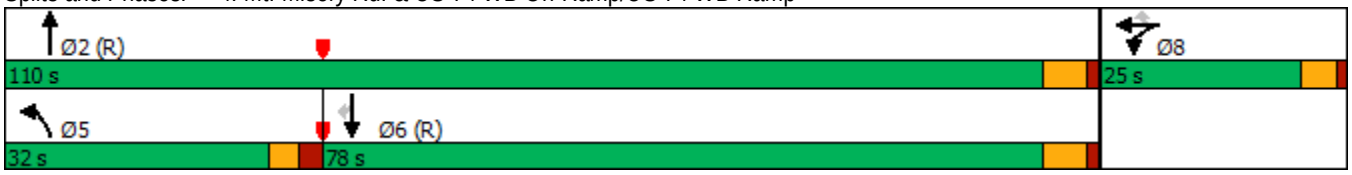
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	4	194	306	433	0	0	861	113
Future Volume (vph)	0	0	0	54	4	194	306	433	0	0	861	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			4778			669			1288	
Travel Time (s)		30.4			93.1			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	60	4	216	340	481	0	0	957	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	64	216	340	481	0	0	957	126
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				25.0	25.0	25.0	32.0	110.0			78.0	78.0
Total Split (%)				18.5%	18.5%	18.5%	23.7%	81.5%			57.8%	57.8%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					19.7	19.7	26.9	105.3			73.5	73.5
Actuated g/C Ratio					0.15	0.15	0.20	0.78			0.54	0.54
v/c Ratio					0.25	0.95	0.97	0.33			0.95	0.15
Control Delay					53.8	104.2	35.9	15.9			49.1	16.0
Queue Delay					0.0	0.0	0.0	1.4			0.0	0.0
Total Delay					53.8	104.2	35.9	17.3			49.1	16.0
LOS					D	F	D	B			D	B
Approach Delay					92.7			25.0			45.2	
Approach LOS					F			C			D	
Queue Length 50th (ft)					50	190	306	348			774	53

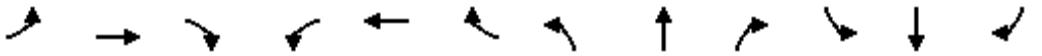
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					97	#348	m298	m333			#1091	89
Internal Link Dist (ft)		1480			4698			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					260	232	354	1454			1003	853
Starvation Cap Reductn					0	0	0	743			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.25	0.93	0.96	0.68			0.95	0.15

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 135
Offset: 82 (61%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 43.7 Intersection LOS: D
Intersection Capacity Utilization 81.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	172	4	510	224	753	0	0	831	177
Future Volume (vph)	0	0	0	172	4	510	224	753	0	0	831	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			4778			669			1288	
Travel Time (s)		30.4			93.1			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	191	4	567	249	837	0	0	923	197
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	195	567	249	837	0	0	923	197
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9	11.9	12.4	17.8			17.8	17.8
Total Split (s)				51.0	51.0	51.0	23.0	94.0			71.0	71.0
Total Split (%)				35.2%	35.2%	35.2%	15.9%	64.8%			49.0%	49.0%
Yellow Time (s)				3.7	3.7	3.7	3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2	1.2	2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1	0.1	-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Act Effct Green (s)					46.0	46.0	18.0	89.0			66.0	66.0
Actuated g/C Ratio					0.32	0.32	0.12	0.61			0.46	0.46
v/c Ratio					0.35	1.14	1.14	0.73			1.10	0.28
Control Delay					40.2	129.5	146.9	7.1			90.9	20.1
Queue Delay					0.0	0.0	0.0	2.1			0.0	0.0
Total Delay					40.2	129.5	146.9	9.2			90.9	20.1
LOS					D	F	F	A			F	C
Approach Delay					106.7			40.8			78.5	
Approach LOS					F			D			E	
Queue Length 50th (ft)					142	~624	~269	107			~995	93

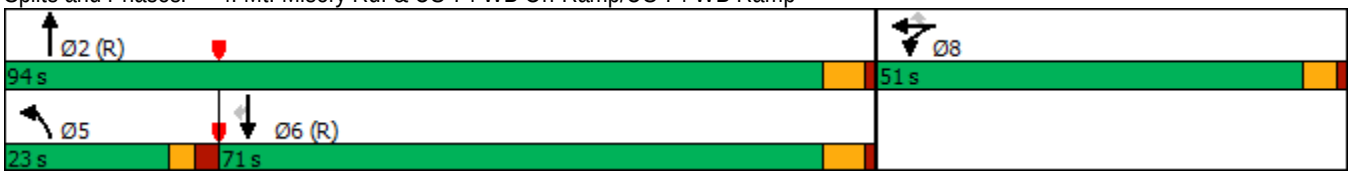
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					213	#857	m#268	m103			m#1245	m151
Internal Link Dist (ft)		1480			4698			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					557	497	219	1143			839	713
Starvation Cap Reductn					0	0	0	175			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.35	1.14	1.14	0.86			1.10	0.28

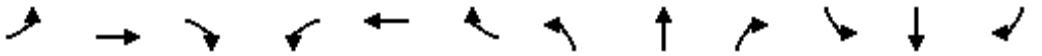
Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 145
Offset: 22 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 71.9 Intersection LOS: E
Intersection Capacity Utilization 88.4% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





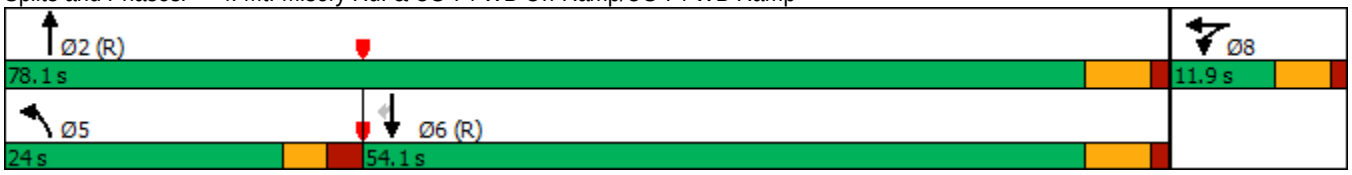
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	4	194	306	433	0	0	861	113
Future Volume (vph)	0	0	0	54	4	194	306	433	0	0	861	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.955		0.950					
Satd. Flow (prot)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1761	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			4778			669			1000	
Travel Time (s)		30.4			93.1			10.1			15.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	60	4	216	340	481	0	0	957	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	64	216	340	481	0	0	957	126
Turn Type				Split	NA	Free	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						Free						6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9		12.4	17.8			17.8	17.8
Total Split (s)				11.9	11.9		24.0	78.1			54.1	54.1
Total Split (%)				13.2%	13.2%		26.7%	86.8%			60.1%	60.1%
Yellow Time (s)				3.7	3.7		3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2		2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1		-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Max			C-Max	C-Max
Act Effct Green (s)					6.9	90.0	18.6	76.5			51.8	51.8
Actuated g/C Ratio					0.08	1.00	0.21	0.85			0.58	0.58
v/c Ratio					0.47	0.14	0.93	0.30			0.90	0.14
Control Delay					52.0	0.2	52.3	5.5			23.4	4.5
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					52.0	0.2	52.3	5.5			23.4	4.5
LOS					D	A	D	A			C	A
Approach Delay					12.0			24.8			21.2	
Approach LOS					B			C			C	
Queue Length 50th (ft)					36	0	174	157			512	20

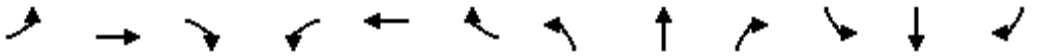
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					76	0	m#320	190			#776	m23
Internal Link Dist (ft)		1480			4698			589			920	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					135	1567	373	1583			1062	902
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.47	0.14	0.91	0.30			0.90	0.14

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 21.4 Intersection LOS: C
Intersection Capacity Utilization 80.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp





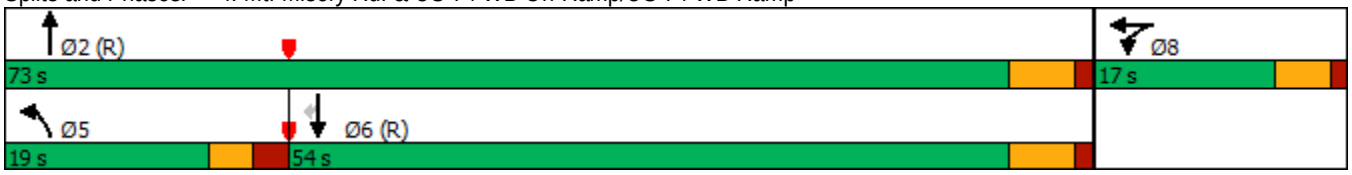
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	172	4	510	224	753	0	0	831	177
Future Volume (vph)	0	0	0	172	4	510	224	753	0	0	831	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			2%	
Storage Length (ft)	0		0	0		150	175		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
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
Frt						0.850						0.850
Flt Protected					0.953		0.950					
Satd. Flow (prot)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Flt Permitted					0.953		0.950					
Satd. Flow (perm)	0	0	0	0	1757	1567	1770	1863	0	0	1844	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1560			4778			669			1288	
Travel Time (s)		30.4			93.1			10.1			19.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	191	4	567	249	837	0	0	923	197
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	195	567	249	837	0	0	923	197
Turn Type				Split	NA	Free	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						Free						6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				11.9	11.9		12.4	17.8			17.8	17.8
Total Split (s)				17.0	17.0		19.0	73.0			54.0	54.0
Total Split (%)				18.9%	18.9%		21.1%	81.1%			60.0%	60.0%
Yellow Time (s)				3.7	3.7		3.0	4.5			4.5	4.5
All-Red Time (s)				1.2	1.2		2.4	1.3			1.3	1.3
Lost Time Adjust (s)					0.1		-0.4	-0.8			-0.8	-0.8
Total Lost Time (s)					5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Max			C-Max	C-Max
Act Effct Green (s)					11.6	90.0	13.9	68.4			49.5	49.5
Actuated g/C Ratio					0.13	1.00	0.15	0.76			0.55	0.55
v/c Ratio					0.87	0.36	0.91	0.59			0.91	0.23
Control Delay					73.2	0.6	64.5	1.2			28.1	10.1
Queue Delay					0.0	0.0	0.0	0.6			0.0	0.0
Total Delay					73.2	0.6	64.5	1.8			28.1	10.1
LOS					E	A	E	A			C	B
Approach Delay					19.2			16.2			24.9	
Approach LOS					B			B			C	
Queue Length 50th (ft)					110	0	131	8			442	48

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					#226	0	m150	m22			m#722	m67
Internal Link Dist (ft)		1480			4698			589			1208	
Turn Bay Length (ft)						150	175					150
Base Capacity (vph)					234	1567	275	1416			1014	862
Starvation Cap Reductn					0	0	0	236			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.83	0.36	0.91	0.71			0.91	0.23

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 20.3 Intersection LOS: C
Intersection Capacity Utilization 79.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp



APPENDIX J

SYNCHRO ANALYSIS REPORTS

MT. MISERY ROAD/LANVALE ROAD
AND
US 74 EASTBOUND RAMPS

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	4	293	0	0	0	0	565	292	182	256	0
Future Vol, veh/h	25	4	293	0	0	0	0	565	292	182	256	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	50	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	4	326	0	0	0	0	628	324	202	284	0

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	1478	1640	284				-	0	0	952	0	0
Stage 1	688	688	-				-	-	-	-	-	-
Stage 2	790	952	-				-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22				-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-				-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318				-	-	-	2.218	-	-
Pot Cap-1 Maneuver	139	100	755				0	-	-	722	-	0
Stage 1	499	447	-				0	-	-	-	-	0
Stage 2	447	338	-				0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	100	0	755				-	-	-	722	-	-
Mov Cap-2 Maneuver	100	0	-				-	-	-	-	-	-
Stage 1	499	0	-				-	-	-	-	-	-
Stage 2	322	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.3	0	5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	100	755	722	-
HCM Lane V/C Ratio	-	-	0.322	0.431	0.28	-
HCM Control Delay (s)	-	-	57.2	13.3	11.9	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	1.2	2.2	1.1	-

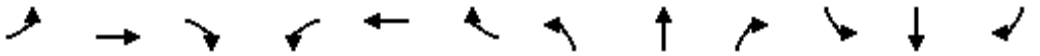
Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	4	213	0	0	0	0	485	114	164	472	0
Future Vol, veh/h	70	4	213	0	0	0	0	485	114	164	472	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	50	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	78	4	237	0	0	0	0	539	127	182	524	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1491	1554	524	-	0	0	666	0	0
Stage 1	888	888	-	-	-	-	-	-	-
Stage 2	603	666	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	136	113	553	0	-	-	923	-	0
Stage 1	402	362	-	0	-	-	-	-	0
Stage 2	546	457	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	109	0	553	-	-	-	923	-	-
Mov Cap-2 Maneuver	109	0	-	-	-	-	-	-	-
Stage 1	402	0	-	-	-	-	-	-	-
Stage 2	438	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	38.4	0	2.5
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	109	553	923	-
HCM Lane V/C Ratio	-	-	0.754	0.428	0.197	-
HCM Control Delay (s)	-	-	102.2	16.3	9.9	-
HCM Lane LOS	-	-	F	C	A	-
HCM 95th %tile Q(veh)	-	-	4.1	2.1	0.7	-

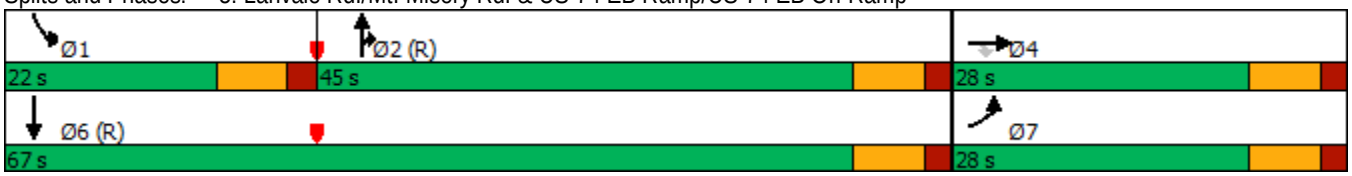


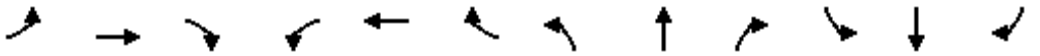
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	4	308	0	0	0	0	614	307	252	330	0
Future Volume (vph)	26	4	308	0	0	0	0	614	307	252	330	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.958								0.950		
Satd. Flow (prot)	0	1606	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.958								0.950		
Satd. Flow (perm)	0	1606	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	342	0	0	0	0	682	341	280	367	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	342	0	0	0	0	682	341	280	367	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	28.0	28.0	28.0					45.0	45.0	22.0	67.0	
Total Split (%)	29.5%	29.5%	29.5%					47.4%	47.4%	23.2%	70.5%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		23.0	23.0					40.0	40.0	17.0	62.0	
Actuated g/C Ratio		0.24	0.24					0.42	0.42	0.18	0.65	
v/c Ratio		0.09	0.99					0.97	0.57	0.98	0.34	
Control Delay		28.7	84.3					55.3	25.5	74.4	5.5	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		28.7	84.3					55.3	25.5	74.4	5.5	
LOS		C	F					E	C	E	A	
Approach Delay		79.4						45.4			35.3	
Approach LOS		E						D			D	
Queue Length 50th (ft)		16	206					391	153	135	83	
Queue Length 95th (ft)		40	#384					#630	243	#322	42	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		388	345					705	600	285	1093	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.09	0.99					0.97	0.57	0.98	0.34	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 48.4		Intersection LOS: D	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



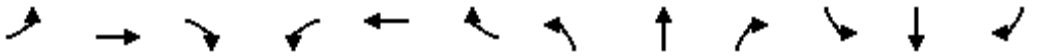


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	4	224	0	0	0	0	582	120	215	539	0
Future Volume (vph)	74	4	224	0	0	0	0	582	120	215	539	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	82	4	249	0	0	0	0	647	133	239	599	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	249	0	0	0	0	647	133	239	599	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	24.0	24.0	24.0					45.0	45.0	21.0	66.0	
Total Split (%)	26.7%	26.7%	26.7%					50.0%	50.0%	23.3%	73.3%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		19.0	19.0					40.1	40.1	15.9	61.0	
Actuated g/C Ratio		0.21	0.21					0.45	0.45	0.18	0.68	
v/c Ratio		0.26	0.83					0.87	0.21	0.85	0.53	
Control Delay		32.0	58.4					36.9	16.4	47.8	7.0	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		32.0	58.4					36.9	16.4	47.8	7.0	
LOS		C	E					D	B	D	A	
Approach Delay		51.6						33.4			18.7	
Approach LOS		D						C			B	
Queue Length 50th (ft)		41	136					322	45	104	162	
Queue Length 95th (ft)		83	#265					#536	83	m#149	m219	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		337	300					747	635	283	1135	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.26	0.83					0.87	0.21	0.84	0.53	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 83 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 30.2		Intersection LOS: C	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

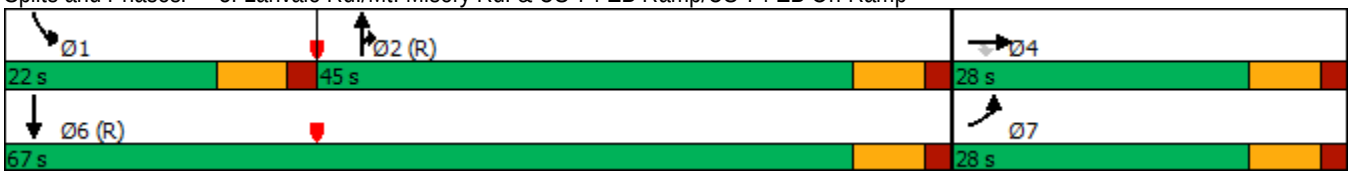


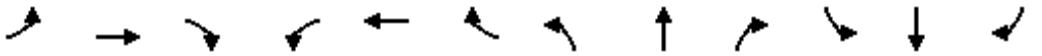
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	4	311	0	0	0	0	623	310	262	341	0
Future Volume (vph)	27	4	311	0	0	0	0	623	310	262	341	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.958								0.950		
Satd. Flow (prot)	0	1606	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.958								0.950		
Satd. Flow (perm)	0	1606	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	4	346	0	0	0	0	692	344	291	379	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	346	0	0	0	0	692	344	291	379	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	28.0	28.0	28.0					45.0	45.0	22.0	67.0	
Total Split (%)	29.5%	29.5%	29.5%					47.4%	47.4%	23.2%	70.5%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		23.0	23.0					40.0	40.0	17.0	62.0	
Actuated g/C Ratio		0.24	0.24					0.42	0.42	0.18	0.65	
v/c Ratio		0.09	1.00					0.98	0.57	1.02	0.35	
Control Delay		28.7	87.2					58.4	25.7	83.1	5.3	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		28.7	87.2					58.4	25.7	83.1	5.3	
LOS		C	F					E	C	F	A	
Approach Delay		81.9						47.6			39.1	
Approach LOS		F						D			D	
Queue Length 50th (ft)		16	~211					401	154	~139	70	
Queue Length 95th (ft)		41	#390					#644	246	m#337	47	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		388	345					705	600	285	1093	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.09	1.00					0.98	0.57	1.02	0.35	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 92 (97%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 51.1		Intersection LOS: D	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



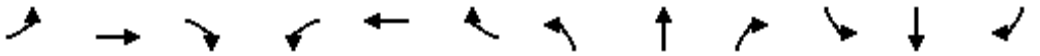


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	4	226	0	0	0	0	598	121	223	550	0
Future Volume (vph)	74	4	226	0	0	0	0	598	121	223	550	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	82	4	251	0	0	0	0	664	134	248	611	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	251	0	0	0	0	664	134	248	611	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	23.0	23.0	23.0					46.0	46.0	21.0	67.0	
Total Split (%)	25.6%	25.6%	25.6%					51.1%	51.1%	23.3%	74.4%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		18.0	18.0					41.0	41.0	16.0	62.0	
Actuated g/C Ratio		0.20	0.20					0.46	0.46	0.18	0.69	
v/c Ratio		0.27	0.88					0.87	0.21	0.88	0.53	
Control Delay		33.1	67.0					36.5	15.8	49.1	7.6	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		33.1	67.0					36.5	15.8	49.1	7.6	
LOS		C	E					D	B	D	A	
Approach Delay		58.4						33.0			19.5	
Approach LOS		E						C			B	
Queue Length 50th (ft)		42	140					329	44	113	198	
Queue Length 95th (ft)		84	#277					#546	82	m#151	m247	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		319	285					763	649	283	1154	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.27	0.88					0.87	0.21	0.88	0.53	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 87 (97%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 31.5		Intersection LOS: C	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

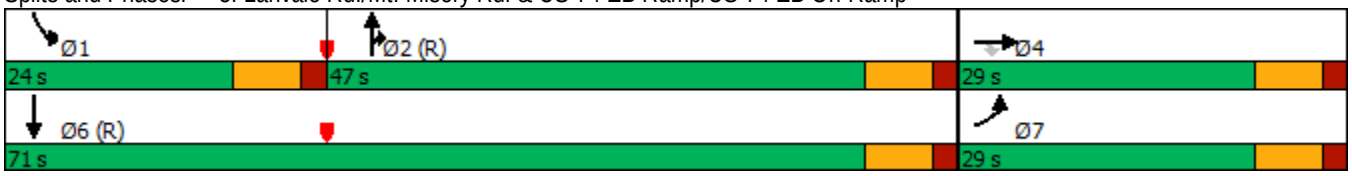


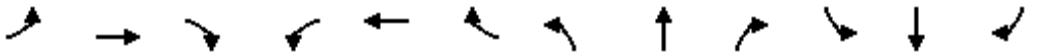
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	4	314	0	0	0	0	635	313	281	360	0
Future Volume (vph)	27	4	314	0	0	0	0	635	313	281	360	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.958								0.950		
Satd. Flow (prot)	0	1606	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.958								0.950		
Satd. Flow (perm)	0	1606	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	4	349	0	0	0	0	706	348	312	400	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	349	0	0	0	0	706	348	312	400	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	29.0	29.0	29.0					47.0	47.0	24.0	71.0	
Total Split (%)	29.0%	29.0%	29.0%					47.0%	47.0%	24.0%	71.0%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		24.0	24.0					42.0	42.0	19.0	66.0	
Actuated g/C Ratio		0.24	0.24					0.42	0.42	0.19	0.66	
v/c Ratio		0.09	1.02					1.00	0.58	1.03	0.36	
Control Delay		30.4	93.2					65.3	27.1	84.4	5.8	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		30.4	93.2					65.3	27.1	84.4	5.8	
LOS		C	F					E	C	F	A	
Approach Delay		87.6						52.7			40.3	
Approach LOS		F						D			D	
Queue Length 50th (ft)		17	~231					~443	166	~170	88	
Queue Length 95th (ft)		43	#412					#692	261	m#358	92	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		385	342					703	598	302	1106	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.09	1.02					1.00	0.58	1.03	0.36	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 54.8		Intersection LOS: D	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



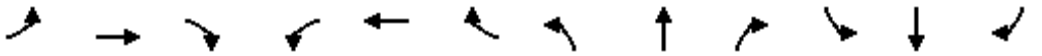


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	4	228	0	0	0	0	623	122	237	567	0
Future Volume (vph)	75	4	228	0	0	0	0	623	122	237	567	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	83	4	253	0	0	0	0	692	136	263	630	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	253	0	0	0	0	692	136	263	630	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	23.0	23.0	23.0					46.0	46.0	21.0	67.0	
Total Split (%)	25.6%	25.6%	25.6%					51.1%	51.1%	23.3%	74.4%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		18.0	18.0					41.0	41.0	16.0	62.0	
Actuated g/C Ratio		0.20	0.20					0.46	0.46	0.18	0.69	
v/c Ratio		0.27	0.89					0.91	0.21	0.93	0.55	
Control Delay		33.2	68.2					40.8	15.9	56.5	6.8	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		33.2	68.2					40.8	15.9	56.5	6.8	
LOS		C	E					D	B	E	A	
Approach Delay		59.2						36.7			21.4	
Approach LOS		E						D			C	
Queue Length 50th (ft)		42	141					352	45	124	152	
Queue Length 95th (ft)		85	#279					#582	82	m#179	m193	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		319	285					763	649	283	1154	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.27	0.89					0.91	0.21	0.93	0.55	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 33.8		Intersection LOS: C	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

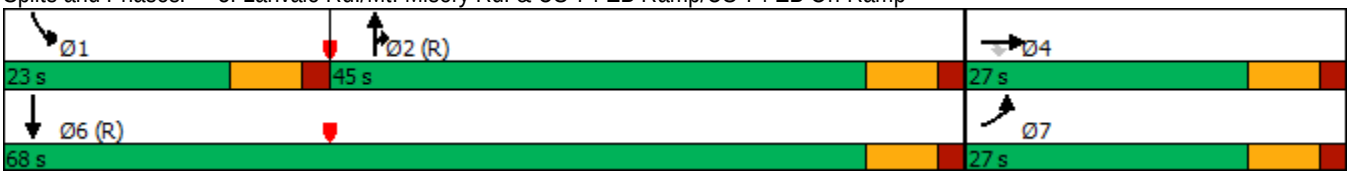


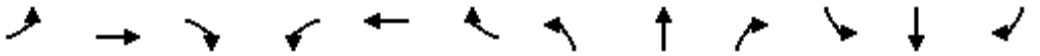
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	4	308	0	0	0	0	639	307	282	406	0
Future Volume (vph)	31	4	308	0	0	0	0	639	307	282	406	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.957								0.950		
Satd. Flow (prot)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.957								0.950		
Satd. Flow (perm)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	34	4	342	0	0	0	0	710	341	313	451	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	342	0	0	0	0	710	341	313	451	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	27.0	27.0	27.0					45.0	45.0	23.0	68.0	
Total Split (%)	28.4%	28.4%	28.4%					47.4%	47.4%	24.2%	71.6%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		22.0	22.0					40.0	40.0	18.0	63.0	
Actuated g/C Ratio		0.23	0.23					0.42	0.42	0.19	0.66	
v/c Ratio		0.10	1.04					1.01	0.57	1.04	0.41	
Control Delay		29.7	97.0					64.7	25.5	84.9	4.5	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		29.7	97.0					64.7	25.5	84.9	4.5	
LOS		C	F					E	C	F	A	
Approach Delay		90.3						52.0			37.4	
Approach LOS		F						D			D	
Queue Length 50th (ft)		18	~224					~424	153	~169	42	
Queue Length 95th (ft)		44	#393					#669	243	m#306	m52	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		371	330					705	600	301	1111	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.10	1.04					1.01	0.57	1.04	0.41	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 92 (97%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 53.6		Intersection LOS: D	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



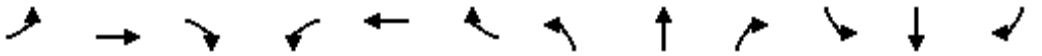


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	4	224	0	0	0	0	670	120	236	590	0
Future Volume (vph)	92	4	224	0	0	0	0	670	120	236	590	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	102	4	249	0	0	0	0	744	133	262	656	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	249	0	0	0	0	744	133	262	656	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	28.0	28.0	28.0					61.0	61.0	26.0	87.0	
Total Split (%)	24.3%	24.3%	24.3%					53.0%	53.0%	22.6%	75.7%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		23.0	23.0					56.1	56.1	20.9	82.0	
Actuated g/C Ratio		0.20	0.20					0.49	0.49	0.18	0.71	
v/c Ratio		0.33	0.87					0.91	0.19	0.91	0.55	
Control Delay		42.9	74.5					44.3	17.6	53.2	20.8	
Queue Delay		0.0	0.0					0.0	0.0	0.0	1.4	
Total Delay		42.9	74.5					44.3	17.6	53.2	22.1	
LOS		D	E					D	B	D	C	
Approach Delay		65.1						40.2			31.0	
Approach LOS		E						D			C	
Queue Length 50th (ft)		68	180					493	54	188	394	
Queue Length 95th (ft)		122	#328					#753	93	m#222	m437	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		319	285					817	694	290	1195	
Starvation Cap Reductn		0	0					0	0	0	328	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.33	0.87					0.91	0.19	0.90	0.76	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 115			
Actuated Cycle Length: 115			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 40.4		Intersection LOS: D	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

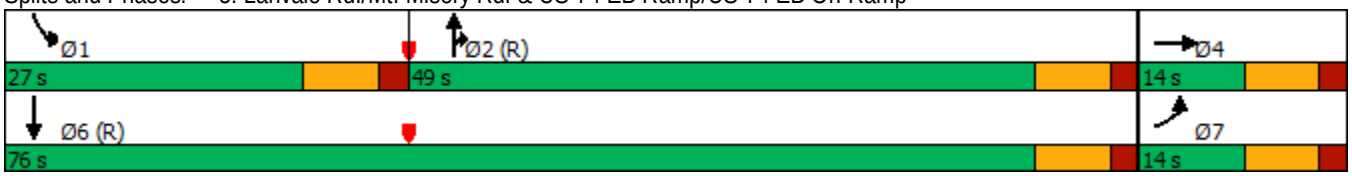


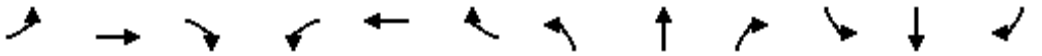
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	4	308	0	0	0	0	639	307	282	406	0
Future Volume (vph)	31	4	308	0	0	0	0	639	307	282	406	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.957								0.950		
Satd. Flow (prot)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.957								0.950		
Satd. Flow (perm)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	34	4	342	0	0	0	0	710	341	313	451	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	342	0	0	0	0	710	341	313	451	0
Turn Type	Prot	NA	Free					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			Free									
Detector Phase	7	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	14.0	14.0						49.0	49.0	27.0	76.0	
Total Split (%)	15.6%	15.6%						54.4%	54.4%	30.0%	84.4%	
Yellow Time (s)	5.0	5.0						5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0						2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0						-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		5.4	90.0					50.4	50.4	21.2	78.6	
Actuated g/C Ratio		0.06	1.00					0.56	0.56	0.24	0.87	
v/c Ratio		0.40	0.24					0.76	0.43	0.83	0.31	
Control Delay		49.9	0.4					24.4	15.5	42.9	0.9	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		49.9	0.4					24.4	15.5	42.9	0.9	
LOS		D	A					C	B	D	A	
Approach Delay		5.3						21.5			18.1	
Approach LOS		A						C			B	
Queue Length 50th (ft)		20	0					342	124	93	0	
Queue Length 95th (ft)		51	0					#572	201	#293	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		96	1425					938	797	390	1464	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.40	0.24					0.76	0.43	0.80	0.31	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 28 (31%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



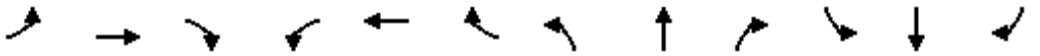


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	4	224	0	0	0	0	670	120	236	590	0
Future Volume (vph)	92	4	224	0	0	0	0	670	120	236	590	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	102	4	249	0	0	0	0	744	133	262	656	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	249	0	0	0	0	744	133	262	656	0
Turn Type	Prot	NA	Free					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			Free									
Detector Phase	7	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	14.0	14.0						52.0	52.0	24.0	76.0	
Total Split (%)	15.6%	15.6%						57.8%	57.8%	26.7%	84.4%	
Yellow Time (s)	5.0	5.0						5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0						2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0						-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		9.0	90.0					47.7	47.7	18.3	71.0	
Actuated g/C Ratio		0.10	1.00					0.53	0.53	0.20	0.79	
v/c Ratio		0.67	0.17					0.84	0.18	0.81	0.50	
Control Delay		60.7	0.3					28.8	12.0	45.5	4.5	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		60.7	0.3					28.8	12.0	45.5	4.5	
LOS		E	A					C	B	D	A	
Approach Delay		18.3						26.2			16.2	
Approach LOS		B						C			B	
Queue Length 50th (ft)		59	0					344	38	109	40	
Queue Length 95th (ft)		#134	0					#582	70	m#199	46	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		159	1425					888	755	336	1322	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.67	0.17					0.84	0.18	0.78	0.50	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

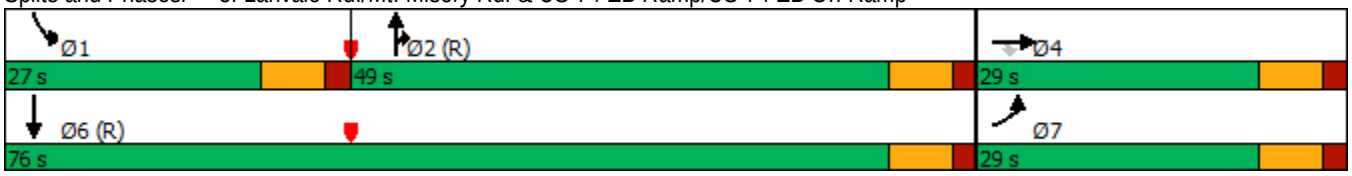


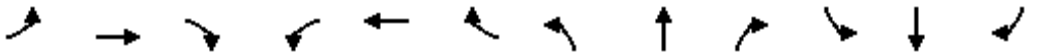
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	4	311	0	0	0	0	668	310	316	476	0
Future Volume (vph)	36	4	311	0	0	0	0	668	310	316	476	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.957								0.950		
Satd. Flow (prot)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.957								0.950		
Satd. Flow (perm)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	4	346	0	0	0	0	742	344	351	529	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	346	0	0	0	0	742	344	351	529	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	29.0	29.0	29.0					49.0	49.0	27.0	76.0	
Total Split (%)	27.6%	27.6%	27.6%					46.7%	46.7%	25.7%	72.4%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		24.0	24.0					44.0	44.0	22.0	71.0	
Actuated g/C Ratio		0.23	0.23					0.42	0.42	0.21	0.68	
v/c Ratio		0.12	1.06					1.06	0.58	1.05	0.47	
Control Delay		33.3	108.2					81.1	28.1	85.5	4.2	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		33.3	108.2					81.1	28.1	85.5	4.2	
LOS		C	F					F	C	F	A	
Approach Delay		99.7						64.3			36.6	
Approach LOS		F						E			D	
Queue Length 50th (ft)		24	~257					~549	173	~249	67	
Queue Length 95th (ft)		54	#435					#776	269	m#321	m78	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		366	325					702	597	333	1133	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.12	1.06					1.06	0.58	1.05	0.47	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 104 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 59.8		Intersection LOS: E	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



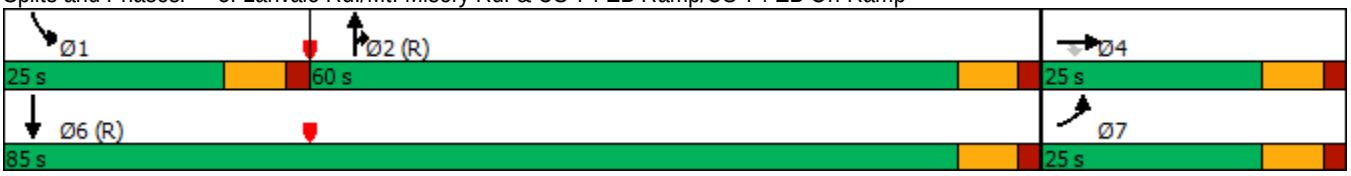


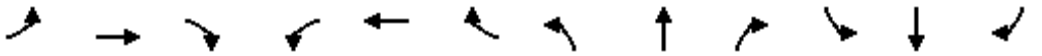
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	4	226	0	0	0	0	758	121	261	644	0
Future Volume (vph)	106	4	226	0	0	0	0	758	121	261	644	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	118	4	251	0	0	0	0	842	134	290	716	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	122	251	0	0	0	0	842	134	290	716	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	25.0	25.0	25.0					60.0	60.0	25.0	85.0	
Total Split (%)	22.7%	22.7%	22.7%					54.5%	54.5%	22.7%	77.3%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		20.0	20.0					55.0	55.0	20.0	80.0	
Actuated g/C Ratio		0.18	0.18					0.50	0.50	0.18	0.73	
v/c Ratio		0.42	0.97					1.00	0.19	1.00	0.59	
Control Delay		45.0	94.4					60.8	16.1	67.0	18.3	
Queue Delay		0.0	0.0					0.0	0.0	0.0	1.1	
Total Delay		45.0	94.4					60.8	16.1	67.0	19.4	
LOS		D	F					E	B	E	B	
Approach Delay		78.3						54.6			33.1	
Approach LOS		E						D			C	
Queue Length 50th (ft)		77	178					~582	50	~218	376	
Queue Length 95th (ft)		136	#339					#862	88	m#230	m378	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		290	259					838	712	289	1218	
Starvation Cap Reductn		0	0					0	0	0	265	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.42	0.97					1.00	0.19	1.00	0.75	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 107 (97%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 49.2		Intersection LOS: D	
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



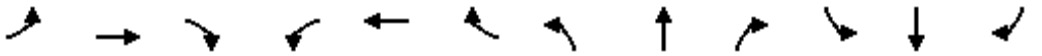


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	4	311	0	0	0	0	668	310	316	476	0
Future Volume (vph)	36	4	311	0	0	0	0	668	310	316	476	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.957								0.950		
Satd. Flow (prot)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.957								0.950		
Satd. Flow (perm)	0	1604	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	4	346	0	0	0	0	742	344	351	529	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	346	0	0	0	0	742	344	351	529	0
Turn Type	Prot	NA	Free					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			Free									
Detector Phase	7	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	14.0	14.0						49.0	49.0	27.0	76.0	
Total Split (%)	15.6%	15.6%						54.4%	54.4%	30.0%	84.4%	
Yellow Time (s)	5.0	5.0						5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0						2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0						-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		5.4	90.0					49.0	49.0	22.6	78.6	
Actuated g/C Ratio		0.06	1.00					0.54	0.54	0.25	0.87	
v/c Ratio		0.46	0.24					0.81	0.44	0.88	0.36	
Control Delay		53.2	0.4					28.0	16.2	45.8	1.3	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		53.2	0.4					28.0	16.2	45.8	1.3	
LOS		D	A					C	B	D	A	
Approach Delay		6.4						24.2			19.1	
Approach LOS		A						C			B	
Queue Length 50th (ft)		24	0					370	126	142	0	
Queue Length 95th (ft)		57	0					#614	203	m#294	m0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		96	1425					912	775	403	1464	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.46	0.24					0.81	0.44	0.87	0.36	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

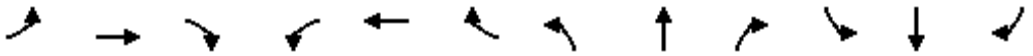


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	4	226	0	0	0	0	758	121	261	644	0
Future Volume (vph)	106	4	226	0	0	0	0	758	121	261	644	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	118	4	251	0	0	0	0	842	134	290	716	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	122	251	0	0	0	0	842	134	290	716	0
Turn Type	Prot	NA	Free					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			Free									
Detector Phase	7	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	14.0	14.0						54.0	54.0	22.0	76.0	
Total Split (%)	15.6%	15.6%						60.0%	60.0%	24.4%	84.4%	
Yellow Time (s)	5.0	5.0						5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0						2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0						-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		9.0	90.0					49.0	49.0	17.0	71.0	
Actuated g/C Ratio		0.10	1.00					0.54	0.54	0.19	0.79	
v/c Ratio		0.77	0.18					0.92	0.17	0.97	0.54	
Control Delay		70.7	0.3					36.6	11.1	66.7	5.7	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.9	
Total Delay		70.7	0.3					36.6	11.1	66.7	6.6	
LOS		E	A					D	B	E	A	
Approach Delay		23.3						33.1			23.9	
Approach LOS		C						C			C	
Queue Length 50th (ft)		69	0					411	36	146	121	
Queue Length 95th (ft)		#159	0					#686	66	m#238	m156	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		159	1425					912	775	300	1322	
Starvation Cap Reductn		0	0					0	0	0	329	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.77	0.18					0.92	0.17	0.97	0.72	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 44 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 27.6		Intersection LOS: C	
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

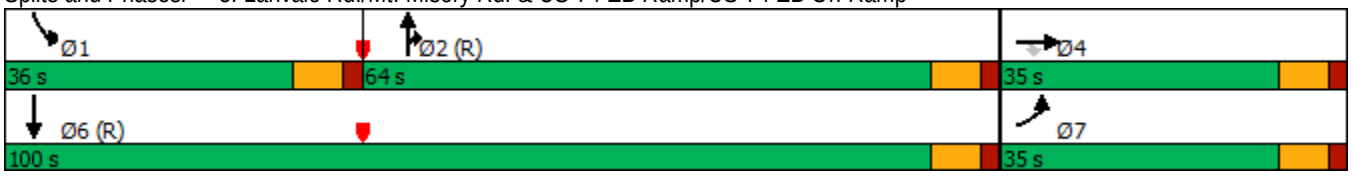


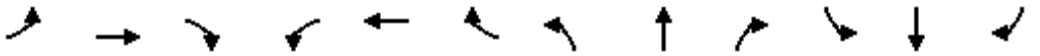
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	4	314	0	0	0	0	701	313	359	556	0
Future Volume (vph)	40	4	314	0	0	0	0	701	313	359	556	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.956								0.950		
Satd. Flow (prot)	0	1603	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.956								0.950		
Satd. Flow (perm)	0	1603	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	4	349	0	0	0	0	779	348	399	618	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	349	0	0	0	0	779	348	399	618	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	35.0	35.0	35.0					64.0	64.0	36.0	100.0	
Total Split (%)	25.9%	25.9%	25.9%					47.4%	47.4%	26.7%	74.1%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		30.0	30.0					59.0	59.0	31.0	95.0	
Actuated g/C Ratio		0.22	0.22					0.44	0.44	0.23	0.70	
v/c Ratio		0.13	1.10					1.06	0.56	1.09	0.52	
Control Delay		43.4	129.6					88.6	32.6	104.0	1.6	
Queue Delay		0.0	0.0					0.0	0.0	0.0	1.4	
Total Delay		43.4	129.6					88.6	32.6	104.0	3.0	
LOS		D	F					F	C	F	A	
Approach Delay		119.2						71.3			42.6	
Approach LOS		F						E			D	
Queue Length 50th (ft)		34	~347					~751	224	~386	0	
Queue Length 95th (ft)		70	#544					#997	325	m#433	m0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		356	316					732	622	365	1179	
Starvation Cap Reductn		0	0					0	0	0	351	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.13	1.10					1.06	0.56	1.09	0.75	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 134 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 67.3		Intersection LOS: E	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



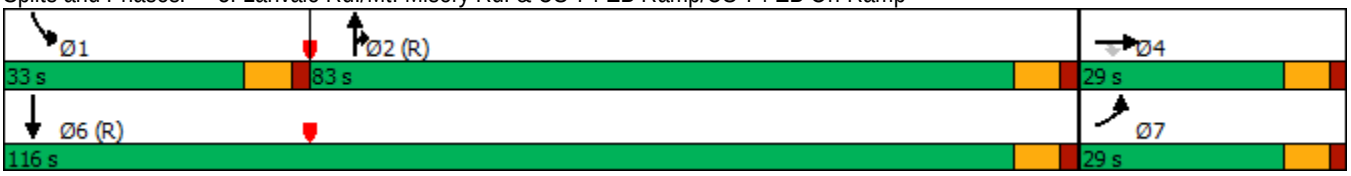


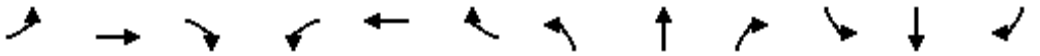
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	4	228	0	0	0	0	858	122	292	705	0
Future Volume (vph)	122	4	228	0	0	0	0	858	122	292	705	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	250		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
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
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	1593	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	136	4	253	0	0	0	0	953	136	324	783	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	253	0	0	0	0	953	136	324	783	0
Turn Type	Prot	NA	Perm					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			4									
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	29.0	29.0	29.0					83.0	83.0	33.0	116.0	
Total Split (%)	20.0%	20.0%	20.0%					57.2%	57.2%	22.8%	80.0%	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None					C-Max	C-Max	None	C-Max	
Act Effct Green (s)		24.0	24.0					78.0	78.0	28.0	111.0	
Actuated g/C Ratio		0.17	0.17					0.54	0.54	0.19	0.77	
v/c Ratio		0.53	1.08					1.06	0.18	1.06	0.61	
Control Delay		63.5	136.0					79.4	17.9	94.6	12.5	
Queue Delay		0.0	0.0					0.0	0.0	0.0	1.4	
Total Delay		63.5	136.0					79.4	17.9	94.6	14.0	
LOS		E	F					E	B	F	B	
Approach Delay		110.2						71.7			37.6	
Approach LOS		F						E			D	
Queue Length 50th (ft)		123	~265					~984	64	~342	320	
Queue Length 95th (ft)		196	#445					#1242	104	m#328	m303	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	250		
Base Capacity (vph)		264	235					901	766	307	1283	
Starvation Cap Reductn		0	0					0	0	0	300	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.53	1.08					1.06	0.18	1.06	0.80	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 145			
Actuated Cycle Length: 145			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 62.9		Intersection LOS: E	
Intersection Capacity Utilization 88.4%		ICU Level of Service E	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



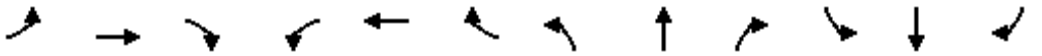


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	4	314	0	0	0	0	701	313	359	556	0
Future Volume (vph)	40	4	314	0	0	0	0	701	313	359	556	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	150		0
Storage Lanes	0		1	0		0	0		1	2		0
Taper Length (ft)	100			100			100			200		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850						0.850			
Flt Protected		0.956								0.950		
Satd. Flow (prot)	0	1603	1425	0	0	0	0	1676	1425	3090	1676	0
Flt Permitted		0.956								0.950		
Satd. Flow (perm)	0	1603	1425	0	0	0	0	1676	1425	3090	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	4	349	0	0	0	0	779	348	399	618	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	349	0	0	0	0	779	348	399	618	0
Turn Type	Prot	NA	Free					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			Free									
Detector Phase	7	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	14.0	14.0						56.0	56.0	20.0	76.0	
Total Split (%)	15.6%	15.6%						62.2%	62.2%	22.2%	84.4%	
Yellow Time (s)	5.0	5.0						5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0						2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0						-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		5.4	90.0					56.3	56.3	15.3	78.6	
Actuated g/C Ratio		0.06	1.00					0.63	0.63	0.17	0.87	
v/c Ratio		0.50	0.24					0.74	0.39	0.76	0.42	
Control Delay		55.8	0.4					19.4	11.3	44.4	1.5	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		55.8	0.4					19.4	11.3	44.4	1.5	
LOS		E	A					B	B	D	A	
Approach Delay		7.1						16.9			18.3	
Approach LOS		A						B			B	
Queue Length 50th (ft)		26	0					334	106	96	0	
Queue Length 95th (ft)		60	0					#534	170	m115	m0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	150		
Base Capacity (vph)		96	1425					1047	891	529	1464	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.50	0.24					0.74	0.39	0.75	0.42	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 22 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 80.6%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	4	228	0	0	0	0	858	122	292	705	0
Future Volume (vph)	122	4	228	0	0	0	0	858	122	292	705	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		50	150		0
Storage Lanes	0		1	0		0	0		1	2		0
Taper Length (ft)	100			100			100			200		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850						0.850			
Flt Protected		0.954								0.950		
Satd. Flow (prot)	0	1599	1425	0	0	0	0	1676	1425	3090	1676	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1599	1425	0	0	0	0	1676	1425	3090	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1421			1056			297			669	
Travel Time (s)		27.7			20.6			4.5			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	136	4	253	0	0	0	0	953	136	324	783	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	253	0	0	0	0	953	136	324	783	0
Turn Type	Prot	NA	Free					NA	Prot	Prot	NA	
Protected Phases	7	4						2	2	1	6	
Permitted Phases			Free									
Detector Phase	7	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0						19.0	19.0	14.0	19.0	
Total Split (s)	15.0	15.0						60.0	60.0	15.0	75.0	
Total Split (%)	16.7%	16.7%						66.7%	66.7%	16.7%	83.3%	
Yellow Time (s)	5.0	5.0						5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0						2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0						-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0						5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Act Effct Green (s)		10.0	90.0					55.0	55.0	10.0	70.0	
Actuated g/C Ratio		0.11	1.00					0.61	0.61	0.11	0.78	
v/c Ratio		0.79	0.18					0.93	0.16	0.94	0.60	
Control Delay		70.3	0.3					33.2	8.1	54.0	10.1	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.3	
Total Delay		70.3	0.3					33.2	8.1	54.0	10.4	
LOS		E	A					C	A	D	B	
Approach Delay		25.2						30.1			23.1	
Approach LOS		C						C			C	
Queue Length 50th (ft)		79	0					446	30	95	253	
Queue Length 95th (ft)		#177	0					#759	56	m#114	m355	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1341			976			217			589	
Turn Bay Length (ft)									50	150		
Base Capacity (vph)		177	1425					1024	870	343	1303	
Starvation Cap Reductn		0	0					0	0	0	138	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.79	0.18					0.93	0.16	0.94	0.67	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 26.4		Intersection LOS: C	
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

APPENDIX K

SYNCHRO ANALYSIS REPORTS

HOOPER ROAD
AND
SITE DRIVE

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	4	88	215	4	4	29	12	72	4	15	4
Future Vol, veh/h	4	4	88	215	4	4	29	12	72	4	15	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	175	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	98	239	4	4	32	13	80	4	17	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	148	184	19	155	106	13	21	0	0	93	0	0
Stage 1	27	27	-	77	77	-	-	-	-	-	-	-
Stage 2	121	157	-	78	29	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	820	710	1059	812	784	1067	1595	-	-	1501	-	-
Stage 1	990	873	-	932	831	-	-	-	-	-	-	-
Stage 2	883	768	-	931	871	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	798	693	1059	720	765	1067	1595	-	-	1501	-	-
Mov Cap-2 Maneuver	798	693	-	720	765	-	-	-	-	-	-	-
Stage 1	969	870	-	912	814	-	-	-	-	-	-	-
Stage 2	856	752	-	838	868	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	12.5	1.9	1.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1595	-	-	1023	725	1501	-	-
HCM Lane V/C Ratio	0.02	-	-	0.104	0.342	0.003	-	-
HCM Control Delay (s)	7.3	0	-	8.9	12.5	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	1.5	0	-	-

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	4	58	148	4	4	100	11	253	4	14	4
Future Vol, veh/h	4	4	58	148	4	4	100	11	253	4	14	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	175	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	64	164	4	4	111	12	281	4	16	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	405	541	18	294	262	12	20	0	0	293	0	0
Stage 1	26	26	-	234	234	-	-	-	-	-	-	-
Stage 2	379	515	-	60	28	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	556	448	1061	658	643	1069	1596	-	-	1269	-	-
Stage 1	992	874	-	769	711	-	-	-	-	-	-	-
Stage 2	643	535	-	951	872	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	513	408	1061	571	586	1069	1596	-	-	1269	-	-
Mov Cap-2 Maneuver	513	408	-	571	586	-	-	-	-	-	-	-
Stage 1	907	871	-	703	650	-	-	-	-	-	-	-
Stage 2	581	489	-	886	869	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	13.9	2	1.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1596	-	-	913	578	1269	-	-
HCM Lane V/C Ratio	0.07	-	-	0.08	0.3	0.004	-	-
HCM Control Delay (s)	7.4	0	-	9.3	13.9	7.8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	1.3	0	-	-

Intersection	
Int Delay, s/veh	19.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	4	326	215	4	4	109	12	72	4	15	4
Future Vol, veh/h	4	4	326	215	4	4	109	12	72	4	15	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	362	239	4	4	121	13	80	4	17	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	326	362	19	465	284	13	21	0	0	93	0	0
Stage 1	27	27	-	255	255	-	-	-	-	-	-	-
Stage 2	299	335	-	210	29	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	627	565	1059	508	625	1067	1595	-	-	1501	-	-
Stage 1	990	873	-	749	696	-	-	-	-	-	-	-
Stage 2	710	643	-	792	871	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	581	518	1059	311	573	1067	1595	-	-	1501	-	-
Mov Cap-2 Maneuver	581	518	-	311	573	-	-	-	-	-	-	-
Stage 1	910	870	-	688	640	-	-	-	-	-	-	-
Stage 2	645	591	-	517	868	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	46.9	4.2	1.3
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1595	-	-	1036	318	1501	-	-
HCM Lane V/C Ratio	0.076	-	-	0.358	0.779	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.4	46.9	7.4	0	-
HCM Lane LOS	A	A	-	B	E	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.6	6.2	0	-	-

Intersection	
Int Delay, s/veh	50.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	4	228	148	4	4	388	11	253	4	14	4
Future Vol, veh/h	4	4	228	148	4	4	388	11	253	4	14	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	253	164	4	4	431	12	281	4	16	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1045	1181	18	1029	902	12	20	0	0	293	0	0
Stage 1	26	26	-	874	874	-	-	-	-	-	-	-
Stage 2	1019	1155	-	155	28	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	207	190	1061	212	277	1069	1596	-	-	1269	-	-
Stage 1	992	874	-	344	367	-	-	-	-	-	-	-
Stage 2	286	271	-	847	872	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	150	126	1061	~ 116	184	1069	1596	-	-	1269	-	-
Mov Cap-2 Maneuver	150	126	-	~ 116	184	-	-	-	-	-	-	-
Stage 1	660	871	-	229	244	-	-	-	-	-	-	-
Stage 2	186	180	-	640	869	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	$ 306.8	4.8	1.4
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1596	-	-	864	120	1269	-	-
HCM Lane V/C Ratio	0.27	-	-	0.303	1.444	0.004	-	-
HCM Control Delay (s)	8.1	0	-	11	$ 306.8	7.8	0	-
HCM Lane LOS	A	A	-	B	F	A	A	-
HCM 95th %tile Q(veh)	1.1	-	-	1.3	12.1	0	-	-

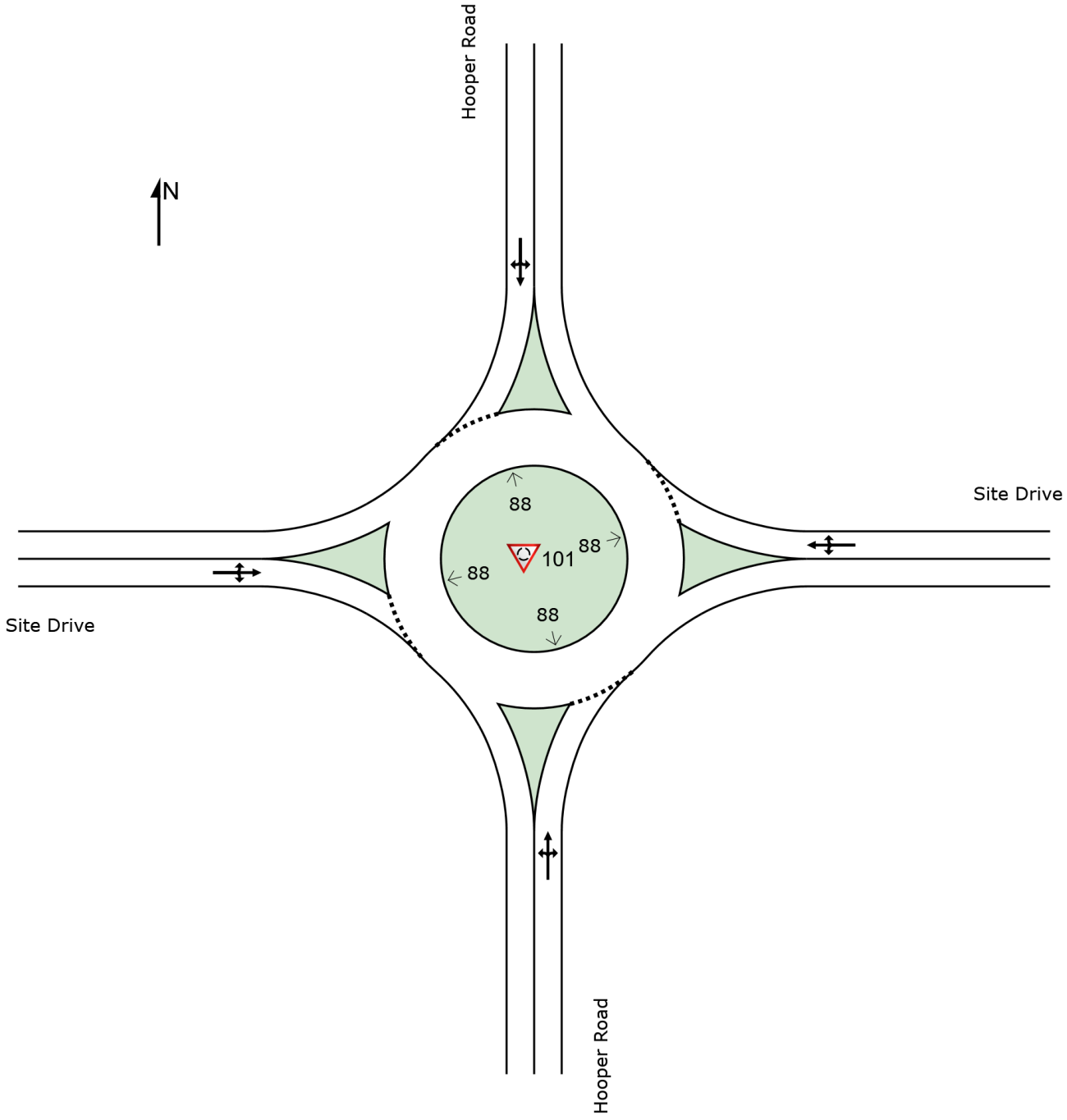
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

SITE LAYOUT

Site: 101 [2030 Build AM_Mitigated (Site Folder: Hopper Road & Site Drive)]

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates by movement class (vehicles per 60 mins)

Site: 101 [2030 Build AM_Mitigated (Site Folder: Hopper Road & Site Drive)]

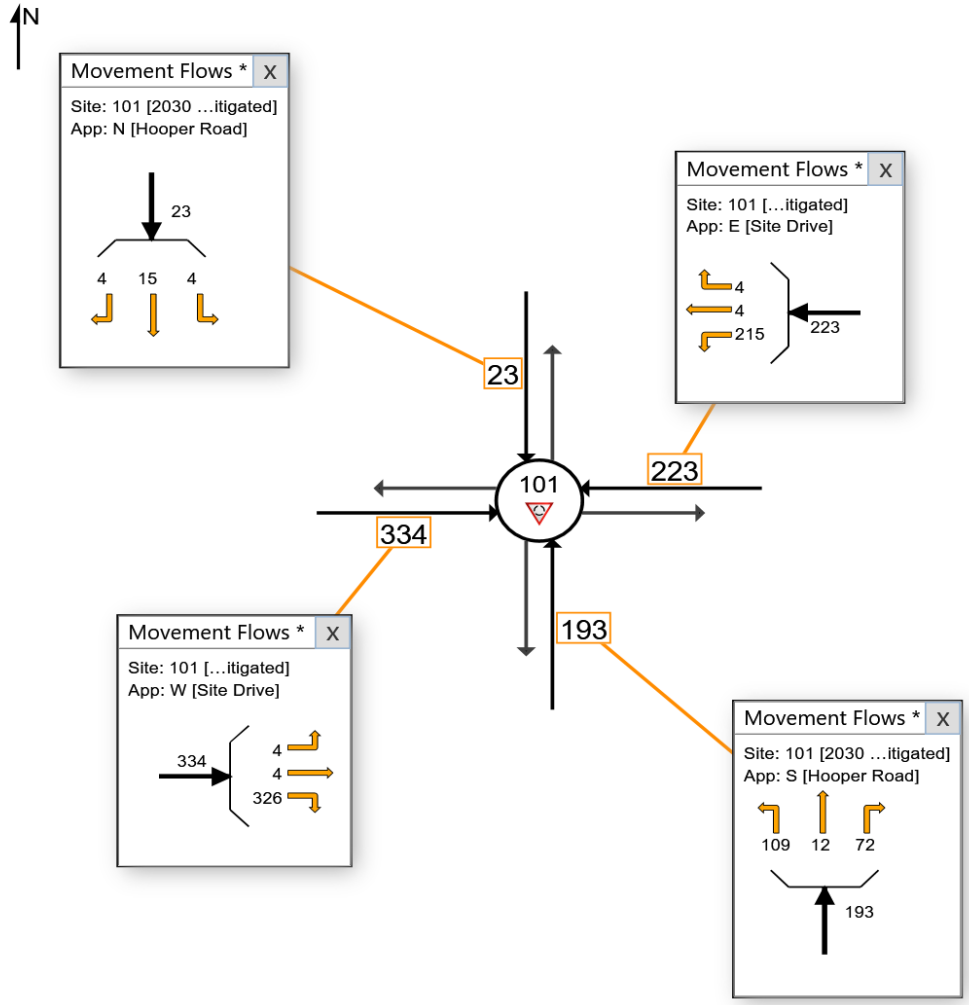
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



MOVEMENT SUMMARY

Site: 101 [2030 Build AM_Mitigated (Site Folder: Hopper Road & Site Drive)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hooper Road															
3	L2	All MCs	118	2.0	118	2.0	0.157	3.7	LOS A	0.8	19.4	0.08	0.02	0.08	32.3
8	T1	All MCs	13	2.0	13	2.0	0.157	3.7	LOS A	0.8	19.4	0.08	0.02	0.08	32.9
18	R2	All MCs	78	2.0	78	2.0	0.157	3.7	LOS A	0.8	19.4	0.08	0.02	0.08	32.6
Approach			210	2.0	210	2.0	0.157	3.7	LOS A	0.8	19.4	0.08	0.02	0.08	32.5
East: Site Drive															
1	L2	All MCs	234	2.0	234	2.0	0.207	4.8	LOS A	1.0	25.8	0.32	0.16	0.32	30.8
6	T1	All MCs	4	2.0	4	2.0	0.207	4.8	LOS A	1.0	25.8	0.32	0.16	0.32	26.0
16	R2	All MCs	4	2.0	4	2.0	0.207	4.8	LOS A	1.0	25.8	0.32	0.16	0.32	26.0
Approach			243	2.0	243	2.0	0.207	4.8	LOS A	1.0	25.8	0.32	0.16	0.32	30.6
North: Hooper Road															
7	L2	All MCs	4	2.0	4	2.0	0.027	4.1	LOS A	0.1	2.7	0.44	0.30	0.44	31.2
4	T1	All MCs	16	2.0	16	2.0	0.027	4.1	LOS A	0.1	2.7	0.44	0.30	0.44	33.4
14	R2	All MCs	4	2.0	4	2.0	0.027	4.1	LOS A	0.1	2.7	0.44	0.30	0.44	31.6
Approach			25	2.0	25	2.0	0.027	4.1	LOS A	0.1	2.7	0.44	0.30	0.44	32.6
West: Site Drive															
5	L2	All MCs	4	2.0	4	2.0	0.351	7.0	LOS A	1.9	48.1	0.50	0.32	0.50	30.6
2	T1	All MCs	4	2.0	4	2.0	0.351	7.0	LOS A	1.9	48.1	0.50	0.32	0.50	31.1
12	R2	All MCs	354	2.0	354	2.0	0.351	7.0	LOS A	1.9	48.1	0.50	0.32	0.50	32.4
Approach			363	2.0	363	2.0	0.351	7.0	LOS A	1.9	48.1	0.50	0.32	0.50	32.3
All Vehicles			841	2.0	841	2.0	0.351	5.5	LOS A	1.9	48.1	0.34	0.20	0.34	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates by movement class (vehicles per 60 mins)

Site: 101 [2030 Build PM_Mitigated (Site Folder: Hopper Road & Site Drive)]

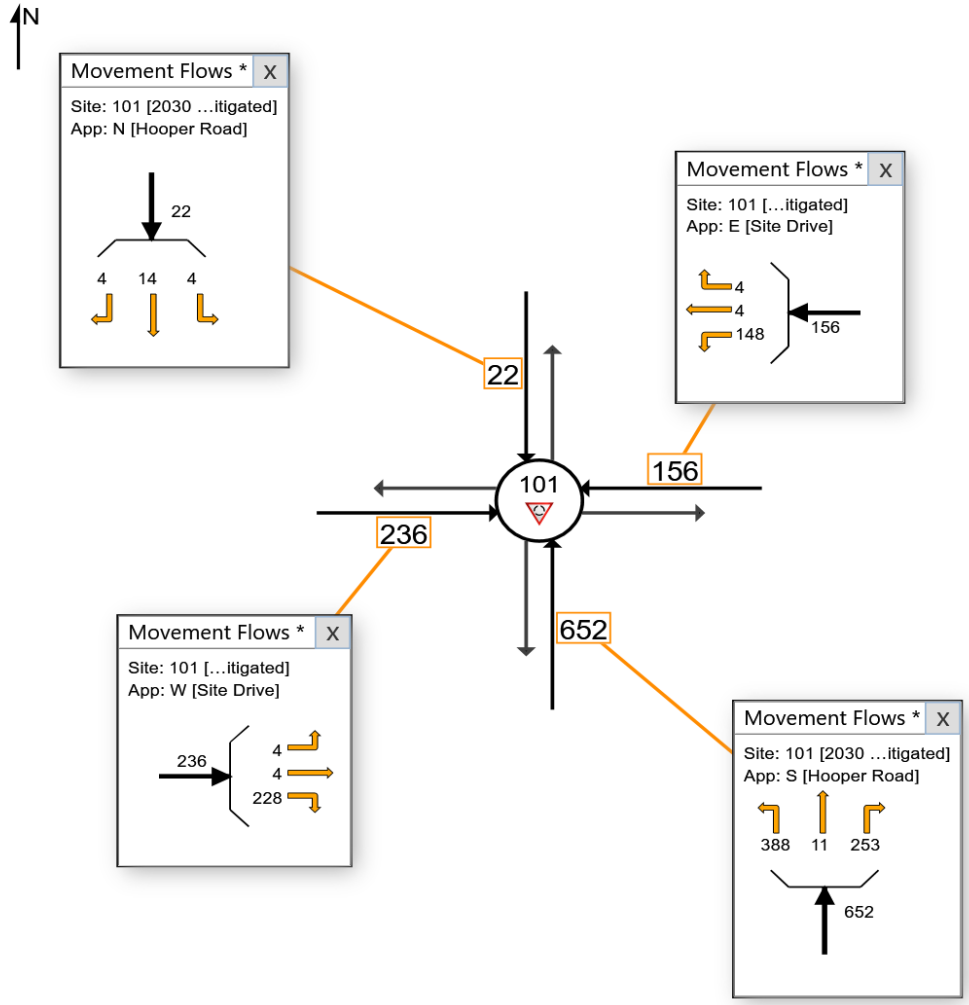
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



MOVEMENT SUMMARY

Site: 101 [2030 Build PM_Mitigated (Site Folder: Hopper Road & Site Drive)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hooper Road															
3	L2	All MCs	422	2.0	422	2.0	0.530	6.7	LOS A	4.6	116.2	0.14	0.03	0.14	30.9
8	T1	All MCs	12	2.0	12	2.0	0.530	6.7	LOS A	4.6	116.2	0.14	0.03	0.14	31.5
18	R2	All MCs	275	2.0	275	2.0	0.530	6.7	LOS A	4.6	116.2	0.14	0.03	0.14	31.3
Approach			709	2.0	709	2.0	0.530	6.7	LOS A	4.6	116.2	0.14	0.03	0.14	31.1
East: Site Drive															
1	L2	All MCs	161	2.0	161	2.0	0.200	6.3	LOS A	0.9	22.1	0.54	0.42	0.54	30.1
6	T1	All MCs	4	2.0	4	2.0	0.200	6.3	LOS A	0.9	22.1	0.54	0.42	0.54	25.6
16	R2	All MCs	4	2.0	4	2.0	0.200	6.3	LOS A	0.9	22.1	0.54	0.42	0.54	25.5
Approach			170	2.0	170	2.0	0.200	6.3	LOS A	0.9	22.1	0.54	0.42	0.54	29.9
North: Hooper Road															
7	L2	All MCs	4	2.0	4	2.0	0.033	5.3	LOS A	0.1	3.2	0.55	0.44	0.55	30.7
4	T1	All MCs	15	2.0	15	2.0	0.033	5.3	LOS A	0.1	3.2	0.55	0.44	0.55	32.8
14	R2	All MCs	4	2.0	4	2.0	0.033	5.3	LOS A	0.1	3.2	0.55	0.44	0.55	31.0
Approach			24	2.0	24	2.0	0.033	5.3	LOS A	0.1	3.2	0.55	0.44	0.55	32.0
West: Site Drive															
5	L2	All MCs	4	2.0	4	2.0	0.229	5.3	LOS A	1.1	28.7	0.38	0.21	0.38	31.3
2	T1	All MCs	4	2.0	4	2.0	0.229	5.3	LOS A	1.1	28.7	0.38	0.21	0.38	31.9
12	R2	All MCs	248	2.0	248	2.0	0.229	5.3	LOS A	1.1	28.7	0.38	0.21	0.38	33.2
Approach			257	2.0	257	2.0	0.229	5.3	LOS A	1.1	28.7	0.38	0.21	0.38	33.2
All Vehicles			1159	2.0	1159	2.0	0.530	6.3	LOS A	4.6	116.2	0.26	0.14	0.26	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates by movement class (vehicles per 60 mins)

Site: 101 [2031 Build AM (Site Folder: Hopper Road & Site Drive)]

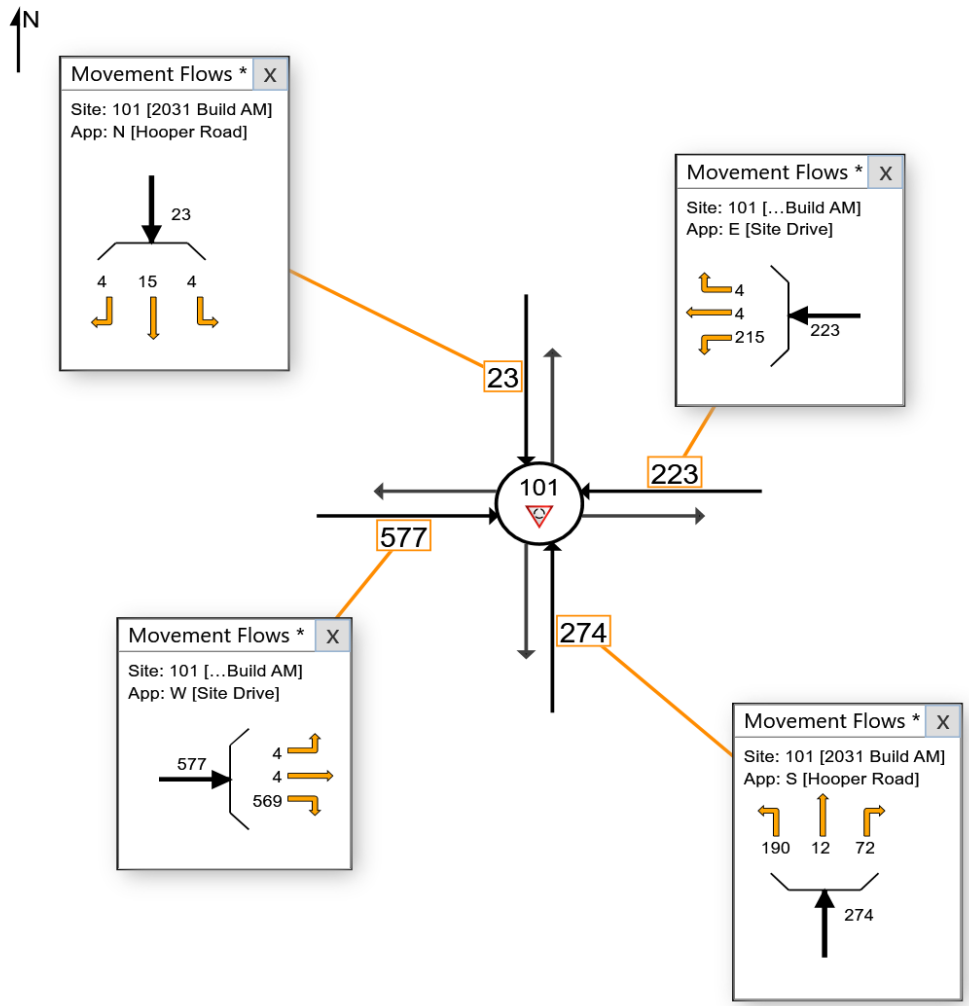
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



MOVEMENT SUMMARY

Site: 101 [2031 Build AM (Site Folder: Hopper Road & Site Drive)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hooper Road															
3	L2	All MCs	207	2.0	207	2.0	0.223	4.2	LOS A	1.2	29.8	0.09	0.02	0.09	31.8
8	T1	All MCs	13	2.0	13	2.0	0.223	4.2	LOS A	1.2	29.8	0.09	0.02	0.09	32.4
18	R2	All MCs	78	2.0	78	2.0	0.223	4.2	LOS A	1.2	29.8	0.09	0.02	0.09	32.1
Approach			298	2.0	298	2.0	0.223	4.2	LOS A	1.2	29.8	0.09	0.02	0.09	31.9
East: Site Drive															
1	L2	All MCs	234	2.0	234	2.0	0.227	5.5	LOS A	1.1	27.9	0.42	0.25	0.42	30.5
6	T1	All MCs	4	2.0	4	2.0	0.227	5.5	LOS A	1.1	27.9	0.42	0.25	0.42	25.9
16	R2	All MCs	4	2.0	4	2.0	0.227	5.5	LOS A	1.1	27.9	0.42	0.25	0.42	25.8
Approach			243	2.0	243	2.0	0.227	5.5	LOS A	1.1	27.9	0.42	0.25	0.42	30.3
North: Hooper Road															
7	L2	All MCs	4	2.0	4	2.0	0.030	4.5	LOS A	0.1	2.9	0.49	0.36	0.49	31.0
4	T1	All MCs	16	2.0	16	2.0	0.030	4.5	LOS A	0.1	2.9	0.49	0.36	0.49	33.2
14	R2	All MCs	4	2.0	4	2.0	0.030	4.5	LOS A	0.1	2.9	0.49	0.36	0.49	31.4
Approach			25	2.0	25	2.0	0.030	4.5	LOS A	0.1	2.9	0.49	0.36	0.49	32.4
West: Site Drive															
5	L2	All MCs	4	2.0	4	2.0	0.606	11.5	LOS B	6.3	160.2	0.69	0.53	0.88	28.8
2	T1	All MCs	4	2.0	4	2.0	0.606	11.5	LOS B	6.3	160.2	0.69	0.53	0.88	29.3
12	R2	All MCs	618	2.0	618	2.0	0.606	11.5	LOS B	6.3	160.2	0.69	0.53	0.88	30.4
Approach			627	2.0	627	2.0	0.606	11.5	LOS B	6.3	160.2	0.69	0.53	0.88	30.4
All Vehicles			1193	2.0	1193	2.0	0.606	8.3	LOS A	6.3	160.2	0.48	0.34	0.58	30.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates by movement class (vehicles per 60 mins)

Site: 101 [2031 Build PM (Site Folder: Hopper Road & Site Drive)]

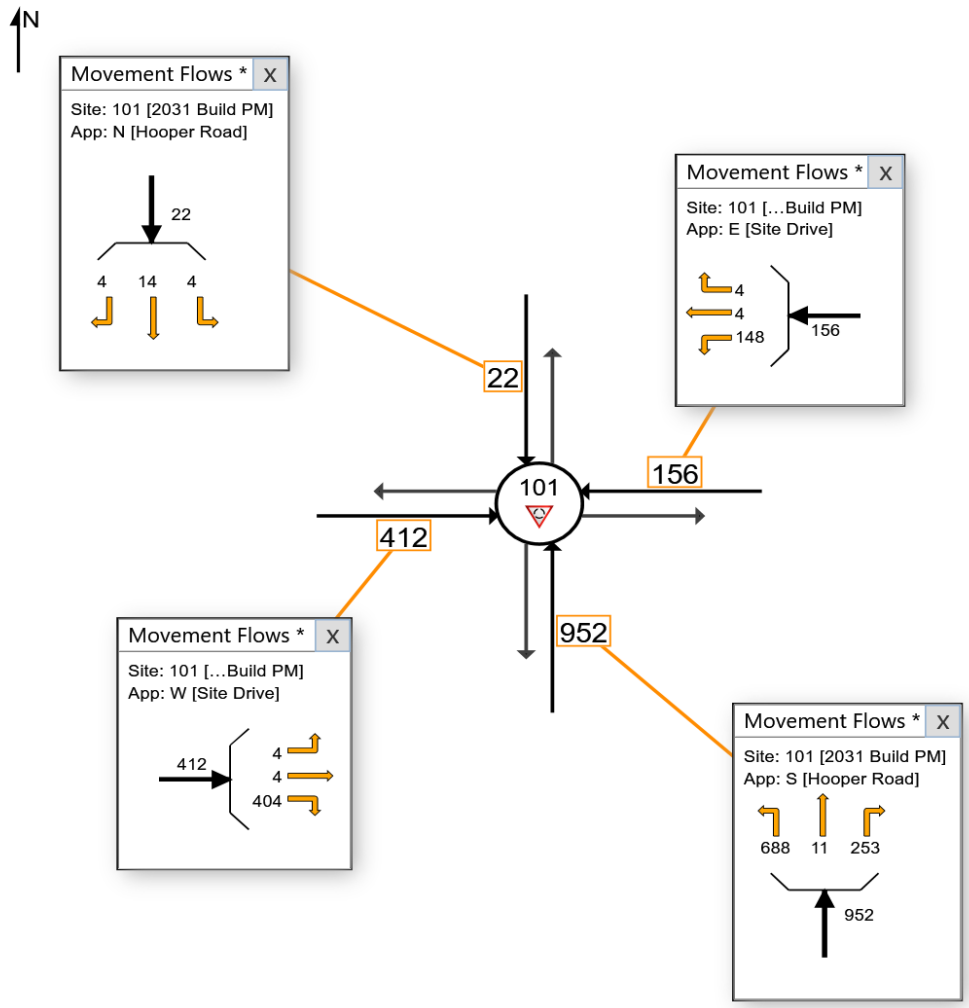
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



MOVEMENT SUMMARY

Site: 101 [2031 Build PM (Site Folder: Hopper Road & Site Drive)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Hooper Road & Site Drive
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hooper Road															
3	L2	All MCs	748	2.0	748	2.0	0.774	9.3	LOS A	13.5	342.5	0.29	0.06	0.29	29.6
8	T1	All MCs	12	2.0	12	2.0	0.774	9.3	LOS A	13.5	342.5	0.29	0.06	0.29	30.2
18	R2	All MCs	275	2.0	275	2.0	0.774	9.3	LOS A	13.5	342.5	0.29	0.06	0.29	30.0
Approach			1035	2.0	1035	2.0	0.774	9.3	LOS A	13.5	342.5	0.29	0.06	0.29	29.7
East: Site Drive															
1	L2	All MCs	161	2.0	161	2.0	0.282	9.7	LOS A	1.2	29.5	0.68	0.63	0.68	28.8
6	T1	All MCs	4	2.0	4	2.0	0.282	9.7	LOS A	1.2	29.5	0.68	0.63	0.68	24.6
16	R2	All MCs	4	2.0	4	2.0	0.282	9.7	LOS A	1.2	29.5	0.68	0.63	0.68	24.6
Approach			170	2.0	170	2.0	0.282	9.7	LOS A	1.2	29.5	0.68	0.63	0.68	28.6
North: Hooper Road															
7	L2	All MCs	4	2.0	4	2.0	0.047	7.6	LOS A	0.2	4.2	0.64	0.62	0.64	29.7
4	T1	All MCs	15	2.0	15	2.0	0.047	7.6	LOS A	0.2	4.2	0.64	0.62	0.64	31.6
14	R2	All MCs	4	2.0	4	2.0	0.047	7.6	LOS A	0.2	4.2	0.64	0.62	0.64	30.0
Approach			24	2.0	24	2.0	0.047	7.6	LOS A	0.2	4.2	0.64	0.62	0.64	30.9
West: Site Drive															
5	L2	All MCs	4	2.0	4	2.0	0.400	7.2	LOS A	2.4	60.8	0.46	0.26	0.46	30.5
2	T1	All MCs	4	2.0	4	2.0	0.400	7.2	LOS A	2.4	60.8	0.46	0.26	0.46	31.1
12	R2	All MCs	439	2.0	439	2.0	0.400	7.2	LOS A	2.4	60.8	0.46	0.26	0.46	32.3
Approach			448	2.0	448	2.0	0.400	7.2	LOS A	2.4	60.8	0.46	0.26	0.46	32.3
All Vehicles			1677	2.0	1677	2.0	0.774	8.8	LOS A	13.5	342.5	0.38	0.18	0.38	30.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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APPENDIX L

SIMTRAFFIC QUEUING REPORTS

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	5	36
Average Queue (ft)	0	15
95th Queue (ft)	4	35
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	56	82	36
Average Queue (ft)	21	35	8
95th Queue (ft)	45	64	29
Link Distance (ft)		1290	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		400
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	65	101	177	176	108
Average Queue (ft)	26	34	82	73	31
95th Queue (ft)	54	80	153	131	81
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	100	135	194	117	238	74
Average Queue (ft)	31	63	109	43	109	21
95th Queue (ft)	70	115	167	91	196	55
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	0	0	0	0	3	
Queuing Penalty (veh)	0	0	1	0	2	

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	SB
Directions Served	LT	R	T	R	L
Maximum Queue (ft)	65	130	4	43	149
Average Queue (ft)	22	59	0	9	60
95th Queue (ft)	51	101	3	31	110
Link Distance (ft)	1386	1386	235		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				50	250
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Network Summary

Network wide Queuing Penalty: 4

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	58
Average Queue (ft)	1	21
95th Queue (ft)	13	42
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	68	113	28
Average Queue (ft)	29	51	4
95th Queue (ft)	53	89	20
Link Distance (ft)		1290	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		400
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	93	171	115	110	98
Average Queue (ft)	38	65	38	48	40
95th Queue (ft)	74	136	85	91	87
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	219	220	178	175	391	250
Average Queue (ft)	80	117	98	70	169	73
95th Queue (ft)	160	190	156	135	309	192
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	1	3	1	0	13	0
Queuing Penalty (veh)	2	5	2	0	18	0

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	SB
Directions Served	LT	R	R	L
Maximum Queue (ft)	226	272	22	88
Average Queue (ft)	137	169	2	41
95th Queue (ft)	699	762	13	73
Link Distance (ft)	1386	1386		
Upstream Blk Time (%)	6	7		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)			50	250
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Network Summary

Network wide Queuing Penalty: 28

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	5	52
Average Queue (ft)	0	16
95th Queue (ft)	4	39
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	75	184	41	95	219	33
Average Queue (ft)	29	89	12	24	92	5
95th Queue (ft)	65	159	36	68	175	23
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		0			0	
Queuing Penalty (veh)		0			0	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	104	115	211	197	139
Average Queue (ft)	40	39	83	98	51
95th Queue (ft)	85	94	180	165	120
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	213	206	245	292	376	231
Average Queue (ft)	52	98	134	64	168	36
95th Queue (ft)	135	167	218	198	304	130
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	1	2	5	0	11	
Queuing Penalty (veh)	1	1	16	1	8	

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	120	494	332	150	1636	323	411
Average Queue (ft)	23	282	303	139	836	182	102
95th Queue (ft)	82	517	347	182	1978	307	317
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			45				0
Queuing Penalty (veh)			0				1
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			52	42		6	1
Queuing Penalty (veh)			159	259		21	2

Network Summary

Network wide Queuing Penalty: 470

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	8	34
Average Queue (ft)	2	21
95th Queue (ft)	12	42
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	92	207	22	149	130	11
Average Queue (ft)	46	144	8	92	85	4
95th Queue (ft)	120	222	27	167	156	19
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		2				
Queuing Penalty (veh)		1				

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	106	162	63	90	103
Average Queue (ft)	64	87	32	53	52
95th Queue (ft)	116	175	71	102	122
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	367	240	203	235	392	233
Average Queue (ft)	222	203	146	145	279	124
95th Queue (ft)	473	282	240	353	438	288
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	4	29	9	2	33	
Queuing Penalty (veh)	15	50	38	4	49	

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	83	190	297	141	74	188	142
Average Queue (ft)	48	146	221	86	21	136	52
95th Queue (ft)	103	238	343	180	99	232	201
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			10				
Queuing Penalty (veh)			0				
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			40	13		2	1
Queuing Penalty (veh)			48	78		12	3

Network Summary

Network wide Queuing Penalty: 298

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	13	42
Average Queue (ft)	0	18
95th Queue (ft)	7	37
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	86	179	48	78	196	42
Average Queue (ft)	30	89	12	23	90	7
95th Queue (ft)	67	157	37	61	162	28
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		0			0	
Queuing Penalty (veh)		0			0	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	108	131	234	199	159
Average Queue (ft)	43	40	86	101	52
95th Queue (ft)	89	100	189	164	125
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	185	186	254	327	461	250
Average Queue (ft)	48	96	134	69	200	43
95th Queue (ft)	121	162	227	213	396	161
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	1	2	7	0	15	
Queuing Penalty (veh)	1	1	22	1	11	

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	66	449	337	150	2716	339	483
Average Queue (ft)	20	258	308	136	1593	214	151
95th Queue (ft)	52	432	328	188	3272	357	472
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			50				1
Queuing Penalty (veh)			0				5
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			54	40		19	2
Queuing Penalty (veh)			168	251		64	5

Network Summary

Network wide Queuing Penalty: 529

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	24	52
Average Queue (ft)	1	21
95th Queue (ft)	9	43
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	130	283	45	246	198	29
Average Queue (ft)	40	149	12	146	97	2
95th Queue (ft)	93	238	36	240	174	15
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		3			0	
Queuing Penalty (veh)		2			0	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	148	240	115	124	115
Average Queue (ft)	69	96	41	58	40
95th Queue (ft)	123	196	95	105	93
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)		0			
Queuing Penalty (veh)		0			

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	549	249	261	403	598	250
Average Queue (ft)	242	200	149	134	297	129
95th Queue (ft)	564	279	243	311	535	291
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				1		
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	6	30	9	1	33	0
Queuing Penalty (veh)	22	53	39	2	49	2

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	123	293	324	150	243	259	291
Average Queue (ft)	49	149	244	88	42	133	50
95th Queue (ft)	98	250	358	186	182	222	171
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			14				0
Queuing Penalty (veh)			0				0
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			42	9		0	0
Queuing Penalty (veh)			51	55		2	1

Network Summary

Network wide Queuing Penalty: 280

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	8	47
Average Queue (ft)	0	16
95th Queue (ft)	5	38
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	81	184	49	93	234	36
Average Queue (ft)	28	91	15	24	98	6
95th Queue (ft)	64	161	41	66	184	25
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		0			0	
Queuing Penalty (veh)		0			0	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	104	142	231	198	171
Average Queue (ft)	46	46	89	102	58
95th Queue (ft)	93	113	191	175	135
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	213	201	252	313	434	250
Average Queue (ft)	67	111	133	65	205	49
95th Queue (ft)	169	184	220	199	406	173
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	2	4	6	0	16	0
Queuing Penalty (veh)	4	2	21	1	12	0

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	169	573	337	150	3078	335	462
Average Queue (ft)	31	342	309	141	1769	217	151
95th Queue (ft)	159	608	324	184	3539	355	465
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			51				1
Queuing Penalty (veh)			0				7
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			55	43		17	2
Queuing Penalty (veh)			171	270		62	7

Network Summary

Network wide Queuing Penalty: 557

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	18	52
Average Queue (ft)	1	21
95th Queue (ft)	8	42
Link Distance (ft)	1617	2243
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	94	270	50	274	236	31
Average Queue (ft)	39	150	11	156	105	3
95th Queue (ft)	82	237	36	245	191	18
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		3			1	
Queuing Penalty (veh)		2			0	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	141	245	115	142	119
Average Queue (ft)	72	115	42	62	45
95th Queue (ft)	129	211	93	114	99
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)		0			
Queuing Penalty (veh)		0			

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	548	250	261	464	726	250
Average Queue (ft)	262	210	151	152	380	141
95th Queue (ft)	566	286	247	340	709	304
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				1		
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	6	37	10	2	41	1
Queuing Penalty (veh)	24	65	49	4	61	3

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	168	317	324	150	304	335	528
Average Queue (ft)	53	166	252	95	56	161	72
95th Queue (ft)	121	294	360	193	211	277	308
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			17				0
Queuing Penalty (veh)			0				2
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			44	12		4	2
Queuing Penalty (veh)			54	72		24	5

Network Summary

Network wide Queuing Penalty: 366

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	23	177
Average Queue (ft)	2	76
95th Queue (ft)	15	138
Link Distance (ft)		2226
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	120	188	52	71	261	37
Average Queue (ft)	52	91	15	15	130	7
95th Queue (ft)	103	159	42	49	224	28
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		0			1	
Queuing Penalty (veh)		0			1	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	112	165	248	260	166
Average Queue (ft)	45	60	108	149	68
95th Queue (ft)	93	131	211	233	150
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	205	200	262	326	579	250
Average Queue (ft)	64	106	133	70	285	73
95th Queue (ft)	162	181	227	200	629	226
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	2	4	6	0	23	0
Queuing Penalty (veh)	3	2	21	1	20	0

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	113	535	335	150	2895	345	597
Average Queue (ft)	26	309	309	139	1602	245	235
95th Queue (ft)	84	522	323	189	3170	395	606
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			51				1
Queuing Penalty (veh)			0				9
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			55	42		29	4
Queuing Penalty (veh)			168	268		119	13

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LT	LTR
Maximum Queue (ft)	60	95	15	8
Average Queue (ft)	30	40	1	0
95th Queue (ft)	49	71	6	5
Link Distance (ft)	1043	1052	2376	1500
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 626

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	58	22	146
Average Queue (ft)	16	2	68
95th Queue (ft)	43	12	122
Link Distance (ft)			2226
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50	500	
Storage Blk Time (%)	0		
Queuing Penalty (veh)	1		

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	196	274	38	202	277	30
Average Queue (ft)	97	150	11	82	128	3
95th Queue (ft)	163	242	34	152	226	18
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	0	4			1	
Queuing Penalty (veh)	0	7			1	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	160	299	128	194	193
Average Queue (ft)	79	158	46	99	77
95th Queue (ft)	136	277	100	164	154
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)		0			
Queuing Penalty (veh)		0			

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	667	250	258	319	787	250
Average Queue (ft)	356	226	161	92	439	157
95th Queue (ft)	689	289	250	266	753	322
Link Distance (ft)	1362			626	1225	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	6	44	22	1	40	1
Queuing Penalty (veh)	27	76	120	1	62	4

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	151	307	331	150	394	334	412
Average Queue (ft)	70	175	275	85	109	179	232
95th Queue (ft)	132	290	372	184	351	301	375
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			23				0
Queuing Penalty (veh)			0				0
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			42	14		3	4
Queuing Penalty (veh)			50	91		19	10

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	LT	R	LTR
Maximum Queue (ft)	50	77	32	4	23
Average Queue (ft)	25	34	2	0	1
95th Queue (ft)	42	57	16	3	11
Link Distance (ft)	1043	1052	2376		1500
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				175	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 468

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	122	213	65	96	259	65
Average Queue (ft)	50	98	16	15	133	7
95th Queue (ft)	100	171	47	57	234	41
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)		1			1	
Queuing Penalty (veh)		0			1	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	117	178	236	309	214
Average Queue (ft)	47	64	107	155	68
95th Queue (ft)	96	137	206	253	162
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)			0	0	0
Queuing Penalty (veh)			0	0	0

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	NB	NB	SB	SB
Directions Served	LT	L	T	T	R
Maximum Queue (ft)	101	266	368	387	249
Average Queue (ft)	44	161	100	172	43
95th Queue (ft)	86	261	299	323	143
Link Distance (ft)	1362		626	949	
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)		175			150
Storage Blk Time (%)	0	11	0	11	0
Queuing Penalty (veh)	0	42	1	10	0

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	B22	SB	SB
Directions Served	LT	R	T	R	T	T	L	T
Maximum Queue (ft)	88	8	328	150	340	41	313	370
Average Queue (ft)	29	0	225	120	56	1	172	47
95th Queue (ft)	66	6	363	192	252	41	282	220
Link Distance (ft)	1386	1386	235		647	9475		626
Upstream Blk Time (%)			10		0			0
Queuing Penalty (veh)			0		0			0
Storage Bay Dist (ft)				50			250	
Storage Blk Time (%)			32	22			3	1
Queuing Penalty (veh)			98	139			14	2

Intersection: 9: Bend

Movement	SB
Directions Served	T
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	2
Link Distance (ft)	235
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 308

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	183	271	34	186	241	32
Average Queue (ft)	99	141	9	89	122	4
95th Queue (ft)	163	235	31	156	202	19
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	0	3			1	
Queuing Penalty (veh)	0	6			0	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	B7	SB	SB
Directions Served	LTR	T	R	T	L	T
Maximum Queue (ft)	158	342	163	12	188	171
Average Queue (ft)	73	169	53	0	97	67
95th Queue (ft)	133	300	124	7	158	142
Link Distance (ft)	1026	2080		949		1042
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			300		400	
Storage Blk Time (%)		1				
Queuing Penalty (veh)		1				

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	227	75	222	249	468	250
Average Queue (ft)	110	6	126	96	215	91
95th Queue (ft)	193	67	198	207	382	229
Link Distance (ft)	1362			626	949	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	4		3	1	14	0
Queuing Penalty (veh)	17		14	1	23	0

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	155	8	322	150	178	253	231
Average Queue (ft)	70	0	210	72	22	129	43
95th Queue (ft)	128	8	347	169	104	215	185
Link Distance (ft)	1386	1386	235		647		626
Upstream Blk Time (%)			8				0
Queuing Penalty (veh)			0				1
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			32	7		0	1
Queuing Penalty (veh)			38	47		1	1

Intersection: 9: Bend

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	5	5
Average Queue (ft)	0	0
95th Queue (ft)	3	5
Link Distance (ft)	235	235
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Bend

Movement	SB	B9	B9
Directions Served	T	T	T
Maximum Queue (ft)	6	5	5
Average Queue (ft)	0	0	0
95th Queue (ft)	6	3	5
Link Distance (ft)	647	235	235
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 152

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	28	4	834
Average Queue (ft)	5	0	416
95th Queue (ft)	22	3	916
Link Distance (ft)			2226
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100	500	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	156	191	59	89	362	194
Average Queue (ft)	69	97	16	9	174	17
95th Queue (ft)	127	166	45	45	311	101
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	0	0			3	
Queuing Penalty (veh)	0	0			4	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	110	200	252	296	175
Average Queue (ft)	50	76	110	174	76
95th Queue (ft)	94	170	216	268	155
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB	B7
Directions Served	LT	R	L	T	T	R	T
Maximum Queue (ft)	249	226	270	344	942	250	56
Average Queue (ft)	72	117	146	103	459	107	4
95th Queue (ft)	189	196	236	237	978	286	55
Link Distance (ft)	1362			626	1225		1201
Upstream Blk Time (%)					2		
Queuing Penalty (veh)					17		
Storage Bay Dist (ft)		150	175			150	
Storage Blk Time (%)	2	6	6	0	35		
Queuing Penalty (veh)	4	4	25	1	35		

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	115	602	338	150	4673	350	629
Average Queue (ft)	31	359	309	132	2588	278	298
95th Queue (ft)	87	624	322	194	5017	402	695
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			53				2
Queuing Penalty (veh)			0				15
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			55	41		38	5
Queuing Penalty (veh)			170	271		179	16

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LT	LTR
Maximum Queue (ft)	123	112	35	7
Average Queue (ft)	58	47	3	0
95th Queue (ft)	97	82	21	5
Link Distance (ft)	1043	1052	2376	1500
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 742

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	EB	WB	WB	SB	B23
Directions Served	L	T	T	R	LR	T
Maximum Queue (ft)	75	19	2	52	1138	10
Average Queue (ft)	33	1	0	11	714	0
95th Queue (ft)	64	18	2	35	1487	10
Link Distance (ft)		1617	1107		2226	471
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					1	
Storage Bay Dist (ft)	100			500		
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	292	380	49	187	334	110
Average Queue (ft)	184	199	10	103	169	6
95th Queue (ft)	284	329	34	176	281	56
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	8	9			4	
Queuing Penalty (veh)	23	27			2	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	186	334	144	269	238
Average Queue (ft)	99	171	45	146	82
95th Queue (ft)	168	299	123	236	175
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)		1			0
Queuing Penalty (veh)		1			0

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB	B7
Directions Served	LT	R	L	T	T	R	T
Maximum Queue (ft)	1092	250	269	499	1184	250	63
Average Queue (ft)	642	243	179	154	793	172	6
95th Queue (ft)	1214	276	266	393	1292	330	52
Link Distance (ft)	1362			626	1225		1201
Upstream Blk Time (%)	5			0	3		
Queuing Penalty (veh)	0			2	21		
Storage Bay Dist (ft)		150	175			150	
Storage Blk Time (%)	6	61	30	3	51	1	
Queuing Penalty (veh)	28	106	191	6	85	8	

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	172	369	333	150	1115	334	440
Average Queue (ft)	78	199	302	83	628	192	254
95th Queue (ft)	146	354	349	187	1605	320	394
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			43				0
Queuing Penalty (veh)			0				2
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			48	12		5	5
Queuing Penalty (veh)			58	92		35	13

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	LT	R	LTR
Maximum Queue (ft)	91	101	54	2	20
Average Queue (ft)	46	46	8	0	1
95th Queue (ft)	76	80	34	2	9
Link Distance (ft)	1043	1052	2376		1500
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				350	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 701

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	R	LR
Maximum Queue (ft)	59	193	110	71	279
Average Queue (ft)	18	93	49	23	152
95th Queue (ft)	47	163	93	57	247
Link Distance (ft)		1617	1107		2226
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			500	
Storage Blk Time (%)		8			
Queuing Penalty (veh)		2			

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	144	191	63	74	359	168
Average Queue (ft)	67	100	19	23	169	15
95th Queue (ft)	125	166	50	61	303	85
Link Distance (ft)		1284		1040	1342	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	0	0			4	
Queuing Penalty (veh)	0	0			4	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB	SB
Directions Served	LTR	T	R	L	L	T
Maximum Queue (ft)	115	176	234	161	189	171
Average Queue (ft)	49	65	96	93	114	75
95th Queue (ft)	96	139	194	144	168	152
Link Distance (ft)	1020	2068				1040
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			300	200	200	
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					1	0

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	NB	NB	SB	SB
Directions Served	LT	L	T	T	R
Maximum Queue (ft)	114	265	308	471	250
Average Queue (ft)	46	156	81	223	64
95th Queue (ft)	92	249	238	402	199
Link Distance (ft)	1362		626	949	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		175			150
Storage Blk Time (%)	0	10	0	15	0
Queuing Penalty (veh)	0	38	1	15	0

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	B22	SB	SB
Directions Served	LT	R	T	R	T	T	L	T
Maximum Queue (ft)	76	17	334	150	459	55	320	351
Average Queue (ft)	31	1	266	127	134	10	187	49
95th Queue (ft)	67	11	378	193	424	111	289	212
Link Distance (ft)	1386	1386	235		647	9475		626
Upstream Blk Time (%)			20		2			0
Queuing Penalty (veh)			0		0			0
Storage Bay Dist (ft)				50			250	
Storage Blk Time (%)			37	26			3	1
Queuing Penalty (veh)			116	175			15	3

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	76	64	46	29
Average Queue (ft)	29	23	7	3
95th Queue (ft)	60	54	31	16
Link Distance (ft)	997	1011	2330	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 372

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	R	LR
Maximum Queue (ft)	93	148	303	234	249
Average Queue (ft)	44	71	153	102	127
95th Queue (ft)	81	128	271	190	214
Link Distance (ft)		1617	1107		2226
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			500	
Storage Blk Time (%)	1	4			
Queuing Penalty (veh)	1	2			

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	297	334	48	219	299	61
Average Queue (ft)	159	166	12	113	148	6
95th Queue (ft)	260	284	36	191	247	39
Link Distance (ft)		1284		1040	1342	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	5	6			2	
Queuing Penalty (veh)	13	19			1	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	B7	B7	SB	SB	SB
Directions Served	LTR	T	R	T		L	L	T
Maximum Queue (ft)	190	414	230	156	6	128	147	202
Average Queue (ft)	88	226	63	7	0	58	82	94
95th Queue (ft)	159	363	169	94	5	107	130	176
Link Distance (ft)	1020	2068		949	949			1040
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			300			200	200	
Storage Blk Time (%)		2						0
Queuing Penalty (veh)		3						0

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	192	29	216	314	535	250
Average Queue (ft)	104	1	120	104	266	120
95th Queue (ft)	171	25	195	248	471	275
Link Distance (ft)	1362			626	949	
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				1		
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	2		3	1	20	0
Queuing Penalty (veh)	11		19	2	33	1

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	NB	NB	B9	B22	SB	SB
Directions Served	LT	T	R	T	T	L	T
Maximum Queue (ft)	155	318	150	394	74	327	473
Average Queue (ft)	80	252	77	91	14	173	85
95th Queue (ft)	141	367	178	372	161	285	310
Link Distance (ft)	1386	235		647	9475		626
Upstream Blk Time (%)		16		2			0
Queuing Penalty (veh)		0		0			2
Storage Bay Dist (ft)			50			250	
Storage Blk Time (%)		37	7			4	2
Queuing Penalty (veh)		45	54			24	6

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	61	111	30
Average Queue (ft)	17	22	48	5
95th Queue (ft)	44	51	94	22
Link Distance (ft)	997	1011	2330	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bend

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	2	6
Average Queue (ft)	0	0
95th Queue (ft)	2	6
Link Distance (ft)	235	235
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Bend

Movement	SB	B9	B9
Directions Served	T	T	T
Maximum Queue (ft)	4	2	6
Average Queue (ft)	0	0	0
95th Queue (ft)	3	2	6
Link Distance (ft)	647	235	235
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 236

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	R	LR
Maximum Queue (ft)	56	256	150	104	496
Average Queue (ft)	22	135	67	33	256
95th Queue (ft)	52	227	125	79	433
Link Distance (ft)		1617	1107		2226
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	150			500	
Storage Blk Time (%)		9			
Queuing Penalty (veh)		2			

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	240	317	67	39	680	273
Average Queue (ft)	113	155	19	4	284	48
95th Queue (ft)	236	312	52	22	578	212
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	1	17			10	
Queuing Penalty (veh)	2	23			13	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	129	268	299	357	153
Average Queue (ft)	57	108	136	217	77
95th Queue (ft)	103	222	257	316	144
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)		0	0	0	
Queuing Penalty (veh)		0	1	0	

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB	B7	B11
Directions Served	LT	R	L	T	T	R	T	T
Maximum Queue (ft)	339	244	271	371	1154	250	340	19
Average Queue (ft)	137	162	175	157	787	128	124	2
95th Queue (ft)	317	253	269	293	1399	313	645	34
Link Distance (ft)	4741			626	1225		1201	2872
Upstream Blk Time (%)					12		1	
Queuing Penalty (veh)					114		6	
Storage Bay Dist (ft)		150	175			150		
Storage Blk Time (%)	9	20	7	2	42			
Queuing Penalty (veh)	17	11	30	7	48			

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	244	786	338	150	5615	350	641
Average Queue (ft)	69	548	308	123	3048	306	327
95th Queue (ft)	282	966	321	198	6029	394	737
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			52				2
Queuing Penalty (veh)			0				20
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			53	38		49	1
Queuing Penalty (veh)			167	268		270	4

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	210	75	54	30
Average Queue (ft)	65	27	16	5
95th Queue (ft)	154	57	47	22
Link Distance (ft)	997	1011	2330	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 1005

Intersection: 1: Mt. Misery Rd/Mt. Misery Rd. & Hooper Rd.

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	R	LR
Maximum Queue (ft)	137	176	412	484	341
Average Queue (ft)	68	83	247	214	185
95th Queue (ft)	120	147	399	391	296
Link Distance (ft)		1617	1107		2226
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	150			500	
Storage Blk Time (%)	0	0		0	
Queuing Penalty (veh)	1	0		1	

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	300	1108	50	276	555	299
Average Queue (ft)	286	722	12	169	286	31
95th Queue (ft)	341	1326	38	261	454	173
Link Distance (ft)		1290		1042	1341	
Upstream Blk Time (%)		6				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	53	35			14	
Queuing Penalty (veh)	151	139			9	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	T	R	L	T
Maximum Queue (ft)	311	634	400	460	738
Average Queue (ft)	174	382	138	300	199
95th Queue (ft)	324	588	383	480	579
Link Distance (ft)	1026	2080			1042
Upstream Blk Time (%)					0
Queuing Penalty (veh)					3
Storage Bay Dist (ft)			300	400	
Storage Blk Time (%)		14		6	2
Queuing Penalty (veh)		23		53	7

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB	B7	B11
Directions Served	LT	R	L	T	T	R	T	T
Maximum Queue (ft)	2753	250	275	637	1327	250	811	131
Average Queue (ft)	1763	249	228	332	1193	145	354	45
95th Queue (ft)	3125	254	309	627	1543	311	1047	381
Link Distance (ft)	4741			626	1225		1201	2872
Upstream Blk Time (%)				5	35		5	
Queuing Penalty (veh)				51	319		50	
Storage Bay Dist (ft)		150	175			150		
Storage Blk Time (%)	5	69	51	15	51	1		
Queuing Penalty (veh)	24	121	387	33	91	6		

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	SB	SB
Directions Served	LT	R	T	R	T	L	T
Maximum Queue (ft)	241	566	335	150	3264	349	550
Average Queue (ft)	119	351	308	62	1877	235	270
95th Queue (ft)	214	622	327	166	3860	347	438
Link Distance (ft)	1386	1386	235		10179		626
Upstream Blk Time (%)			46				1
Queuing Penalty (veh)			0				6
Storage Bay Dist (ft)				50		250	
Storage Blk Time (%)			47	9		10	6
Queuing Penalty (veh)			58	79		70	18

Intersection: 6: Hooper Road & Site Drive

Movement	EB	WB	NB	B25	B23	SB
Directions Served	LTR	LTR	LTR	T	T	LTR
Maximum Queue (ft)	87	73	2054	148	3	30
Average Queue (ft)	27	26	1346	17	0	6
95th Queue (ft)	63	58	2343	118	3	23
Link Distance (ft)	997	1011	2330	471	2226	1454
Upstream Blk Time (%)			9	0		
Queuing Penalty (veh)			90	3		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 1794

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	LT	T	T	R
Maximum Queue (ft)	309	421	111	112	541	250
Average Queue (ft)	126	268	40	50	225	37
95th Queue (ft)	267	472	90	102	494	171
Link Distance (ft)	1290	1290		1045	1335	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			400			200
Storage Blk Time (%)					6	
Queuing Penalty (veh)					8	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	SB	SB	SB
Directions Served	LTR	T	R	L	L	T
Maximum Queue (ft)	118	241	235	191	228	181
Average Queue (ft)	48	93	122	114	130	56
95th Queue (ft)	95	188	212	165	190	129
Link Distance (ft)	1020	2068				1045
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			300	200	200	
Storage Blk Time (%)		0	0	0	0	0
Queuing Penalty (veh)		0	0	1	3	1

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	NB	NB	SB	SB
Directions Served	LT	L	T	T	R
Maximum Queue (ft)	107	269	392	438	248
Average Queue (ft)	44	171	112	229	66
95th Queue (ft)	88	268	295	396	202
Link Distance (ft)	4734		622	950	
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)		175			150
Storage Blk Time (%)		13	1	20	
Queuing Penalty (veh)		55	2	22	

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	NB	NB	B9	SB	SB	SB
Directions Served	LT	T	R	T	L	L	T
Maximum Queue (ft)	100	312	150	246	180	219	212
Average Queue (ft)	37	219	115	45	104	116	27
95th Queue (ft)	81	355	192	170	160	181	124
Link Distance (ft)	1380	222		647			622
Upstream Blk Time (%)		10					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)			50		150	150	
Storage Blk Time (%)		27	18		2	2	0
Queuing Penalty (veh)		85	126		10	13	2

Intersection: 22: Bend

Movement	SB
Directions Served	T
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	5
Link Distance (ft)	647
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 327

Intersection: 2: Mt. Misery Rd. & I-140 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	LT	T	T	R
Maximum Queue (ft)	300	656	140	150	424	136
Average Queue (ft)	260	384	69	83	209	11
95th Queue (ft)	349	605	119	126	360	80
Link Distance (ft)		1290		1045	1335	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		400			200
Storage Blk Time (%)	11	54			7	
Queuing Penalty (veh)	52	108			5	

Intersection: 3: Mt. Misery Rd. & I-140 EB Ramps/I-140 EB On-Ramp

Movement	EB	NB	NB	B7	SB	SB	SB
Directions Served	LTR	T	R	T	L	L	T
Maximum Queue (ft)	206	571	371	20	181	191	224
Average Queue (ft)	107	305	93	1	87	111	116
95th Queue (ft)	184	496	282	12	155	174	201
Link Distance (ft)	1020	2068		1238			1045
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			300		200	200	
Storage Blk Time (%)		8			0	1	0
Queuing Penalty (veh)		14			1	7	1

Intersection: 4: Mt. Misery Rd. & US 74 WB On-Ramp/US 74 WB Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	239	124	249	284	632	250
Average Queue (ft)	120	8	148	97	330	133
95th Queue (ft)	202	81	225	241	570	294
Link Distance (ft)	4734			622	1238	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150	175			150
Storage Blk Time (%)	6		11	1	25	0
Queuing Penalty (veh)	31		84	1	44	2

Intersection: 5: Lanvale Rd./Mt. Misery Rd. & US 74 EB Ramp/US 74 EB On-Ramp

Movement	EB	EB	NB	NB	B9	B22	SB	SB	SB
Directions Served	LT	R	T	R	T	T	L	L	T
Maximum Queue (ft)	223	8	318	150	476	149	204	245	334
Average Queue (ft)	106	0	247	69	162	29	101	127	147
95th Queue (ft)	206	8	361	170	536	237	181	208	272
Link Distance (ft)	1380	1380	222		647	9475			622
Upstream Blk Time (%)			20		4				
Queuing Penalty (veh)			0		0				
Storage Bay Dist (ft)				50			150	150	
Storage Blk Time (%)			33	5			4	7	3
Queuing Penalty (veh)			41	45			28	50	9

Intersection: 9: Bend

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	7	6
Average Queue (ft)	0	0
95th Queue (ft)	5	6
Link Distance (ft)	222	222
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Bend

Movement	SB	B9	B9
Directions Served	T	T	T
Maximum Queue (ft)	7	7	6
Average Queue (ft)	0	0	0
95th Queue (ft)	6	5	6
Link Distance (ft)	647	222	222
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 523

BRUNSWICK COUNTY PLANNING DEPARTMENT
75 Government Drive, Building I • P.O. Box 249 • Bolivia, NC 28422
www.brunswickcountync.gov/planning • (910)253-2025

January 17, 2025

Andy Mills
2000 Regency Parkway
Cary, NC 27518

RE: Hooper Road Tract Planned Development
File # PD-146

To Whom It May Concern:

The Technical Review Committee (TRC) at their January 15, 2025 meeting reviewed the preliminary plans for the above referenced project.

Please find below comments with regards to the review of the project.

Comments from Planning:
Marc Pages – 910-253-2056 – marc.pages@brunswickcountync.gov

- Planning staff recommends committing 5% of the units to Workforce Housing.
- A second active entrance is highly recommended to connect to Black Chestnut Road or, at a minimum, this connection should be a gated emergency entrance.
- Please provide better open space distribution throughout the project.
- Planning recommends having limited individual driveways on the main spine road for better traffic flow within the project.
- Please show all trails and greenways.
- Planning recommends installing a minimum 20-foot buffer to all wetlands.
- Please clearly label all flood hazard zones.
- Planning recommends placing all wetlands in a future conservation easement.
- Please note on the plan that there will be sidwalks installed on one side of all internal roads.
- Please note that there will be two non-garage parking spaces per lot.
- Please note that a heritage tree survey will be performed prior to any construction.
- If project is to be phased, please show phase lines.
- Please note that any street lighting shall be consistent with UDO Section 6.9.
- Please note that all nonresidential uses are subject to site specific review.
- Please note screening shall be required where applicable consistent with UDO Section 6.4.
- Please note that the TIA must be approved by NCDOT prior to going before the Planning Board.
- Please note that a neighborhood meeting is recommended per UDO Section 9.2.

Comments from Stormwater
Richard Christensen – 910-253-1716 – Richard.Christensen@brunswickcountync.gov

- A State Stormwater permit will be required.
- A State Erosion Control permit will be required.
- A County SW permit will be required.
- County SW Requirements: Pre/Post for the 1-, 10- and 25-year design storms.
- SCMs must be able to handle the 100-year storm without overtopping the SCMs.
- Add these comments to the Notes section on the Master Plan.

Comments from Floodplain Administration
James Paggioli – 910-253-2054 – james.paggioli@brunswickcountync.gov

- Sheet C-100 – Note 1, Tracts also have AE Flood Zone located upon them. Revised note 1 to reflect this.
- All Sheets must depict NEA of Hood Creek and Floodway of Cape Fear on all applicable map sheets, for all submissions.
- The applicant is proposing multiple mine areas, each will be required to submit plans for Floodplain review, prior to removal of any fill as well as required State of NC permitting, and shall depict existing and proposed grading.
- Note for Floodplain Development Permits where any development work, (including grading and filling for road construction, Storm Water Ponds, infrastructure, etc), within the SFHA shall be obtained prior to any site road/infrastructure work occurring. This is applicable to at least Phase 1A, Phase 2A, Phase 3A and 3B.

Comments from Engineering
Bill Pinnix – 910-253-2406 – william.pinnix@brunswickcountync.gov

- Existing 10” watermain on Hooper Road, and an 8” through the property from Lilly Hills Dr to Wind Tree Ct (as shown on plans).
- Existing 12” high pressure forcemain with an 8” stub-out at the intersection of Mt. Misery/Dogwood Rd/Opportunity Drive (as noted on plans).
- Fire hydrants at subdivision entrances and every 500 LF throughout (as noted on plans).
- Double water meter boxes/(2) single water meter boxes to be installed per lot.
- End of lines (whether for future extensions or not) should have a fire hydrant or a Post Flushing Hydrant; blow-off assemblies with full size valves can be used as needed at phase lines.
- Gravity sewer is always the preferred sewer and will need to be designed and installed to the furthest extent possible (noted on plans); call out any stub outs at phase lines when submitting for plan review.
- One 4” sewer clean-out per lot.
- The proposed layout for the pump stations - Odor Control would not be required, final determination will be made during plan review.
- NCDOT Encroachment would be needed for Hooper Rd & Mt. Misery Rd.
- Refer to Brunswick County Design Manual & Technical Specifications as needed.

Comments from Fire Code Official
Joe Oliver – 910-676-4392 – joseph.oliver@brunswickcountync.gov

- Will need development permit for access roads and fire hydrants.
- Will need to determine fire flow requirements and witness hydrant flow.
- Any road that exceeds 150 feet shall be provided with an approved turnaround. This also goes for stub outs and roads between phases. (Talked about adding note to plan)
- Fire Hydrants are to be spaced at 500 feet with no point exceeding 250 feet from any point in road. This is to start at or near the entrance as this has not been met. Fire hydrants should not be put at end of dead-end roads unless it's to meet the spacing requirements. A lot of places where hydrants exceed 500 feet or further than 250 feet. This measurement includes phase lines as hydrants would need to meet requirements before next phase. Also check distance from intersection to cul-de-sac.
- Note Fire Development permit will be required and fire flow to meet 1,000 GPM for residential and minimum 1,500 for any commercial but reference Brunswick County Fire Prevention Ordinance. Any access gate will need approval by fire chief and the departments approved means for emergency override if automatic. Manual would need Knox PadlockGeneral Comments:
    1. Need to apply for a fire development permit. https://www.brunswickcountync.gov/code-administration/permits/. Select Fire Application and complete all applicable fields. And upload civil/utility plans.
    2. Need to review the "Development / Subdivision Fire approval Guidance document located at the following link.

https://www.brunswickcountync.gov/fire-marshal/development-subdivision-fire-approval-process/

- Final plat will require fire approval.

Please provide a digital set of revised plans to the Brunswick County Planning Department by 5:00 p.m. on January 27, 2025.

If you have any questions, please feel free to contact me.

Sincerely,

Marc A. Pages

Marc A. Pages
Brunswick County Deputy Planning Director

Docusign Envelope ID: A869DBC1-59E2-4709-BD8E-59E62D473CB3

Planned Development (PD)

Application and Checklist

Fee: $1,000 (Brunswick County Jurisdiction)
$968 (City of Northwest Jurisdiction)

Brunswick County Planning Dept. 910-253-2025

For Office Use Only

File #_____ Invoice #_____

Date Received:_____

Northwest Jurisdiction ☐ YES ☐ NO

This application is a request to construct a Planned Development consistent with a submitted master site plan that identifies permitted land uses, densities, building setbacks, heights, lot layout, buffers, off-street parking and street widths. This application should only be used if the proposed development is requesting flexibility in zoning requirements in order to achieve a development as an alternative to a conventional zoning design standards. Please reference Section 4.3.1. of the Unified Development Ordinance (UDO) for requirements regarding Planned Developments (PD's).

YES

Please fill out form completely, supplying all necessary information and documentation to support your request.

Property Owner

Name	LONGLEAF PINE HOLDINGS LLC; HEWETT HEATHER MICHAELA AND COX ZACHARY SCOTT	Phone	791-499-1373; 910-712-6792
Address	330 MILITARY CUTOFF RD STE A2 WILMINGTON, NC 28405-8303	Fax	
City, St, Zip	9016 BLACK CHESTNUT DR LELAND, NC 28451	Email	steve@steveshuttleworth.com; heatherweather60@gmail.com

Applicant or Representative

Name	ANDY MILLS	Phone	910-233-8581
Address	2000 Regency Pkwy, #295	Fax	
City, St, Zip	Cary, NC 27518	Email	andy.mills@collierseng.com

Property Information

Address	9351 HOOPER RD NE LELAND 28451 9321 HOOPER RD NE LELAND 28451 9370 HOOPER RD NE LELAND 28451 9016 BLACK CHESTNUT DR NE LELAND 28451
Tax Parcel(s)	00600011; 0100002101 01000010 ; 01000021; 010JEO023
Acreage	594.87 AC
Current Zoning	RR
Public Utilities Available?	Water YES Sewer YES

Project Information

Project Name	HOOPER ROAD TRACT		
Modification or Expansion Of Existing PD?	Yes	No	
Single Family Acres	594.87 AC	Lots	1725
Multi-Family Acres	N/A	Units	N/A
Commercial Acres	N/A		

Authorization

Property Owner Signature Signed by: Heather Cox 485839857914411F... DocuSigned by: Steve Shuttleworth D9B751D0A61446F... Date 12/11/2024 12/12/2024

Applicant/Representative Signature Digitally signed by Anthony Mills Date: 2024.12.10 14:49:22-05'00' Date 12/10/2024

Please submit three folded copies and one electronic copy of the site plan with application.

Docusign Envelope ID: A869DBC1-59E2-4709-BD8E-59E62D473CB3

Planned Development Checklist

NOTE: All items below must be shown on the provided Site Plan

Existing Site Data	Zoning of Subject Property	Project Acreage
	Zoning and Land Use of Adj. Property	Wetland Areas
	Tax Parcel Numbers of Adj. Property	Tax Parcel Number(s) of Subject Property
	Owner Information of Adj. Properties	Heritage Tree Survey *(UDO Section 6.1.3.)*

Project Breakdown	Single Family Acreage	Single Family Lots
	Multi-Family Acreage	Multi-Family Units
	Commercial Acreage	Project Density (Dwelling Units Per Acre)
	Required Open Space *(UDO Section 6.4.4)*	Workforce Housing Density Bonus *(Optional)* (UDO Section 4.3.2.)
	Recreation Space *(UDO Section 6.4.4.)*	
	Total Open Space *(UDO Section 6.4.4.)*	Wetland Acreage

Project Site Data	Total Number of Lots	Housing Types Labeled
	Lot Numbers	Impervious Area
	Average Lot Size	Setbacks
	Smallest Lot Size	Periphery Buffer *(UDO Section 4.3.1.F.)*
	Lot Widths	Street Buffers *(UDO Section 4.3.1.F.)*
	Parking Calculations *(UDO Sect. 6.12)*	Screening *(UDO Section 6.4.)*

Roads	Indicate Roads to be Public or Private	Street Names
	Right of Way Widths	Traffic Impact Study *(UDO Section 6.16.)*
	Street Detail	Link Node Ratio *(UDO Section 6.11.3.B.)*
	Cul de Sac Radius	External Access *(UDO Section 6.11.3.C.)*

Utilities	Utility Plan	Utility Provider Approval Documentation *(If other than Brunswick County)*
	Water/Sewer Provider	Topography
	Lighting Plan *(UDO Section 6.9)*	Stormwater Plan
	Location of Utility Lines	10' Utility Easement on Interior Roads

Miscellaneous	Owner Contact Information	Vicinity Map
	Engineer Contact Information	Graphic Scale
	Phase Lines	Date
	Neighborhood Meeting Notes	North Arrow

Exceptional Design	**Incorporating Exceptional Design into the proposed plan may allow flexibility from the conventional UDO development standards (See UDO Section 6.1.). Some elements of Exceptional Design include:**	
	LID (Low Impact Development)	Green Building (LEED or Energy Star)
	Increased Open/Recreation Space	Tree Resource Management
	Superior Landscaping	Natural Resource Conservation

General Notes to be Included on Site Plan:

- "Project to be built to County or City specifications for water and sewer. A utility plan must be submitted and approved by Engineering and the Fire Marshal."
- "County and/or State Stormwater Permits must be obtained prior to any construction. No natural drainage areas will be cut off or disturbed before obtaining the permits."
- "There shall be a note on the final plats, master covenants, and deeds showing the location of wetlands and noting that those areas may not be filled, disturbed, or altered in any way unless properly permitted by the NC Department of Environment and Natural Resources and/or the U.S. Army Corp of Engineers."
- "A home owners association will be formed prior to the sale of lots and membership will be automatic upon purchase within the development. The homeowners association will comply with the standards set forth in Section 6.11.2.I. of the Unified Development Ordinance."
- "All roads will be built to NCDOT minimum paving standards for subdivision roads."

PD-146

ADJACENT PROPERTY OWNER(S)

PARCEL ID	NAME 1	NAME 2	ADDRESS	CITY	STATE	ZIP
01000049	JACOBS LEVANDER ETUX	JACOBS DETRA	9117 HOOPER RD NE	LELAND	NC	28451-9707
01000023	HAMILTON BRIAN K ET	HAMILTON SHELBY C	PO BOX 12321	WILMINGTON	NC	28405
010HA030	HOLDEN STEPHEN ETUX	HOLDEN CYNTHIA A	9039 MARTINGALE CT	LELAND	NC	28451-9704
0100002128	BLUFFS INVESTMENT LLC		145 BROOKLINE DR	PINEHURST	NC	28374-7129
0100002127	BLUFFS INVESTMENT LLC		145 BROOKLINE DR	PINEHURST	NC	28374-7129
0100002126	BLUFFS INVESTMENT LLC		145 BROOKLINE DR	PINEHURST	NC	28374-7129
0100002115	HOOPER MELVIN ETUX	HOOPER DIANE M	9550 HOOPER RD NE	LELAND	NC	28451-9018
0100002114	HOLLIDAY MINNIE L		8975 FINCH DR NE	LELAND	NC	28451-4043
0100002109	ELLIOTT THOMAS ET	ELLIOTT ESTHER	287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704
0100002108	ELLIOTT ESTER H ETVIR	ELLIOTT THOMAS	287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704
0100001305	WILLIS LOUISE H		1690 CEDAR HILL RD NE	LELAND	NC	28451
0100001302	WILLIS HERBERT L AND	ELLIOTT ESTHER	287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704
0100001301	JACOBS RICHARD L		9411 HOOPER ROAD NE	LELAND	NC	28451
01000013	HOOPER BRYAN ETALS		9480 HOOPER RD NE	LELAND	NC	28451-9020
01000011	ELLIOTT THOMAS ETALS		287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704
010JA036	WADDELL DAVID JR AND	BROWN KATINA L	9082 HOOPER RD NE	LELAND	NC	28451-9024
010HB00101	HOODS CREEK VILLAGE HOME OWNERS ASSOCIATIC		5201 MONROE RD	CHARLOTTE	NC	28205-7827
0060001514	HOOPER WORTH D JR ETALS		9430 HOOPER RD NE	LELAND	NC	28451-9020
0060001513	HOOPER HILL LAND COMPANY INC	%ESTHER H ELLIOTT	287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704
0060001512	EVERETT IRENE	HEIRS	3989 RED OAK RD NE	LELAND	NC	28451-4047
0060001502	HOLLIDAY CHARLES A SR AND	HOLLIDAY MINNIE	8975 FINCH DR NE	LELAND	NC	28451-4043
0060001229	MOORE BEVERLY HALL		PO BOX 1394	LELAND	NC	28451-1394
0060001228	HALL BEVERLY		PO BOX 1394	LELAND	NC	28451-1394
0060001226	HALL JANEEN		6141 HANNA CT	CHARLOTTE	NC	28212-2189
0060001216	DANIELS EVORIA		1232 MAPLE TREE DR APT 205	LELAND	NC	28451-9142
0060001215	YOUNG KELVIN D		9539 HOOPER RD NE	LELAND	NC	28451-9019
00600006	PRIDGEN JAN MILLER		5006 HEWLETTS RUN UNIT 2	WILMINGTON	NC	28409-2423
0060000101	COSTIN GERALENE ROBBINS		932 VILLAGE RD NE	LELAND	NC	28451-8460
0100004709	JONES DANA D ETALS		1003 N LIMESTONE APT 415	LEXINGTON	KY	40505-3591
010JC019	DEBOSE SHERRY S		9043 HAWKS BILL DR NE	LELAND	NC	28451-9765
010JC020	DEBOSE ALYSON		19 JOY LN	SPARTA	NC	28675-9701
010JC021	PADGETT JOYCE		779 GREEN ACRES DR NE	LELAND	NC	28451-8321
010JC027	MEZA EMILY		4046 RED OAK RD	LELAND	NC	28451-4026
010JC018	DZIEMBOWSKI PENNIE FLYNT (LT)	*KEMPLE TASHA RENAE	9051 HAWKS BILL DR NE	LELAND	NC	28451-9765
010JD019	EATON GAYTHON C ETALS	EATON PATRICIA C	413 F AVE	KURE BEACH	NC	28449
010JD020	CURL ALICE FAYE		9039 FINCH DR NE	LELAND	NC	28451-4045
010JD018	RUIZ ELIZABETH		9038 FINCH DR NE	LELAND	NC	28451-4044
010JD017	RUIZ ELIZABETH		9038 FINCH DR NE	LELAND	NC	28451-4044
010JC016	MCDUFFIE DONAHUE CYNTHIA ETVIR	DONAHUE STEPHEN	1411 SANDY RIDGE WAY NE	LELAND	NC	28451-7331
010JC028	GURGANIOUS JOSEPH L		4045 RED OAK RD	LELAND	NC	28451-4027

010JC026	GIBBS THEODORE R JR		4040 RED OAK RD	LELAND	NC	28451-4026
010JC022	RIVENBARK BENJAMIN GRAHAM		9019 HAWKS BILL DR NE	LELAND	NC	28451-9765
0100004712	MYERS IVORY D SR ETUX	MYERS JACQUELINE	4231 M HALL LN NE	LELAND	NC	28451-7976
0100002129	TODD LEMONDO DEIRICO ETUX	TODD TALITHA CLEMMONS	9109 HOOPER RD NE	LELAND	NC	28451
0100002901	BOX STREET PARTNERS NC LLC	c/o LUKE FORELLE	447 E 14TH ST APT 10B	NEW YORK	NY	10009-2726
010JE025	AMMONS CLIFTON ROBERT ETUX	AMMONS MARY LOU	9008 BLACK CHESTNUT DRIVE	LELAND	NC	28451
010JE033	GAUSE ALLIENE		8976 BLACK CHESTNUT DR	LELAND	NC	28451-8990
010JE032	HONAKER BARBARA (LT)	* DENNY E HONAKER	8980 BLACK CHESTNUT DR	LELAND	NC	28451
010JE031	ST JOHN MARY ANN AND	GOFF MICHAEL C	8984 BLACK CHESTNUT DR	LELAND	NC	28451-8990
010JE030	FUNDORA LINDSEY MICHELLE ETALS		1811 CHESTNUT ST	WILMINGTON	NC	28405-2916
010JE028	MEEHAN JAMES MICHAEL ETUX	MEEHAN NICOLE LYNN	8996 BLACK CHESTNUT DR	LELAND	NC	28451-8990
010JE027	DAVIS KAREN P		P O BOX 1195	LELAND	NC	28451
010JE026	WEBB ERIC ETUX	RAGSDALE TALISHA N	9004 BLACK CHESTNUT DR	LELAND	NC	28451-9741
010HA028	GUZMAN MAYORI RUIZ ETVIR	ARIAS CANAS NELSON ISAIAS	9029 MARTINGALE CT	LELAND	NC	28451-9704
010HA027	HANNEL JAMES A HEIRS		9028 MARTINDALE CT	LELAND	NC	28451
010HA026	WALTER JOHN G ETUX	WALTER CHERYL H	9036 MARTINGALE CT	LELAND	NC	28451-9704
010JE029	ROBINSON ADELE JOHNSON		197 LUNDY RD	GARLAND	NC	28441-8393
010HB027	RANSOM DESHAUN ANTRELL		8032 FOOTPATH RD	LELAND	NC	28451-9637
010HB026	MCCULLOCH RANDALL ET	MCCULLOCH MERRY	3965 SOURWOOD CT	LELAND	NC	28451-9724
010HA036	BROOKS CARLA		9030 BLACK CHESTNUT	LELAND	NC	28451
010HA023	BAKER KENNETH ETUX	CHRISTENSEN KERI	3973 GUM BRANCH CT	LELAND	NC	28451-9703
010HA022	BAUTISTA HERNANDEZ LUIS		622 GOVERNORS RD	WILMINGTON	NC	28411-9077
010JE024	RODRIGUEZ JOSE LUIS BARBOSA AND	GARCIA REYNA VERALIS GONZALEZ	9012 BLACK CHESTNUT DR	LELAND	NC	28451-9741
010AA003	BEACHY NICKEL LYNN		9176 SPIVEY CT NE	LELAND	NC	28451-6085
0100004701	HOLLIDAY MINNIE AND	NW CHANNEL INC ETALS	8975 FINCH DR NE	LELAND	NC	28451-4043
010AA00101	TAR PIT LANDING HOA		9182 SPIVEY CT NE	LELAND	NC	28451-6085
0060000102	COSTIN GERALENE ROBBINS		932 VILLAGE RD NE	LELAND	NC	28451-8460
010GA001	DAVIS CAROLYN J		9089 HOOPER RD NE	LELAND	NC	28451-9025
010JC017	CHEESMAN KENNETH T AND	CHEESMAN SHERRY J C/O SHERRY JO HUCKABEY	9408 E FERNWOOD PL	INVERNESS	FL	34450-2818
0100002902	N C DEPARTMENT OF TRANSPORTATION	ATTN: RIGHT OF WAY	5501 BARBADOS BLVD	CASTLE HAYNE	NC	28429
00900121	WEYERHAEUSER FOREST HOLDINGS INC	C/O TAX GROUP	205 PERRY LANE RD	BRUNSWICK	GA	31525-9799
010GA006	BOYD ASIA		251 OLD 87 RD	RIEGELWOOD	NC	28456-7098
010JE023	HEWETT HEATHER MICHAELA AND	COX ZACHARY SCOTT	9016 BLACK CHESTNUT DR	LELAND	NC	28451
010HA029	WILLIAMS KEVIN L ETUX	WILLIAMS KIMBERLI D	9033 MARTINGALE CT	LELAND	NC	28451-9704
00600008	CORBETT PACKAGE COMPANY		P O BOX 210	WILMINGTON	NC	28401
00600009	CORBETT TIMBER CO		P O BOX 210	WILMINGTON	NC	28402
00600007	CORBETT PACKAGE COMPANY		P O BOX 210	WILMINGTON	NC	28401
010AA004	GRAINGER VICTORIA AND	HEDWIN DONNIE R	9182 SPIVEY CT NE	LELAND	NC	28451-6085
010JA037	WHITE IRIS AND	WYNN SONYA	7647 PLANTATION BAY DR E	JACKSONVILLE	FL	32244-5182
010JA03701	WHITE IRIS AND	WYNN SONYA	7647 PLANTATION BAY DR E	JACKSONVILLE	FL	32244-5182
	COMMANDER MOT SUNNY POINT		6280 SUNNY POINT RD SE	SOUTHPORT	NC	28461

OWNER(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP

01000010	LONGLEAF PINE HOLDINGS LLC	PO BOX 126	ASH	NC	28420-0126
0100002101	LONGLEAF PINE HOLDINGS LLC	PO BOX 126	ASH	NC	28420-0126
00600011	LONGLEAF PINE HOLDINGS LLC	PO BOX 126	ASH	NC	28420-0126
01000021	LONGLEAF PINE HOLDINGS LLC	PO BOX 126	ASH	NC	28420-0126

APPLICANT(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
APPLICANT	ANDY MILLS		2000 REGENCY PKWY, #295	CARY	NC	27518

PARCEL ID	NAME 1	NAME 2
01000049	JACOBS LEVANDER ETUX	JACOBS DETRA
01000023	HAMILTON BRIAN K ET	HAMILTON SHELBY C
010HA030	HOLDEN STEPHEN ETUX	HOLDEN CYNTHIA A
0100002128	BLUFFS INVESTMENT LLC	
0100002115	HOOPER MELVIN ETUX	HOOPER DIANE M
0100002114	HOLLIDAY MINNIE L	
0100002109	ELLIOTT THOMAS ET	ELLIOTT ESTHER
0100002108	ELLIOTT ESTER H ETVIR	ELLIOTT THOMAS
0100001305	WILLIS LOUISE H	
0100001302	WILLIS HERBERT L AND	ELLIOTT ESTHER
0100001301	JACOBS RICHARD L	
01000013	HOOPER BRYAN ETALS	
01000011	ELLIOTT THOMAS ETALS	
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0060001513	HOOPER HILL LAND COMPANY INC	%ESTHER H ELLIOTT
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0060001229	MOORE BEVERLY HALL	
0060001228	HALL BEVERLY	
0060001226	HALL JANEEN	
0060001216	DANIELS EVORIA	
0060001215	YOUNG KELVIN D	
00600006	PRIDGEN JAN MILLER	
0060000101	COSTIN GERALENE ROBBINS	
0100004709	JONES DANA D ETALS	
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010JD019	EATON GAYTHON C ETALS	EATON PATRICIA C
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010JD018	RUIZ ELIZABETH	
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010JC028	GURGANIOUS JOSEPH L	
010JC026	GIBBS THEODORE R JR	
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0100004712	MYERS IVORY D SR ETUX	MYERS JACQUELINE
0100002129	TODD LEMONDO DEIRICO ETUX	TODD TALITHA CLEMMONS
0100002901	BOX STREET PARTNERS NC LLC	c/o LUKE FORELLE
010JE025	AMMONS CLIFTON ROBERT ETUX	AMMONS MARY LOU
010JE033	GAUSE ALLIENE	
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010JE031	ST JOHN MARY ANN AND	GOFF MICHAEL C
010JE030	FUNDORA LINDSEY MICHELLE ETALS	
010JE028	MEEHAN JAMES MICHAEL ETUX	MEEHAN NICOLE LYNN
010JE027	DAVIS KAREN P	
010JE026	WEBB ERIC ETUX	RAGSDALE TALISHA N
010HA028	GUZMAN MAYORI RUIZ ETVIR	ARIAS CANAS NELSON ISAIAS
010HA027	HANNEL JAMES A HEIRS	
010HA026	WALTER JOHN G ETUX	WALTER CHERYL H
010JE029	ROBINSON ADELE JOHNSON	
010HB027	RANSOM DESHAUN ANTRELL	
010HB026	MCCULLOCH RANDALL ET	MCCULLOCH MERRY
010HA036	BROOKS CARLA	
010HA023	BAKER KENNETH ETUX	CHRISTENSEN KERI
010HA022	BAUTISTA HERNANDEZ LUIS	
010JE024	RODRIGUEZ JOSE LUIS BARBOSA AND	GARCIA REYNA VERALIS GONZALEZ
010AA003	BEACHY NICKEL LYNN	
0100004701	HOLLIDAY MINNIE AND	NW CHANNEL INC ETALS
010AA00101	TAR PIT LANDING HOA	
010GA001	DAVIS CAROLYN J	
010JC017	CHEESMAN KENNETH T AND	CHEESMAN SHERRY J C/O SHERRY JO HUC
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00900121	WEYERHAEUSER FOREST HOLDINGS INC	C/O TAX GROUP
010GA006	BOYD ASIA	
010JE023	HEWETT HEATHER MICHAELA AND	COX ZACHARY SCOTT

010HA029	WILLIAMS KEVIN L ETUX	WILLIAMS KIMBERLI D
00600008	CORBETT PACKAGE COMPANY	
00600009	CORBETT TIMBER CO	
010AA004	GRAINGER VICTORIA AND	HEDWIN DONNIE R
010JA037	WHITE IRIS AND	WYNN SONYA
	COMMANDER MOT SUNNY POINT	
	OWNERS	
01000010	LONGLEAF PINE HOLDINGS LLC	
APPLICANT	ANDY MILLS	

ADDRESS	CITY	STATE	ZIP	CASE #
9117 HOOPER RD NE	LELAND	NC	28451-9707	CASE# PD-146
PO BOX 12321	WILMINGTON	NC	28405	CASE# PD-146
9039 MARTINGALE CT	LELAND	NC	28451-9704	CASE# PD-146
145 BROOKLINE DR	PINEHURST	NC	28374-7129	CASE# PD-146
9550 HOOPER RD NE	LELAND	NC	28451-9018	CASE# PD-146
8975 FINCH DR NE	LELAND	NC	28451-4043	CASE# PD-146
287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704	CASE# PD-146
287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704	CASE# PD-146
1690 CEDAR HILL RD NE	LELAND	NC	28451	CASE# PD-146
287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704	CASE# PD-146
9411 HOOPER ROAD NE	LELAND	NC	28451	CASE# PD-146
9480 HOOPER RD NE	LELAND	NC	28451-9020	CASE# PD-146
287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704	CASE# PD-146
9082 HOOPER RD NE	LELAND	NC	28451-9024	CASE# PD-146
5201 MONROE RD	CHARLOTTE	NC	28205-7827	CASE# PD-146
9430 HOOPER RD NE	LELAND	NC	28451-9020	CASE# PD-146
287 CHELSEA BLVD	PLAINFIELD	NJ	07062-1704	CASE# PD-146
3989 RED OAK RD NE	LELAND	NC	28451-4047	CASE# PD-146
8975 FINCH DR NE	LELAND	NC	28451-4043	CASE# PD-146
PO BOX 1394	LELAND	NC	28451-1394	CASE# PD-146
PO BOX 1394	LELAND	NC	28451-1394	CASE# PD-146
6141 HANNA CT	CHARLOTTE	NC	28212-2189	CASE# PD-146
1232 MAPLE TREE DR APT 205	LELAND	NC	28451-9142	CASE# PD-146
9539 HOOPER RD NE	LELAND	NC	28451-9019	CASE# PD-146
5006 HEWLETTS RUN UNIT 2	WILMINGTON	NC	28409-2423	CASE# PD-146
932 VILLAGE RD NE	LELAND	NC	28451-8460	CASE# PD-146
1003 N LIMESTONE APT 415	LEXINGTON	KY	40505-3591	CASE# PD-146
9043 HAWKS BILL DR NE	LELAND	NC	28451-9765	CASE# PD-146
19 JOY LN	SPARTA	NC	28675-9701	CASE# PD-146
779 GREEN ACRES DR NE	LELAND	NC	28451-8321	CASE# PD-146
4046 RED OAK RD	LELAND	NC	28451-4026	CASE# PD-146
9051 HAWKS BILL DR NE	LELAND	NC	28451-9765	CASE# PD-146
413 F AVE	KURE BEACH	NC	28449	CASE# PD-146
9039 FINCH DR NE	LELAND	NC	28451-4045	CASE# PD-146

9038 FINCH DR NE	LELAND	NC	28451-4044	CASE# PD-146
1411 SANDY RIDGE WAY NE	LELAND	NC	28451-7331	CASE# PD-146
4045 RED OAK RD	LELAND	NC	28451-4027	CASE# PD-146
4040 RED OAK RD	LELAND	NC	28451-4026	CASE# PD-146
9019 HAWKS BILL DR NE	LELAND	NC	28451-9765	CASE# PD-146
4231 M HALL LN NE	LELAND	NC	28451-7976	CASE# PD-146
9109 HOOPER RD NE	LELAND	NC	28451	CASE# PD-146
447 E 14TH ST APT 10B	NEW YORK	NY	10009-2726	CASE# PD-146
9008 BLACK CHESTNUT DRIVE	LELAND	NC	28451	CASE# PD-146
8976 BLACK CHESTNUT DR	LELAND	NC	28451-8990	CASE# PD-146
8980 BLACK CHESTNUT DR	LELAND	NC	28451	CASE# PD-146
8984 BLACK CHESTNUT DR	LELAND	NC	28451-8990	CASE# PD-146
1811 CHESTNUT ST	WILMINGTON	NC	28405-2916	CASE# PD-146
8996 BLACK CHESTNUT DR	LELAND	NC	28451-8990	CASE# PD-146
P O BOX 1195	LELAND	NC	28451	CASE# PD-146
9004 BLACK CHESTNUT DR	LELAND	NC	28451-9741	CASE# PD-146
9029 MARTINGALE CT	LELAND	NC	28451-9704	CASE# PD-146
9028 MARTINDALE CT	LELAND	NC	28451	CASE# PD-146
9036 MARTINGALE CT	LELAND	NC	28451-9704	CASE# PD-146
197 LUNDY RD	GARLAND	NC	28441-8393	CASE# PD-146
8032 FOOTPATH RD	LELAND	NC	28451-9637	CASE# PD-146
3965 SOURWOOD CT	LELAND	NC	28451-9724	CASE# PD-146
9030 BLACK CHESTNUT	LELAND	NC	28451	CASE# PD-146
3973 GUM BRANCH CT	LELAND	NC	28451-9703	CASE# PD-146
622 GOVERNORS RD	WILMINGTON	NC	28411-9077	CASE# PD-146
9012 BLACK CHESTNUT DR	LELAND	NC	28451-9741	CASE# PD-146
9176 SPIVEY CT NE	LELAND	NC	28451-6085	CASE# PD-146
8975 FINCH DR NE	LELAND	NC	28451-4043	CASE# PD-146
9182 SPIVEY CT NE	LELAND	NC	28451-6085	CASE# PD-146
9089 HOOPER RD NE	LELAND	NC	28451-9025	CASE# PD-146
9408 E FERNWOOD PL	INVERNESS	FL	34450-2818	CASE# PD-146
5501 BARBADOS BLVD	CASTLE HAYNE	NC	28429	CASE# PD-146
205 PERRY LANE RD	BRUNSWICK	GA	31525-9799	CASE# PD-146
251 OLD 87 RD	RIEGELWOOD	NC	28456-7098	CASE# PD-146
9016 BLACK CHESTNUT DR	LELAND	NC	28451	CASE# PD-146

9033 MARTINGALE CT	LELAND	NC	28451-9704	CASE# PD-146
P O BOX 210	WILMINGTON	NC	28401	CASE# PD-146
P O BOX 210	WILMINGTON	NC	28402	CASE# PD-146
9182 SPIVEY CT NE	LELAND	NC	28451-6085	CASE# PD-146
7647 PLANTATION BAY DR E	JACKSONVILLE	FL	32244-5182	CASE# PD-146
6280 SUNNY POINT RD SE	SOUTHPORT	NC	28461	CASE# PD-146
				CASE# PD-146
PO BOX 126	ASH	NC	28420-0126	CASE# PD-146
2000 REGENCY PKWY, #295	CARY	NC	27518	CASE# PD-146

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Marc Pages, Deputy Director

Action Item# VII1
Folly Hills Planned Development (PD-157)

Issue/Action Requested:
Consideration of the proposed Folly Hills Planned Development consisting of 204 single family units on approximately 146.09 acres, creating an overall density of 1.4 dwelling units per acre.

Background/Purpose of Request:
The applicant, Norris and Bland Consulting Engineers, requests site plan approval for a Planned Development on Tax Parcel 16900013 located on Southport-Supply Road SE (NC 211) near Bolivia. The project proposes 204 single family units on approximately 146.09 acres, creating an overall density of 1.4 dwelling units per acre.

Planning Department Recommendation:
Planning Staff has determined that the proposed Planned Development meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:
1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.
2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.

Attachments:
1. Staff Report
2. Site Plan 1
3. Site Plan 2

4. Zoning Map
5. Imagery Map
6. FLU Map
7. Flood Map
8. Turn Lane Warrant Analysis
9. TRC Comment Letter
10. Application
11. Mailing List

BRUNSWICK COUNTY
STAFF REPORT AND RECOMMENDATION

Application No. PD-157

Applicant: Norris and Tunstall Engineering c/o Phil Norris

Project Name: Folly Hills Planned Development

Property Location: Southport-Supply RD SE (NC 211)

Parcel Numbers: 16900013

Zoning District: R-7500 (Low Density Residential) and RR (Rural Residential)

R-7500 Density Maximum – 5.8 Dwelling Units per Acre (with water and sewer)
"The R-7500, R-6000, and SBR-6000 districts are established to provide for orderly suburban residential development. A limited number of commercial and civic uses are allowed, subject to the restrictions necessary to preserve and protect the residential character of the neighborhood. A special permit process for higher intensity development is also allowed, using discretion to balance issues of higher density with improved amenities. Due to the higher intensity developments contained in this district, it is intended to be applied to properties served by public sewer and water systems."

RR Density Maximum – 2.9 Dwelling Units per Acre (with water and sewer)
The Rural Low Density Residential District is intended to accommodate nonresidential agricultural uses and low density residential development, as well as limited nonresidential uses that are supportive of the County's traditional agricultural orientation including farming, silviculture operations and related activities. Development in this District should rely predominantly on individual wells and septic tank systems for domestic water supply and sewage disposal, respectively, although clustered residential development served by public water and wastewater systems may be allowed.

Surrounding Zoning
North: R-7500
South: RR, R-7500, and CLD (Commercial Low Density)
East: RR and R-7500
West: RR

Proposed Use: Folly Hills is a proposed planned development, consisting of 204 single family units on approximately 146.09 acres, creating an overall density of 1.40 dwelling units per acre.

Approval Criteria

- The majority of surrounding uses consist of single family residential, commercial, and vacant land.
- The Blueprint Brunswick Future Land Use Map denotes this area as Low Density Residential and Open Space Conservation (OSC-1).
- Parking will be off street with a minimum of 2 driveway parking spaces per lot.
- Proposed infrastructure:
    1. **Water** and **Sewer** will be provided by Brunswick County.
    2. **Roads** will be private.
- The proposed development will have a 30-foot, 0.6 opacity peripheral buffer using existing vegetation to satisfy the requirement. Supplemental landscaping will be installed where necessary. There will be a

50-foot buffer alonf the western boundary adjacent to the parcel currently in the Voluntary Agricultural District (VAD).

- The proposed development will have a 30-foot wide street buffer along Southport-Supply Road.
- The required open space for the development is approximately 36.52 acres. The developer is proposing 94.34 acres of dedicated open space. The developer is also proposing 12.52 acres of recreation space of which 5.48 acres are required.
- The proposed project will generate approximately 1,944 vehicle trips per 24-hour weekday volume. A Driveway Warrant Analysis (TIA) has been completed for the project. Proposed road improvements made by the TIA include:
    - NC 211 Site Access – Westbound and eastbound turn lanes with 100 feet of storage.
- The Exceptional Design elements to be included in the project are as follows:
    1. The developer is proposing 94.34 acres of open space where as 36.52 acres are required.
    2. The developer is proposing 12.52 acres of recreation space where as 5.48 acres are required.
    3. The developer is proposing a 30-foot street buffer with an additional 200+ feet of setback on NC 211.
    4. A 10-foot easement within the street buffer shall be reserved for a possible future greenway.
    5. All lots shall be located outside of the AE Flood Zone.
    6. The stormwater system will be constructed to the 100-year storm event.

- The design flexibility elements requested for the project are as follows:
    1. Reduction in lot dimensions.
    2. Reduction in setbacks.

- Portions of the parcels are in an AE flood zone. All of the proposed lots will be located outside of the AE flood zone.
- Adjacent property owners were notified via US mail and a notification sign was posted on the subject property.
- TRC was held on May 13, 2025.

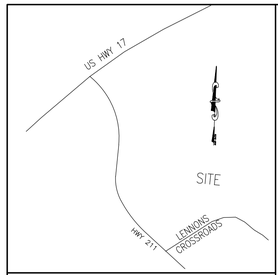
If approved, this development shall have a vested right for a period of three years. A two-year extension may be requested by the applicant to the Brunswick County Planning Department.

Planning Staff has determined that the proposed Planned Development meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:

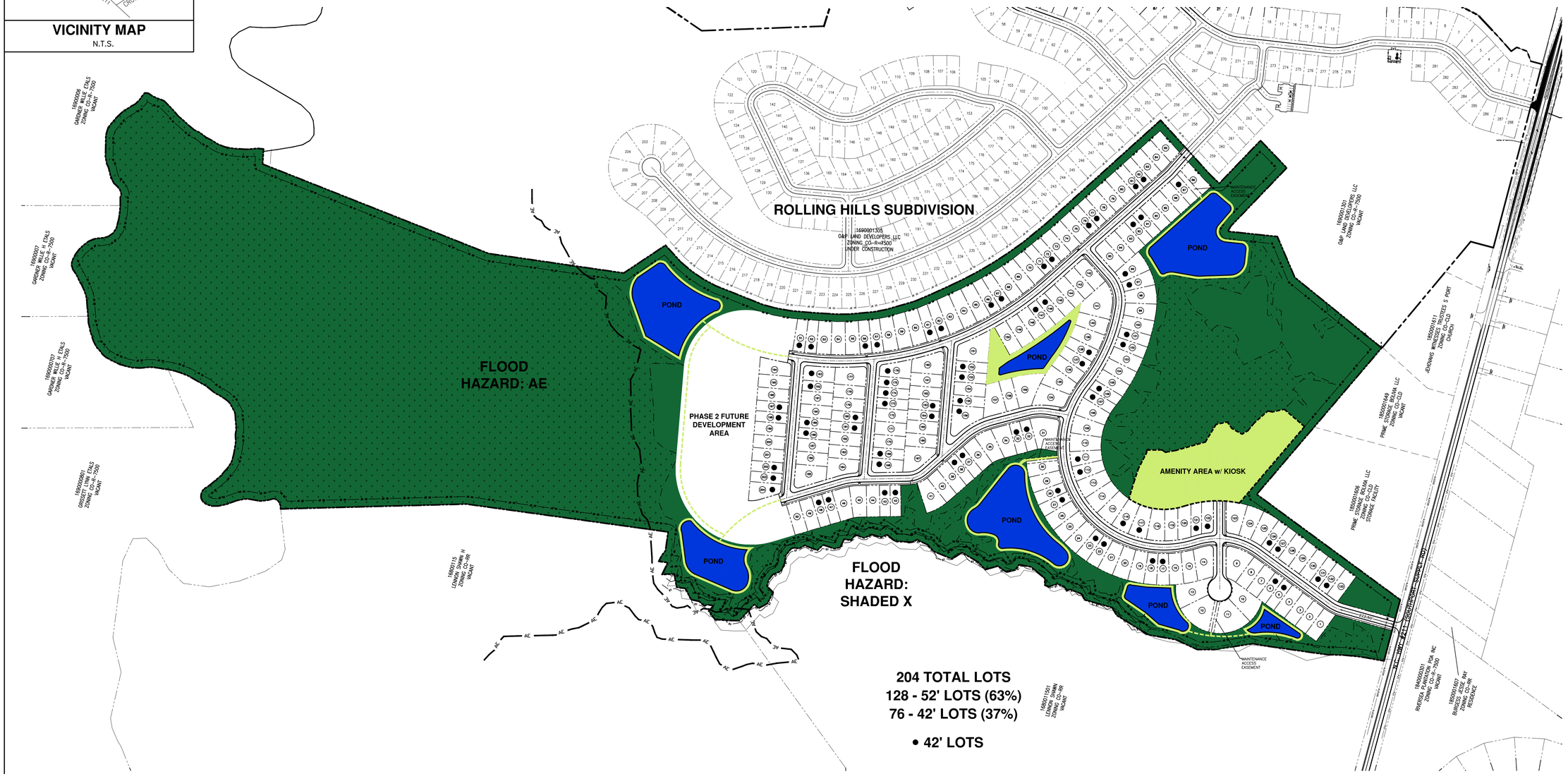
1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.

2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.

3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.



VICINITY MAP
N.T.S.



SYMBOL	DATE	DESCRIPTION	BY

REVISIONS

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OVERALL PLAN
FOLLY HILLS SUBDIVISION
--
BRUNSWICK COUNTY, NORTH CAROLINA

DEVELOPER:
MALPHRUS GROUP LLC
24 LUCKY CREEK DR.
BEAUFORT, SC

NORRIS & BLAND
CONSULTING ENGINEERS, P.C.
1429 ASH-LITTLE RIVER RD. NW
ASH, NC 28420
(910) 287-5900

Licence #C-5102

25021

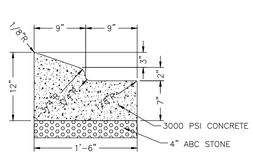
DES.	JKB
CKD.	JPN
DRWN.	EDB
DATE	05/22/25

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 041020 JOSEPH K. BLAND
FOR PERMIT ONLY
NOT FOR CONSTRUCTION

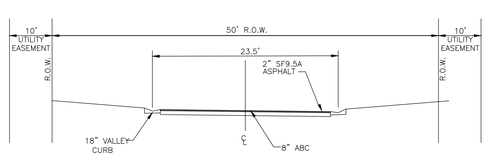
C0

LEGEND

	PROPERTY LINE
	RIGHT OF WAY
	PROPOSED LOT
RBF — RBF	30' BC RIPARIAN BUFFER
30 BF	30' PERIMETER BUFFER
ST — ST	STREAM
50 IB	50' IMPERVIOUS SETBACK FROM STREAM



MOUNTABLE CURB
NTS



TYPICAL STREET SECTION
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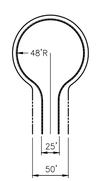
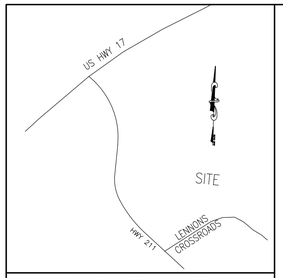


CUL-D-SAC DETAIL
NTS

ACTIVE OPEN SPACE

PASSIVE OPEN SPACE

SCALE: 1" = 200'
0 200 400 600



VICINITY MAP
N.T.S.

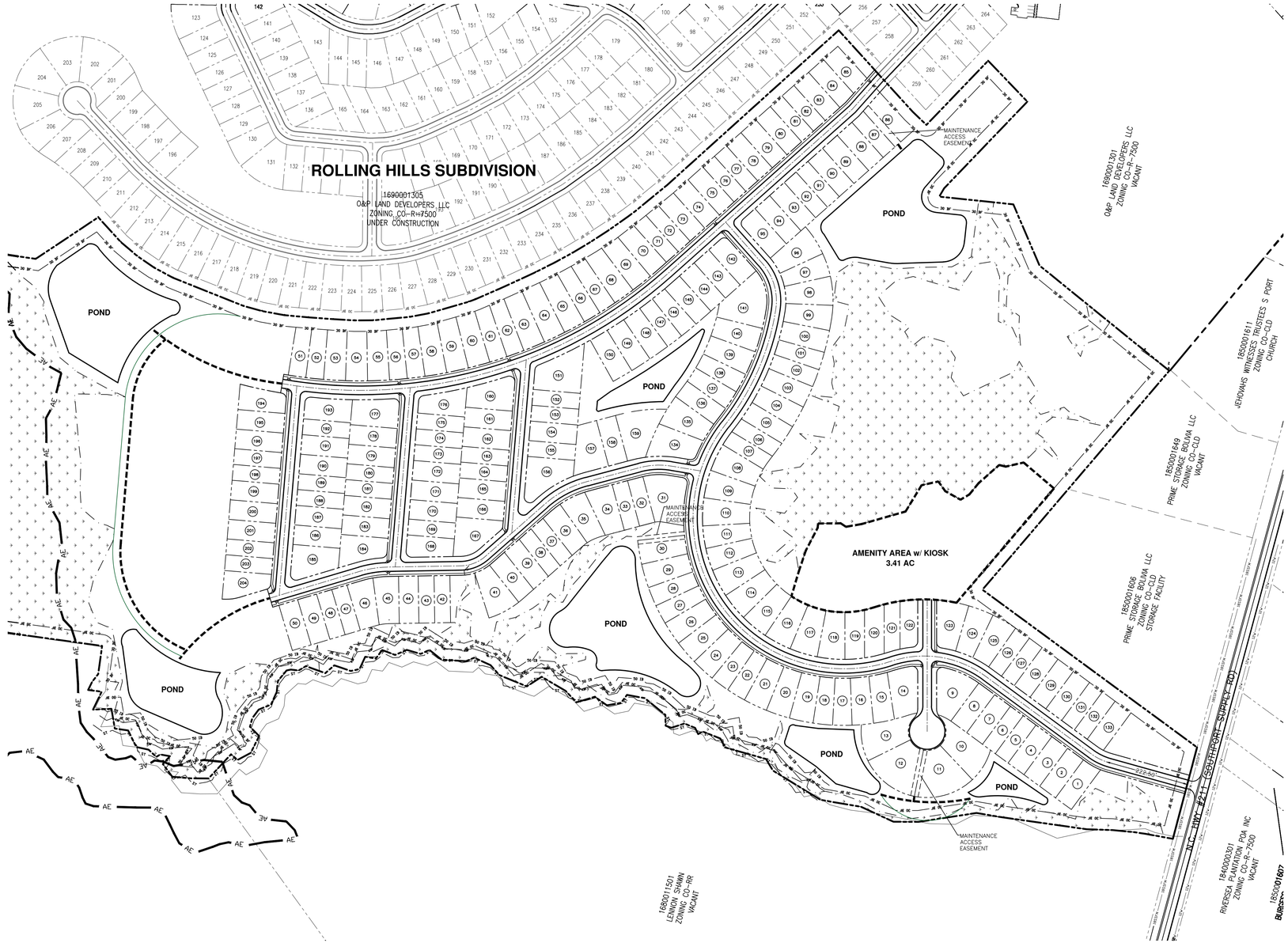
NOTES:
1. PROJECT TO BE BUILT COUNTY SPECIFICATIONS FOR WATER AND SEWER. A UTILITY PLAN MUST BE SUBMITTED AND APPROVED BY BRUNSWICK COUNTY ENGINEERING AND COUNTY FIRE MARSHALL OFFICE.
2. COUNTY AND/OR STATE STORMWATER PERMITS MUST BE OBTAINED PRIOR TO ANY CONSTRUCTION. NO NATURAL DRAINAGE AREAS WILL BE CUTOFF OR DISTURBED BEFORE OBTAINING THE PERMITS.
3. A NCDEQ EROSION & SEDIMENTATION PERMIT WILL BE REQUIRED.
4. THERE SHALL BE A NOTE ON THE FINAL PLATS, MASTER COVENANTS, AND DEEDS SHOWING THE LOCATION OF WETLANDS AND NOTING THAT THOSE AREAS MAY NOT BE FILLED, DISTURBED, OR ALTERED IN ANY WAY UNLESS PROPERLY PERMITTED BY THE NC DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES AND/OR THE U.S. ARMY CORPS OF ENGINEERS.
5. A HOME OWNERS ASSOCIATION WILL BE FORMED PRIOR TO THE SALE OF LOTS AND MEMBERSHIP WILL BE AUTOMATIC UPON PURCHASE WITHIN THE DEVELOPMENT. THE HOME OWNERS ASSOCIATION WILL COMPLY WITH THE STANDARDS SET FORTH IN SECTION 6.11.2.1 OF THE UNIFIED DEVELOPMENT ORDINANCE.
6. ALL PHASES OF THIS PLANNED DEVELOPMENT SHALL HAVE ACCESS TO AMENITIES AS SHOWN.
7. ALL ROADS WILL BE BUILT TO NCDOT MINIMUM PAVING STANDARDS FOR SUBDIVISION ROADS.
8. ALL PROPOSED ROADS SHALL BE PRIVATE AND MAINTAINED BY THE HOA.
9. A 10' NON-EXCLUSIVE UTILITY EASEMENT SHALL BE PROVIDED ALONG THE FRONT OF ALL LOTS, PARALLEL TO THE ROAD RIGHT-OF-WAY.
10. ALL LAKES, PONDS, BERMS, COMMON AREAS AND OPEN SPACE ARE TO BE OWNED AND MAINTAINED BY THE PROPERTY HOA/POA.
11. OFFSITE RIGHT-OF-WAY AND TRAFFIC IMPROVEMENTS SHALL BE PROVIDED AS REQUIRED BY TRAFFIC STUDY (TIA) WHICH WILL BE COORDINATED WITH NCDOT. THE TIA (IF REQUIRED) MUST BE COMPLETED PRIOR TO PLANNING BOARD.
12. HERITAGE TREE SURVEY SHALL BE PERMITTED PRIOR TO RECORDING A FINAL PLAT FOR A PHASE OF DEVELOPMENT.
13. ALL PROJECT LIGHTING SHALL COMPLY WITH UDO SEC 6-9.
14. PUMP STATIONS AND MECHANICAL EQUIPMENT SHALL BE SCREENED AND CONSISTENT WITH UDO SEC. 6-4.
15. 30' PERIMETER BUFFER A MINIMUM 0.6 OPACITY. EXISTING VEGETATION WITHIN THE BUFFER TO BE PRESERVED. SUPPLEMENTAL PLANTINGS SHALL BE REQUIRED IN THE BUFFER WHERE EXISTING VEGETATION DOES NOT ACHIEVE 0.6 OPACITY.
16. PERIMETER BUFFERS WILL BE EXPANDED WHERE POSSIBLE.
17. TWO NON-GARAGE PARKING SPACES TO BE PROVIDED PER LOT.
18. ALL STORMWATER PONDS WILL BE DESIGNED FOR PRE-POST ATTENUATION TREATMENT OF THE 1 YR, 10 YR, 25 YR & 100 YR DESIGN STORMS. THIS IS IN EXCESS OF THE BRUNSWICK COUNTY STORM WATER ORDINANCE.
19. GRASSED WALKING TRAILS WILL BE PLACED AROUND ALL PONDS SO THEY MAY BE UTILIZED AS AN ACTIVE COMPONENT OF THE COMMUNITY.
20. PRELIMINARY WETLANDS EVALUATION PROVIDED BY OTHERS. AN APPROVED ACOE JD WILL BE OBTAINED PRIOR TO DEVELOPMENT.
21. A 10' ACCESS EASEMENT WILL BE PROVIDED ALONG ALL NCDOT ROADS FOR FUTURE SIDEWALKS/GREENWAYS.
22. FIRE HYDRANTS REQUIRED AT ENTRANCES THEN EVERY 500 LF THEREAFTER.
23. SIDEWALKS WILL BE PROVIDED ON ONE SIDE OF THE STREET.
24. DOUBLE WATER METER BOX REQUIRED AT EACH LOT.
25. A FIRE DEVELOPMENT PERMIT IS REQUIRED TO VALIDATE ROADS, STREET SIGNS, HYDRANTS & HYDRANT FLOWS.
26. THE FINAL PLAT WILL REQUIRE FIRE APPROVAL.
27. HYDRANTS SHALL BE PROVIDED EVERY 500 FEET AND NOT TO EXCEED 250 FEET FROM ANY POINT IN THE ROAD (HYDRANTS SHALL NOT BE PLACED IN DEAD END AREAS UNLESS TO MEET SPACING REQUIREMENTS).
28. FIRE DEVELOPMENT PERMIT WILL BE REQUIRED TO CHECK ROADS, STREET SIGNAGE, HYDRANT LOCATIONS AND HYDRANT FLOW. HYDRANT FLOW MINIMUM REQUIRED IS 1,000 GPM FOR RESIDENTIAL AND MINIMUM 1,500 GPM FOR COMMERCIAL BUT REFER TO BRUNSWICK COUNTY FIRE PREVENTION ORDINANCE FOR SPECIFICS.
29. ANY AMENITY CENTER COMMUNITY POOL WILL REQUIRE HEALTH DEPARTMENT APPROVAL AT SITE SPECIFIC REVIEW.
30. STREET NAMES WILL NEED TO BE SECURED WITH GIS DEPARTMENT PRIOR TO PLATTING.
31. PROJECT LIES WITHIN A HALF MILE OF A VOLUNTARY AGRICULTURAL DISTRICT.
32. ALL NON-RESIDENTIAL IMPROVEMENTS ARE SUBJECT TO SITE SPECIFIC REVIEW.
33. A FLOODPLAIN DEVELOPMENT WILL BE REQUIRED FOR ANY WORK (INCLUDING FILL AND STORM WATER POND CONSTRUCTION) PRIOR TO THE START OF CONSTRUCTION. PROPOSED GRADING AND UTILITY PLANS RELEASED FOR CONSTRUCTION SHALL BE SUBMITTED TO DETERMINE THE REQUIRED FLOODPLAIN DEVELOPMENT REQUIRED.

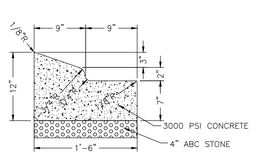
PROJECT DATA

PARCEL NUMBERS:	16900013
ZONING:	R7500
TOTAL PROJECT AREA:	6,363,680 SF/146.09 AC
WETLANDS:	2,872,503 SF/65.90 AC
DENSITY:	5.8 UNITS/AC
FEMA ZONE:	AE, X
FIRM MAP:	3720202900K
USES:	SINGLE FAMILY
DEVELOPMENT SUMARY:	
PROJECT DENSITY:	204 UNITS/146.09 AC=1.37 UNITS/AC
MAX ALLOWABLE DENSITY:	146.09 AC(5.8 UNITS/AC) = 847 UNITS MAX
DENSITY UTILIZATION:	(204 UNITS/847 UNITS)(100) = 24.09%
PROPOSED SINGLE FAMILY:	204 UNITS TOTAL
OPEN SPACE:	
REQUIRED:	146.09 AC x 25% = 36.52 AC
REQUIRED ACTIVE:	36.52 AC x 15% = 5.48 AC
PROPOSED:	
PROPOSED PASSIVE:	81.82 AC
PROPOSED ACTIVE:	12.52 AC
TOTAL PROVIDED:	94.34 AC
DIMENSIONAL STANDARDS SINGLE-FAMILY	
MIN. LOT AREA:	5,250 SF
MIN. LOT WIDTH:	42'
FRONT SETBACK:	20'
REAR SETBACK:	10'
SIDE SETBACK:	5'
STREET SIDE:	10'
UTILITIES:	
WATER:	BRUNSWICK COUNTY
SEWER:	BRUNSWICK COUNTY

LEGEND

- PROPERTY LINE
- RIGHT OF WAY
- PROPOSED LOT
- RBF — RBF — 30' BC RIPARIAN BUFFER
- 30 BF — 30' PERIMETER BUFFER
- ST — ST — STREAM
- 50 IB — 50' IMPERVIOUS SETBACK FROM STREAM





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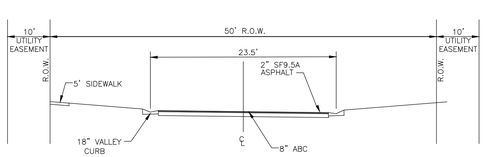

TYPICAL STREET SECTION
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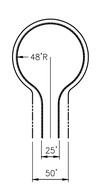

CUL-D-SAC DETAIL
NTS

SCALE: 1" = 150'
0 150 300 450

SYMBOL	DATE	DESCRIPTION	BY
		REVISIONS	

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PLAN DEVELOPMENT
FOLLY HILLS SUBDIVISION
--
BRUNSWICK COUNTY, NORTH CAROLINA

DEVELOPER:
MALPHRUS GROUP LLC
24 LUCKY CREEK DR.
BEAUFORT, SC

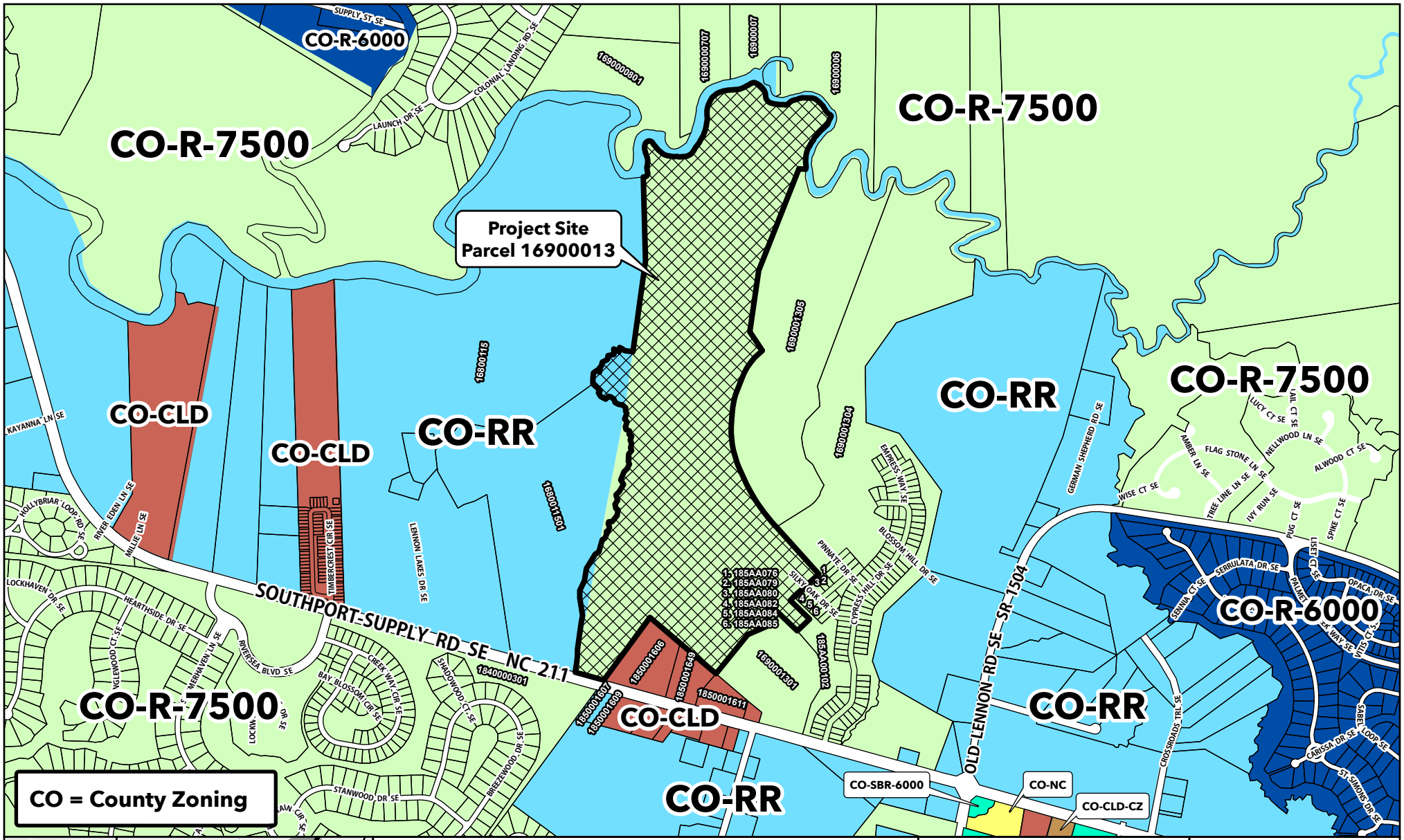
NORRIS & BLAND — CONSULTING ENGINEERS, P.C. —
1429 ASH LITTLE RIVER RD. NW
ASH, NC 28420
(910) 287-5900
Licence #C-5102

25021

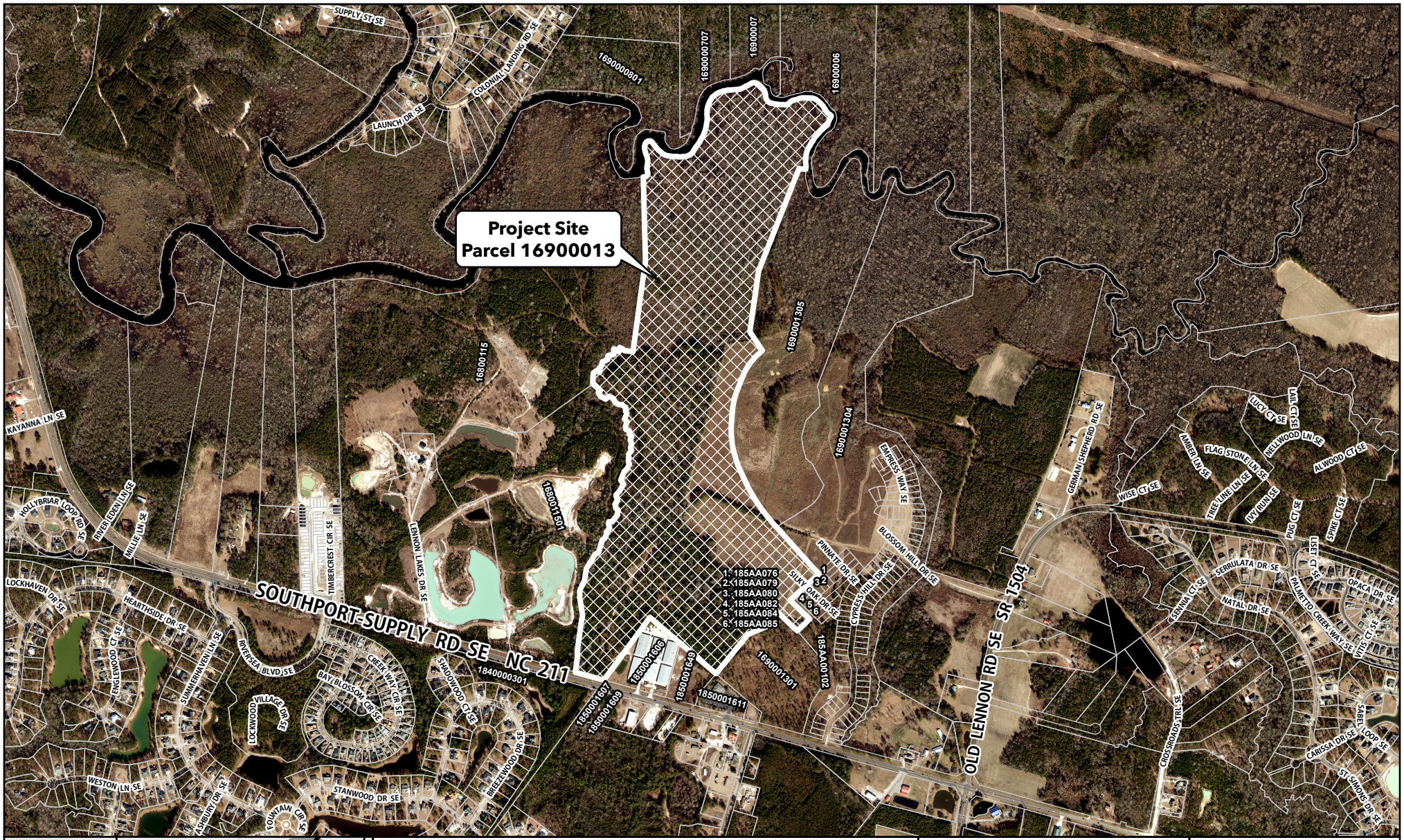
DES.	JKB
CKD.	JPN
DRWN.	EDB
DATE	05/22/25

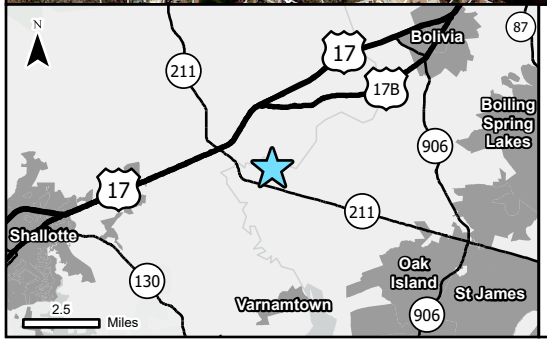
NORTH CAROLINA PROFESSIONAL ENGINEER JOSEPH K. BLAND 049220 — NOT PERMITTED FOR CONSTRUCTION

C1



Brunswick County Planning Board
Planned Development
Folly Hills
Case PD-157
Zoning Map





Brunswick County Planning Board
Planned Development
Folly Hills
Case PD-157
Imagery Map

N
W
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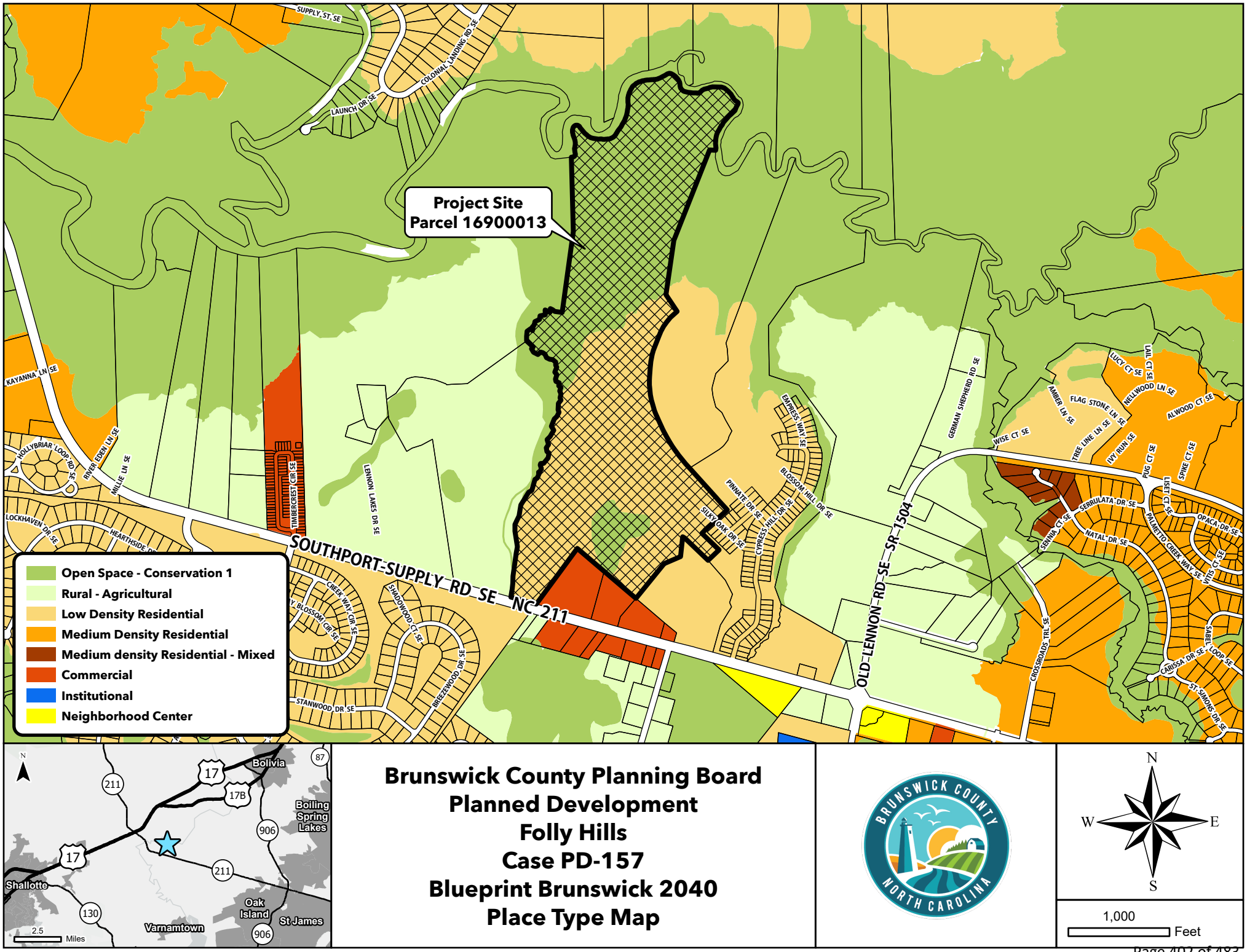
1,000
Feet



Brunswick County Planning Board
Planned Development
Folly Hills
Case PD-157
Blueprint Brunswick 2040
Place Type Map

N
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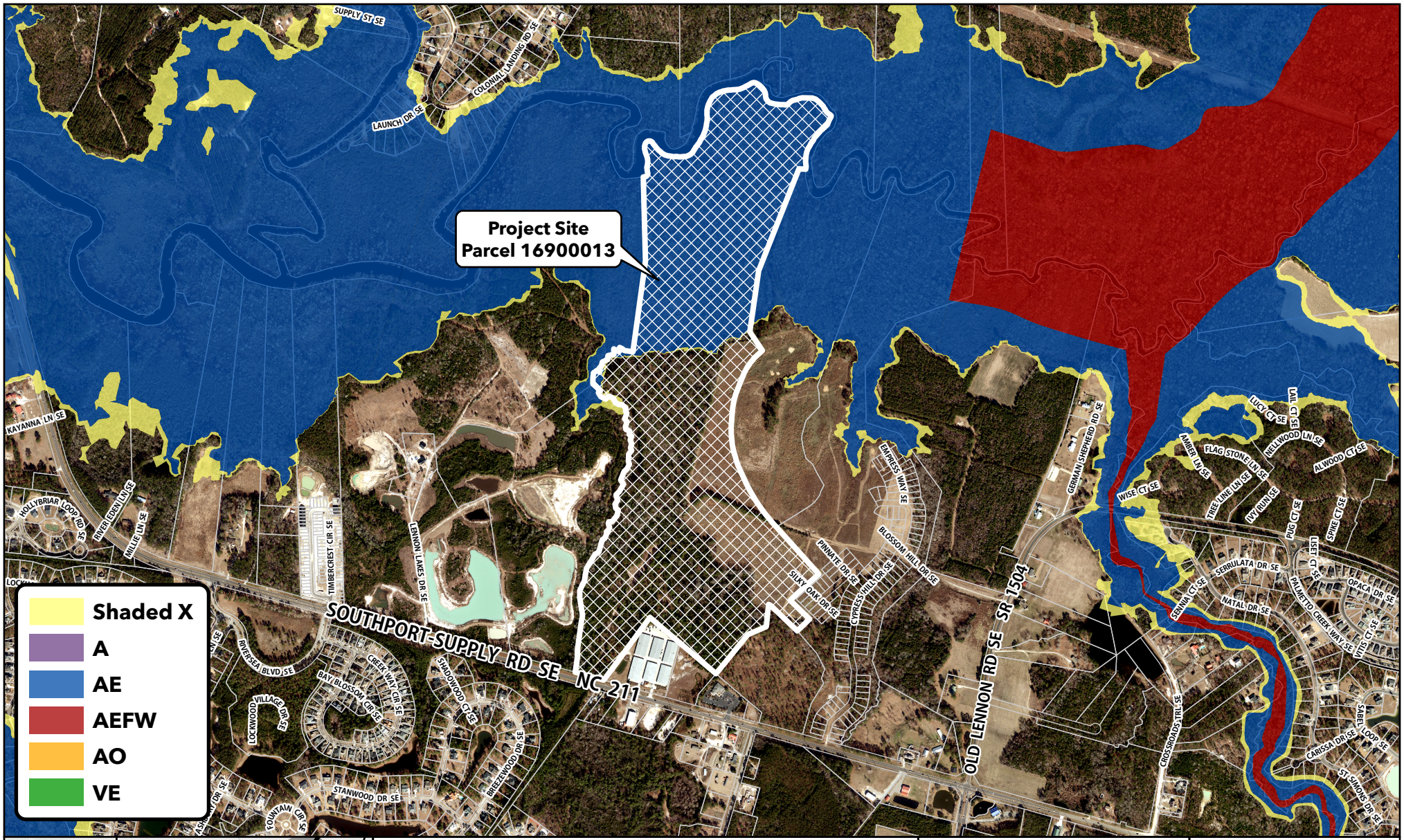
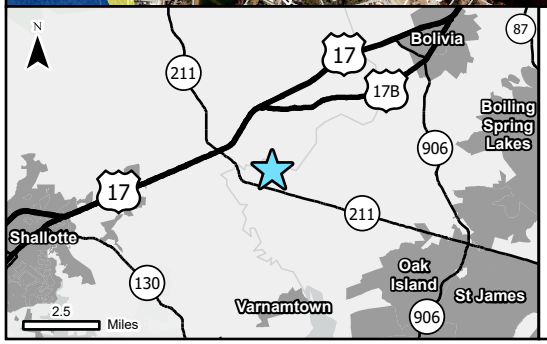
1,000
Feet





Brunswick County Planning Board
Planned Development
Folly Hills
Case PD-157
Flood Hazards Map

N
W
E
S

1,000
Feet

June 25, 2025

Benjamin T. Hughes, PE
District Engineer
NCDOT Division 3, District 3
Phone: (910) 632-0891
Email: bthughes@ncdot.gov

Reference: Folly Hills Subdivision (Phase 1) – Brunswick County, North Carolina

Subject: Turn Lane Warrant

Dear Mr. Hughes:

RFK Engineers PLLC (RFK) has evaluated the trip generation potential of Phase 1 of the proposed Folly Hills Subdivision development that is to be located on the north side of NC 211 west of Old Lennon Road (Parcel ID 16900013) in Brunswick County, North Carolina. Phase 1 of the proposed residential development is expected to consist of up to 204 single family lots with completion estimated by 2030.

Direct access to the parcel is proposed via a new full-movement driveway on NC 211 located approximately 3,500 feet west of Old Lennon Road. Secondary access is proposed via interconnectivity to the adjacent Rolling Hills Subdivision located to the east of the proposed development. The Rolling Hills Subdivision has an existing access that connects directly to NC 211 approximately 1,300 feet west of Old Lennon Road. Refer to the attachments for a conceptual site plan.

Trip Generation

Average weekday daily as well as AM and PM peak hour site trips were calculated utilizing methodology contained within the 11th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual, which is the current edition. Traffic was generated utilizing equations for the peak hour of adjacent street traffic based on the number of dwelling units as the independent variable for the ITE land use Single-Family Detached Housing (ITE Code 210). Refer to Table 1 for a summary of the trip generation results.

Table 1: Trip Generation Summary

ITE Land Use (Code)	Independent Variable	Average Daily Traffic (vpd)	AM Peak Hour (vph)		PM Peak Hour (vph)	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (210)	204 dwelling units	1,944	36	107	122	72

The first 204 lots of the proposed development could generate 143 trips (36 entering and 107 exiting) during the AM peak hour and 194 trips (122 entering and 72 exiting) during the PM peak hour.

Based on coordination with the North Carolina Department of Transportation (NCDOT) and Brunswick County (County) staff, because the peak hour trip generation potential is less than the Unified Development Ordinance (UDO) threshold of 200 peak hour trips, no Traffic Impact Analysis (TIA) is required. Instead, the traffic volumes at the proposed site access on NC 211 were compared to the turn lane warrant charts located within the NCDOT *Policy on Street and Driveway Access to North Carolina Highways* and Roadway Design Manual.

Turn Lane Warrant Methodology and Results

Based on traffic counts collected in May 2025, NC 211 carries approximately 19,000 vehicles per day. Table 1 (below) shows to the peak hour traffic volumes by direction over the course of two days with the calculated average provided as well. In order to determine the length of left and right turn lanes that would be warranted at the proposed site access on NC 211, the existing peak hour volumes were projected to the anticipated build year for Phase 1 (2030) utilizing a compounded annual growth rate of 2%, commonly approved by NCDOT. The projected (no build) volumes were then combined with the inbound site-generated traffic volumes that were distributed 50%/50% from the east and west on NC 211 based on the existing traffic volumes. The volumes were then graphed on the NCDOT turn lane warrant chart. Refer to Table 2 (below) for a progression of the turn lane warrant calculations. Refer to the attachments for the raw traffic counts, as well as the turn lane warrant charts with the weekday AM and PM peak hour volumes graphed.

Table 1: Peak Hour Traffic Volumes on NC 211

Direction	Day 1		Day 2		*Average*	
	AM	PM	AM	PM	*AM*	*PM*
EBT	758	696	740	688	*749*	*692*
WBT	821	817	762	803	*792*	*810*

Table 2: Turn Lane Warrant Calculations

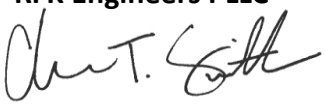
Direction	Existing		No Build[1]		Site			Build	
	AM	PM	AM	PM	%	AM	PM	AM	PM
EBL	-	-	-	-	50	18	61	18	61
EBT	749	692	827	764	-	-	-	827	764
WBT	792	810	874	894	-	-	-	874	894
WBR	-	-	-	-	50	18	61	18	61

1. Peak hour no-build volumes calculated assuming a compounded annual growth rate of 2% from 2025 to 2030.

Based on the NCDOT turn lane warrant charts, left and right turn lanes with a minimum of 100 feet of full width storage are warranted.

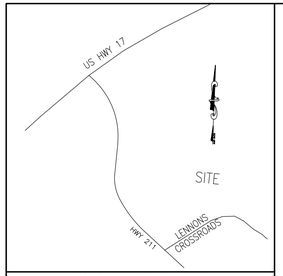
If you should have any questions regarding this correspondence, please contact me via email (csmith@rfkengineers.com) or at (336) 813-9289.

Sincerely,
RFK Engineers PLLC

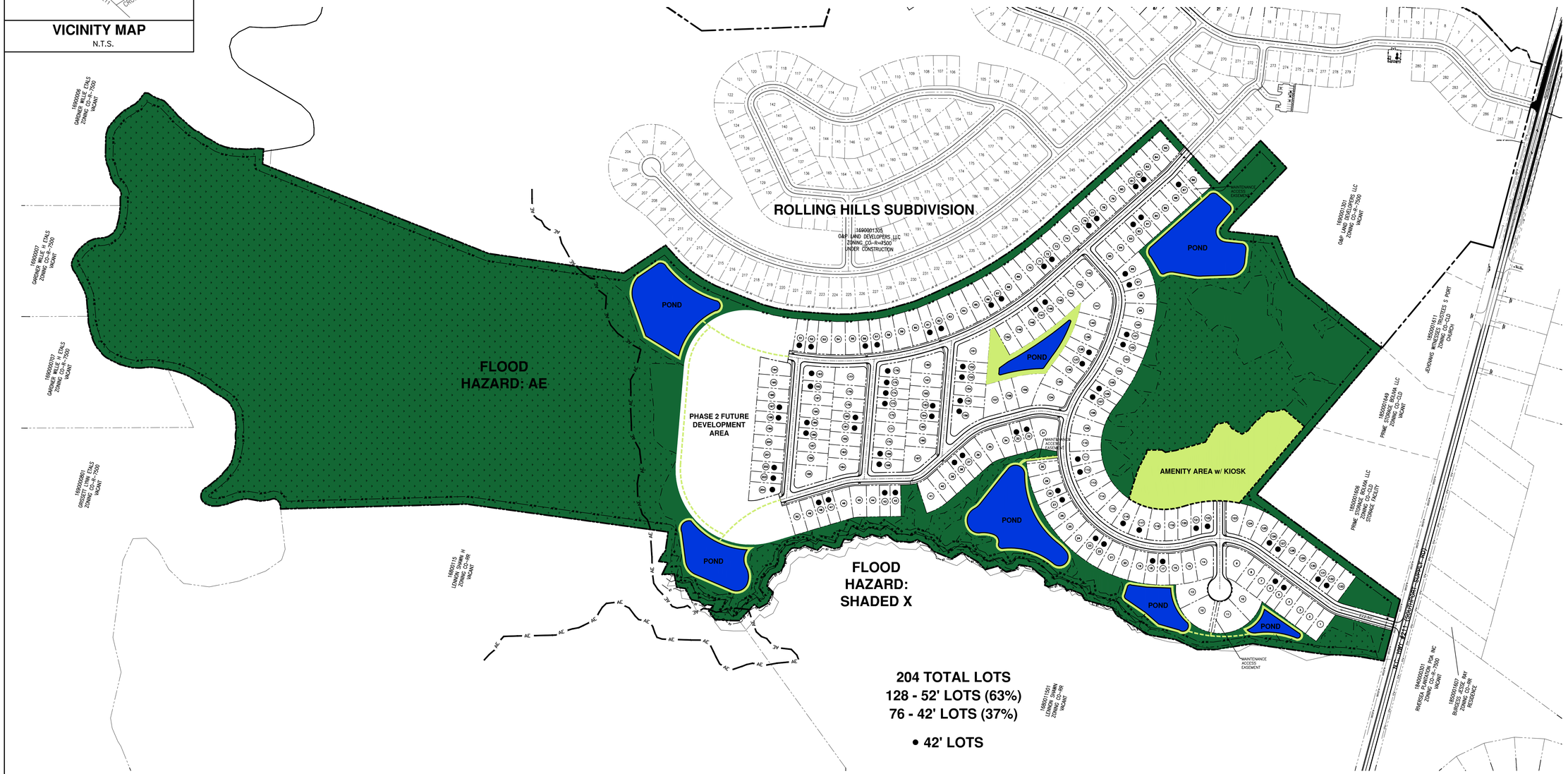


Chase Smith, PE
Senior Traffic Engineer

Attachment: Traffic Counts, Turn Lane Warrants



VICINITY MAP
N.T.S.

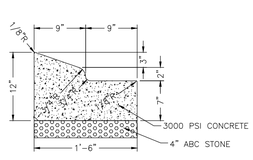


204 TOTAL LOTS
128 - 52' LOTS (63%)
76 - 42' LOTS (37%)

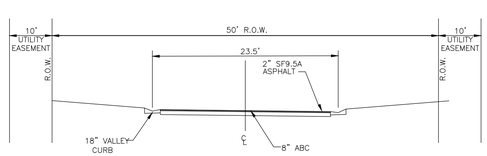
• 42' LOTS

LEGEND

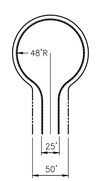
- PROPERTY LINE
- RIGHT OF WAY
- PROPOSED LOT
- RBF — RBF — 30' BC RIPARIAN BUFFER
- 30 BF — 30' PERIMETER BUFFER
- ST — ST — STREAM
- 50 IB — 50' IMPERVIOUS SETBACK FROM STREAM



MOUNTABLE CURB
NTS



TYPICAL STREET SECTION
NTS



CUL-D-SAC DETAIL
NTS

- ACTIVE OPEN SPACE
- PASSIVE OPEN SPACE

SCALE: 1" = 200'
0 200 400 600

SYMBOL	DATE	DESCRIPTION	BY
		REVISIONS	

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OVERALL PLAN
FOLLY HILLS SUBDIVISION
--
BRUNSWICK COUNTY, NORTH CAROLINA

DEVELOPER:
MALPHRUS GROUP LLC
24 LUCKY CREEK DR.
BEAUFORT, SC

NORRIS & BLAND
— CONSULTING ENGINEERS, P.C. —
1429 ASH-LITTLE RIVER RD. NW
ASH, NC 28420
(910) 287-5900

Licence #C-5102

25021

DES. JKB
CKD. JPN
DRWN. EDB

DATE 05/22/25

NOT FOR CONSTRUCTION
NORTH CAROLINA
PROFESSIONAL
ENGINEER
JOSEPH K. BLAND
NOT PRINTED OR SIGNED

C0

Daily Vehicle Volume Report

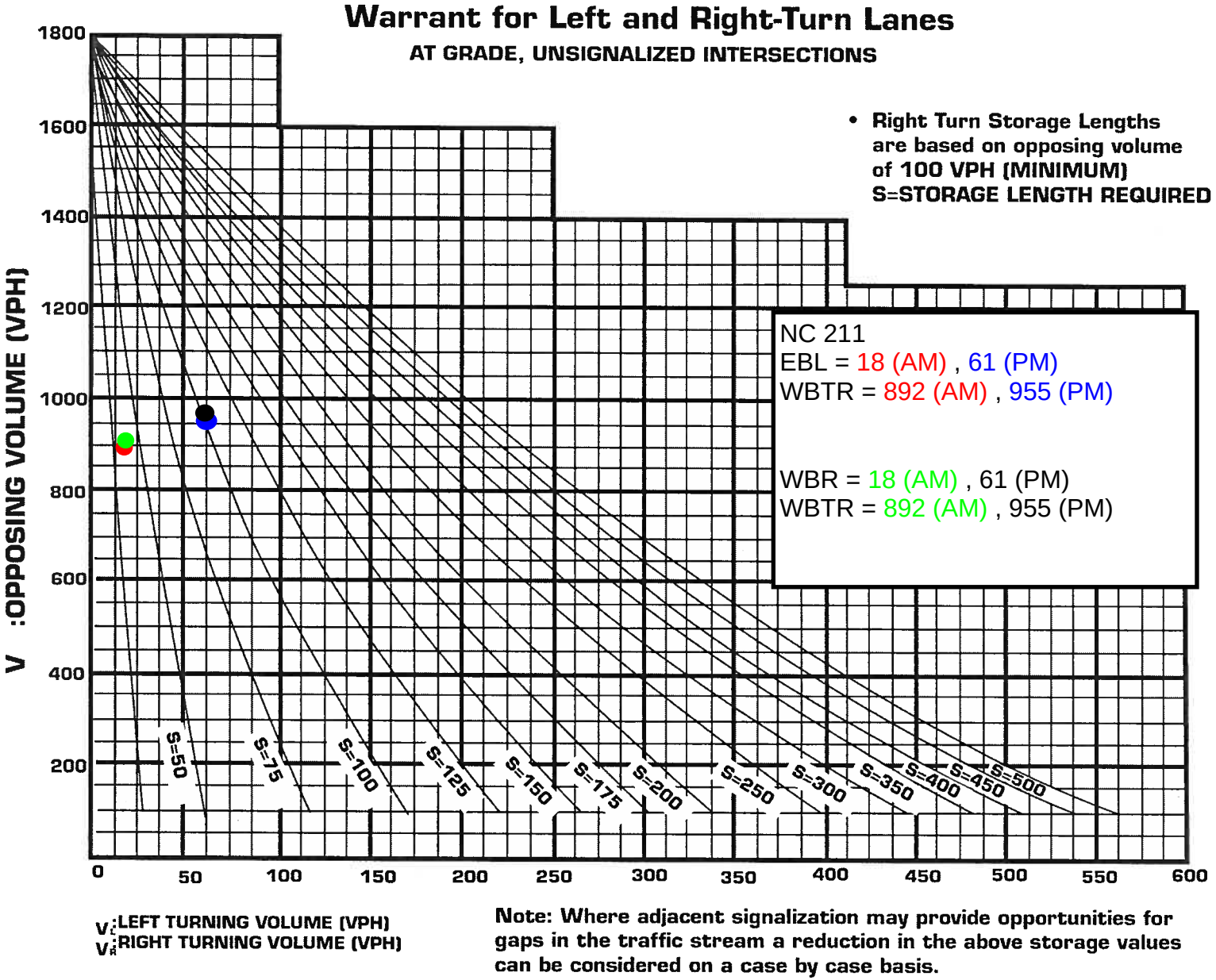
Study Date: Tuesday, 05/20/2025
Unit ID: NC 211 East
Location: NC 211 West

	Westbound Volume	Eastbound Volume	Total Volume
00:00 - 00:59	24	35	**59**
01:00 - 01:59	10	18	**28**
02:00 - 02:59	12	12	**24**
03:00 - 03:59	19	28	**47**
04:00 - 04:59	59	83	**142**
05:00 - 05:59	144	282	**426**
06:00 - 06:59	461	421	**882**
07:00 - 07:59	821	758	**1579**
08:00 - 08:59	782	690	**1472**
09:00 - 09:59	693	544	**1237**
10:00 - 10:59	698	596	**1294**
11:00 - 11:59	641	679	**1320**
12:00 - 12:59	731	669	**1400**
13:00 - 13:59	643	698	**1341**
14:00 - 14:59	640	701	**1341**
15:00 - 15:59	805	800	**1605**
16:00 - 16:59	817	696	**1513**
17:00 - 17:59	748	668	**1416**
18:00 - 18:59	507	472	**979**
19:00 - 19:59	286	322	**608**
20:00 - 20:59	193	272	**465**
21:00 - 21:59	129	193	**322**
22:00 - 22:59	67	104	**171**
23:00 - 23:59	35	41	**76**
Totals	**9965**	**9782**	**19747**
AM Peak Time	**07:20 - 08:19**	**07:18 - 08:17**	**07:19 - 08:18**
AM Peak Volume	**853**	**823**	**1661**
PM Peak Time	**15:15 - 16:14**	**14:36 - 15:35**	**15:16 - 16:15**
PM Peak Volume	**897**	**820**	**1629**

Daily Vehicle Volume Report

Study Date: Wednesday, 05/21/2025
Unit ID: NC 211 East
Location: NC 211 West

	Westbound Volume	Eastbound Volume	Total Volume
00:00 - 00:59	23	28	**51**
01:00 - 01:59	14	18	**32**
02:00 - 02:59	12	18	**30**
03:00 - 03:59	20	23	**43**
04:00 - 04:59	56	63	**119**
05:00 - 05:59	150	288	**438**
06:00 - 06:59	419	408	**827**
07:00 - 07:59	762	740	**1502**
08:00 - 08:59	798	695	**1493**
09:00 - 09:59	697	544	**1241**
10:00 - 10:59	677	564	**1241**
11:00 - 11:59	698	616	**1314**
12:00 - 12:59	673	683	**1356**
13:00 - 13:59	665	671	**1336**
14:00 - 14:59	575	734	**1309**
15:00 - 15:59	757	689	**1446**
16:00 - 16:59	803	688	**1491**
17:00 - 17:59	404	337	**741**
18:00 - 18:59	-	-	**-**
19:00 - 19:59	-	-	**-**
20:00 - 20:59	-	-	**-**
21:00 - 21:59	-	-	**-**
22:00 - 22:59	-	-	**-**
23:00 - 23:59	-	-	**-**
Totals	**8203**	**7807**	**16010**
AM Peak Time	**07:46 - 08:45**	**07:27 - 08:26**	**07:37 - 08:36**
AM Peak Volume	**859**	**796**	**1632**
PM Peak Time	**15:59 - 16:58**	**14:23 - 15:22**	**14:55 - 15:54**
PM Peak Volume	**813**	**751**	**1495**


Warrant for Left and Right-Turn Lanes
AT GRADE, UNSIGNALIZED INTERSECTIONS
• Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
S=STORAGE LENGTH REQUIRED
NC 211
EBL = 18 (AM) , 61 (PM)
WBTR = 892 (AM) , 955 (PM)
WBR = 18 (AM) , 61 (PM)
WBTR = 892 (AM) , 955 (PM)
V :OPPOSING VOLUME (VPH)
1800
1600
1400
1200
1000
800
600
400
200
0
50
100
150
200
250
300
350
400
450
500
550
600
S=50
S=75
S=100
S=125
S=150
S=175
S=200
S=250
S=300
S=350
S=400
S=450
S=500
V: LEFT TURNING VOLUME (VPH)
V: RIGHT TURNING VOLUME (VPH)
Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

Planning & Community Enforcement
Planning Phone: 910.253.2025
Community Enforcement Phone: 910.253.2200
Fax: 910.253.2437
Email: planning@brunswickcountync.gov

Location: Government Center Building I
75 Courthouse Drive NE, Bolivia, NC 28422

To: Jody Bland, Norris and Bland Engineering

From: Marc Pages, Brunswick Planning; 910-253-2056

CC: File;

Date: 5/13/2025

Re: Folly Hills Planned Development PD-157

Name	Division	Status
Amy Aycock	County Engineering, Utilities	Comments provided below
Richard Christensen, PE	County Engineering, Stormwater	Comments provided below
Joe Oliver	County Fire	Comments provided below
Helen Bunch	Transportation Planner	Comments provided below
Danny Thornton	Environmental Health	Comments provided below
James Paggioli	Floodplain	Comments provided below
Elliot Swain	Brunswick Soil & Water Dist.	Comments provided below
Jeff Walton	Planning, Commercial Review	Comments provided below
Clayton Rivenbark	BEMC	Comments provided below

The following is a list of comments for review from planning regarding the project. Please provide your corrections as listed below. Additional review will be required once all the needed documents have been provided. Please contact me for any further questions.

Amy Aycock, Engineering Utilities, 910-253-2407; (amy.aycock@brunswickcountync.gov)

- Existing 12" watermain on Southport-Supply Rd (Rolling Hills subd, there is a 2" main on Silky Road where the road interconnection is proposed).
- Existing 18" high pressure forcemain on Southport Supply Rd available for connection (end of line sanitary sewer manhole very shallow on Silky Road, assuming no interconnection of sewer).
- You have noted requirements for fire hydrant spacing and water meter boxes.
- No proposed sewer shown, gravity is always the preferred sewer installed to the furthest extent possible.
- No proposed pump station site shown on plans (note about pump station screening on plans) – Odor Control will be determined during plan review.
- NCDOT Encroachment required for connections on Hwy 211.
- Here is the link for any NCDEQ water or sewer applications that may be needed: https://www.deq.nc.gov/about/divisions/water-resources
- Here is the link for NCDOT permits that may be needed: https://connect.ncdot.gov/municipalities/Pages/default.aspx
- Here is the link for Brunswick County Engineering Design Manual: https://www.brunswickcountync.gov/wp-content/uploads/2023/04/BC-Design-Manual-Rec-1.06-revised-4-10-23.pdf
- Here is the link for the Brunswick County Engineering Department: https://www.brunswickcountync.gov/engineering/

Richard Christensen, Engineering Stormwater, 910-253-1718; (richard.christensen@brunswickcountync.gov)

- NCDEMLR Sedimentation & Erosion Control Permit is required.
- NCDEQ Stormwater Management Permit is required.
- County Stormwater Permit is required.
- County SW Requirements: Pre/post for the 1-year, 10-year and 25-year rain events. No overtopping of SCMs during the 100-year rain event.

Joe Oliver, Fire Marshall, 910-253-2043; (joseph.oliver@brunswickcountync.gov)

- No hydrant plan shown - hydrants shall be provided every 500 feet and not to exceed 250 feet from any point in the road (hydrants shall not be placed in dead end areas unless to meet spacing requirements).
- Fire Development Permit will be required to check roads, street signage, hydrant locations and hydrant flow. Hydrant flow minimum required is 1000 GPM for residential and minimum 1500 GPM for commercial but refer to Brunswick County Fire Prevention Ordinance for specifics.
- General Comments:
    - Need to apply for a fire development permit. https://www.brunswickcountync.gov/code-administration/permits/ . Select Fire Application and complete all applicable fields. And upload civil/utility plans.
    - Need to review the "Development / Subdivision Fire approval Guidance document located at the following link.
    - https://www.brunswickcountync.gov/fire-marshal/development-subdivision-fire-approval-process/
    - Final plat will require fire approval.

Danny Thornton, Environmental Health, 910-253-2252; (danny.thornton@brunswickcountync.gov)

- Any amenity center community pool will require health department approval at site specific review.

Jan Clemmons, County GIS, 910-253-2392; (jan.clemmons@brunswickcountync.gov)

- Street names will need to be secured with the GIS Department prior to platting.

Helen Bunch, Transportation Planner, 910-253-2035; (helen.bunch@brunswickcountync.gov)

- Show site distance triangles.
- Please indicate the status of the TIA.
- Show sidewalk in the street detail.
- Identify any mail kiosk locations.

James Paggioli, CFM, Floodplain, 910-253-2054; (james.paggioli@brunswickcountync.gov)

- Indicate the AE Flood Zone boundary on the site plan.

Elliot Swain, Brunswick Soil and Water, 910-253-2832; (elliot.swain@brunswickcountync.gov)

- Note that the project is within ½ mile of a VAD District.

Bridger Warlick, Focus Broadband, 910-755-1797; (bwarlick@focusbroadband.com)

- Please contact for service questions.

Clayton Rivenbark, BEMC, 910-540-2386; (clayton.rivenbark@bemc.org)

- Please ensure that public utility lines are located within ROW and not in the individual lots.

Marc Pages – Planning, Commercial Review, 910-253-2056; (marc.pages@brunswickcountync.gov)

- Please provide an update on the TIA status for the project.
- Please indicate distance of NC 211 ROW to first lot in the development.
- Please note that all non-residential improvements are subject to site specific review.
- Please show sidewalk(s) in the street detail.
- Please note all open space areas. Indicate the specific recreation space uses in the site data and acreage of each recreation space.
- Planning staff recommends buffers between the back-to-back lots.

- Please note on the plan that the project lies within a half mile of a Voluntary Agricultural District.
- Please consider placing the wetlands in a conservation easement.
- Planning staff recommend that 5% of the residential units be Workforce Housing units. These units would be affordable to those households earning 80% or less of the HUD Area Median Income.
- Please note that a neighborhood meeting is recommended per UDO Section 9.2.

No Comments received from:
NCDOT, Duke Power, Focus, NC Wildlife, USACE, BC Schools, BC Parks, BC Sherriff, BC Code Administration, H2GO, Southeast Sanitary Dist.

Please provide a digital set of revised plans to the Brunswick County Planning Department by 5:00 p.m. on May 27, 2025.

dotloop signature verification: dtlp.us/h8RH-GNEF-PhJl

Planned Development (PD)
Application and Checklist
Fee: $1,000 (Brunswick County Jurisdiction)
$968 (City of Northwest Jurisdiction)
Brunswick County Planning Dept. 910-253-2025

For Office Use Only
File #_____ Invoice #_____
Date Received:_____
Northwest Jurisdiction ☐ YES ☐ NO

This application is a request to construct a Planned Development consistent with a submitted master site plan that identifies permitted land uses, densities, building setbacks, heights, lot layout, buffers, off-street parking and street widths. This application should only be used if the proposed development is requesting flexibility in zoning requirements in order to achieve a development as an alternative to a conventional zoning design standards. Please reference Section 4.3.1. of the Unified Development Ordinance (UDO) for requirements regarding Planned Developments (PD's).

Please fill out form completely, supplying all necessary information and documentation to support your request.

Property Owner

Name XIAOMING JIAO
Address 3101 SUMMER OAKS DR.
City, St, Zip APEX NC 27539-6834
Phone (910) 885-9708
Fax
Email jasminejiao@outlook.com

Applicant or Representative

Name JOEY BLAND
NORRIS & BLAND CONSULTING ENG.
Address 1401 ASH LITTLE RIVER RD.
City, St, Zip ASH NC 28420
Phone 910-287-5900
Fax
Email jblandcnbengr.com

Property Information

Address NONE ASSIGNED - ADJACENT TO 890 SOUTHPORT-SUPPLY RD.
Tax Parcel(s) 169 00013
Acreage 146.09
Current Zoning R7500
Public Utilities Available? Water ✓ Sewer ✓
BC PU

Project Information

Project Name Folly Hills
Modification or Expansion Of Existing PD? Yes (No)
Single Family Acres 146.09 Lots 274
Multi-Family Acres ϕ Units ϕ
Commercial Acres ϕ

Authorization

Property Owner Signature Xiaoming Jiao dotloop verified 04/25/25 11:44 AM EDT 1WAH-C9YV-TGBO-ANAJ
Date _____

Applicant/Representative Signature _____
Date 4/24/25

Please submit three folded copies and one electronic copy of the site plan with application.

Planned Development Checklist

PD-157

ADJACENT PROPERTY OWNER(S)

PARCEL ID	NAME 1	NAME 2	ADDRESS	CITY	STATE	ZIP
1850001609	CARR INSURANCE & REALTY INC		5521 ROB GANDY BLVD SE #C	SOUTHPORT	NC	28461-2753
1840000301	RIVERSEA PLANTATION POA INC		PO BOX 26844	CHARLOTTE	NC	28221-6844
1680011501	LENNON SHAWN		452 LENNON LAKES DR SE	BOLIVIA	NC	28422-4203
1690000707	GARDNER WILLIE H ETALS	% CALVESTER GARDNER	3105 BROWN RD SE	BOLIVIA	NC	28422-7539
1690000801	GRISSETT LYNN ETALS		PO BOX 195	SUPPLY	NC	28462-0195
16800115	LENNON SHAWN H		452 LENNON LAKES DR SE	BOLIVIA	NC	28422-4203
1850001607	BURGESS JESSE RAY		879 SOUTHPORT SUPPLY RD	SOUTHPORT	NC	28461
1690001301	O & P LAND DEVELOPERS LLC		PO BOX 1366	LUMBERTON	NC	28359-1366
1850001611	JEHOVAHS WITNESSES TRUSTEES S PORT	C/O DEGLEFFETTI MICHAEL	3836 TIMBER STREAM DR	SOUTHPORT	NC	28461-9023
1690001305	HIC ROLLING HILLS LLC		2626 GLENWOOD AVE STE 550	RALEIGH	NC	27608-1370
1690001304	HIC ROLLING HILLS LLC		2626 GLENWOOD AVE STE 550	RALEIGH	NC	27608-1370
185AA00102	ROLLING HILLS ESTATES COMM ASSN INC		6752 PARKER FARM DR STE 210	WILMINGTON	NC	28405-3175
185AA076	HIC ROLLING HILLS LLC		2626 GLENWOOD AVE STE 550	RALEIGH	NC	27608-1370
185AA079	HIC ROLLING HILLS LLC		2626 GLENWOOD AVE STE 550	RALEIGH	NC	27608-1370
185AA080	HIC ROLLING HILLS LLC		2626 GLENWOOD AVE STE 550	RALEIGH	NC	27608-1370
185AA081	HIC ROLLING HILLS LLC		2626 GLENWOOD AVE STE 550	RALEIGH	NC	27608-1370
185AA082	D R HORTON INC		6752 PARKER FARM DR	WILMINGTON	NC	28405-3175
185AA083	D R HORTON INC		6752 PARKER FARM DR	WILMINGTON	NC	28405-3175
185AA084	D R HORTON INC		6752 PARKER FARM DR	WILMINGTON	NC	28405-3175
185AA085	D R HORTON INC		6752 PARKER FARM DR	WILMINGTON	NC	28405-3175
185AA086	D R HORTON INC		6752 PARKER FARM DR	WILMINGTON	NC	28405-3175
1850001606	PRIME STORAGE BOLIVIA LLC		83 RAILROAD PL # 85	SARATOGA SPGS	NY	12866-2124
1850001649	PRIME STORAGE BOLIVIA LAND LLC		85 RAILROAD PL	SARATOGA SPGS	NY	12866-2124
16900007	GARDNER WILLIE H ETALS	% CALVESTER GARDNER	3105 BROWN RD SE	BOLIVIA	NC	28422-7539
16900006	GARDNER WILLIE ETALS	% CALVESWTER GARDNER	3105 BROWN RD SE	BOLIVIA	NC	28422-7539

OWNER(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
16900013	JIAO XIAOMING		3101 SUMMER OAKS DR	APEX	NC	27539-6834

APPLICANT(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
PER APPLICATION	JODY BLAND	NORRIS & BLAND CONSULTING ENGINEERS, P.C.	1401 ASH-LITTLE RIVER RD NW	ASH	NC	28420

PARCEL ID	NAME 1	NAME 2
1850001609	CARR INSURANCE & REALTY INC	
1840000301	RIVERSEA PLANTATION POA INC	
1680011501	LENNON SHAWN	
1690000707	GARDNER WILLIE H ETALS	% CALVESTER GARDNER
1690000801	GRISSETT LYNN ETALS	
16800115	LENNON SHAWN H	
1850001607	BURGESS JESSE RAY	
1690001301	O & P LAND DEVELOPERS LLC	
1850001611	JEHOVAHS WITNESSES TRUSTEES S PORT	C/O DEGLEFFETTI MICHAEL
1690001305	HIC ROLLING HILLS LLC	
185AA00102	ROLLING HILLS ESTATES COMM ASSN INC	
185AA082	D R HORTON INC	
1850001606	PRIME STORAGE BOLIVIA LLC	
1850001649	PRIME STORAGE BOLIVIA LAND LLC	
16900006	GARDNER WILLIE ETALS	% CALVESWTER GARDNER
	OWNERS	
16900013	JIAO XIAOMING	
PER APPLICATION	JODY BLAND	NORRIS & BLAND CONSULTING ENGINEER

ADDRESS	CITY	STATE	ZIP	CASE #
5521 ROB GANDY BLVD SE #C	SOUTHPORT	NC	28461-2753	CASE# PD-157
PO BOX 26844	CHARLOTTE	NC	28221-6844	CASE# PD-157
452 LENNON LAKES DR SE	BOLIVIA	NC	28422-4203	CASE# PD-157
3105 BROWN RD SE	BOLIVIA	NC	28422-7539	CASE# PD-157
PO BOX 195	SUPPLY	NC	28462-0195	CASE# PD-157
452 LENNON LAKES DR SE	BOLIVIA	NC	28422-4203	CASE# PD-157
879 SOUTHPORT SUPPLY RD	SOUTHPORT	NC	28461	CASE# PD-157
PO BOX 1366	LUMBERTON	NC	28359-1366	CASE# PD-157
3836 TIMBER STREAM DR	SOUTHPORT	NC	28461-9023	CASE# PD-157
2626 GLENWOOD AVE STE 550	RALEIGH	NC	27608-1370	CASE# PD-157
6752 PARKER FARM DR STE 210	WILMINGTON	NC	28405-3175	CASE# PD-157
6752 PARKER FARM DR	WILMINGTON	NC	28405-3175	CASE# PD-157
83 RAILROAD PL # 85	SARATOGA SPGS	NY	12866-2124	CASE# PD-157
85 RAILROAD PL	SARATOGA SPGS	NY	12866-2124	CASE# PD-157
3105 BROWN RD SE	BOLIVIA	NC	28422-7539	CASE# PD-157
				CASE# PD-157
3101 SUMMER OAKS DR	APEX	NC	27539-6834	CASE# PD-157
1401 ASH-LITTLE RIVER RD NW	ASH	NC	28420	CASE# PD-157

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Marc Pages, Deputy Director

Action Item# VII2
Sailors Haven Planned Development (PD-158)

Issue/Action Requested:
Consideration of the proposed Sailors Haven Planned Development consisting of 299 single family units on approximately 117.38 acres, creating an overall density of 2.55 dwelling units per acre.

Background/Purpose of Request:
The applicant, Coastal Cornerstone Development, LLC, requests site plan approval for a Planned Development on Tax Parcel 2270000102 located on Seaside Road SW (NC 904) near Sunset Beach. The project proposes 299 single family units on approximately 117.38 acres, creating an overall density of 2.55 dwelling units per acre.

Planning Department Recommendation:
Planning Staff has determined that the proposed Planned Development meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:

1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.
2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.

Attachments:
1. Staff Report
2. Site Plan

3. Zoning Map
4. Imagery Map
5. Flood Map
6. FLU Map
7. Turn Lane Warrant Analysis
8. TRC Comment Letter
9. Application
10. Mailing List

BRUNSWICK COUNTY
STAFF REPORT AND RECOMMENDATION

Application No. PD-158

Applicant: Paramounte Engineering

Project Name: Sailors Haven

Property Location: Seaside Road (NC 904)

Parcel Numbers: 2270000102

Zoning District: R-7500 (Medium Density Residential) and CLD (Commercial Low Density)
R-7500 Density Maximum – 5.8 Dwelling Units per Acre (with water and sewer)
"The R-7500, R-6000, and SBR-6000 districts are established to provide for orderly suburban residential development. A limited number of commercial and civic uses are allowed, subject to the restrictions necessary to preserve and protect the residential character of the neighborhood. A special permit process for higher intensity development is allowed, using discretion to balance issues of higher density with improved amenities. Due to the higher intensity developments contained in this district, it is intended to be applied to properties served by public sewer and water systems."

CLD Density Maximum – 13.6 Dwelling Units per Acre (with water and sewer)
"The CLD District is intended primarily to be used in outlying areas, adjacent to major thoroughfares, with yards and other provisions for reducing conflicts with adjacent residential uses, and with substantial setbacks to reduce marginal friction on adjacent major thoroughfares. Commercial uses in this District will serve the needs of residential neighborhoods for auto-dependent commercial facilities; and serve the needs of highway oriented tourist business."

Surrounding Zoning: R-7500 (Medium Density Residential), CLD (Commercial Low Density) and SB-MB-2 (Southport Jurisdiction)

Proposed Use: Sailors Haven is a proposed planned development, consisting of 299 single family units on approximately 117.38 acres, creating an overall density of 2.55 dwelling units per acre.

Approval Criteria

- The majority of surrounding uses consist of single family residential and vacant land.
- The Blueprint Brunswick Future Land Use Map denotes this area as LDR (Low Density Residential) and OSC-1 (Open Space Conservation).
- Parking will be off street with a minimum of 2 driveway parking spaces per lot.
- Proposed infrastructure:
    1. **Water** and **Sewer** will be provided by Brunswick County.
    2. **Roads** will be private.
- The proposed development will have a 30-foot, 0.6 opacity peripheral buffer and an 80-foot, 0.6 opacity buffer adjacent to Wyndfall Subdivision using existing vegetation to satisfy the requirement. Supplemental landscaping will be installed where necessary.

- The proposed development will have a 20-foot wide street buffer along Seaside Road.
- The required open space for the development is approximately 24.12 acres. The developer is proposing 36.77 acres of dedicated open space. The developer is also proposing 4.25 acres of recreation space of which 3.62 acres are required.
- The proposed project will generate approximately 2,772 vehicle trips per 24-hour weekday volume. A Driveway Warrant Analysis has been completed for the project. Proposed road improvements made by the TIA include:
    - Construct a northbound left turn lane on NC 904 with 75 feet of storage and appropriate full-width deceleration and taper lengths.
    - Construct a southbound right turn lane on NC 904 with 50 feet of storage and appropriate full-width deceleration and taper lengths
- The project proposes and additional vehicle emergency connection to Seaside Road. Two stubouts to adjacent properties are proposed for future vehicular connections.
- The Exceptional Design elements to be included in the project are as follows:
    1. The developer is proposing 36.77 acres of open space where as 24.12 acres are required.
    2. The stormwater ponds will be constructed to the 100-year storm event.
    3. Additional buffer between wetlands and proposed lots.
    4. Additional open space buffer proposed adjacent to Wyndfall Subdivision.
    5. All lots located outside of any AE Flood Zones.

- The design flexibility elements requested for the project are as follows:
    1. Reduction in lot dimensions.
    2. Reductions in setbacks.

- No portion of the site is located in an AE Flood Zone.
- Adjacent property owners were notified via US mail and a notification sign was posted on the subject property.
- TRC was held on May 13, 2025.
- A neighborhood meeting was held on May 29, 2025.

If approved, this development shall have a vested right for a period of three years. A two-year extension may be requested by the applicant to the Brunswick County Planning Department.

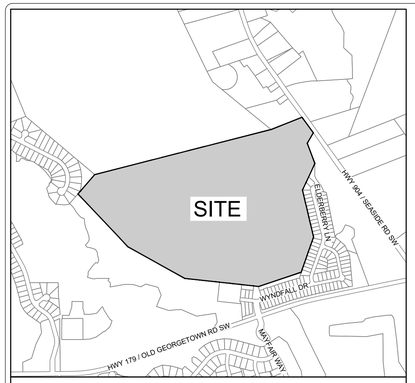
Planning Staff has determined that the proposed Planned Development meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:

1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.

2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.

3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.

4. Add a note to the plan that a 10-wide access easement shall be included within the Seaside Road street buffer for a future pedestrian path or greenway.



LOCATION MAP
SCALE: 1"=1,000'

NORTH

SITE INFORMATION

OWNER INFORMATION:	DIANE K BLACKMAN & WAYNE R CHYKIRDA PO BOX 6142 OCEAN ISLE BEACH, NC 28469
PROJECT ADDRESS:	HWY 904 / SEASIDE ROAD & SAW PIT RD
PID:	2270000102
PIN:	105603110972
RECORDED DEED / PLAT BOOK :	DB 4620 PG 485; PLAT 65/ 73
CURRENT ZONING:	CLD & R-7500
CURRENT ZONING:	PD-PLANNED DEVELOPMENT (BASE ZONING OF CLD & R-7500)
EXISTING USE:	VACANT LAND
PROPOSED USE:	SINGLE FAMILY DETACHED HOMES

EXISTING CONDITIONS NOTES

1. WETLAND DELINEATION PERFORMED BY DAVEY RESOURCE GROUP ON 3/5/25. THE JD IS CURRENTLY UNDER REVIEW BY THE USACE.
2. THE SUBJECT PARCEL LIES WITHIN FLOOD ZONE X (MINIMAL FLOOD RISK) AS INDICATED BY FEMA FLOOD ZONE PANEL 1056, MAP NUMBER 3720105600K, BEARING AN EFFECTIVE DATE OF AUGUST 28, 2018.
3. NO KNOWN HISTORIC OR ARCHEOLOGICAL SITES EXIST ON ANY OF THE SUBJECT PARCELS.
4. NO HERITAGE TREES FOUND ON SITE IN THE UPLAND AREAS PROPOSED FOR DEVELOPMENT, BUT IF ANY ARE LOCATED, THEY WILL BE DOCUMENTED.
5. HERITAGE TREES ARE DEFINED AS FOLLOWS:
   - 5.1. A FLOWERING DOGWOOD, LIVE OAK, LONG LEAF PINE, REDBAY, BLACK TUPELO OR LAUREL OAK WITH A TRUNK DIAMETER MEASUREMENT OF 4" OR GREATER MEASURED AT 4.5 FEET ABOVE GROUND;
   - 5.2. ANY TREE SPECIES INCLUDED IN THE PLANTING TABLE (SEE SECTION 6.1.5.C) WITH A TRUNK CALIPER MEASUREMENT OF 18" OR GREATER MEASURED AT 4.5 FEET ABOVE GROUND;

PROJECT SITE DATA

PROJECT DENSITY

ALLOWABLE DENSITY

± 117.38 TOTAL AC

± 110.9 R7500 AC x 5.8 DU/AC =	643 UNITS
± 6.48 C-LD AC x 13.6 DU/AC =	88 UNITS
TOTAL ALLOWABLE UNITS =	**731 UNITS ALLOWED** (± 6.21 DU/AC AVG.)
PROVIDED DENSITY	**299 SINGLE FAMILY DETACHED UNITS PROVIDED** (± 2.55 DU / AC)

PD DIMENSIONAL REQUIREMENTS

PD - PLANNED DEVELOPMENT (SINGLE FAMILY, DUPLEX, TOWNHOMES)

MINIMUM LOT AREA:	4500 SF MIN LOT
AVERAGE LOT SIZE:	4800 SF (±40' WIDE LOTS), 6000 SF (±50' WIDE LOTS)
MINIMUM LOT WIDTH:	40' SINGLE FAMILY
MAXIMUM BUILDING HEIGHT:	40' SF
SINGLE FAMILY SETBACKS:	
MINIMUM FRONT SETBACK:	10'
MINIMUM REAR SETBACK:	10'
MINIMUM INTERIOR SIDE SETBACK:	5' OR 10' TOTAL SUM OF SIDE YARDS
MINIMUM CORNER LOT SIDE SETBACK:	10'

SCREENING

1. THE SCREENING FOR ALL DUMPSTERS, HVAC UNITS, PUMP STATIONS AND UTILITY BOXES WILL BE CONSISTENT WITH THE UDO

PROJECT BUFFERS

1. A PROJECT BOUNDARY BUFFER WITH A MINIMUM OPACITY OF 0.6, 30' WIDE, SHALL BE REQUIRED ALONG ALL BOUNDARIES OF A PD EXCEPT PORTIONS OF THE PROJECT LOCATED ADJOINING A STREET OR ROADWAY ACCORDING TO ARTICLE 4.4 OF UDO.
2. A 20' WIDE STREET BUFFER SHALL BE REQUIRED ALONG ALL BOUNDARIES OF A PD FRONTING ON A COLLECTOR OR THOROUGHFARE STREET OR ROADWAY.
3. ALL BUFFERS WILL BE COMMON AREA AND BE LOCATED OUTSIDE OF ALL INDIVIDUAL LOTS.

STORMWATER & EROSION CONTROL

1. A STATE EROSION CONTROL PERMIT WILL BE REQUIRED FOR CLEARING AND/OR GRADING
2. STATE AND COUNTY STORMWATER PERMITS ARE REQUIRED BEFORE ANY CONSTRUCTION
3. PROJECT IS PROPOSED USING HIGH DENSITY STORMWATER .
4. STORMWATER MANAGEMENT WILL BE DESIGNED IN ACCORDANCE WITH STATE BRUNSWICK COUNTY REQUIREMENTS

UTILITIES

1. ALL WATER AND SEWER UTILITIES TO BE COORDINATED WITH BRUNSWICK COUNTY WATER AND SEWER.
2. WATER FLOW FOR COMMERCIAL PARCELS SHALL BE PROVIDED TO MEET NC FIRE PREVENTION CODE.
3. LOCATIONS OF WATER AND SEWER LINES ARE PRELIMINARY AND FINAL LOCATIONS WILL BE DESIGNED WITH SITE PLANS.
4. 10' UTILITY EASEMENTS WILL BE PROVIDED ON PROJECT ROADS.

BRUNSWICK COUNTY ENGINEERING NOTES

1. ALL SPRINKLERED BUILDINGS SHALL HAVE A POST INDICATOR VALVE
2. RPZ BACKFLOW PROTECTION DEVICES SHALL BE REQUIRED ON ALL WATER METER AND SPRINKLER SYSTEMS
3. EACH BUILDING SHALL BE SERVED WITH A 2" (INCH) WATER MASTER METER
4. EACH BUILDING SHALL BE SERVED WITH A 6-INCH MINIMUM GRAVITY SEWER LATERAL
5. EACH BUILDING WILL BE EQUIPPED WITH DOUBLE WATER METER BOXES
6. NCDOT ENCROACHMENT AGREEMENT NEEDED (CONTROLLED ACCESS AND PRIMARY / SECONDARY)
7. SEWER PUMP STATION SHALL CONNECT TO THE HIGH-PRESSURE FORCE MAIN AT ONE POINT (PER BRUNSWICK COUNTY DETAILS AND SPECS)

BRUNSWICK COUNTY FIRE NOTES

1. EACH BUILDING WILL REQUIRE AN INDIVIDUAL FIRE DEVELOPMENT PERMIT
2. UTILITY PLANS SHALL BE PROVIDED SATISFYING THE REQUIREMENTS OF THE 2018 NC FIRE PREVENTION CODE AND THE FOLLOWING BRUNSWICK COUNTY FIRE MARSHAL'S COMMENTS
3. FINAL PLAT WILL REQUIRE FIRE APPROVAL
4. NFPA 291 FORM (FIRE HYDRANT FLOW TEST) SHALL BE REQUIRED FOR FIRE HYDRANT SYSTEMS AT TIME OF FIELD FIRE INSPECTION PRIOR TO FINAL PLAT
5. FIRE HYDRANTS SHALL BE LOCATED AT EACH ENTRANCE TO THE SITE AND THEN EVERY 500' THEREAFTER IN SINGLE FAMILY NEIGHBORHOODS
6. HYDRANTS SHALL BE PROVIDED WITHIN 50' OF ANY FDC FOR SPRINKLERED BUILDINGS.
7. HYDRANTS SHALL BE LOCATED WITHIN 250' OF ALL PHASE NOT CONSTRUCTED AT THE SAME TIME.
8. FUTURE STUB ROADS EXCEEDING 150' WILL REQUIRED FIRE TURNAROUND.
9. HYDRAULIC CALCULATIONS SHALL BE PROVIDED PRIOR TO FINAL PLAT
10. HYDRANTS SHALL BE IN PLACE AND HAVE WATER BEFORE COMBUSTIBLE CONSTRUCTION MATERIALS ARE PLACED ON SITE

STREETLIGHT NOTES

1. STREETLIGHT LOCATIONS SHOWN ON PLAN ARE PRELIMINARY. FINAL DESIGN, LOCATIONS, AND CALCULATIONS WILL BE PROVIDED AND COMPLY WITH THE U.D.O.;

TRAFFIC NOTES

1. TIA IS UNDERWAY & WILL BE COMPLETED PRIOR TO CONSTRUCTION.
2. TRAFFIC IMPROVEMENTS ARE RECOMMENDED IN THE DRAFT TIA AT ALL PROJECT INTERSECTIONS; PENDING FINAL APPROVAL TO DETERMINE FULL SCOPE OF IMPROVEMENTS REQUIRED.

LINK NODE RATIO

1. PROJECT CONTAINS 26 LINKS AND 17 NODES
2. LINK NODE RATIO = 1.5

PROJECT PHASING

1. PROJECT WILL BE DEVELOPED IN 5 PHASES. SEE PHASING KEY THIS SHEET.

TRAFFIC NOTES

1. TRAFFIC WARRANT STUDY IS UNDERWAY & WILL BE COMPLETED PRIOR TO CONSTRUCTION.

OPEN SPACE KEY

1	GENERAL OPEN SPACE (EXCLUDING BUFFER AREAS)	± 4.26 AC
2	WETLANDS	± 12.65 AC
3	STORMWATER PONDS	± 15.61 AC
4	USEABLE RECREATION SPACE	± 4.25 AC AMENITY CENTER & OTHER REC. SPACE*
REQUIRED OPEN SPACE		**± 24.12 AC**
TOTAL REQUIRED OPEN SPACE: *± 111.02 R7500 * 20% = ± 22.20 AC* *± 6.4 CLD * 30% = ± 1.92 AC*		± 24.12 AC
TOTAL REQUIRED RECREATION SPACE: *± 24.12 * 15%(15% OF TOTAL REQUIRED OPEN SPACE)*		± 3.62 AC
PROVIDED OPEN SPACE		**± 36.77 AC MIN.**

* OPEN SPACE NOTE: USEABLE OPEN SPACE MAY BE A COMBINATION OF NATURAL EXISTING DITCH AREAS, NATURE TRAILS, POND OVERLOOKS, AND/OR OTHER ACCEPTABLE USEABLE OPEN SPACE AREAS AS AMENITIES FOR THE NEIGHBORHOOD. SEE PLAN FOR ADDITIONAL INFORMATION

OPEN SPACE REQUIREMENTS

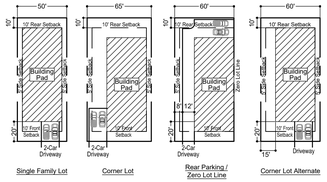
1. MINIMUM OPEN SPACE REQUIRED:
   - 20% IN R-7500 ZONING
   - 30% IN CLD ZONING
2. 15% OF TOTAL OPEN SPACE MUST BE IN THE FORM OF USABLE RECREATION SPACE

PARKING REQUIREMENTS

1. ALL LOTS WILL HAVE 2 OFF-STREET NON-GARAGE PARKING SPACES.

NEIGHBORHOOD MEETING

1. NEIGHBORHOOD MEETING CONDUCTED ON MAY 15, 2025. APPROXIMATELY 15 PEOPLE ATTENDED THE MEETING & DEVELOPER UPDATED PLAN TO REFLECT SOME OF THE REQUESTED CHANGES.



TYPICAL LOT CONFIGURATION

BRUNSWICK COUNTY GENERAL NOTES

1. PROJECT MUST BE BUILT TO COUNTY OR CITY SPECIFICATIONS FOR WATER AND SEWER. A UTILITY PLAN MUST BE SUBMITTED AND APPROVED BY ENGINEERING AND EMERGENCY MANAGEMENT
2. COUNTY AND/OR STATE STORMWATER PERMITS MUST BE OBTAINED PRIOR TO ANY CONSTRUCTION. NO NATURAL DRAINAGE AREAS WILL NE CUT OFF OR DISTURBED BEFORE OBTAINING THE PERMITS.
3. THERE SHALL BE A NOTE ON THE FINAL PLATS, MASTER COVENANTS, AND DEEDS SHOWING THE LOCATION OF WETLANDS AND NOTING THAT THOSE AREAS MAY NOT BE FILLED, DISTURBED, OR ALTERED IN ANY WAY UNLESS PROPERLY PERMITTED BY THE NC DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES AND/OR THE U.S. ARMY CORP OF ENGINEERS
4. A HOMEOWNERS ASSOCIATION WILL BE FORMED PRIOR TO THE SALE OF LOTS AND MEMBERSHIP WILL BE AUTOMATIC UPON PURCHASE WITH THE DEVELOPMENT. THE HOMEOWNERS ASSOCIATION WILL COMPLY WITH THE STANDARDS SET FORTH IN SECTION 6.11.2.I OF THE UNIFIED DEVELOPMENT ORDINANCE.
5. ALL ROADS WILL BE BUILT TO NCDOT MINIMUM PAVING STANDARDS FOR SUBDIVISION ROADS.

IMPERVIOUS AREA

SINGLE FAMILY IMPERVIOUS AREA

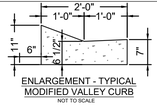
ROADS	± 322,140 SF
BUILDINGS	± 5000 SF
SIDEWALKS / CONCRETE	± 56,475 SF
TOTAL SINGLE FAMILY IMPERVIOUS AREA:	± 1,050,000 SF

TOTAL SITE IMPERVIOUS AREA: ± 1,433,615 SF / ± 32.91 AC (± 28.04%)

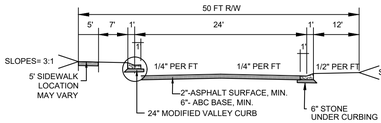
PROJECT BOUNDARY (PERIMETER) BUFFER

MINIMUM PLANTINGS REQUIRED PER 100 LF (0.6 OPACITY)

- (3) CANOPY TREES
- (6) UNDERSTORY TREES
- (34) SHRUBS



ENLARGEMENT - TYPICAL MODIFIED VALLEY CURB
NOT TO SCALE



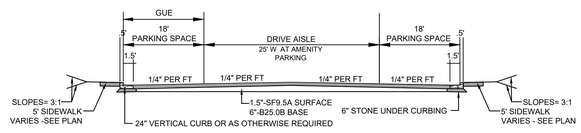
PAVING NOTE: ALL PAVING THICKNESS WILL BE DETERMINED BASED ON SOILS DATA. NO TESTING HAS BEEN COMPLETED AT THIS TIME, SO A MINIMUM PAVING SECTION HAS BEEN PROVIDED AND WILL BE FURTHER EVALUATED WITH THE AVAILABILITY OF SOILS DATA.

TYPICAL 50' PRIVATE ROAD CROSS SECTION

NOT TO SCALE

PROJECT ROAD NOTES

1. ALL ROADS WILL BE PRIVATE RIGHT OF WAYS CONSTRUCTED TO NCDOT SUBDIVISION ROADS MINIMUM CONSTRUCTION STANDARDS.
2. ALL PROPOSED INTERNAL ROADWAY INTERSECTIONS WILL HAVE A 15' RADIUS MINIMUM AND CONNECTIONS TO EXISTING ROADWAYS WILL HAVE A 30' RADIUS MINIMUM.
3. STREET NAME SIGNS SHALL BE INSTALLED AS SOON AS ROADWAYS ARE ACCESSIBLE BY VEHICLE TRAFFIC TO INCLUDE DURING CONSTRUCTION AND BRUNSWICK COUNTY STREET SIGN SPECIFICATIONS (AS STANDARDS APPLY)
4. ADDRESSING WILL COMPLY WITH LOCAL ORDINANCES.
5. PER SECTION 6.11.3 C OF BRUNSWICK COUNTY UDO, DEVELOPMENTS OVER 120 LOTS WILL HAVE AT LEAST 3 ACCESS POINTS.

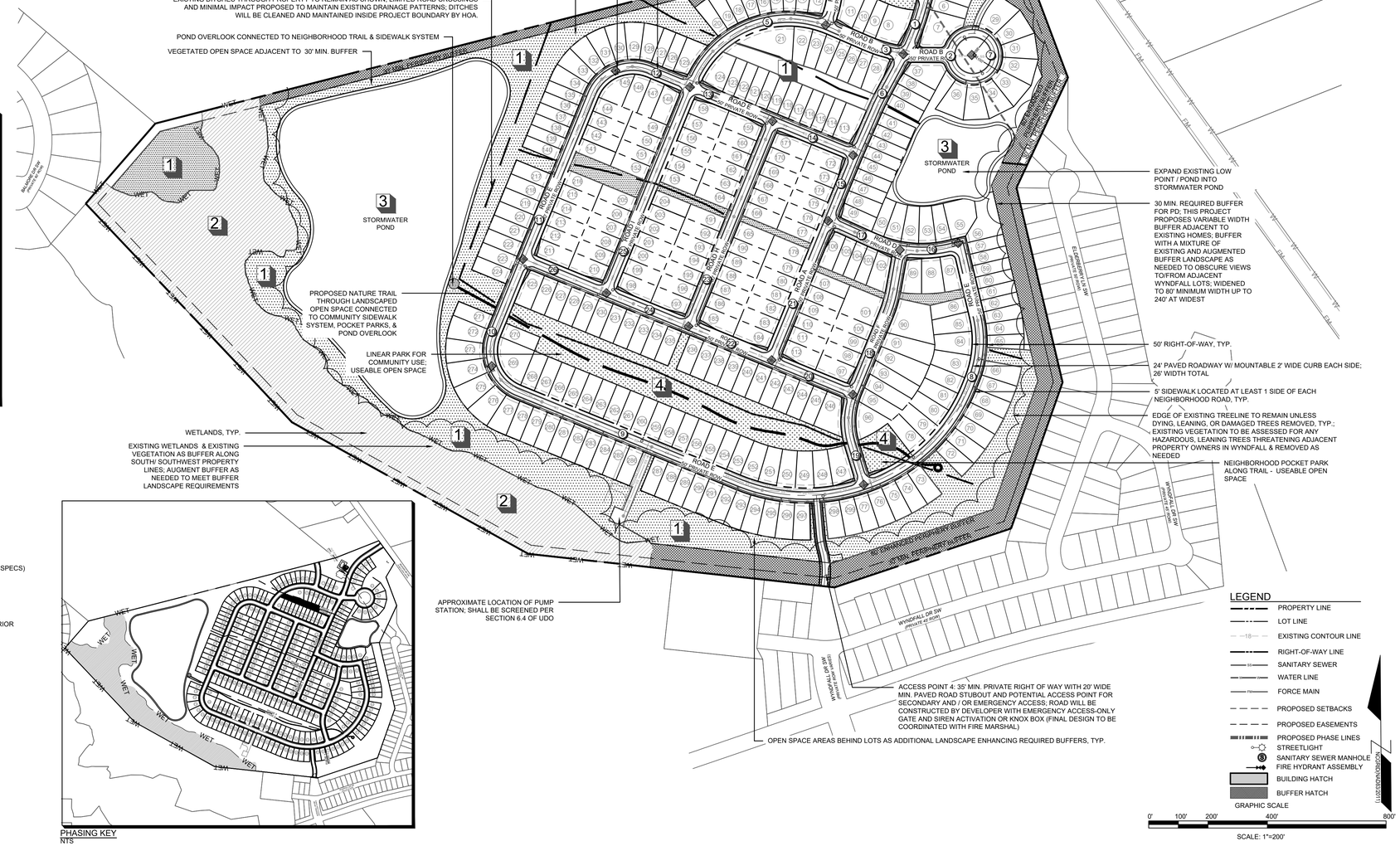


PAVING NOTE: ALL PAVING THICKNESS WILL BE DETERMINED BASED ON SOILS DATA. NO TESTING HAS BEEN COMPLETED AT THIS TIME; SO A MINIMUM PAVING SECTION HAS BEEN PROVIDED AND WILL BE FURTHER EVALUATED WITH THE AVAILABILITY OF SOILS DATA.

REFERENCE PROJECT ROAD NOTES THIS SHEET FOR ADDITIONAL INFORMATION.

25' PRIVATE DRIVE WITH PARKING CROSS SECTION

NOT TO SCALE



PHASING KEY
NTS

PRELIMINARY DESIGN - NOT RELEASED FOR CONSTRUCTION

REVISIONS:	
REV 1	SECONDARY ACCESS REVISION PER COUNTY REQUEST 09/27/25

CLIENT INFORMATION:

COASTAL CORNERSTONE DEVELOPMENT, LLC
PO BOX 7974
WILMINGTON, NC 28406

PARAMOUNTE ENGINEERING
122 Cinema Drive
Wilmington, North Carolina 28403
(910) 791-6707 (O) (910) 791-6760 (F)
NC License #: C-2846

PD SITE PLAN

SAILOR'S HAVEN
BRUNSWICK COUNTY
NORTH CAROLINA

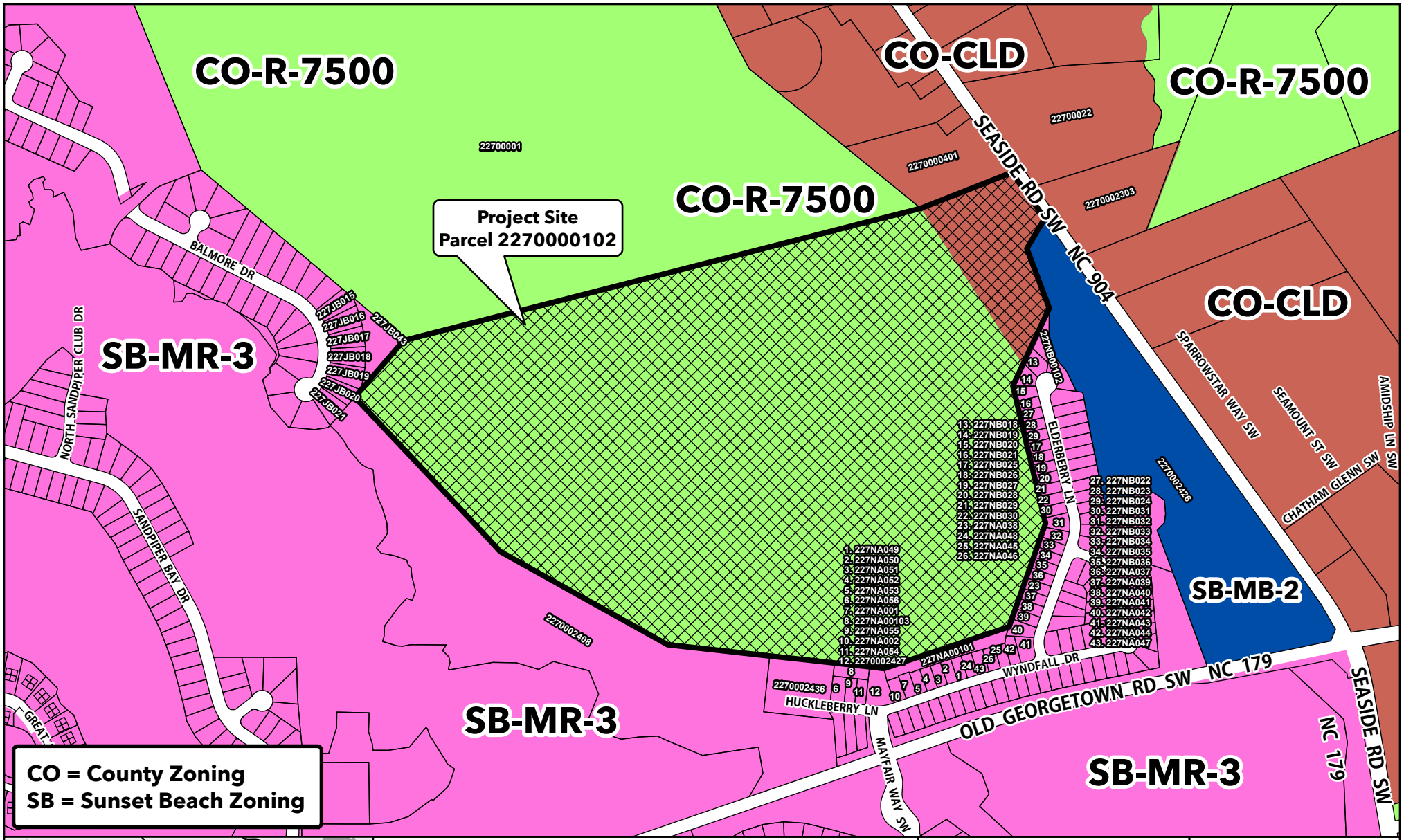
PROJECT STATUS
CONCEPTUAL LAYOUT:
PRELIMINARY LAYOUT:
FINAL DESIGN:
RELEASED FOR CONST.

DRAWING INFORMATION
DATE: 4/28/25
SCALE: 1" = 200'
DESIGNED: AHE
DRAWN: AHE
CHECKED: TGC

SEAL

PD-1

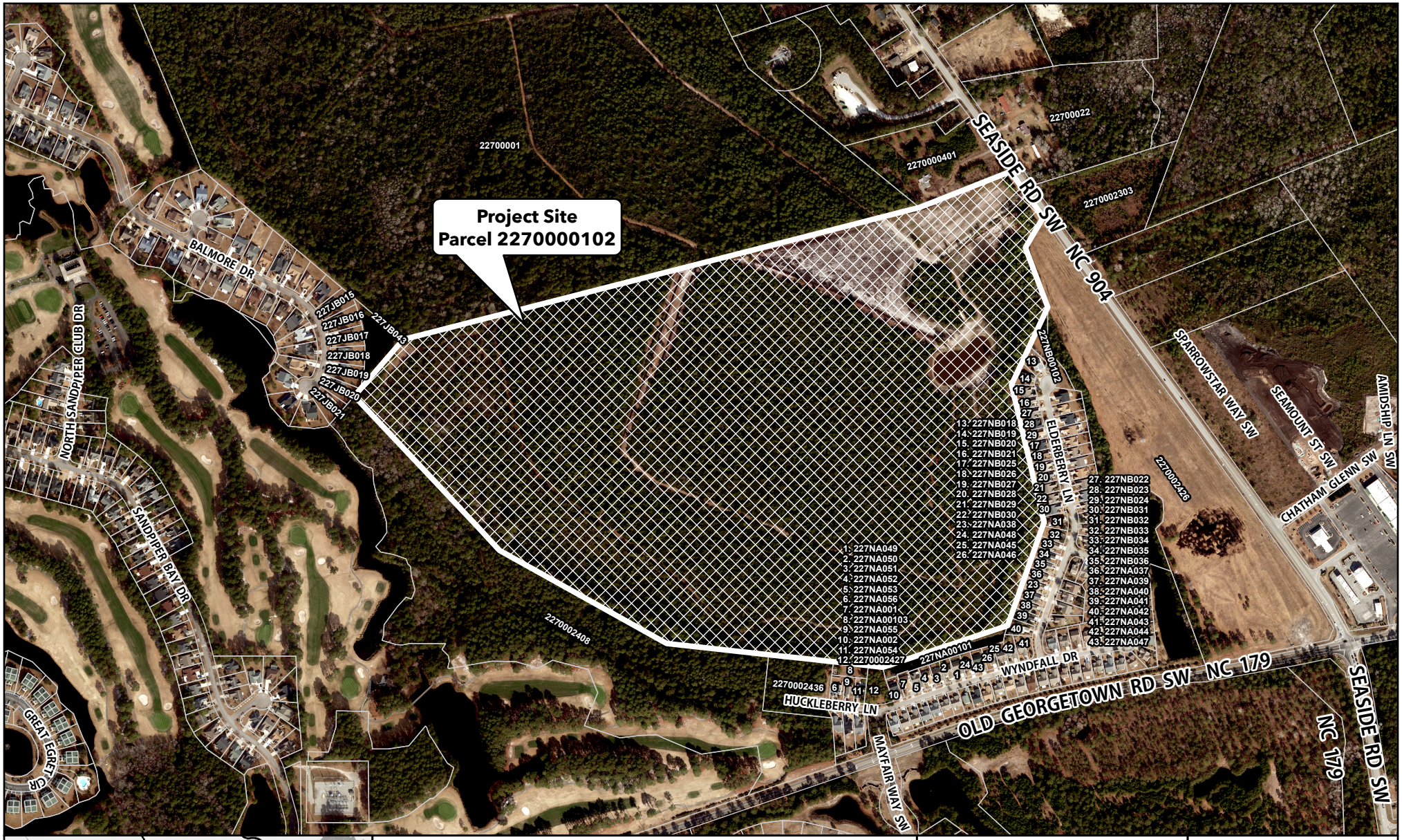
PEI JOB#: 25135.PE

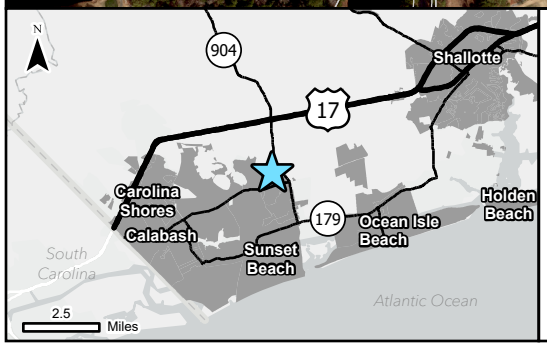


Brunswick County Planning Board
Planned Development
Sailor's Haven
Case PD-158
Zoning Map

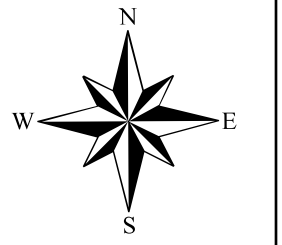
N
W E
S

700 Feet

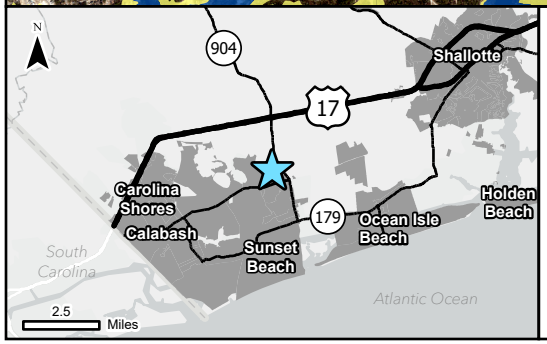




Brunswick County Planning Board
Planned Development
Sailor's Haven
Case PD-158
Imagery Map



700 Feet

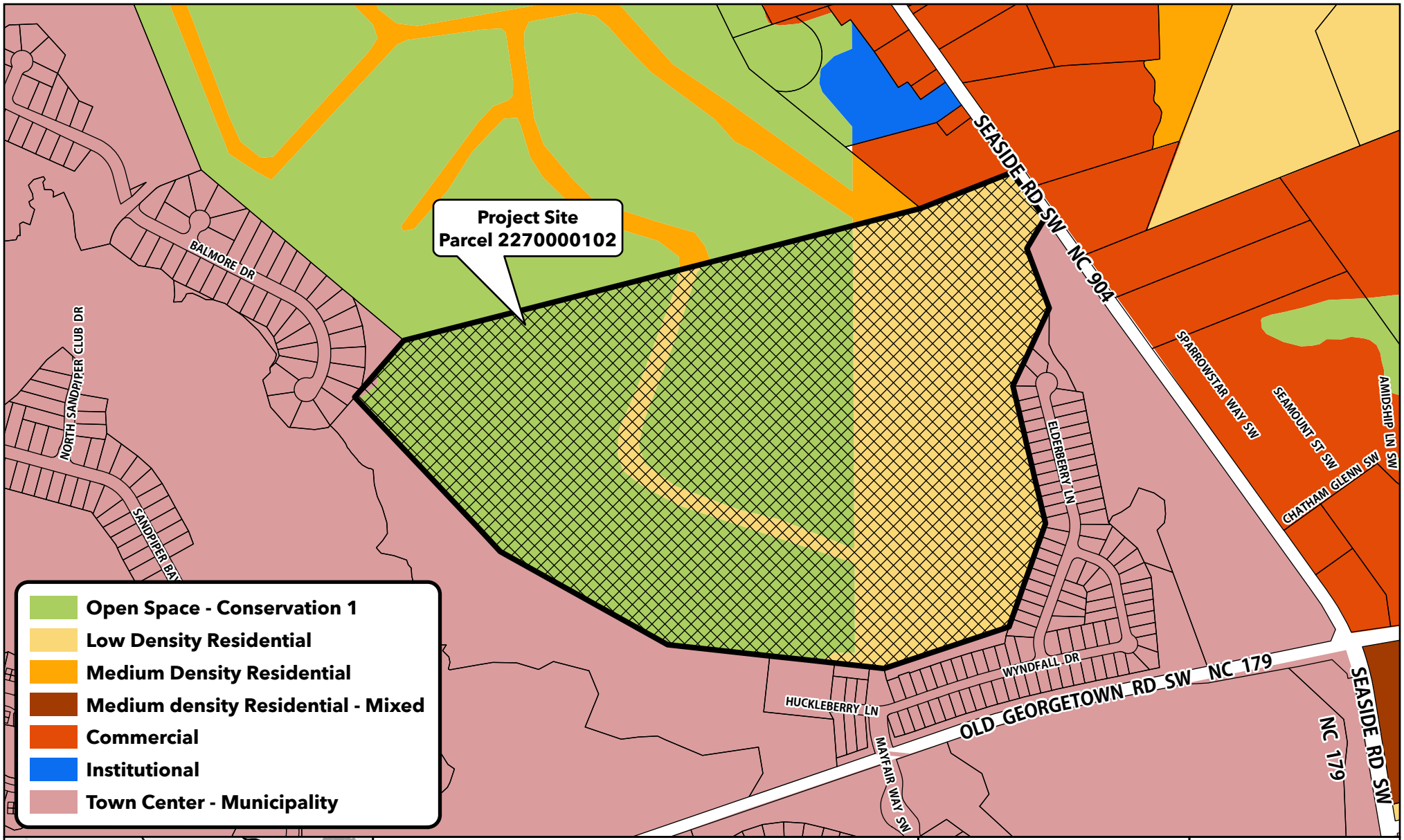


Brunswick County Planning Board
Planned Development
Sailor's Haven
Case PD-158
Flood Hazards Map

BRUNSWICK COUNTY NORTH CAROLINA

N
W
E
S

3,000 Feet



Brunswick County Planning Board
Planned Development
Sailor's Haven
Case PD-158
Blueprint Brunswick 2040
Place Type Map

DRMP, Inc.
8210 University Executive Park Drive
Suite 220, Charlotte, NC 28262

April 23, 2025

Benjamin Hughes, PE
NCDOT District Engineer
Division 3 / District 3
P: 910-398-9109

Reference: Blackman Tract – Brunswick County, NC

Subject: Turn Lane Warrant Analysis

Dear Ben:

This letter provides a trip generation summary and turn lane warrant analysis for the proposed Blackman Tract development, to be located north of NC 179 and west of NC 904 Brunswick County, North Carolina. The proposed development is expected to consist of 300 single-family homes detached. Site access is proposed via one (1) full-movement driveway along NC 904. Refer to the attachments for a copy of the preliminary site plan.

The purpose of this assessment is to review the potential need for turn lanes at the proposed site driveway.

Study Area Roadway Summary:

NC 904 is a two-lane roadway with a posted speed limit of 45 miles per hour (mph) along the frontage of the site. Peak hour traffic volumes in close proximity to the site were determined based on a 48-hour bi-directional count conducted in April of 2025. Based on the collected traffic data, NC 904 carries approximately 10,000 vehicles per day (vpd). Refer to the attachments for a copy of the traffic count data.

Trip Generation:

Average weekday daily, AM and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 11th Edition. Table 1 provides a summary of the full build out trip generation potential for the site.

Table 1: Site Trip Generation

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single-Family Homes (LUC 210)	300 DU	2,772	51	151	176	103

Based on the manual, it is estimated that the proposed development will generate approximately 2,772 total site trips on the roadway network during a typical 24-hour period. Of the daily traffic volumes, it is anticipated that 202 trips (51 entering and 151 exiting) would occur during the weekday AM peak hour and 279 trips (176 entering and 103 exiting) would occur during the weekday PM peak hour.

Turn Lane Warrants:

Based on the existing traffic counts, NC 904 carries in excess of 4,000 vpd, the typical volume threshold in which the North Carolina Department of Transportation (NCDOT) typically considers turn lanes.

The NCDOT *Policy on Street and Driveway Access to North Carolina Highways* (Driveway Manual) was referenced to conduct a turn lane warrant analysis at the proposed site access along NC 904. To estimate the traffic volumes at the proposed access, the site trips were distributed with 55% of the traffic heading to/from the south and 45% heading to/from the north. The site trips were distributed based on the existing peak hour traffic, assuming 100% of the development traffic used the one access point on NC 904. Based on the turn lane warrant chart, a 75-foot storage northbound left turn lane and a 50-foot storage southbound right turn lane is warranted at the proposed access. Refer to the attachments for a copy of the turn lane warrant chart.

If you should have any questions regarding this study, please feel free to contact me at dcapers@drmp.com.

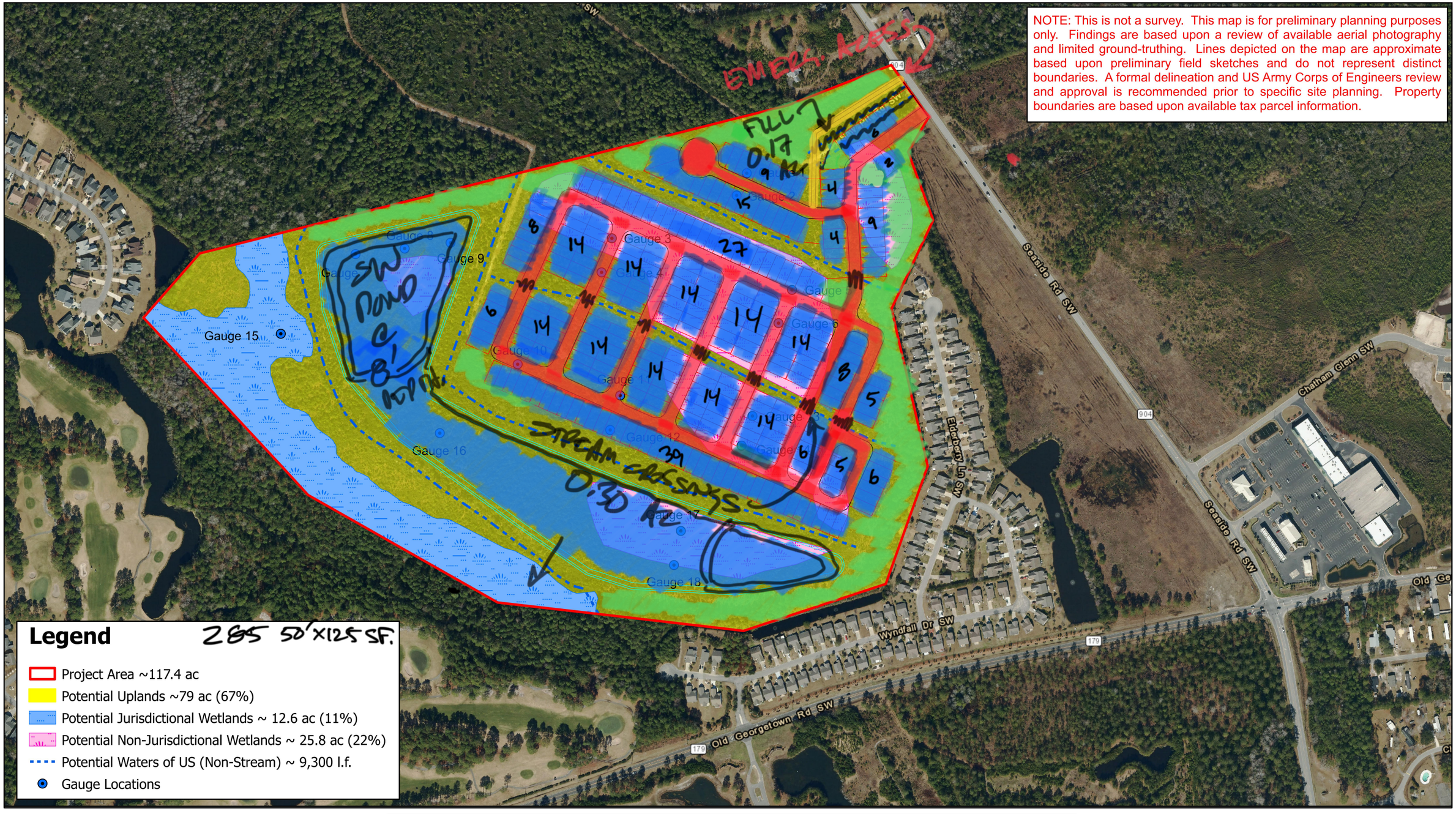
Sincerely,

4/23/2025

Dyron Capers, PE
Traffic Analysis Project Manager
DRMP, Inc.
License #F-1524

Attachments

- Preliminary Site Plan
- Traffic Count Data
- Turn Lane Warrants



Path: L:\WETLANDS\2024 WETLANDS FILES\P.ENV0001410 --- 24 - Blackman Tract, Coastal Cornerstone Development LLC\GIS\ArcPro\Blackman Tract\Blackman Tract.aprx

Boundaries are approximate and not meant to be absolute.

Map Source: 2020 NC One Map

Blackman Tract
Brunswick County, NC

Map Date:
P.ENV0001410

DAVEY Resource Group
3805 Wrightsville Avenue
Wilmington, NC 28403
(910) 452-0001

Preliminary Assessment Sketch

N

0 225 450 900 ft

Scale applies to 11X17" print.

Daily Vehicle Volume Report

Study Date: Tuesday, 04/08/2025
Unit ID: NC 904
Location: NC 904

	Southbound Volume	Northbound Volume	Total Volume
00:00 - 00:59	3	6	**9**
01:00 - 01:59	2	1	**3**
02:00 - 02:59	3	2	**5**
03:00 - 03:59	9	11	**20**
04:00 - 04:59	11	26	**37**
05:00 - 05:59	27	46	**73**
06:00 - 06:59	136	173	**309**
07:00 - 07:59	304	322	**626**
08:00 - 08:59	385	304	**689**
09:00 - 09:59	376	344	**720**
10:00 - 10:59	334	384	**718**
11:00 - 11:59	339	373	**712**
12:00 - 12:59	404	405	**809**
13:00 - 13:59	339	438	**777**
14:00 - 14:59	361	430	**791**
15:00 - 15:59	396	455	**851**
16:00 - 16:59	398	394	**792**
17:00 - 17:59	353	376	**729**
18:00 - 18:59	230	248	**478**
19:00 - 19:59	157	199	**356**
20:00 - 20:59	109	123	**232**
21:00 - 21:59	91	67	**158**
22:00 - 22:59	30	37	**67**
23:00 - 23:59	15	20	**35**
Totals	**4812**	**5184**	**9996**
AM Peak Time	**08:18 - 09:17**	**10:12 - 11:11**	**09:25 - 10:24**
AM Peak Volume	**409**	**399**	**734**
PM Peak Time	**14:23 - 15:22**	**14:39 - 15:38**	**15:03 - 16:02**
PM Peak Volume	**406**	**465**	**866**

Daily Vehicle Volume Report

Study Date: Wednesday, 04/09/2025
Unit ID: NC 904
Location: NC 904

	Southbound Volume	Northbound Volume	Total Volume
00:00 - 00:59	6	5	**11**
01:00 - 01:59	4	1	**5**
02:00 - 02:59	3	4	**7**
03:00 - 03:59	4	8	**12**
04:00 - 04:59	19	23	**42**
05:00 - 05:59	37	53	**90**
06:00 - 06:59	170	179	**349**
07:00 - 07:59	329	334	**663**
08:00 - 08:59	454	389	**843**
09:00 - 09:59	380	372	**752**
10:00 - 10:59	375	386	**761**
11:00 - 11:59	389	391	**780**
12:00 - 12:59	423	484	**907**
13:00 - 13:59	404	441	**845**
14:00 - 14:59	381	481	**862**
15:00 - 15:59	406	477	**883**
16:00 - 16:59	430	391	**821**
17:00 - 17:59	371	390	**761**
18:00 - 18:59	226	272	**498**
19:00 - 19:59	160	170	**330**
20:00 - 20:59	133	108	**241**
21:00 - 21:59	66	71	**137**
22:00 - 22:59	46	40	**86**
23:00 - 23:59	20	10	**30**
Totals	**5236**	**5480**	**10716**
AM Peak Time	**07:58 - 08:57**	**10:21 - 11:20**	**07:58 - 08:57**
AM Peak Volume	**471**	**403**	**856**
PM Peak Time	**15:37 - 16:36**	**14:43 - 15:42**	**12:01 - 13:00**
PM Peak Volume	**439**	**493**	**911**

Daily Southbound Classes Report

Study Date: Tuesday, 04/08/2025
Unit ID: NC 904
Location: NC 904

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	Total
00:00 - 00:59	0	2	1	0	0	0	0	0	0	0	0	0	0	0	**3**
01:00 - 01:59	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
02:00 - 02:59	0	2	0	0	1	0	0	0	0	0	0	0	0	0	**3**
03:00 - 03:59	0	7	1	0	1	0	0	0	0	0	0	0	0	0	**9**
04:00 - 04:59	0	10	0	0	1	0	0	0	0	0	0	0	0	0	**11**
05:00 - 05:59	0	19	3	2	2	0	0	1	0	0	0	0	0	0	**27**
06:00 - 06:59	0	78	23	2	26	1	0	4	2	0	0	0	0	0	**136**
07:00 - 07:59	0	145	70	1	78	2	0	4	4	0	0	0	0	0	**304**
08:00 - 08:59	1	223	76	4	72	1	0	7	1	0	0	0	0	0	**385**
09:00 - 09:59	0	225	75	1	66	3	1	3	1	1	0	0	0	0	**376**
10:00 - 10:59	2	209	67	3	45	3	1	4	0	0	0	0	0	0	**334**
11:00 - 11:59	0	232	53	0	43	3	1	3	4	0	0	0	0	0	**339**
12:00 - 12:59	0	259	68	1	63	1	3	7	2	0	0	0	0	0	**404**
13:00 - 13:59	0	218	60	2	54	1	1	1	2	0	0	0	0	0	**339**
14:00 - 14:59	3	232	64	2	55	1	1	2	1	0	0	0	0	0	**361**
15:00 - 15:59	3	277	58	2	52	0	0	3	1	0	0	0	0	0	**396**
16:00 - 16:59	0	294	54	1	45	0	1	2	1	0	0	0	0	0	**398**
17:00 - 17:59	3	264	37	0	49	0	0	0	0	0	0	0	0	0	**353**
18:00 - 18:59	1	173	34	0	22	0	0	0	0	0	0	0	0	0	**230**
19:00 - 19:59	2	113	22	0	19	0	0	1	0	0	0	0	0	0	**157**
20:00 - 20:59	0	81	13	0	14	0	0	0	1	0	0	0	0	0	**109**
21:00 - 21:59	0	69	10	0	11	0	0	0	1	0	0	0	0	0	**91**
22:00 - 22:59	0	23	3	0	4	0	0	0	0	0	0	0	0	0	**30**
23:00 - 23:59	0	13	1	0	0	0	0	1	0	0	0	0	0	0	**15**
Totals	**15**	**3170**	**793**	**21**	**723**	**16**	**9**	**43**	**21**	**1**	**0**	**0**	**0**	**0**	**4812**
Percent of Total	**0.3**	**65.9**	**16.5**	**0.4**	**15.0**	**0.3**	**0.2**	**0.9**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.2**	**59.8**	**19.1**	**0.7**	**17.4**	**0.7**	**0.2**	**1.3**	**0.6**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.4**	**69.9**	**14.7**	**0.3**	**13.5**	**0.1**	**0.2**	**0.6**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 834 % Trucks: 17.3 AM % Trucks: 20.9 PM % Trucks: 14.9

Classification Scheme: FHWA(1) (ID: 2275065203)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More
#14 Unlassified Vehicle

Daily Southbound Classes Report

Study Date: Wednesday, 04/09/2025
Unit ID: NC 904
Location: NC 904

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	Total
00:00 - 00:59	1	4	0	0	1	0	0	0	0	0	0	0	0	0	**6**
01:00 - 01:59	0	4	0	0	0	0	0	0	0	0	0	0	0	0	**4**
02:00 - 02:59	0	2	0	0	1	0	0	0	0	0	0	0	0	0	**3**
03:00 - 03:59	0	4	0	0	0	0	0	0	0	0	0	0	0	0	**4**
04:00 - 04:59	0	16	2	0	1	0	0	0	0	0	0	0	0	0	**19**
05:00 - 05:59	0	23	4	1	6	2	0	0	1	0	0	0	0	0	**37**
06:00 - 06:59	0	92	25	4	32	13	1	1	2	0	0	0	0	0	**170**
07:00 - 07:59	0	176	68	2	68	5	1	8	0	0	0	1	0	0	**329**
08:00 - 08:59	1	232	111	4	92	5	2	4	2	0	0	0	1	0	**454**
09:00 - 09:59	1	221	80	1	67	4	1	4	1	0	0	0	0	0	**380**
10:00 - 10:59	1	237	66	1	61	2	4	3	0	0	0	0	0	0	**375**
11:00 - 11:59	2	240	71	1	66	5	1	1	2	0	0	0	0	0	**389**
12:00 - 12:59	0	273	65	1	72	5	2	3	2	0	0	0	0	0	**423**
13:00 - 13:59	1	260	75	0	55	4	4	2	3	0	0	0	0	0	**404**
14:00 - 14:59	1	255	68	1	48	1	2	2	3	0	0	0	0	0	**381**
15:00 - 15:59	1	272	67	2	54	3	3	3	1	0	0	0	0	0	**406**
16:00 - 16:59	0	306	51	2	62	3	1	4	1	0	0	0	0	0	**430**
17:00 - 17:59	1	279	41	0	45	2	0	2	1	0	0	0	0	0	**371**
18:00 - 18:59	0	151	34	0	41	0	0	0	0	0	0	0	0	0	**226**
19:00 - 19:59	2	112	28	0	18	0	0	0	0	0	0	0	0	0	**160**
20:00 - 20:59	0	106	15	0	11	0	0	0	1	0	0	0	0	0	**133**
21:00 - 21:59	0	47	10	0	9	0	0	0	0	0	0	0	0	0	**66**
22:00 - 22:59	0	36	6	0	4	0	0	0	0	0	0	0	0	0	**46**
23:00 - 23:59	0	16	2	0	2	0	0	0	0	0	0	0	0	0	**20**
Totals	**12**	**3364**	**889**	**20**	**816**	**54**	**22**	**37**	**20**	**0**	**0**	**1**	**1**	**0**	**5236**
Percent of Total	**0.2**	**64.2**	**17.0**	**0.4**	**15.6**	**1.0**	**0.4**	**0.7**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**57.6**	**19.7**	**0.6**	**18.2**	**1.7**	**0.5**	**1.0**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.2**	**68.9**	**15.1**	**0.2**	**13.7**	**0.6**	**0.4**	**0.5**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 971 % Trucks: 18.5 AM % Trucks: 22.4 PM % Trucks: 15.8

Classification Scheme: FHWA(1) (ID: 2275065203)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More
#14 Unlassified Vehicle

Daily Northbound Classes Report

Study Date: Tuesday, 04/08/2025
Unit ID: NC 904
Location: NC 904

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	Total
00:00 - 00:59	0	2	2	0	2	0	0	0	0	0	0	0	0	0	**6**
01:00 - 01:59	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:59	0	1	1	0	0	0	0	0	0	0	0	0	0	0	**2**
03:00 - 03:59	0	6	3	0	2	0	0	0	0	0	0	0	0	0	**11**
04:00 - 04:59	0	16	6	0	4	0	0	0	0	0	0	0	0	0	**26**
05:00 - 05:59	0	25	11	1	7	0	0	1	1	0	0	0	0	0	**46**
06:00 - 06:59	0	112	44	1	12	2	1	1	0	0	0	0	0	0	**173**
07:00 - 07:59	1	211	69	2	28	6	0	5	0	0	0	0	0	0	**322**
08:00 - 08:59	1	189	63	2	42	3	0	0	4	0	0	0	0	0	**304**
09:00 - 09:59	0	222	67	2	36	10	1	2	4	0	0	0	0	0	**344**
10:00 - 10:59	2	250	86	4	34	1	1	4	1	0	0	0	1	0	**384**
11:00 - 11:59	2	240	80	3	40	0	0	4	4	0	0	0	0	0	**373**
12:00 - 12:59	2	256	92	2	48	3	0	1	1	0	0	0	0	0	**405**
13:00 - 13:59	1	291	81	4	49	9	0	2	1	0	0	0	0	0	**438**
14:00 - 14:59	1	275	99	4	40	6	0	2	3	0	0	0	0	0	**430**
15:00 - 15:59	3	299	100	1	44	5	0	3	0	0	0	0	0	0	**455**
16:00 - 16:59	1	244	93	3	46	2	0	3	2	0	0	0	0	0	**394**
17:00 - 17:59	1	257	73	3	36	2	0	4	0	0	0	0	0	0	**376**
18:00 - 18:59	0	188	40	1	19	0	0	0	0	0	0	0	0	0	**248**
19:00 - 19:59	0	151	32	0	15	0	0	1	0	0	0	0	0	0	**199**
20:00 - 20:59	0	102	17	0	4	0	0	0	0	0	0	0	0	0	**123**
21:00 - 21:59	0	51	13	0	3	0	0	0	0	0	0	0	0	0	**67**
22:00 - 22:59	1	28	6	0	1	0	0	0	1	0	0	0	0	0	**37**
23:00 - 23:59	0	18	2	0	0	0	0	0	0	0	0	0	0	0	**20**
Totals	**16**	**3435**	**1080**	**33**	**512**	**49**	**3**	**33**	**22**	**0**	**0**	**0**	**1**	**0**	**5184**
Percent of Total	**0.3**	**66.3**	**20.8**	**0.6**	**9.9**	**0.9**	**0.1**	**0.6**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**64.0**	**21.7**	**0.8**	**10.4**	**1.1**	**0.2**	**0.9**	**0.7**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**100**
Percent of PM	**0.3**	**67.7**	**20.3**	**0.6**	**9.6**	**0.8**	**0.0**	**0.5**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 653 % Trucks: 12.6 AM % Trucks: 14.0 PM % Trucks: 11.7

Classification Scheme: FHWA(1) (ID: 2275065203)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More
#14 Unlassified Vehicle

Daily Northbound Classes Report

Study Date: Wednesday, 04/09/2025
Unit ID: NC 904
Location: NC 904

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	Total
00:00 - 00:59	0	3	1	0	1	0	0	0	0	0	0	0	0	0	**5**
01:00 - 01:59	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:59	0	3	0	0	1	0	0	0	0	0	0	0	0	0	**4**
03:00 - 03:59	0	4	3	0	1	0	0	0	0	0	0	0	0	0	**8**
04:00 - 04:59	0	17	4	0	2	0	0	0	0	0	0	0	0	0	**23**
05:00 - 05:59	0	32	14	0	3	1	2	0	1	0	0	0	0	0	**53**
06:00 - 06:59	0	119	43	1	10	2	3	0	1	0	0	0	0	0	**179**
07:00 - 07:59	1	221	66	2	33	8	2	0	1	0	0	0	0	0	**334**
08:00 - 08:59	1	251	88	4	37	5	2	1	0	0	0	0	0	0	**389**
09:00 - 09:59	3	246	81	1	30	3	1	3	4	0	0	0	0	0	**372**
10:00 - 10:59	2	253	85	1	35	6	0	2	2	0	0	0	0	0	**386**
11:00 - 11:59	2	244	89	4	41	5	1	2	3	0	0	0	0	0	**391**
12:00 - 12:59	3	308	100	3	59	7	0	2	2	0	0	0	0	0	**484**
13:00 - 13:59	1	272	102	3	47	8	1	3	4	0	0	0	0	0	**441**
14:00 - 14:59	0	314	102	4	47	8	1	1	4	0	0	0	0	0	**481**
15:00 - 15:59	0	305	104	5	51	7	1	3	1	0	0	0	0	0	**477**
16:00 - 16:59	0	240	91	2	46	5	0	4	3	0	0	0	0	0	**391**
17:00 - 17:59	3	273	77	3	32	0	0	1	1	0	0	0	0	0	**390**
18:00 - 18:59	1	202	49	1	18	1	0	0	0	0	0	0	0	0	**272**
19:00 - 19:59	0	120	32	0	17	1	0	0	0	0	0	0	0	0	**170**
20:00 - 20:59	0	85	14	0	9	0	0	0	0	0	0	0	0	0	**108**
21:00 - 21:59	0	56	9	0	4	0	0	1	1	0	0	0	0	0	**71**
22:00 - 22:59	0	34	4	0	2	0	0	0	0	0	0	0	0	0	**40**
23:00 - 23:59	0	7	2	0	1	0	0	0	0	0	0	0	0	0	**10**
Totals	**17**	**3610**	**1160**	**34**	**527**	**67**	**14**	**23**	**28**	**0**	**0**	**0**	**0**	**0**	**5480**
Percent of Total	**0.3**	**65.9**	**21.2**	**0.6**	**9.6**	**1.2**	**0.3**	**0.4**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.4**	**65.0**	**22.1**	**0.6**	**9.0**	**1.4**	**0.5**	**0.4**	**0.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.2**	**66.4**	**20.6**	**0.6**	**10.0**	**1.1**	**0.1**	**0.4**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 693 % Trucks: 12.6 AM % Trucks: 12.5 PM % Trucks: 12.7

Classification Scheme: FHWA(1) (ID: 2275065203)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More
#14 Unlassified Vehicle

Daily Total Classes Report

Study Date: Tuesday, 04/08/2025
Unit ID: NC 904
Location: NC 904

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	Total
00:00 - 00:59	0	4	3	0	2	0	0	0	0	0	0	0	0	0	**9**
01:00 - 01:59	0	3	0	0	0	0	0	0	0	0	0	0	0	0	**3**
02:00 - 02:59	0	3	1	0	1	0	0	0	0	0	0	0	0	0	**5**
03:00 - 03:59	0	13	4	0	3	0	0	0	0	0	0	0	0	0	**20**
04:00 - 04:59	0	26	6	0	5	0	0	0	0	0	0	0	0	0	**37**
05:00 - 05:59	0	44	14	3	9	0	0	2	1	0	0	0	0	0	**73**
06:00 - 06:59	0	190	67	3	38	3	1	5	2	0	0	0	0	0	**309**
07:00 - 07:59	1	356	139	3	106	8	0	9	4	0	0	0	0	0	**626**
08:00 - 08:59	2	412	139	6	114	4	0	7	5	0	0	0	0	0	**689**
09:00 - 09:59	0	447	142	3	102	13	2	5	5	1	0	0	0	0	**720**
10:00 - 10:59	4	459	153	7	79	4	2	8	1	0	0	0	1	0	**718**
11:00 - 11:59	2	472	133	3	83	3	1	7	8	0	0	0	0	0	**712**
12:00 - 12:59	2	515	160	3	111	4	3	8	3	0	0	0	0	0	**809**
13:00 - 13:59	1	509	141	6	103	10	1	3	3	0	0	0	0	0	**777**
14:00 - 14:59	4	507	163	6	95	7	1	4	4	0	0	0	0	0	**791**
15:00 - 15:59	6	576	158	3	96	5	0	6	1	0	0	0	0	0	**851**
16:00 - 16:59	1	538	147	4	91	2	1	5	3	0	0	0	0	0	**792**
17:00 - 17:59	4	521	110	3	85	2	0	4	0	0	0	0	0	0	**729**
18:00 - 18:59	1	361	74	1	41	0	0	0	0	0	0	0	0	0	**478**
19:00 - 19:59	2	264	54	0	34	0	0	2	0	0	0	0	0	0	**356**
20:00 - 20:59	0	183	30	0	18	0	0	0	1	0	0	0	0	0	**232**
21:00 - 21:59	0	120	23	0	14	0	0	0	1	0	0	0	0	0	**158**
22:00 - 22:59	1	51	9	0	5	0	0	0	1	0	0	0	0	0	**67**
23:00 - 23:59	0	31	3	0	0	0	0	1	0	0	0	0	0	0	**35**
Totals	**31**	**6605**	**1873**	**54**	**1235**	**65**	**12**	**76**	**43**	**1**	**0**	**0**	**1**	**0**	**9996**
Percent of Total	**0.3**	**66.1**	**18.7**	**0.5**	**12.4**	**0.7**	**0.1**	**0.8**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.2**	**61.9**	**20.4**	**0.7**	**13.8**	**0.9**	**0.2**	**1.1**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.4**	**68.7**	**17.6**	**0.4**	**11.4**	**0.5**	**0.1**	**0.5**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

Total Trucks: 1487 % Trucks: 14.9 AM % Trucks: 17.4 PM % Trucks: 13.3

Classification Scheme: FHWA(1) (ID: 2275065203)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More
#14 Unlassified Vehicle

Daily Total Classes Report

Study Date: Wednesday, 04/09/2025
Unit ID: NC 904
Location: NC 904

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	Total
00:00 - 00:59	1	7	1	0	2	0	0	0	0	0	0	0	0	0	**11**
01:00 - 01:59	0	5	0	0	0	0	0	0	0	0	0	0	0	0	**5**
02:00 - 02:59	0	5	0	0	2	0	0	0	0	0	0	0	0	0	**7**
03:00 - 03:59	0	8	3	0	1	0	0	0	0	0	0	0	0	0	**12**
04:00 - 04:59	0	33	6	0	3	0	0	0	0	0	0	0	0	0	**42**
05:00 - 05:59	0	55	18	1	9	3	2	0	2	0	0	0	0	0	**90**
06:00 - 06:59	0	211	68	5	42	15	4	1	3	0	0	0	0	0	**349**
07:00 - 07:59	1	397	134	4	101	13	3	8	1	0	0	1	0	0	**663**
08:00 - 08:59	2	483	199	8	129	10	4	5	2	0	0	0	1	0	**843**
09:00 - 09:59	4	467	161	2	97	7	2	7	5	0	0	0	0	0	**752**
10:00 - 10:59	3	490	151	2	96	8	4	5	2	0	0	0	0	0	**761**
11:00 - 11:59	4	484	160	5	107	10	2	3	5	0	0	0	0	0	**780**
12:00 - 12:59	3	581	165	4	131	12	2	5	4	0	0	0	0	0	**907**
13:00 - 13:59	2	532	177	3	102	12	5	5	7	0	0	0	0	0	**845**
14:00 - 14:59	1	569	170	5	95	9	3	3	7	0	0	0	0	0	**862**
15:00 - 15:59	1	577	171	7	105	10	4	6	2	0	0	0	0	0	**883**
16:00 - 16:59	0	546	142	4	108	8	1	8	4	0	0	0	0	0	**821**
17:00 - 17:59	4	552	118	3	77	2	0	3	2	0	0	0	0	0	**761**
18:00 - 18:59	1	353	83	1	59	1	0	0	0	0	0	0	0	0	**498**
19:00 - 19:59	2	232	60	0	35	1	0	0	0	0	0	0	0	0	**330**
20:00 - 20:59	0	191	29	0	20	0	0	0	1	0	0	0	0	0	**241**
21:00 - 21:59	0	103	19	0	13	0	0	1	1	0	0	0	0	0	**137**
22:00 - 22:59	0	70	10	0	6	0	0	0	0	0	0	0	0	0	**86**
23:00 - 23:59	0	23	4	0	3	0	0	0	0	0	0	0	0	0	**30**
Totals	**29**	**6974**	**2049**	**54**	**1343**	**121**	**36**	**60**	**48**	**0**	**0**	**1**	**1**	**0**	**10716**
Percent of Total	**0.3**	**65.1**	**19.1**	**0.5**	**12.5**	**1.1**	**0.3**	**0.6**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**61.3**	**20.9**	**0.6**	**13.7**	**1.5**	**0.5**	**0.7**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.2**	**67.6**	**17.9**	**0.4**	**11.8**	**0.9**	**0.2**	**0.5**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Truck Summary:

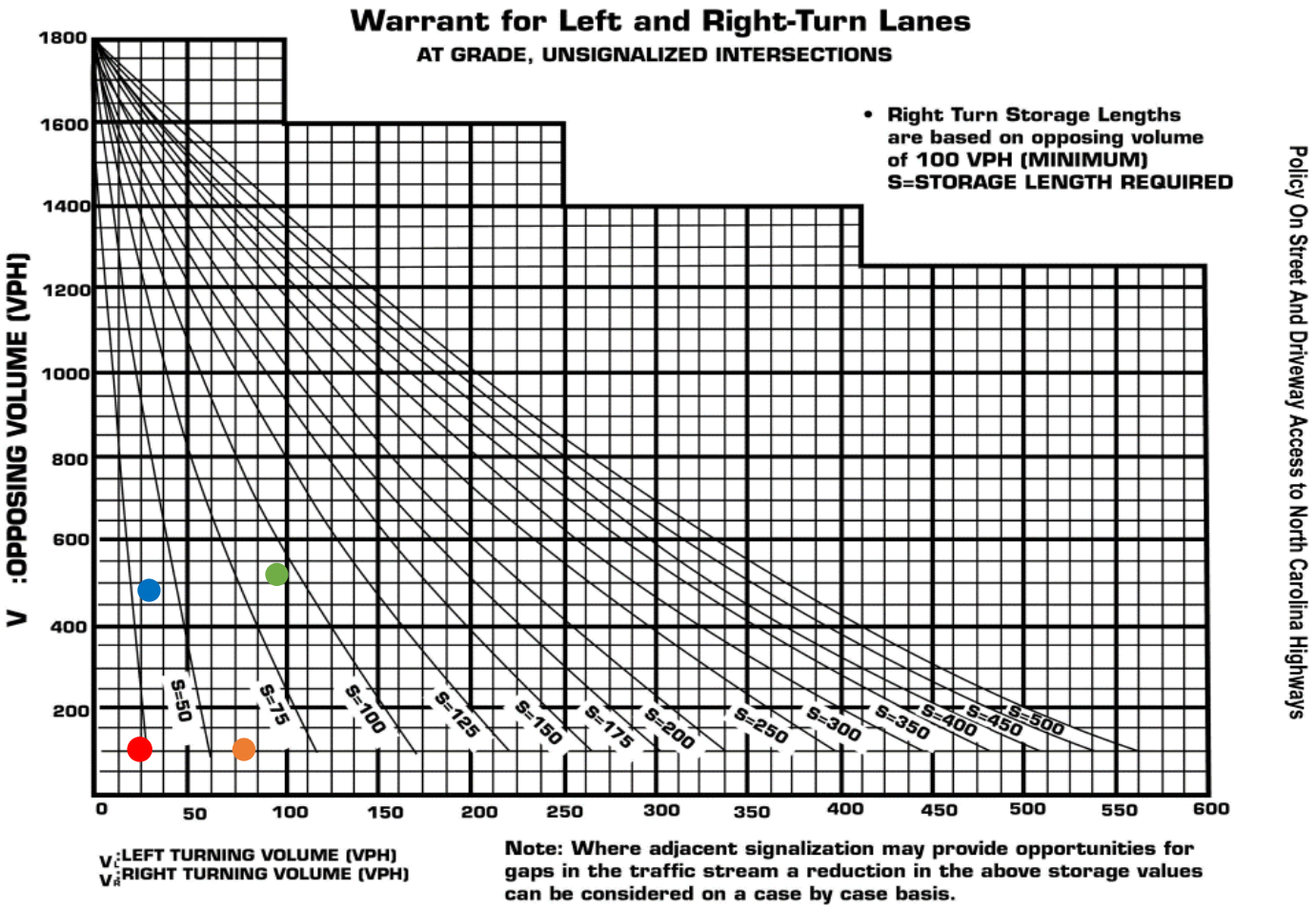
Total Trucks: 1664 % Trucks: 15.5 AM % Trucks: 17.5 PM % Trucks: 14.2

Classification Scheme: FHWA(1) (ID: 2275065203)

#1 Motorcycles - 2 Axles
#2 Passenger Cars - 2 Axles
#3 Pickup Trucks, Vans - 2 Axles
#4 Buses
#5 Single Unit - 2 Axles, 6 Tires
#6 Single Unit Truck - 3 Axles
#7 Single Unit - 4 Axles
#8 Single Unit - 4 Axles or Less
#9 Double Unit - 5 Axles
#10 Double Unit - 6 Axles or More
#11 Multi-Unit - 5 Axles or Less
#12 Multi-Unit - 6 Axles
#13 Multi-Unit - 7 Axles or More
#14 Unlassified Vehicle

Blackman Tract

TURN LANE STORAGE WARRANTS



INTERSECTION: NC 904 and Site Access

SCENARIO	Movement	Turn Lane	Turning Volume (V_R/V_L)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	SBR	Right	23	100	
AM Build	NBL	Left	28	481	
PM Build	SBR	Right	79	100	
PM Build	NBL	Left	97	519	

Planning & Community Enforcement
Planning Phone: 910.253.2025
Community Enforcement Phone: 910.253.2200
Fax: 910.253.2437
Email: planning@brunswickcountync.gov

Location: Government Center Building I
75 Courthouse Drive NE, Bolivia, NC 28422

To: Allison Engelbretsen, Paramounte Engineering

From: Marc Pages, Brunswick Planning; 910-253-2056

CC: File;

Date: 5/13/2025

Re: Sailors Haven Planned Development PD-158

Name	Division	Status
Amy Aycock	County Engineering, Utilities	Comments provided below
Richard Christensen, PE	County Engineering, Stormwater	Comments provided below
Joe Oliver	County Fire	Comments provided below
Helen Bunch	Transportation Planner	Comments provided below
Danny Thornton	Environmental Health	Comments provided below
James Paggioli	Floodplain	Comments provided below
Elliot Swain	Brunswick Soil & Water Dist.	Comments provided below
Jeff Walton	Planning, Commercial Review	Comments provided below
Clayton Rivenbark	BEMC	Comments provided below

The following is a list of comments for review from planning regarding the project. Please provide your corrections as listed below. Additional review will be required once all the needed documents have been provided. Please contact me for any further questions.

Amy Aycock, Engineering Utilities, 910-253-2407; (amy.aycock@brunswickcountync.gov)

- Existing 16" watermain on Seaside Road available for connection.
- Existing 8" and 24" forcemain on Seaside Road; prefer connection to the 8".
- Fire hydrants at subdivision entrance and spaced every 500 LF for single family homes and every 400 LF for multi-family.
- Double water meter boxes or (2) single water meter boxes required per SF and fee simple multi-family; master meters can be installed with multi-family buildings that are not Fee Simple.
- Gravity sewer is shown – always our preferred system; one sewer clean-out per lot/unit.
- Odor Control will be decided in plan review – however at the current proposed pump station location, it would not be required.
- NCDOT Encroachment required for connections on Seaside Road.
- Here is the link for any NCDEQ water or sewer applications that may be needed: https://www.deq.nc.gov/about/divisions/water-resources
- Here is the link for NCDOT permits that may be needed: https://connect.ncdot.gov/municipalities/Pages/default.aspx
- Here is the link for Brunswick County Engineering Design Manual: https://www.brunswickcountync.gov/wp-content/uploads/2023/04/BC-Design-Manual-Rec-1.06-revised-4-10-23.pdf
- Here is the link for the Brunswick County Engineering Department: https://www.brunswickcountync.gov/engineering/

Richard Christensen, Engineering Stormwater, 910-253-1718; (richard.christensen@brunswickcountync.gov)

- NCDEMLR Sedimentation & Erosion Control Permit is required.
- NCDEQ Stormwater Management Permit is required.
- County Stormwater Permit is required.
- County SW Requirements: Pre/post for the 1-year, 10-year and 25-year rain events. No overtopping of SCMs during the 100-year rain event.

Joe Oliver, Fire Marshall, 910-253-2043; (joseph.oliver@brunswickcountync.gov)

- Notes indicate that each building will require an individual fire development permit. Each phase will require a fire development permit and fire hydrant flow permit. Each phase will require a fire hydrant flow test. Fire flow requirements come from Brunswick County Fire Prevention Ordinance Table B105.1 for minimum requirements for residential at 1,000 GPM and commercial minimum at 1,500 GPM but reference ordinance for specifics.
- Fire notes #5 will need to be change for spacing of fire hydrants at 500 feet with no point of the road to exceed 250 feet. Required fire hydrants should not be placed at end of dead end roads or in the bulb of cul-de-sacs.
- Fire Notes #6 fire hydrants will need to be 50 feet from any FDC for sprinkler buildings.
- If phase line causes road to dead end in excess of 150 feet then an approved fire apparatus turnaround will be required. Refer to Brunswick County Fire Prevention Ordinance Figure D103.1
- Fire Hydrants will need to be within 250 feet of the phase lines.
- Future stub out roads that exceed 150 feet will be required to have a fire apparatus turnaround in accordance with Brunswick County Fire Prevention Ordinance.
- Pump Station will be required to have an approved turnaround as the road dead ends in excess of 150 feet.
- General Comments:
    - Need to apply for a fire development permit. https://www.brunswickcountync.gov/code-administration/permits/ . Select Fire Application and complete all applicable fields. And upload civil/utility plans.
    - Need to review the "Development / Subdivision Fire approval Guidance document located at the following link.
    - https://www.brunswickcountync.gov/fire-marshal/development-subdivision-fire-approval-process/
    - Final plat will require fire approval.

Danny Thornton, Environmental Health, 910-253-2252; (danny.thornton@brunswickcountync.gov)

- Any amenity center community pool will require health department approval at site specific review.

Jan Clemmons, County GIS, 910-253-2392; (jan.clemmons@brunswickcountync.gov)

- Street names will need to be secured with the GIS Department prior to platting.

Helen Bunch, Transportation Planner, 910-253-2035; (helen.bunch@brunswickcountync.gov)

- Show site distance triangles.
- Please indicate the status of the TIA. Note that the TIA must be approved by NCDOT prior to Planning Board.
- Identify any mail kiosk locations.

James Paggioli, CFM, Floodplain, 910-253-2054; (james.paggioli@brunswickcountync.gov)

- Site is located in a Carolina Bay which may present some drainage issues. Additional comments forthcoming.

Elliot Swain, Brunswick Soil and Water, 910-253-2832; (elliot.swain@brunswickcountync.gov)

- Note that the development is located in a Carolina Bay with very poorly drained soils. A properly designed stormwater system is vital to ensure proper drainage.

Bridger Warlick, Focus Broadband, 910-755-1797; (bwarlick@focusbroadband.com)

- Please contact for service questions.

Clayton Rivenbark, BEMC, 910-540-2386; (clayton.rivenbark@bemc.org)

- Please ensure that public utility lines are located within ROW and not in the individual lots.

Marc Pages – Planning, Commercial Review, 910-253-2056; (marc.pages@brunswickcountync.gov)

- Please provide an update on the TIA status for the project.
- Please note that there will be a minimum of 2 non-garage parking spaces per lot.
- Please note that all non-residential improvements are subject to site specific review.
- Please clarify which dashed lines are phase lines and which are proposed trails.
- Please indicate the specific recreation space uses in the site data and acreage of each recreation space.
- Please provide a typical lot layout for those lots utilizing a 10-foot front setback. Be sure to include the parking design.
- Planning staff recommends buffers between the back-to-back lots.
- Please note that the stormwater ponds will be designed to accommodate the 100-year storm event.
- Planning staff recommend that 5% of the residential units be Workforce Housing units. These units would be affordable to those households earning 80% or less of the HUD Area Median Income.
- Please note that a neighborhood meeting is recommended per UDO Section 9.2.

No Comments received from:
NCDOT, Duke Power, Focus, NC Wildlife, USACE, BC Schools, BC Parks, BC Sherriff, BC Code Administration, H2GO, Southeast Sanitary Dist.

Please provide a digital set of revised plans to the Brunswick County Planning Department by 5:00 p.m. on May 27, 2025.

Authentisign ID: 1A8FC65D-D122-F011-8B3D-00224822F75A

Planned Development (PD)

Application and Checklist

Fee: $1,000 (Brunswick County Jurisdiction)
$968 (City of Northwest Jurisdiction)

Brunswick County Planning Dept. 910-253-2025

For Office Use Only

File #_____ Invoice #_____

Date Received:_____

Northwest Jurisdiction ☐ YES ☐ NO

This application is a request to construct a Planned Development consistent with a submitted master site plan that identifies permitted land uses, densities, building setbacks, heights, lot layout, buffers, off-street parking and street widths. This application should only be used if the proposed development is requesting flexibility in zoning requirements in order to achieve a development as an alternative to a conventional zoning design standards. Please reference Section 4.3.1. of the Unified Development Ordinance (UDO) for requirements regarding Planned Developments (PD's).

Please fill out form completely, supplying all necessary information and documentation to support your request.

Property Owner

Name Diane K Blackman & Wayne R Chykirda Phone

Address PO BOX 6142 Fax

City, St, Zip Ocean Isle Beach, NC 28469 Email

Applicant or Representative

Name Coastal Cornerstone Development, LLC Phone 910.791.6707 (Rep: Paramounte Engineering)

Address PO Box 7974 Fax

City, St, Zip Wilmington, NC 28406 Email landplanning@paramounte-eng.com

Property Information

Address Hwy 904 / Seaside Dr

Tax Parcel(s)PID:2270000102 PIN: 105603110972

Acreage +/- 117.42 acres

Current Zoning CLD and R7500

Public Utilities Available? Water yes Sewer yes

Project Information

Project Name Sailor's Haven

Modification or Expansion Of Existing PD? Yes (No)

Single Family Acres 300 Lots

Multi-Family Acres 0 Units

Commercial Acres 0

Authorization

Property Owner Signature AuthentiSIGN Diane Blackman Date 04/26/25

Applicant/Representative Signature AuthentiSIGN Steven Smiley Date 04/26/25

Please submit three folded copies and one electronic copy of the site plan with application.

Planned Development Checklist

Authentisign ID: 1A8FC65D-D122-F011-8B3D-00224822F75A

NOTE: All items below must be shown on the provided Site Plan

Existing Site Data	Zoning of Subject Property	Project Acreage
	Zoning and Land Use of Adj. Property	Wetland Areas
	Tax Parcel Numbers of Adj. Property	Tax Parcel Number(s) of Subject Property
	Owner Information of Adj. Properties	Heritage Tree Survey *(UDO Section 6.1.3.)*

Project Breakdown	Single Family Acreage	Single Family Lots
	Multi-Family Acreage	Multi-Family Units
	Commercial Acreage	Project Density (Dwelling Units Per Acre)
	Required Open Space *(UDO Section 6.4.4)*	Workforce Housing Density Bonus *(Optional)* (UDO Section 4.3.2.)
	Recreation Space *(UDO Section 6.4.4.)*	
	Total Open Space *(UDO Section 6.4.4.)*	Wetland Acreage

Project Site Data	Total Number of Lots	Housing Types Labeled
	Lot Numbers	Impervious Area
	Average Lot Size	Setbacks
	Smallest Lot Size	Periphery Buffer *(UDO Section 4.3.1.F.)*
	Lot Widths	Street Buffers *(UDO Section 4.3.1.F.)*
	Parking Calculations *(UDO Sect. 6.12)*	Screening *(UDO Section 6.4.)*

Roads	Indicate Roads to be Public or Private	Street Names
	Right of Way Widths	Traffic Impact Study *(UDO Section 6.16.)*
	Street Detail	Link Node Ratio *(UDO Section 6.11.3.B.)*
	Cul de Sac Radius	External Access *(UDO Section 6.11.3.C.)*

Authentisign ID: 1A8FC65D-D122-F011-8B3D-00224822F75A

Utilities	Utility Plan	Utility Provider Approval Documentation *(If other than Brunswick County)*
	Water/Sewer Provider	Topography
	Lighting Plan *(UDO Section 6.9)*	Stormwater Plan
	Location of Utility Lines	10' Utility Easement on Interior Roads

Miscellaneous	Owner Contact Information	Vicinity Map
	Engineer Contact Information	Graphic Scale
	Phase Lines	Date
	Neighborhood Meeting Notes	North Arrow

Exceptional Design	**Incorporating Exceptional Design into the proposed plan may allow flexibility from the conventional UDO development standards (See UDO Section 6.1.). Some elements of Exceptional Design Include:**	
	LID (Low Impact Development)	Green Building (LEED or Energy Star)
	Increased Open/Recreation Space	Tree Resource Management
	Superior Landscaping	Natural Resource Conservation

General Notes to be Included on Site Plan:

- "Project to be built to County or City specifications for water and sewer. A utility plan must be submitted and approved by Engineering and Emergency Management."
- "County and/or State Stormwater Permits must be obtained prior to any construction. No natural drainage areas will be cut off or disturbed before obtaining the permits."
- "There shall be a note on the final plats, master covenants, and deeds showing the location of wetlands and noting that those areas may not be filled, disturbed, or altered in any way unless properly permitted by the NC Department of Environment and Natural Resources and/or the U.S. Army Corp of Engineers."
- "A home owners association will be formed prior to the sale of lots and membership will be automatic upon purchase within the development. The homeowners association will comply with the standards set forth in Section 6.11.2.I. of the Unified Development Ordinance."
- "All roads will be built to NCDOT minimum paving standards for subdivision roads."

PD-158

ADJACENT PROPERTY OWNER(S)

PARCEL ID	NAME 1	NAME 2	ADDRESS	CITY	STATE	ZIP
227NB00102	WYNDFALL AT SANDPIPER BAY GOLF &	COUNTRY CLUB HOA ASSOC	PO BOX 8126	OCEAN ISL BCH	NC	28469-2126
227JB043	SANDPIPER BAY POA INC	C/O PRIESTLEY MGMT CO	PO BOX 4408	GREENSBORO	NC	27404-4408
227NB026	BROWN GARY M ETALS		913 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NB024	JERNIGAN MARVIN EDWARD AND	SCHOTT DEBORAH A	59 GREYABBEY DR	PINEHURST	NC	28374-6705
227NB036	SUMMA FREDERICK HARMON III ETUX	SUMMA JULIE ANN	5149 GOOD MEMORY LN	ELLICOTT CITY	MD	21043-7509
227NB020	POVENTUD FAMILY IRREVOCABLE TRUST		16 FRANCO AVE	SELDEN	NY	11784-1806
2270002408	STONE CANYON DEVEL CO INC		800 N SANDPIPER CLUB DR SW	SUNSET BEACH	NC	28468-5808
227NA00103	WYNDFALL @ SANDPIPER BAY GOLF		PO BOX 8126	OCEAN ISL BCH	NC	28469-2126
227NA00101	WYNDFALL @ SANDPIPER BAY GOLF		PO BOX 8126	OCEAN ISL BCH	NC	28469-2126
2270002436	SMITH GEORGE T ETUX	SMITH ELISABETH W	7406 HUCKLEBERRY LN SW	SUNSET BEACH	NC	28468-5850
2270002427	STONE CANYON DEVEL CO INC		800 N SANDPIPER CLUB DR SW	SUNSET BEACH	NC	28468-5808
2270002426	SIERRA PACIFIC INVESTMENT ENT LLC		1545 STONE CANYON ROAD	LOS ANGELES	CA	90077
2270002303	REMUDA RUN INVESTMENTS LLC		131 OCEAN BLVD W	HOLDEN BEACH	NC	28462-5024
22700001	SUNSET BEACH DEVELOPMENT LLC		2002 OAK ST SUITE 200	MYRTLE BEACH	SC	29577
227NA039	MILLER WILLIAM H ETUX	MILLER JANA L	941 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NA001	COMFORT JANICE G		958 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NA037	SHOAP GERALD EDWARD ETUX	SHOAP JANICE KAY	937 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NB027	DEVITO STEPHEN J ETUX	DEVITO JEAN ANDERSON	915 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NB025	CATHEY ELINOR A		911 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NA046	SWEIKO SUZANNE		942 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NA044	MARSH BRIAN L ETUX	MARSH MARTHA B	936 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NB035	ULICNY JAMES M ETUX	ULICNY PATRICIA L	PO BOX C	CORAL	PA	15731-0249
227NB033	FERGUSON SUSAN MARIE		927 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NB032	SWAIN WHITMEL B ET	SWAIN BETTY E	925 ELDERBERRY LANE SW	SUNSET BEACH	NC	28468
227NB029	LEMOND VALERIE H		1500 CHURCHILL DR	CONWAY	SC	29527-4714
227NB023	GIAMPOCARO TRINA MARIE		907 ELDERBERRY LANE	SUNSET BEACH	NC	28468
227NB021	GRESHAM MARGARET M		903 ELDERBERRY LANE	SUNSET BEACH	NC	28468
227NB018	COOPER JAMES R ET	COOPER SHARON B	897 ELDERBERRY LN SW	SUNSET BEACH	NC	28468
227NA050	DAVIES PATRICIA ANN		950 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NA002	ROHRER SHEILA B		960 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NA040	MAPLEWOOD TMS LLC		2067 INLAND DR SW	OCEAN ISL BCH	NC	28469-5745
227NB031	VOIT RUDY F ETUX	VOIT GAIL L	PO BOX 6427	OCEAN ISL BCH	NC	28469-0427
227NB030	WINN MITCHELL D		3612 PARKWOOD SCHOOL RD	MONROE	NC	28112-7544
227NB028	WEBER EDWARD E		917 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NB022	LAMPE GLADYS		905 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227NB019	OLSEN JOHN E & ALBERT J		899 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5860
227NA056	SMITH GEORGE ETUX	SMITH ELISABETH	7406 HUCKLEBERRY LN SW	SUNSET BEACH	NC	28468-5850
227NA054	PLONSKI JEFFREY J ET	PLONSKI JANE	7505 ANDOVER LN	N ROYALTON	OH	44133-2972
227NA052	HUNT HERMAN ET	HUNT JANICE	954 WYNDFALL DRIVE	SUNSET BEACH	NC	28468
227NA051	KOONTZ GLENN M ETUX	KOONTZ SANDRA L	952 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172

227NA048	BROWN RONALD L ETUX	BROWN BEATRICE D	946 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NA047	BRASFIELD MARY C		944 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NA045	HANKE KEVIN M ETUX	HANKE MARY	923 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6173
227NA043	HOLMES MICHAEL P		932 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227NA042	HOMES ARE US LLC 401 K TRUST	FBO JOSEPH A MENTZ	7384 SARTEANO DR	MYRTLE BEACH	SC	29572-7207
227NA038	SIRK BALFOUR O	WYNDFALL AT SANPIPER BAY	939 ELDERBERRY LANE	SUNSET BEACH	NC	28468
227JB021	KEAVENEY JOHN M SR ETUX	KEAVENEY CAROL A	7364 BALMORE DR SW	SUNSET BEACH	NC	28468-6188
227JB019	ZOTTER LOUIS J III ETUX	ZOTTER BERNADETTE	7368 BALMORE DR SW	SUNSET BEACH	NC	28468-6188
227JB018	DEMORE DONALD A ETUX	DEMORE BARBARA J	7370 BALMORE DR SW	SUNSET BEACH	NC	28468-6188
227JB017	WILLIAM EARL & ROSE JONES REV TRUST		7372 BALMORE DR SW	SUNSET BEACH	NC	28468-6188
227JB016	RASPA VINCENT		53 WESTMINSTER DR	MONROE	NJ	08831-1981
227NB034	HARRELL DONNA LYNNE TAYLOR		929 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837
227JB020	SULLIVAN BILLY MICHAEL ETUX	SULLIVAN DIANE LOVITT	4149 EDINBURGH DR	VIRGINIA BCH	VA	23452-2543
227NA055	EADS RICHARD D ETUX	EADS JOAN	7404 HUCKLEBERRY LN SW	SUNSET BEACH	NC	28468-5850
227NA053	GREENSTEIN ALLEN AND	COLLINS DONNA	956 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
227JB015	GALLAGHER MARY KATHLEEN ETVIR	KELLEY JAMES ARNOLD	6601 E WAKEFIELD DR APT A2	ALEXANDRIA	VA	22307-6802
2270000401	SEASIDE STORAGE CENTER LLC	%ANDREW JEFFERSON POWELL	612 5TH AVE S	N MYRTLE BCH	SC	29582-3237
227NA049	LINAUER CURT		948 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172
22700022	GAUSE SARAH LEE ETALS		1571 SCHLEY ST	HILLSIDE	NJ	07205-1216
227NA041	COX KEVIN THOMAS ETUX	COX LYNDA FAY	945 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837

OWNER(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
2270000102	BLACKMAN DIANE K AND	CHYKIRDA WAYNE R	PO BOX 6142	OCEAN ISL BCH	NC	28469-0142

APPLICANT(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
PER APPLICATION	COASTAL CORNERSTONE DEVELOPMENT, LLC		PO BOX 7974	WILMINGTON	NC	28406

PARCEL ID	NAME 1	NAME 2
227NB00102	WYNDFALL AT SANDPIPER BAY GOLF &	COUNTRY CLUB HOA ASSOC
227JB043	SANDPIPER BAY POA INC	C/O PRIESTLEY MGMT CO
227NB026	BROWN GARY M ETALS	
227NB024	JERNIGAN MARVIN EDWARD AND	SCHOTT DEBORAH A
227NB036	SUMMA FREDERICK HARMON III ETUX	SUMMA JULIE ANN
227NB020	POVENTUD FAMILY IRREVOCABLE TRUST	
2270002408	STONE CANYON DEVEL CO INC	
227NA00103	WYNDFALL @ SANDPIPER BAY GOLF	
2270002436	SMITH GEORGE T ETUX	SMITH ELISABETH W
2270002426	SIERRA PACIFIC INVESTMENT ENT LLC	
2270002303	REMUDA RUN INVESTMENTS LLC	
22700001	SUNSET BEACH DEVELOPMENT LLC	
227NA039	MILLER WILLIAM H ETUX	MILLER JANA L
227NA001	COMFORT JANICE G	
227NA037	SHOAP GERALD EDWARD ETUX	SHOAP JANICE KAY
227NB027	DEVITO STEPHEN J ETUX	DEVITO JEAN ANDERSON
227NB025	CATHEY ELINOR A	
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227NB030	WINN MITCHELL D	
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227NA056	SMITH GEORGE ETUX	SMITH ELISABETH
227NA054	PLONSKI JEFFREY J ET	PLONSKI JANE
227NA052	HUNT HERMAN ET	HUNT JANICE
227NA051	KOONTZ GLENN M ETUX	KOONTZ SANDRA L
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227NA045	HANKE KEVIN M ETUX	HANKE MARY
227NA043	HOLMES MICHAEL P	
227NA042	HOMES ARE US LLC 401 K TRUST	FBO JOSEPH A MENTZ
227NA038	SIRK BALFOUR O	WYNDFALL AT SANPIPER BAY
227JB021	KEAVENEY JOHN M SR ETUX	KEAVENEY CAROL A
227JB019	ZOTTER LOUIS J III ETUX	ZOTTER BERNADETTE
227JB018	DEMORE DONALD A ETUX	DEMORE BARBARA J
227JB017	WILLIAM EARL & ROSE JONES REV TRUST	
227JB016	RASPA VINCENT	
227NB034	HARRELL DONNA LYNNE TAYLOR	
227JB020	SULLIVAN BILLY MICHAEL ETUX	SULLIVAN DIANE LOVITT
227NA055	EADS RICHARD D ETUX	EADS JOAN
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227NA041	COX KEVIN THOMAS ETUX	COX LYNDA FAY
	OWNERS	
2270000102	BLACKMAN DIANE K AND	CHYKIRDA WAYNE R
PER APPLICATION	COASTAL CORNERSTONE DEVELOPMENT, LLC	

ADDRESS	CITY	STATE	ZIP	CASE #
PO BOX 8126	OCEAN ISL BCH	NC	28469-2126	CASE# PD-158
PO BOX 4408	GREENSBORO	NC	27404-4408	CASE# PD-158
913 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837	CASE# PD-158
59 GREYABBEY DR	PINEHURST	NC	28374-6705	CASE# PD-158
5149 GOOD MEMORY LN	ELLICOTT CITY	MD	21043-7509	CASE# PD-158
16 FRANCO AVE	SELDEN	NY	11784-1806	CASE# PD-158
800 N SANDPIPER CLUB DR SW	SUNSET BEACH	NC	28468-5808	CASE# PD-158
PO BOX 8126	OCEAN ISL BCH	NC	28469-2126	CASE# PD-158
7406 HUCKLEBERRY LN SW	SUNSET BEACH	NC	28468-5850	CASE# PD-158
1545 STONE CANYON ROAD	LOS ANGELES	CA	90077	CASE# PD-158
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958 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172	CASE# PD-158
937 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837	CASE# PD-158
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927 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837	CASE# PD-158
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2067 INLAND DR SW	OCEAN ISL BCH	NC	28469-5745	CASE# PD-158
PO BOX 6427	OCEAN ISL BCH	NC	28469-0427	CASE# PD-158
3612 PARKWOOD SCHOOL RD	MONROE	NC	28112-7544	CASE# PD-158
917 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837	CASE# PD-158
905 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837	CASE# PD-158
899 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5860	CASE# PD-158

7406 HUCKLEBERRY LN SW	SUNSET BEACH	NC	28468-5850	CASE# PD-158
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954 WYNDFALL DRIVE	SUNSET BEACH	NC	28468	CASE# PD-158
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53 WESTMINSTER DR	MONROE	NJ	08831-1981	CASE# PD-158
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7404 HUCKLEBERRY LN SW	SUNSET BEACH	NC	28468-5850	CASE# PD-158
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612 5TH AVE S	N MYRTLE BCH	SC	29582-3237	CASE# PD-158
948 WYNDFALL DR SW	SUNSET BEACH	NC	28468-6172	CASE# PD-158
1571 SCHLEY ST	HILLSIDE	NJ	07205-1216	CASE# PD-158
945 ELDERBERRY LN SW	SUNSET BEACH	NC	28468-5837	CASE# PD-158
				CASE# PD-158
PO BOX 6142	OCEAN ISL BCH	NC	28469-0142	CASE# PD-158
PO BOX 7974	WILMINGTON	NC	28406	CASE# PD-158

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Phillip Coates, Planner I

Action Item# VII3
Oxpen Oaks Major Subdivision (SS-291)

Issue/Action Requested:
Consideration of the proposed Oxpen Oaks Major Subdivision consisting of 15 single family units on approximately 6.67 acres, creating an overall density of 2.25 dwelling units per acre.

Background/Purpose of Request:
The applicant, Coastline Homes NC LLC, requests site plan approval for a Major Subdivisiont on Tax Parcel 2150009001 located on Oxpen Road SW (SR 1140) near Supply. The project proposes 15 single family units on 6.67 acres and an overall density of 2.25 dwelling units per acre.

Planning Department Recommendation:
Planning Staff has determined that the proposed Major Subdivisions meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:
1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick Couty Planning Department.
2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.
3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State, and County approvals/ permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.

Attachments:
1. Staff Report SS-291
2. Site Plan
3. Zoning Map
4. Imagery Map
5. FLU Map

6. Flood Map
7. TRC Comment Letter
8. Application
9. SS-291 Mailing List

BRUNSWICK COUNTY
STAFF REPORT AND RECOMMENDATION

Application No. SS-291

Applicant: Coastline Homes NC LLC

Project Name: Oxpen Oaks

Property Location: Off Oxpen Rd (SR 1140)

Parcel Number: 2150009001

Zoning District: R-6000 (High Density Residential)
Density Maximum – 7.3 Dwelling Units per Acre
"The R-7500, R-6000, and SBR-6000 districts are established to provide for orderly suburban residential development. A limited number of commercial and civic uses are allowed, subject to the restrictions necessary to preserve and protect the residential character of the neighborhood. A special permit process for higher intensity development is also allowed, using discretion to balance issues of higher density with improved amenities. Due to the higher intensity developments contained in this district, it is intended to be applied to properties served by public sewer and water systems."

Surrounding Zoning
North: R-6000
South: R-6000
East: CL-D
West: R-6000

Proposed Use: Oxpen Oaks is a proposed Major Subdivision consisting of 15 single family units on 6.67 acres and created an overall density of 2.25 dwelling units per acre.

Approval Criteria

- The majority of surrounding uses consists of single family residential and vacant land.
- The Future Land Use Map denotes this area as MDRM- (Medium Density Residential Mixed).
- Parking will be off street with a minimum of 2 driveway parking spaces per lot.
- Proposed infrastructure:
    1. Water is available from Brunswick County Utilities. Sewer is not available therefore septic systems have been proposed. It shall be the developer's responsibility to connect to the water system.
    2. Roads will be private.
- The proposed development will have a 10-foot, 0.2 opacity peripheral buffer, adjacent to C-LD property using existing vegetation to satisfy the requirement. Supplemental landscaping will be installed where necessary.
- The proposed development will have a 15-foot-wide local street buffer along Oxpen Road (SR 1140).
- Open space is required at 7% of the development area. The developer is proposing 61, 556 sq. feet 1.41 acres of total open space, of which .46 acres are required. Of the required open space, 15% is

required to be a usable recreation area. The developer is proposing .53 acres of recreational open space.

- A TIA is not warranted for this project.
- The majority of this parcel is located in the shaded X flood zone and only lot 5 is in the AE zone.
- Adjacent property owners were notified via US mail, and a notification sign was posted on the subject property.
- TRC was held on April 16, 2025.

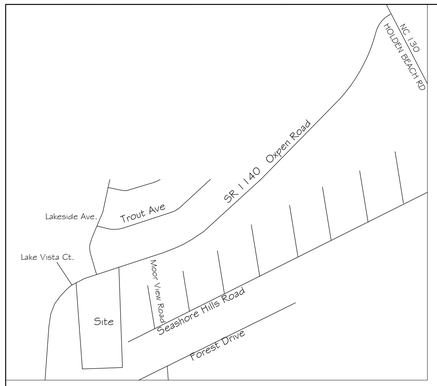
If approved, this development shall have a vested right for a period of three years. A two-year extension may be requested by the applicant to the Brunswick County Planning Department.

Planning Staff has determined that the proposed Major Subdivisions meets or exceeds the applicable standards of the UDO and therefore recommends approval based on the following conditions:

1. That the development shall proceed in conformity with all plans and design features submitted as part of the planned development application and kept on file by the Brunswick County Planning Department.

2. That the development of the parcel(s) shall comply with all regulations as specified in the Brunswick County Unified Development Ordinance.

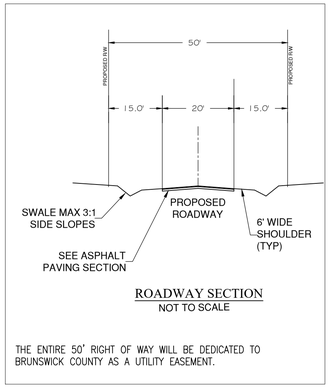
3. Planned Development approval does not constitute an authorization to construct. All applicable Federal, State and County approvals/permits will be necessary to obtain final plat approvals and building permits. This includes Stormwater, Utilities, and Fire Marshal requirements.



VICINITY MAP

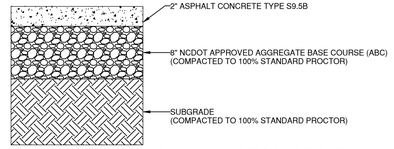
NOT TO SCALE

SITE INFORMATION	
PROPERTY OWNER / OWNER ADDRESS	HOMETOWN HOMEBUILDING LLC 4929 BRIDGERS RD, SHALLOTTE, NC 28470
APPLICANT / APPLICANT ADDRESS	COASTLINE HOMES NC, LLC 5710 OLEANDER DR, STE 206, WILMINGTON NC 28403
SITE LOCATION	OFF OXPEN ROAD SW (SR 1140)
PIN / PID	200719607622 / 2150009001
ZONING DISTRICT	CO-R-6000
ACREAGE OF PARCEL	290,377 SF OR 6.67 AC
PROPOSED USE	SINGLE FAMILY RESIDENTIAL (15 LOTS)
PROJECT DENSITY	15 UNITS / 6.67 AC = 2.25 UNITS PER ACRE
OPEN SPACE REQUIRED	7% OF 290,377 SF = 20,326 SF TOTAL REQ'D 15% OF TOTAL SHALL BE RECREATIONAL = 3,049 SF
OPEN SPACE PROVIDED	TOTAL OPEN SPACE = 61,556 SF 23,202 SF OF WHICH IS RECREATIONAL
WETLANDS	+/- 0.32 AC, WITH AN IMPACT OF 0.07 AC. PERMITS FROM USACE AND NCDWR REQUIRED.
LOT DATA	MINIMUM LOT DIMENSIONS (WATER & SEPTIC); 60' WIDE, 10,000 SF. SETBACKS; 25' FRONT, 9' REAR, 5' SIDE, 15' STREET SIDE, OR BUFFER EASEMENT. SMALLEST LOT SIZE 10,009 SF, AVG LOT SIZE 18812 SF
UTILITIES	LOTS TO BE SERVED BY BRUNSWICK COUNTY MUNICIPAL WATER, AND ONSITE SEPTIC SYSTEMS



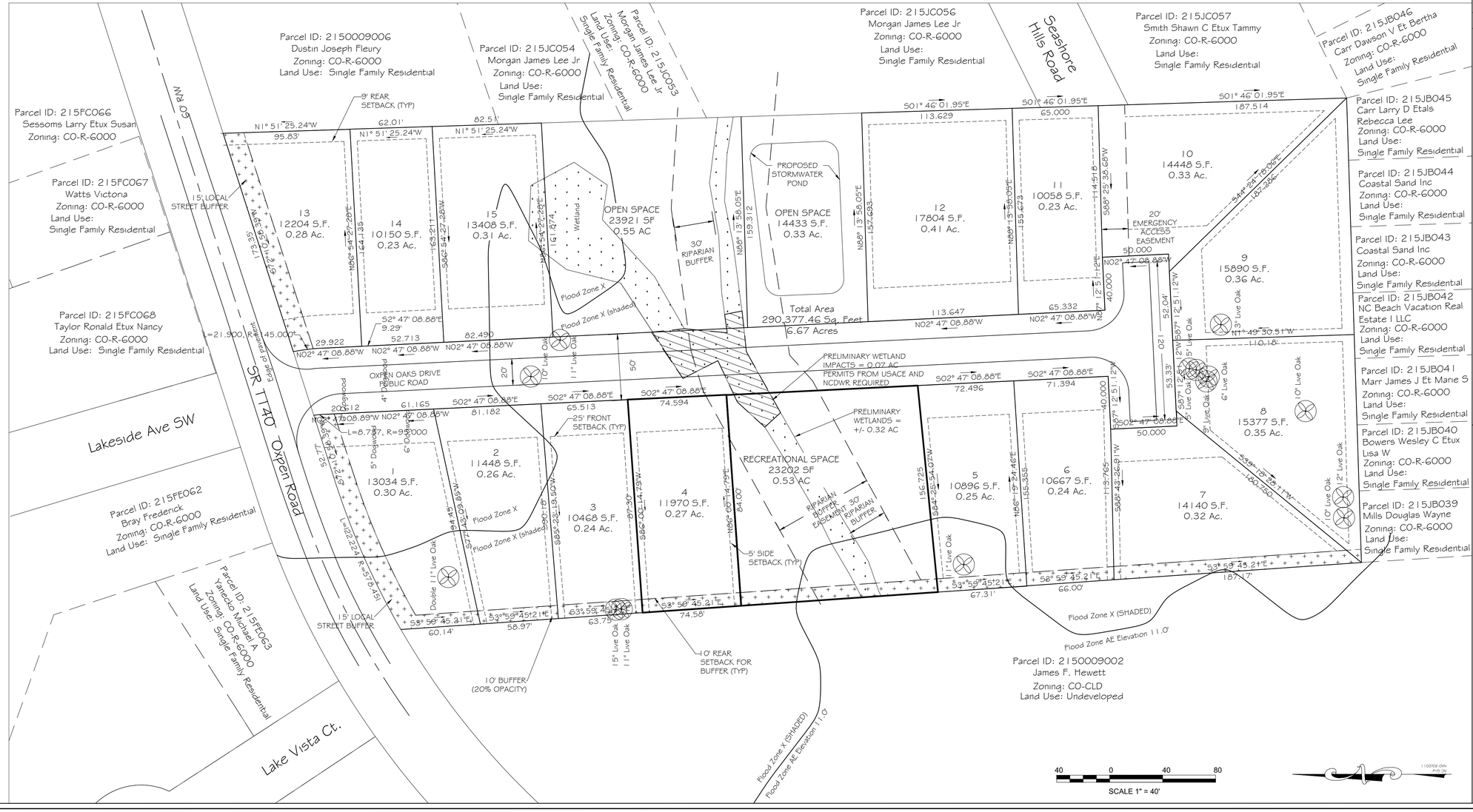
ROADWAY SECTION
NOT TO SCALE

THE ENTIRE 50' RIGHT OF WAY WILL BE DEDICATED TO BRUNSWICK COUNTY AS A UTILITY EASEMENT.



- UNDERCUT ANY UNSUITABLE MATERIAL UP TO 24" AND REPLACE WITH SELECT MATERIAL AS REQUIRED.
- NO BASE COURSE SHALL BE PLACED ON ORGANIC MATTER OR OTHER UNSUITABLE MATERIAL.
- WHEN CURBING IS NOT SPECIFIED, BASE COURSE SHALL EXTEND A MINIMUM OF 12" BEYOND EDGE OF ASPHALT.
- THE PAVEMENT DESIGN SHOWN REPRESENTS THE MINIMUM THICKNESS OF SURFACE AND BASE COURSE TO BE USED. SUBGRADE SOILS TESTS MAY DETERMINE HEAVIER PAVEMENT DESIGNS ARE REQUIRED.
- ALL MATERIALS SHALL MEET THE REQUIREMENTS SET FORTH IN THE LATEST EDITION OF THE NCDOT SUBDIVISION ROADS CONSTRUCTION STANDARDS AND NCDOT MATERIALS AND TESTS UNIT ASPHALT QMS MANUAL.
- CONTRACTOR SHALL NOTIFY ENGINEER IF SATURATED SUBGRADE IS ENCOUNTERED DURING CONSTRUCTION AS ADDITIONAL DRAINAGE MEASURES MAY BE REQUIRED.

ASPHALT PAVING SECTION



ENGINEERING
ELI ENGINEERING, PLLC
PO BOX 6234
OCEAN ISLE BEACH, NC 28469
910-279-3033
Elizabeth@EliEngineering.net
NC LICENSE # P-3016

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030507 ELIZABETH M NELSON

Digitally signed by Elizabeth M Nelson
Date: 2025.06.25 14:07:43 -04'00'

PROJECT NO: 25-1020
DRAWN BY: EMN
CHECKED BY: EMN
DATE: 3/31/25

REVISIONS

REV	DATE	COMMENT
1	3-31-25	ISSUED FOR TRC REVIEW
2	5-26-25	ISSUED FOR PB REVIEW
3	6-25-25	ADDED POND OUTLINE TO SITE PLAN

PROJECT NOTES

PER "PJD REFERENCE SKETCH FOR OXPEN RD TRACT" BY DAVEY RESOURCE GROUP DATED 02/06/24 AND SURVEY PERFORMED BY NORRIS & WARD DATED 02/05/25. FLAGS WILL NEED TO BE RE-STAKED AND SURVEYED, AND ARE TO BE CONSIDERED PRELIMINARY.

PRELIMINARY SOIL SUITABILITY MAP BY NEEDHAM & GULLEY ENVIRONMENTAL PLLC WAS USED WHEN DETERMINING LOT LAYOUT, AND ALL PROPOSED LOTS HAVE PROVISIONALLY SUITABLE SOILS FOR ON-SITE SUBSURFACE WASTE TREATMENT. FINAL ONSITE SEPTIC ANALYSIS WILL BE REQUIRED ONCE PROPERTY CORNERS ARE MARKED FOR PERMITTING.

BASE MAP PER "BOUNDARY & TOPOGRAPHIC SURVEY FOR COASTLINE HOMES NC, LLC" PROVIDED BY NORRIS & WARD LAND SURVEYORS, PA AND DATED FEBRUARY 5, 2025.

OWNER / DEVELOPER:
COASTLINE HOMES NC, LLC
5710 OLEANDER DRIVE, SUITE 206
WILMINGTON NC 28403

PROJECT:
OXPEN OAKS
SUPPLY. NC
BRUNSWICK COUNTY
SCALE: AS SHOWN

SHEET TITLE:
PRELIMINARY MAJOR SUBDIVISION

SHEET NUMBER:
C-101

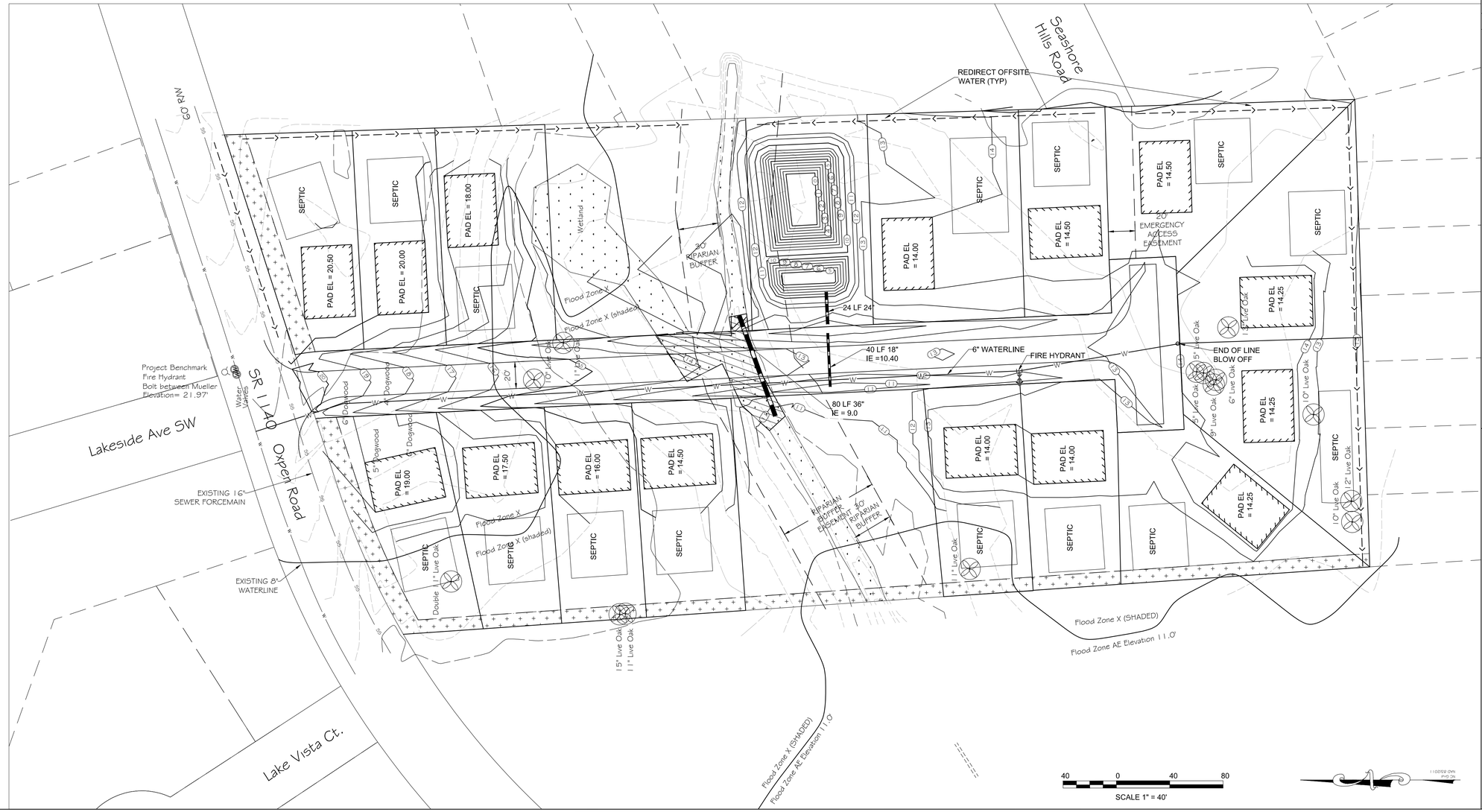
STORMWATER INFORMATION

TOTAL IMPERVIOUS AREA:
RESIDENTIAL BUA ,15 LOTS @ 4,000 SF PER LOT = 60,000 SF
ONSITE PAVEMENT = 14,660 SF
PAVEMENT IN NCDOT R/W = 922 SF
TOTAL = 75,582 SF

SITE AREA: 290,377 SF

ONSITE % IMPERVIOUS : 74,660 SF / 290,377 SF = 26%

DESIGN: SITE IS WITHIN ½ MILE AND DRAINING TO SA WATERS, AND EXCEEDS 12% IMPERVIOUS SO WILL REQUIRE A NCDEQ PERMITTED STORMWATER POND, IN ADDITION TO MEETING THE BRUNSWICK COUNTY PEAK DISCHARGE REQUIREMENTS.



ELI ENGINEERING, PLLC
PO BOX 6234
OCEAN ISLE BEACH, NC 28469
910-279-3033
Elizabeth@EliEngineering.net
NC LICENSE # P-3016

NORTH CAROLINA PROFESSIONAL SEAL 030507 ENGINEER ELIZABETH M NELSON

Digitally signed by Elizabeth M Nelson
Date: 2025.06.25 14:08:09 -04'00'

PROJECT NO: 25-1020
DRAWN BY: EMN
CHECKED BY: EMN
DATE: 3/31/25

REVISIONS

REV	DATE	COMMENT
1	3-31-25	ISSUED FOR TRC REVIEW
2	5-26-25	ISSUED FOR PB REVIEW
3	6-25-25	ADDED POND OUTLINE TO SITE PLAN

PROJECT NOTES

PER "PJD REFERENCE SKETCH FOR OXPEN RD TRACT" BY DAVEY RESOURCE GROUP DATED 02/06/24 AND SURVEY PERFORMED BY NORRIS & WARD DATED 02/05/25. FLAGS WILL NEED TO BE RE-STAKED AND SURVEYED, AND ARE TO BE CONSIDERED PRELIMINARY.

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BASE MAP PER "BOUNDARY & TOPOGRAPHIC SURVEY FOR COASTLINE HOMES NC, LLC" PROVIDED BY NORRIS & WARD LAND SURVEYORS, PA AND DATED FEBRUARY 5, 2025.

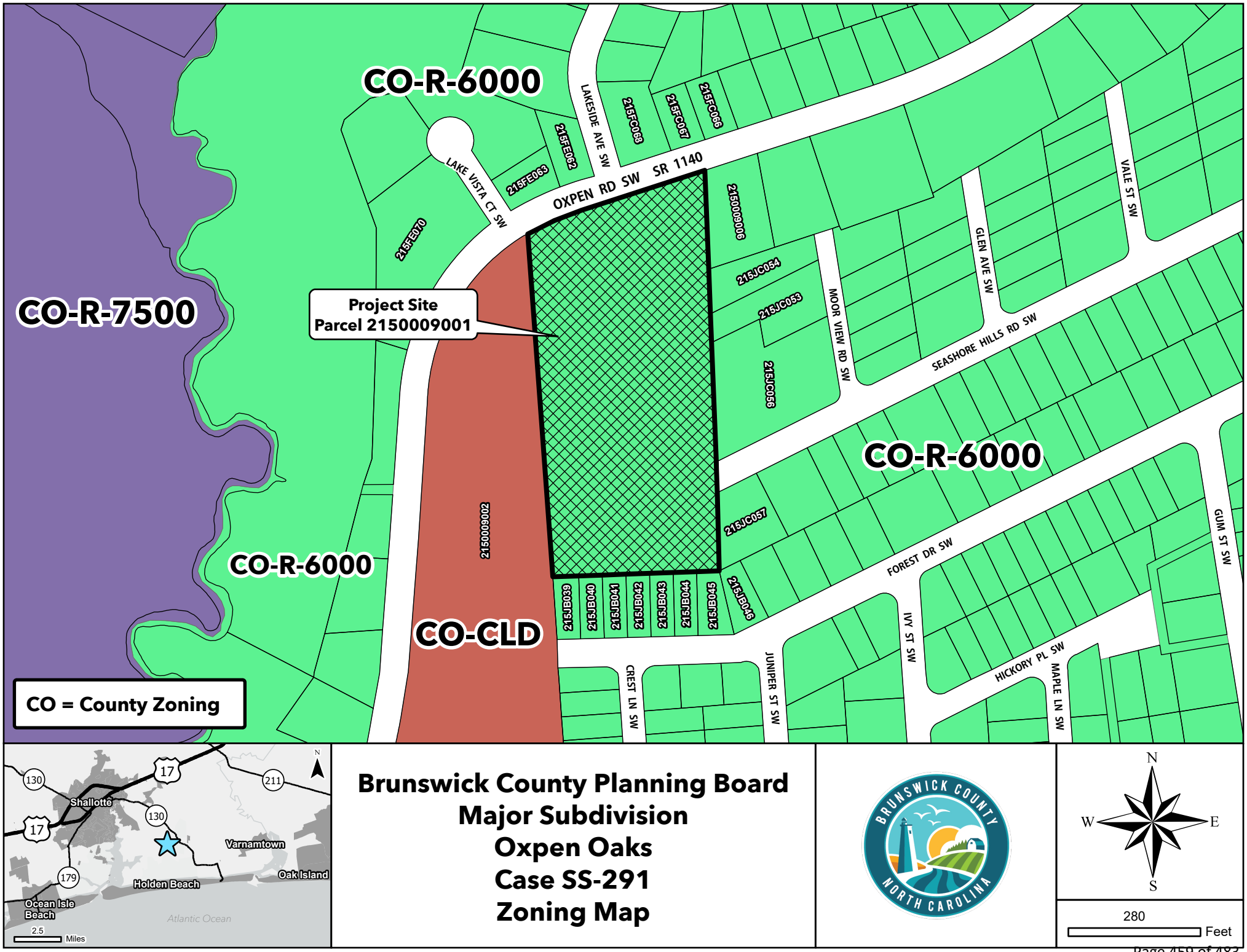
OWNER / DEVELOPER:
COASTLINE HOMES NC, LLC
5710 OLEANDER DRIVE, SUITE 206
WILMINGTON NC 28403

PROJECT:
OXPEN OAKS
SUPPLY. NC
BRUNSWICK COUNTY

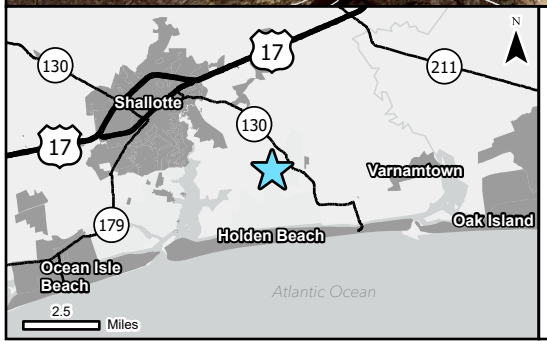
SCALE: AS SHOWN

SHEET TITLE:
PRELIMINARY UTILITY & STORMWATER PLAN

SHEET NUMBER:
C-201



Brunswick County Planning Board
Major Subdivision
Oxpen Oaks
Case SS-291
Zoning Map



Brunswick County Planning Board
Major Subdivision
Oxpen Oaks
Case SS-291
Imagery Map

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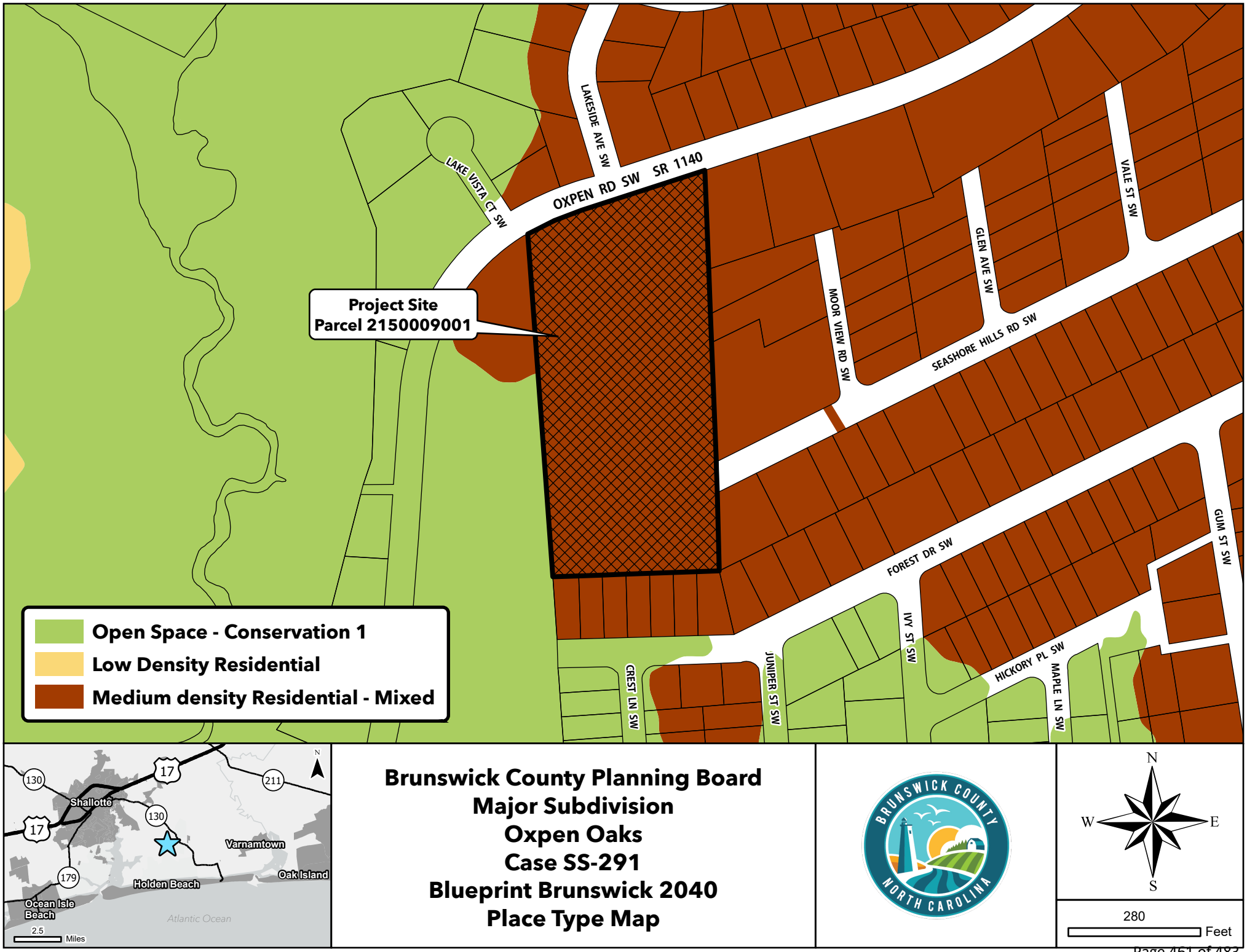
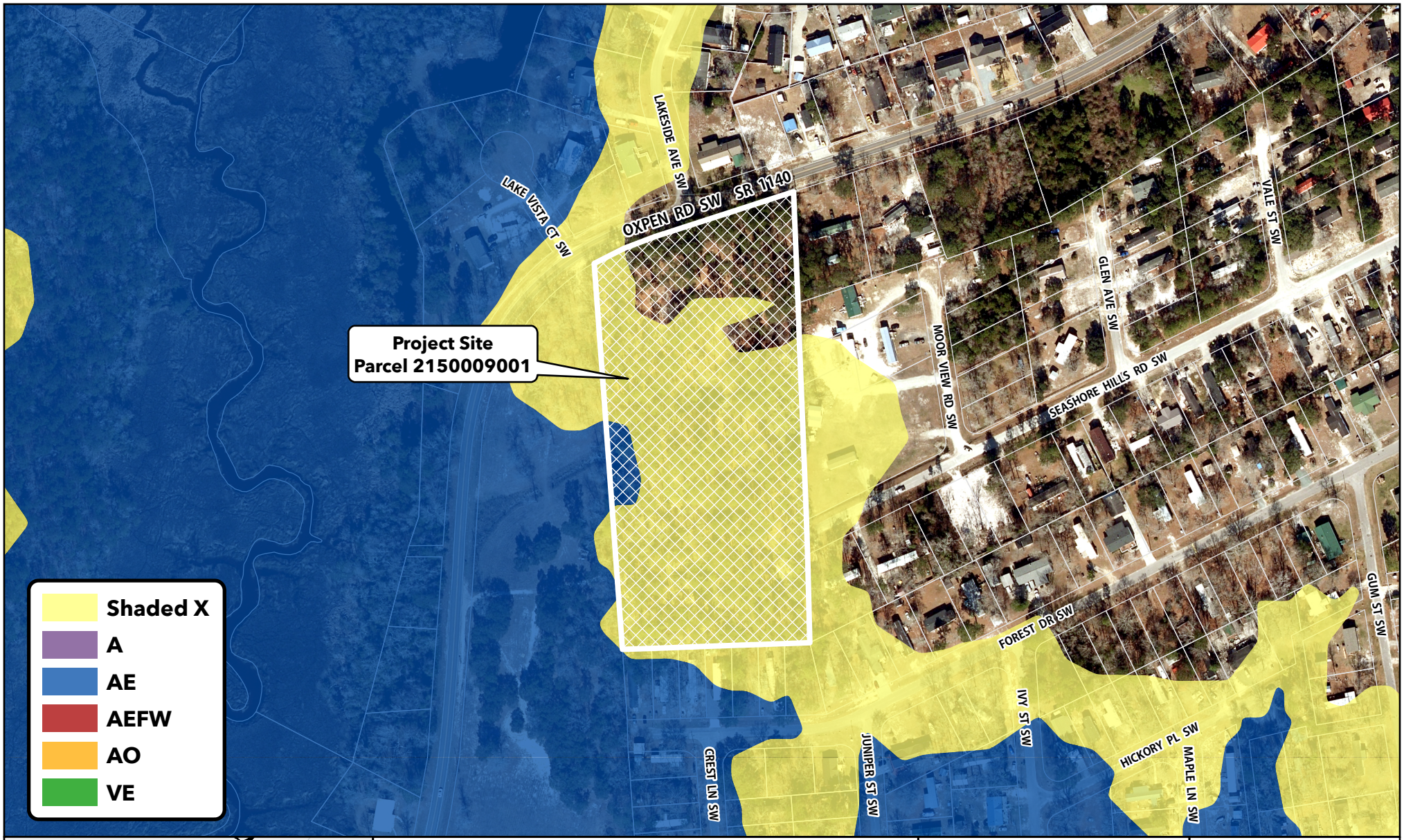
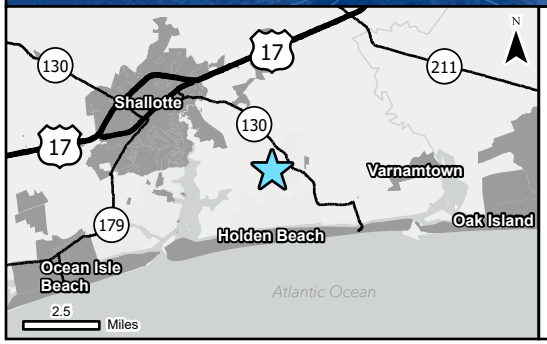
280 Feet



Brunswick County Planning Board
Major Subdivision
Oxpen Oaks
Case SS-291
Blueprint Brunswick 2040
Place Type Map





Brunswick County Planning Board
Major Subdivision
Oxpen Oaks
Case SS-291
Flood Hazards Map

N
W
E
S

280 Feet

Planning & Community Enforcement
Planning Phone: 910.253.2025
Community Enforcement Phone: 910.253.2200
Fax: 910.253.2437
Email: planning@brunswickcountync.gov

Location: Government Center Building I
75 Courthouse Drive NE, Bolivia, NC 28422

To: Coastline Homes NC LLC

From: Phillip Coates, Brunswick Planning; 910-253-2292

CC: File;

Date: 4/16/2025

Re: Oxpen Oaks, Oxpen Rd (SR 1140)

Name	Division	Status
Amy Aycock	County Engineering, Utilities	Comments provided below
Richard Christensen, PE	County Engineering, Stormwater	Comments provided below
Joe Oliver	County Fire	Comments provided below
Kevin Somersett	Inspections, Plan Review	No comments given at this time
Danny Thornton	Environmental Health	No comments given at this time
James Paggioli	Floodplain	Comments provided below
Angela Hammers	NCDOT Engineering	No comments given at this time
Jeff Walton	Planning, Commercial Review	Comments provided below

The following is a list of comments for review from planning regarding the project. Please provide your corrections as listed below. Additional review will be required once all the needed documents have been provided. Items of documents not provided on initial submission will be subject to further review. Please contact me for any further questions.

Amy Aycock, Engineering Utilities, 910-253-2407; (amy.aycock@brunswickcountync.gov)

- Existing 8" watermain on Oxpen Road available for connection
- Existing 16" high pressure forcemain on Oxpen available for connection (no existing sewer collection system available)
- Engineering would approve/allow septic as noted on plans. If Developer wants to provide a sewer system - a private sewer system and private pump station could be permitted with NCDEQ and connect to our forcemain.
- There is a fire hydrant just across the street from the entrance, we feel one would not be needed at the entrance to subdivision; we would allow the proposed 6" watermain with an end-of-line fire hydrant near Lot 8 as shown; additional fire hydrants may be required by the County Fire Marshall.
- If septic, single water meter boxes would be allowed - though a double water meter box or (2) single water meter boxes are preferred. If private sewer system then a double meter box or (2) single water meter boxes would be required. (per lot)

- NCDOT Encroachment would be required for water (and/or) sewer connection on Oxpen Road

Richard Christensen, Engineering Stormwater, 910-253-1718; (richard.christensen@brunswickcountync.gov)

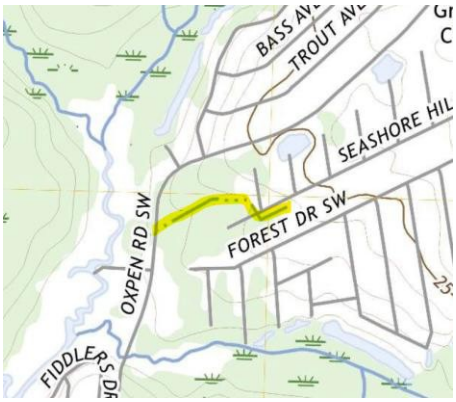
1. NCDEMLR Sedimentation & Erosion Control Permit is required.

2. NCDEQ Stormwater Management Permit is required.

3. County Stormwater Permit is required.

4. County SW requirements: Pre/post for the 1-year, 10-year and 25-year rain events. No overtopping of SCMs during the 100-year rain event.

5. An unnamed tributary exists on site. A 30-foot Riparian Buffer will be required. Please show and label it on the site plan. Riparian buffer areas shall be designated on recorded plats as easements



Joe Oliver, Fire Marshall, 910-253-2043; (joseph.oliver@brunswickcountync.gov)
Fire Department Notes should Indicate that hydrant spacing is at 500 feet and no point of the road to exceed 250 feet from hydrant.

- Road D fire hydrant be brought back to the intersection so it is not at the end of the dead end road.
- Fire Development Permit will be required to check roads, street signage, hydrant locations and hydrant flow. Hydrant flow minimum required is 1000 GPM for residential and minimum 1500 GPM for commercial but refer to Brunswick County Fire Prevention Ordinance for specifics.
- General Comments:
    1. Need to apply for a fire development permit. https://www.brunswickcountync.gov/code-administration/permits/ . Select Fire Application and complete all applicable fields. And upload civil/utility plans.
    2. Need to review the "Development / Subdivision Fire approval Guidance document located at the following link.

https://www.brunswickcountync.gov/fire-marshal/development-subdivision-fire-approval-process/

- Final plat will require fire approval.

Kevin Somersett, Insps Plan Review, ADA Review, 910-253-5738; (kevin.somersett@brunswickcountync.gov)

- No Comments

Danny Thornton, Environmental Health, 910-253-2252; (danny.thornton@brunswickcountync.gov)

- No Comments

James Paggioli, CFM, Floodplain, 910-253-2054; (james.paggioli@brunswickcountync.gov)

1) The vast majority of the site is located within the Shaded X Zone, The Building pads are proposed to be over two feet above the nearest AE RFPE which would have beam Elevation 13.0. Likely that most if not all finished first floor elevations will be higher than 500 year storm levels if floor is above elevation 16.0'
2) No significant work or structures are proposed to be located within the AE Flood Zone.

Angela Hammers, NCDOT Engineering, 910-398-9119; (akhammers@ncdot.gov)

- No Comments

Jeff Walton – Planning, Commercial Review, 910-253-2039; (Jeff.walton@brunswickcountync.gov)

- Provide a vicinity map that shows how the proposed development and Oxpen Road connect to Holden Beach Road (NC 130).
- Note that Lots 1 and 2 must be accessed from the internal street, Oxpen Oaks Drive. Direct access to Oxpen Road is not permitted.
- Indicate the proposed secondary access for this development. Seashore Hills Road is shown as dead-ending into the development, however, there is no linkage to Oxpen Oaks Drive. Please address, as this may be a viable emergency option. If not, show the recommended secondary option.
- Address access to the proposed recreation space and open space, as well as the proposed location for the mail kiosk. Note that the proposed access must be a minimum of 50' from any intersection. In addition, show proposed parking.
- Provide to NCDOT a Transportation Impact Analysis for this project. (We understand that this will not be a full analysis.)

Major Subdivision
Application and Checklist

Fee: $1,000 (Brunswick County Jurisdiction)
$908 + $11 per lot (City of Northwest Jurisdiction)
Brunswick County Planning Dept. 910-253-2025

For Office Use Only
File # _____ Invoice # _____
Date Received: _____
Northwest Jurisdiction ☐ YES ☐ NO

This application is a request to obtain approval to construct a Major Subdivision of more than 10 lots consistent with a submitted master site plan that identifies permitted land uses, densities, building setbacks, heights, lot size, width, buffers, off-street parking and street widths. Please reference Section 3.4.11. of the Unified Development Ordinance (UDO) for requirements regarding Major Subdivisions.

Please fill out form completely, supplying all necessary information and documentation to support your request.

Property Owner

Name HOMETOWN HOMEBUILDING LLC
Address 4929 Bridgers Rd
City, St, Zip Shallotte NC 28470
Phone
Fax
Email

Applicant or Representative

Name Coastline Homes NC LLC
Address 5710 Oleander Dr. Ste 206
City, St, Zip Wilmington, NC 28403
Phone 910-352-3381
Fax N/A
Email pj@coastlinehomesnc.com
andi@coastlinehomesnc.com

Property Information

Address OXPEN Rd (SR 1140)
Tax Parcel(s) 2150009001
Acreage 6.67
Current Zoning CO-R-6000
Public Utilities Available? Water X Sewer X

Project Information

Project Name OXPEN OAKS
Project Description 15 LOT SUBDIVISION
Modification or Expansion Of Existing Subdivision? Yes (No)
Single Family Acres 6.67
Commercial Acres 0
Number of Lots 15

Authorization

Property Owner Signature _____ Date _____

Applicant/Representative Signature _____ Date 3/31/25

Please submit three folded copies and one electronic copy of the site plan with application.

SS-291

ADJACENT PROPERTY OWNER(S)

PARCEL ID	NAME 1	NAME 2	ADDRESS	CITY	STATE	ZIP
215JC054	MORGAN JAMES LEE JR		2090 TURKEY TRAP RD SW	SUPPLY	NC	28462-5138
2150009006	FLEURY DUSTIN JOSEPH		90 WINONA RD APT 3	ASHLAND	NH	03217-4440
2150009002	HEWETT JAMES F		1412 MT PISGAH RD SW	SUPPLY	NC	28462
215FC068	TAYLOR RONALD ETUX	TAYLOR NANCY	1937 OXPEN RD SW	SUPPLY	NC	28462-3969
215JB039	MILLS DOUGLAS WAYNE		2292 FOREST DR SW	SUPPLY	NC	28462
215FE062	BRAY FREDERICK		2271 LAKESIDE AVE SW	SUPPLY	NC	28462-5856
215JC053	MORGAN JAMES LEE JR		2090 TURKEY TRAP RD SW	SUPPLY	NC	28462-5138
215FE070	VARNAM MITCHELL		1845 LAKE VISTA CT SW	SUPPLY	NC	28462-4240
215FE063	YANECKO MICHAEL A		299 CHAINTOWN RD	DAWSON	PA	15428-1208
215FC067	WATTS VICTORIA		3566 WALTER TODD RD	CLARENDON	NC	28432-9460
215JC057	SMITH SHAWN C ETUX	SMITH TAMMY L	14069 LIBERTY HILL CHURCH RD	OAKBORO	NC	28129-9644
215FC066	SESSOMS LARRY ETUX	SESSOMS SUSAN	1925 OXPEN RD SW	SUPPLY	NC	28462-3969
215JC056	MORGAN JAMES LEE JR		2090 TURKEY TRAP RD SW	SUPPLY	NC	28462-5138
215JB046	CARR DAWSON V ET	CARR BERTHA	PO BOX 221	WEST END	NC	27376-0221
215JB045	CARR LARRY D ETALS	CARR REBECCA LEE AND	PO BOX 221	WEST END	NC	27376-0221
215JB044	COASTAL SAND INC		PO BOX 7322	OCEAN ISL BCH	NC	28469-1322
215JB043	COASTAL SAND INC		PO BOX 7322	OCEAN ISL BCH	NC	28469-1322
215JB042	NC BEACH VACATION REAL ESTATE I LLC		24310 CLARKSBURG RD	CLARKSBURG	MD	20871-9252
215JB041	MARR JAMES J ET	MARR MARIE S	5529 RIVERFRONT RD	CLOVER	SC	29710-8053
215JB040	BOWERS WESLEY C ETUX	BOWERS LISA W	1255 IRISH LN	WALNUT COVE	NC	27052-5817

OWNER(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
2150009001	OXPEN OAKS NC LLC		5710 OLEANDER DR STE 206	WILMINGTON	NC	28403-4722
PER APPLICATION	HOMETOWN HOMEBUILDING, LLC		4929 BRIDGERS RD	SHALLOTTE	NC	28470

APPLICANT(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
PER APPLICATION	COASTLINE HOMES NC, LLC		5710 OLEANDER DR STE 206	WILMINGTON	NC	28403

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Tyler Connor, Planner I

Action Item# VII4
Rezoning Case Z-917

Issue/Action Requested:
Consideration of Rezoning Case Z-917: Request to rezone Tax Parcel 02100058 (58.38 acres) from CI (Commercial Intensive) to R-7500 (Medium Density Residential).

Background/Purpose of Request:
The applicant, Joseph K. Bland, P.E. with Norris & Bland Consulting Engineers P.C., requests to rezone Tax Parcel 02100058 from C-I (Commercial-Intensive) to R-7500 (Medium Density Residential). This rezoning request is conventional; therefore, no conditions or site plans are proposed.

Planning Department Recommendation:
Staff recommends Approval of Rezoning Case# Z-917, with the existing place type designation as Medium Density Residential (MDR) based upon the information provided, the surrounding area, current uses, the Blueprint Brunswick 2040 Comprehensive Plan (CAMA Land Use Plan), and other adopted Brunswick County plans and policies.

Attachments:
1. Staff Recommendation Summary with Consistency Statement
2. Zoning Map
3. Imagery Map
4. Future Land Use Map
5. Flood Map
6. Application
7. Mailing List
8. Staff Report Z-917 draft

Brunswick County Planning
STAFF RECOMMENDATION SUMMARY

PLANNING STAFF RECOMMENDATION

Staff recommends **APPROVAL** of Rezoning Case# Z-917, with the existing place type designation as Medium Density Residential (MDR) based upon the information provided, the surrounding area, current uses, the Blueprint Brunswick 2040 Comprehensive Plan (CAMA Land Use Plan), and other adopted Brunswick County plans and policies.

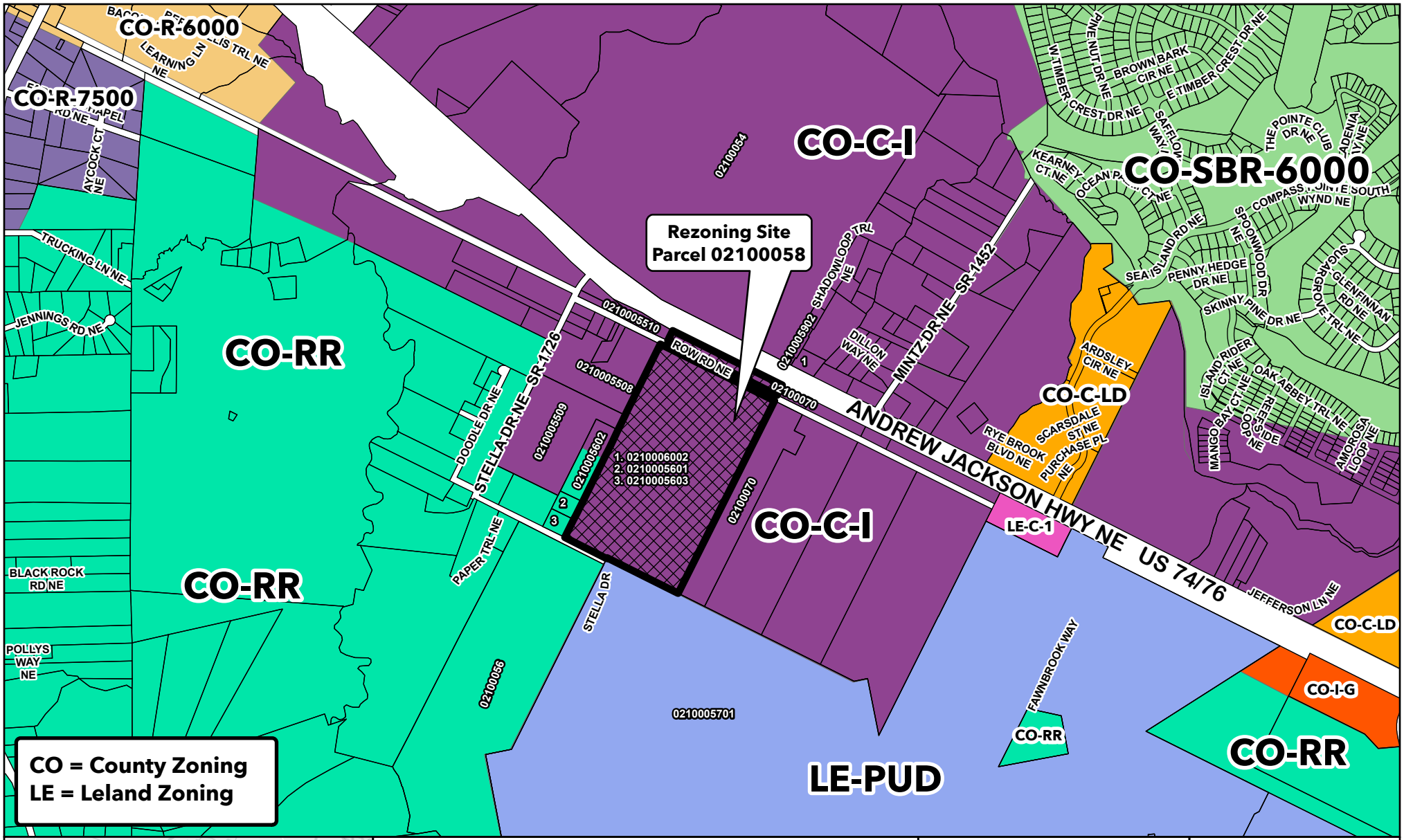
CONSISTENCY & REASONABLENESS DETERMINATION

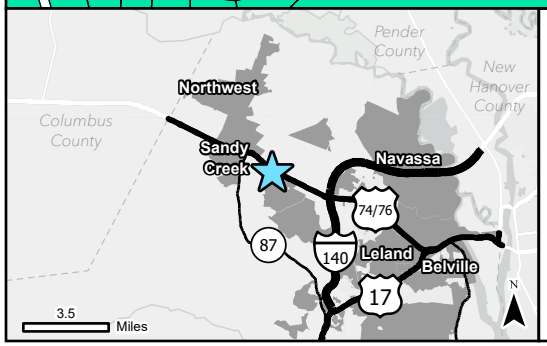
Per NCGS, zoning regulations shall be made in accordance with a comprehensive plan. Prior to adopting or rejecting any zoning amendment (including map and text amendments), a statement regarding plan consistency shall be adopted.

This request is **CONSISTENT** with the Blueprint Brunswick 2040 Comprehensive Plan place type designation and **CONSISTENT** with the goals, recommendations, and policies of the plans adopted by Brunswick County (listed below). Staff also finds the request **REASONABLE**, appropriate, and in the public interest based upon the following findings:

1. The Blueprint Brunswick 2040 Comprehensive Plan (CAMA Plan) goals & objectives support the rezoning:
    - Consistent with the goals and objectives
        - HN-1. Expand housing choices within Brunswick County to respond to changing preferences and to increase housing affordability in the county.

2. The Residential Suitability Map indicates the property as suitable for residential development





Brunswick County Planning Board
Rezoning Case Z-917
C-I to R-7500
Zoning Map

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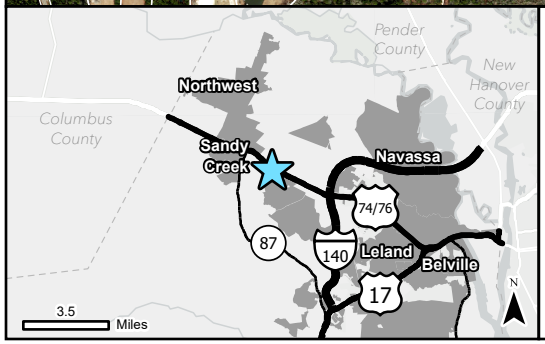
1,000 Feet



Brunswick County Planning Board
Rezoning Case Z-917
C-I to R-7500
Imagery Map

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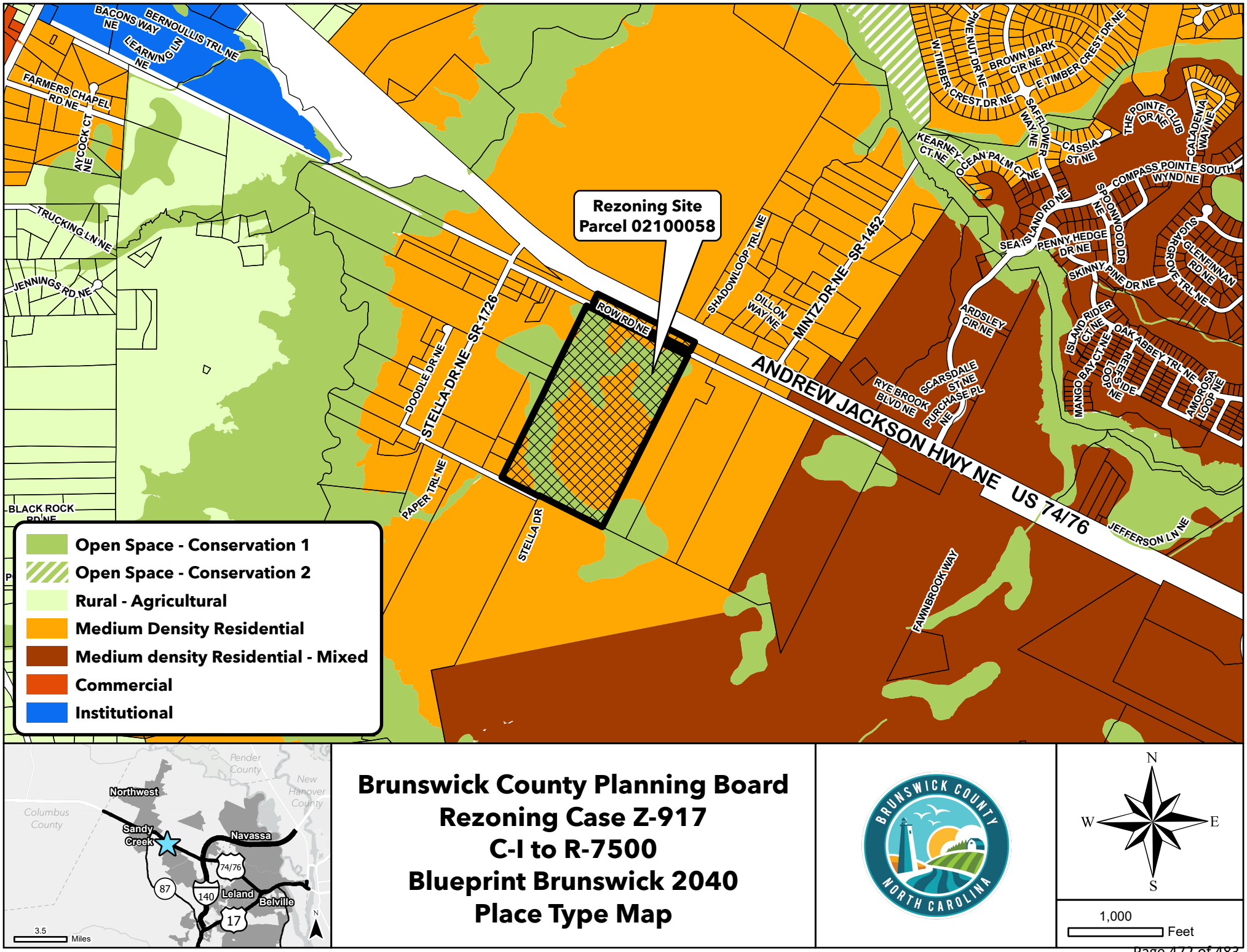
Rezoning Site
Parcel 02100058
ANDREW JACKSON HWY NE US 74/76
MINTZ DR NE–SR 1452
STELLA DR NE–SR 1726
ROW RD NE
BACONS WAY NE
BERNOULLIS TRL NE
LEARNING LN NE
FARMERS CHAPEL RD NE
AYCOCK CT NE
TRUCKING LN NE
JENNINGS RD NE
BLACK ROCK RD NE
DOODLE DR NE
PAPER TRL NE
STELLA DR
SHADOW LOOP TRL NE
DILLON WAY NE
KEARNEY CT NE
OCEAN PALM CT NE
SAFFLOWER WAY NE
CASSIA ST NE
THE POINTE CLUB DR NE
CALADENIA WAY NE
COMPASS POINTE SOUTH WYND NE
SEA ISLAND RD NE
SPOONWOOD DR NE
PENNY HEDGE DR NE
SUGAR GROVE TRL NE
GLENFINNAN RD NE
SKINNY PINE DR NE
ISLAND RIDER CT NE
OAK ABBEY TRL NE
MANGO BAY CT NE
REEF SIDE LOOP NE
AMOROSA LOOP NE
ARDSLEY CIR NE
SCARSDALE ST NE
RYE BROOK BLVD NE
PURCHASE PL NE
JEFFERSON LN NE
FAWNBROOK WAY
W TIMBER CREST DR NE
E TIMBER CREST DR NE
BROWN BARK CIR NE
NE NUT DR NE
Open Space - Conservation 1
Open Space - Conservation 2
Rural - Agricultural
Medium Density Residential
Medium density Residential - Mixed
Commercial
Institutional
Pender County
New Hanover County
Columbus County
Northwest
Sandy Creek
Navassa
Leland
Belville
74/76
87
140
17
3.5
Miles
N
Brunswick County Planning Board
Rezoning Case Z-917
C-I to R-7500
Blueprint Brunswick 2040
Place Type Map
BRUNSWICK COUNTY NORTH CAROLINA
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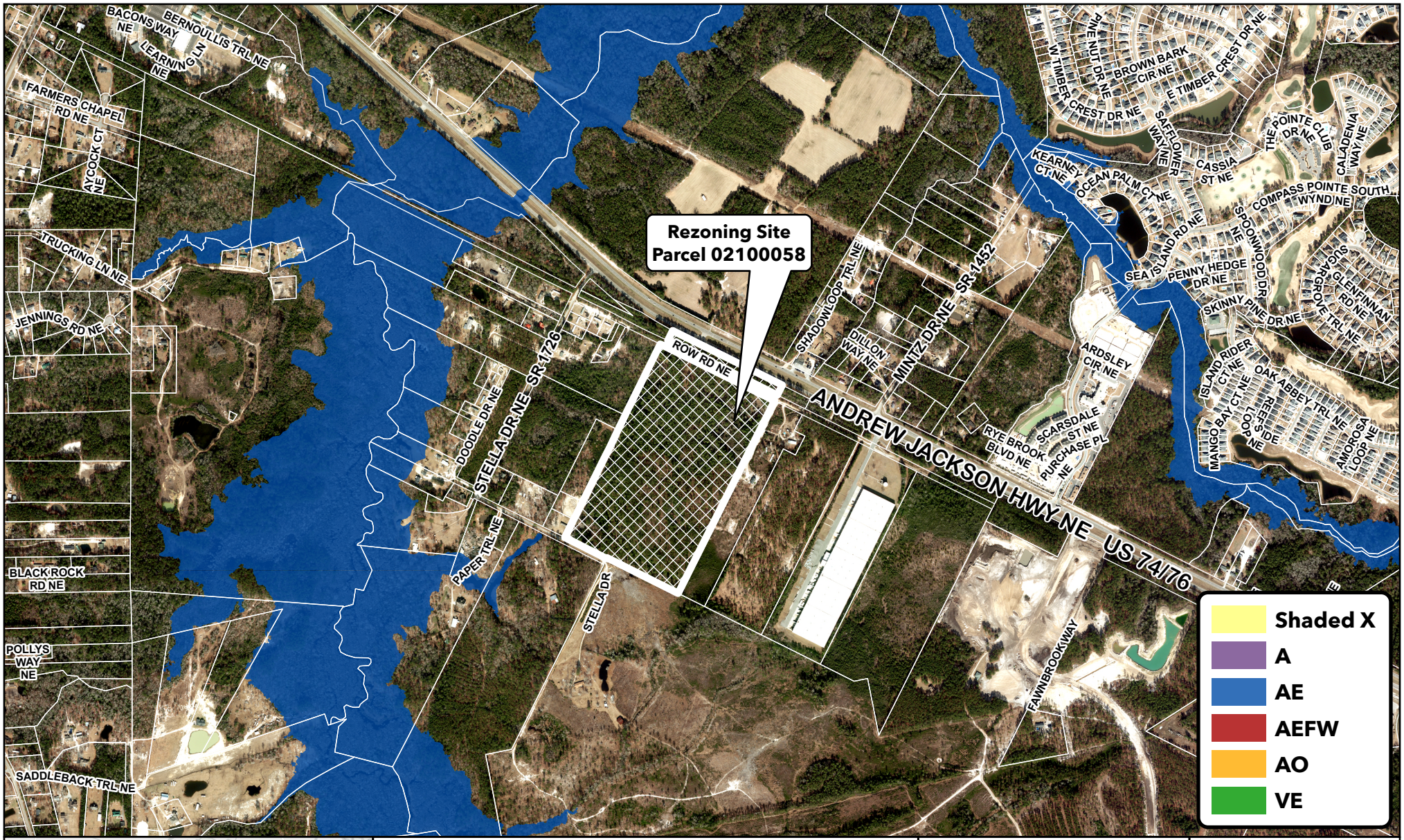


Brunswick County Planning Board
Rezoning Case Z-917
C-I to R-7500
Flood Hazard Map

Docusign Envelope ID: 670C7B7F-92E5-42FD-8031-CFE2A6D311F1

REZONING APPLICATION

For Office Use Only
Rezoning Case Z- 917 Invoice # 644965
Date Received 4-17-2025
Northwest Jurisdiction ☐ YES ☒ NO

Brunswick County Planning • PO Box 249, Bolivia, NC 28422 • Phone: (910) 253-2025/1-800-621-0609 • Fax: (910) 253-2437

Complete the following application. This form must be *completely* filled out. Incomplete applications will result in a delay of this application and slow down the rezoning process.

APPLICANT INFORMATION (This person will be the contact person and will receive all mailings)

Applicant Name(s):	Joseph K. Bland, P.E. Norris & Bland Consulting Engineers P.C.
Mailing Address:	1429 Ash-Little River Rd. NW, Ash, NC 28420
Phone: 910-287-5900	Email: jbland@nbengr.com

PROPERTY OWNER INFORMATION (If different from above)

Owner Name(s):	BONNIE K MCGLAUGHLIN
Mailing Address:	C/O G & CMS INC. 14405 SW 69TH CT PALMETTO BAY, FL 33158
Phone:	Email:

PROPERTY INFORMATION

Property Address and/or Description of Location: ~~NONE ASSIGNED~~ ~~ADJACENT TO 3001 RAWLS RD. NE~~ 7190 STELLA DR. NE Leland N.C. (TC 4-17-2025)

Parcel Tax ID #(s): 02100058	Total Site Acreage: 58.38
Current Zoning District(s): CI	Proposed Zoning District(s): R7500

Conditional Zoning Request ☐ YES ☒ NO

Conditional Zoning have additional submittal requirements such as Conceptual Site Plan, Proposed Conditions, Proposed Uses, and the holding of a neighborhood meeting. Please include the additional information as an attachment to this application.

NOTE: If multiple parcels are being proposed for rezoning then write "see attached" and attach the list of the parcels. Make sure to include the Tax Parcel ID #, owner name(s)/address, and acreage information.

Docusign Envelope ID: 670C7B7F-92E5-42FD-8031-CFE2A6D311F1

STATEMENT OF REASONABLENESS

Please explain why the proposed zoning is reasonable for the area. Possible reasons could be the rezoning is consistent with the character of the area, the rezoning will match the surrounding zoning, or the rezoning is consistent with the Land Use Plan:

The proposed rezoning would be a reduction in intensity from CI to R7500 District.
The current land use plan supports R7500 in this area.

LAND USE COMPATIBILITY

Future Land Use Map Classification:

Is the proposed rezoning consistent with the Land Use Plan? ☑ YES ☐ NO

If not consistent, please explain the change in conditions of the community which justify amending the Land Use Plan Map:

NOTE: The future Land Use Map Classification comes from the Brunswick Co. CAMA CORE Land Use Plan. If a rezoning request is not consistent then an amendment is required. Planning Staff can assist with this determination.

APPLICANT/OWNER SIGNATURE

In signing of this Rezoning Application, I certify that I have understand the application guidelines and that incomplete applications will delay my application and my rezoning. I ALSO UNDERSTAND THAT MY REZONING REQUEST MUST BE CONSISTENT WITH THE LAND USE PLAN. I further certify that I am authorized to submit this application and that all the information presented in this application is accurate to the best of my knowledge, information, and belief.

Applicant Signature: _____ Date: 4/10/25

Owner Signature: Signed by: Janice J Connors _____ Date: 4/16/2025

Owner Signature: _____ Date: _____

NOTE: If there are multiple owners that need to sign have them sign under the owner signature or attached additional sheets.

Brunswick County Jurisdiction Fees

☐ <1.0 acres ($350) ☐ 1.0 to <5 acres ($400) ☐ 5.0 to <25 acres ($450)
☐ 25 to <50 acres ($600) ☒ 50+ acres ($1,200) ☐ Conditional Zoning (Add $200)

City of Northwest Jurisdiction Fees

☐ <1.0 acres ($1,650) ☐ 1.0 to <5 acres ($1,760) ☐ 5.0 to <25 acres ($1,870)
☐ 25 to <50 acres ($2,090) ☐ 50+ acres ($2,200) ☐ Conditional Zoning (Add $550)

Please note that any continuance request after initial advertising will incur and additional $500 fee for Brunswick County Jurisdiction and $550 for City of Northwest Jurisdiction.

Z-917

ADJACENT PROPERTY OWNER(S)

PARCEL ID	NAME 1	NAME 2	ADDRESS	CITY	STATE	ZIP
0210005603	KLUTZ RICHARD ET	KLUTZ GAYLE	7203 STELLA DR	LELAND	NC	28451
0210005902	DAVIS ALTON E ETUX	DAVIS MAGDALENE	118 COMBINE LN SE	LELAND	NC	28451-9607
0210005510	LEONARD BONNIE REYNOLDS		799 SILVER GROVE WAY	SHALLOTTE	NC	28470-6120
0210005509	HEWETT TERESA REYNOLDS ETVIR	HEWETT CHARLIE NEWMAN	1292 GEORGE II HWY SE	BOLIVIA	NC	28422-8546
0210005601	KLUTZ RICHARD ETUX	KLUTZ GAYLE R	7203 STELLA DR NE	LELAND	NC	28451-7909
0210005602	KLUTZ RICHARD ET	KLUTZ GAYLE	7203 STELLA DR	LELAND	NC	28451
0210005508	LEONARD BONNIE REYNOLDS		799 SILVER GROVE WAY	SHALLOTTE	NC	28470-6120
0210006002	AL 1982 PROPERTIES LLC		7113 JENNINGS RD NE	LELAND	NC	28451-9431
02100054	TALL PINES FARM OF BRUNSWICK LLC		3120 ANDREW JACKSON HWY NE	LELAND	NC	28451-8904
02100056	KLUTZ RICHARD DOLE		7203 STELLA DR NE	LELAND	NC	28451
02100070	PARKER STEVE		3001 ROW RD NE	LELAND	NC	28451-8892
0210005701	MALMO VENTURES LLC		60 GREGORY RD NE SUITE 1	BELVILLE	NC	28451-9275
	COMMANDAR MOT SUNNY POINT		6280 SUNNY POINT RD SE	SOUTHPORT	NC	28461

OWNER(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
2100058	CONNORS JANICE J ETALS		22971 CORKSCREW RD	ESTERO	FL	33928-9406

APPLICANT(S)

PARCEL ID	NAME	NAME 2	ADDRESS	CITY	STATE	ZIP
	JOSEPH K. BLAND, P.E.	NORRIS & BLAND CONSULTING ENGINEERS P.C.	1429 ASH-LITTLER RIVER RD. NW	ASH	NC	28420

REZONING STAFF REPORT

Prepared by Tyler Connor, Planner I
Rezoning Case#: Z-917
July 14, 2025

APPLICATION SUMMARY

The applicant, Joseph K. Bland, P.E. with Norris & Bland Consulting Engineers P.C., requests to rezone Tax Parcel 02100058 from C-I (Commercial-Intensive) to R-7500 (Medium Density Residential). This rezoning request is conventional; therefore, no conditions or site plans are proposed. All owners and adjacent owners have been notified via first-class mail.

Location
7190 Stella Dr. NE Near Leland, N.C.

Tax Parcel
Parcel 02100058

Current Zoning
C-I (Commercial-Intensive)

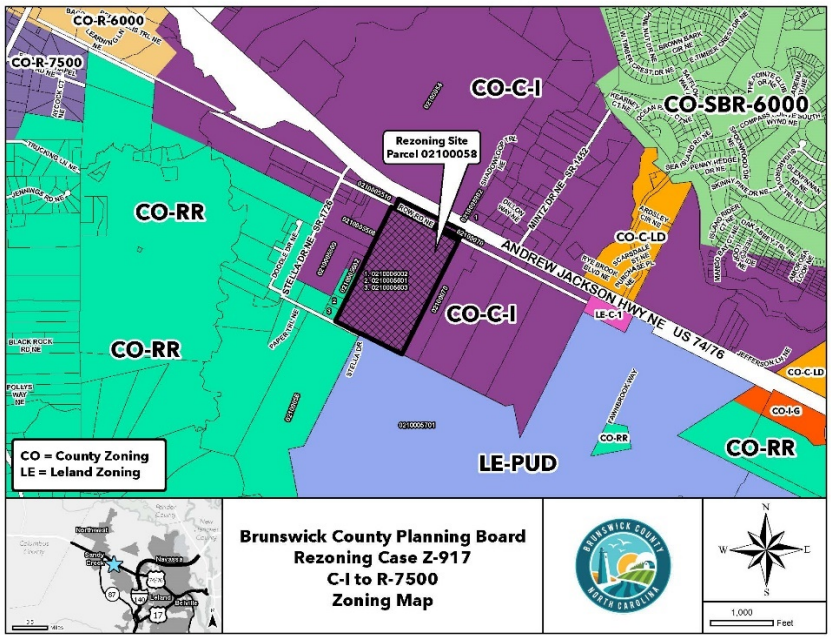
Proposed Zoning
R-7500 (Medium Density Residential)

Surrounding Zoning
C-I (Commercial-Intensive), RR (Rural Residential), and PUD (Leland Zoning Jurisdiction)

Current Use
Single Family Residential

Surrounding Land Uses
Single Wide Mobile Home, Double Wide Mobile Home, Single Family Residential, and Undeveloped

Size 58.38 Acres



SITE CONSIDERATIONS

Zoning History:

- The Property was rezoned from C-M (Commercial-Manufacturing) to C-I (Commercial-Intensive in 2007 with the adoption of the Brunswick County Development Ordinance (UDO). The zoning of the property has remained the same since then.

Buffers:

- When located next to C-I, if rezoned to R-7500, a .6 buffer would be required next to developed property and a .2 buffer would be required next to undeveloped property. When located next to RR, if rezoned to R-7500, a .2 buffer would be required next to developed and undeveloped property. When located next to Leland Zoning District PUD (Planned Unit Development District), if rezoned to R-7500, no buffer would be required. However, non-residential uses locating next to vacant property shall be required to provide a 0.2 buffer. When locating a non-residential use in a R-7500 Zoning District next to an existing residential developed property, a 0.4 buffer shall be required. Non-residential uses locating next to other non-residential uses are not required to provide a buffer. Also, non-residential uses locating next to vacant property shall be required to provide a 0.2 buffer (Note: the PUD District is similar to the Counties R-6000, R-7500, and SBR-6000 Zoning Districts)

Street Yard Buffers:

- A 20-foot street yard buffer may be required depending on the design of any future development.

Utilities:

- County water is not available.
- County wastewater is available via a 10 inch high pressure sewer force main on Andrew Jackson Hwy.

Schools:

- The property is located within the Lincoln Elementary School, Leland Middle School, and North Brunswick High School Districts. Lincoln Elementary School is slightly over capacity. Leland Middle School has capacity. North Brunswick High School is nearing capacity.

CIP Projects In the Area:

- Education CIP New Bond Issue Projects FY 2027
- Northwest District Park FY 2029 and 2030
- I -74 Parallel Force Main Project (34a & 34b) FY 2026

Traffic:

- Stella Dr. (SR 1726) has adequate capacity.
- Andrew Jackson Hwy (US 74-76) is over capacity.

NCDOT Road Improvement Projects in Area:

- HO-0002C Install Broadband from I-95 in Lumberton to I-140 in Wilmington
- I-6036 Pavement Rehabilitation US 17 to North of US 74
- HS-2003O Install traffic signals on 74-76 at Enterprise Dr. and Wood Treatment Rd.

Environmental Impacts:

- The rezoning request is not located in a Flood Hazard Zone.
- Biodiversity and Wildlife Habitat Assessment Score: Portions of the site scores 5 out of 10. A high score indicates more biodiversity and wildlife on the site while a low score indicated less biodiversity on the site.
- The parcel is not located within a half-mile of a Voluntary Agricultural District property.
- The parcel is not located in a Significant Natural Area.

ANALYSIS

Proposed Zoning District: R7500 (Medium Density Residential) *The R-7500, R-6000, and SBR-6000 districts are established to provide for orderly suburban residential development. A limited number of commercial and civic uses are allowed, subject to the restrictions necessary to preserve and protect the residential character of the neighborhood. A special permit process for higher intensity development is also allowed, using discretion to balance issues of higher density with improved amenities. Due to the higher intensity developments contained in this district, it is intended to be applied to properties served by public sewer and water systems.*

Existing Blueprint Brunswick 2040 Plan Place Types:

Medium-Density Residential,
This area consists of—or can support—single-family detached homes on varying lot sizes. Improved open spaces in the form of neighborhood parks and recreational amenities are interspersed. Greenway trails within provide links to greenway trails in the area. Maximum impervious coverage limitations help preserved green space.

Blueprint Brunswick 2040 Plan Place Type: Medium-Density Residential

☒ *Consistent with the Blueprint Brunswick 2040 Plan Place Type.*

☐ *Not Consistent with the Blueprint Brunswick 2040 Plan existing Place Type. If the place type is not consistent, a land use amendment is required.*

Applicable Blueprint Brunswick 2040 Plan Policies:

- HN-1. Expand housing choices within Brunswick County to respond to changing preferences and to increase housing affordability in the county.
- The Residential Suitability Map indicates the property as suitable for residential development.

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:
Kirstie Dixon, PLANNING DIRECTOR

Action Item# VIII1
FY 25 Administrative Adjustment Report

Issue/Action Requested:

Background/Purpose of Request:
The Brunswick County Unified Development Ordinance (UDO) allows the Planning Director to approve minor modifications to setbacks and fence height. Section 9.6.5 of the UDO requires that an annual report be submitted to the Planning Board and County Manager detailing all Administrative Adjustment requests and associated findings from the preceding year. The report lists all the Administrative Adjustments approved in FY 25.

Attached is the FY 25 Administrative Adjustment Report.

Planning Department Recommendation:
Recommend hearing a report on FY 25 Administrative Adjustment Report. No action needed.

Attachments:
1. FY 25 Administrative Adjustment Report

Planning & Community Enforcement
Planning Phone: 910.253.2025
Community Enforcement Phone: 910.253.2200
Fax: 910.253.2437
Email: planning@brunswickcountync.gov

Location: Government Center Building I
75 Courthouse Drive NE, Bolivia, NC 28422

MEMORANDUM

DATE: July 1, 2025

TO: Brunswick County Planning Board
Steve Stone, County Manager

FROM: Kirstie Dixon, Planning Director

RE: FY 25 Administrative Adjustments Annual Report

Section 9.6.5 of the Brunswick County Unified Development Ordinance requires that an annual report be submitted to the Planning Board and County Manager detailing all Administrative Adjustment requests and associated findings from the preceding year.

In practice, requests that do not align with the intent of the Administrative Adjustment provisions are generally discouraged. In such cases, staff typically recommends alternative solutions, such as site plan modifications, variance requests, or rezonings.

The following Administrative Adjustments were approved between July 1, 2024, and June 30, 2025:

Project #	Name	Address	Type	Request	App/Den
2024203597	Olivia Johnson Regional Homes	1029 Backfin Place	Setback	9.5' side setback	Approved
2024203643	Brian Gobble	2069 Seashore Hills Rd	Fence	8' height	Approved
2024203680	Charity Sunrise	2591 Shell Point Road	Fence	6' height in front yard	Approved
2024203689	Sean Morrow Marty Wright Hm	519 Dark Oak Street	Setback	24.2' front setback	Approved
2024203818	Kelly Byrd Kent Homes	2206 Palm Pointe	Setback	4.9' side setback	Approved
2024203835	Leslie Robinson Coastal Permit	674 Harbor Drive	Setback	4.5' side setback	Approved
2024203875	Tom Russell Future Homes	3148 Waterview Drive (for the site plan)	Setback	23.9' rear setback on through lot	Approved

2024203910	Ricardo Mantalban	1419 Holden Beach Road Case #2400473	Fence	8’ height	Approved
2024203901	Autumn Lewis Marty Wright Hm	3055 Canna Place (Site Plan)	Setback	8.98’ rear setback	Approved
2024203945	Olivia Johnson Regional Homes	1396 Stanley Road	Setback	9’ side setback	Approved
2024203962	Ricardo Vega	2536 Blue Marlin Street	Fence	8’ height	Approved
2024203987	Jason Schumann Future Homes	3140 Waterview Drive	Setback	22.6’ rear setback through lot	Approved
2025204215	Autumn Lewis Marty Wright Hm	3055 Canna Place (Foundation Survey)	Setback	24.77’ front setback 24.68’ front setback	Approved
2025204274	Jessica C. Clayton Homes	1018 Winding Way	Setback	23.8’ front setback	Approved
2025204244	Calvin Neeley	2420 Williams Street	Fence	8’ height	Approved
2025204416	Steve Little	2420 Myrtlewood Dr	Setback	24.45’ front setback	Approved
2025204468	Kasey Abbott Regional Homes	1396 Stanley Road	Setback	14.4’ street side setback	Approved
2025204567	James Knipper	1858 Oak Harbour Drive	Fence	7’ height	Approved
2025204574	David Sherman	4348 Carolyn Avenue	Setback	24.1’ front setback	Approved
2025204529	Nathan Francis	1853 Pelican Point Ct	Fence	8’ height	Approved
2025204577	Thad Efird	2614 Penny Street	Fence	8’ height	Approved

CC: Niel Brooks, Deputy County Manager
Dennis Rabon, Zoning Administrator
Marc Pages, Deputy Planning Director
Belinda Wilson, Zoning Technician
Nancy Tyler, Zoning Technician

Brunswick County Planning Board
ACTION AGENDA ITEM
July 14, 2025

From:

Action Item# VIII2
New Agenda Management System

Issue/Action Requested:

Background/Purpose of Request:
The Planning Department recently implemented a new system called **CivicClerk** to manage agendas for the Planning Board and Board of Adjustment. Originally purchased to support agenda management for the Board of Commissioners, the system is now being expanded for use by other County boards and committees. This creates a portal where you and the public can easily view the agenda packet and meeting minutes.

Planning Department Recommendation:
Recommend hearing information about the newly launched system to manage Planning Board and Board of Adjustment agendas. No action needed.

Attachments:
None