Banner Scottsdale Hospital

Zoning Allocation & Conditional Use Permit



Banner Health®

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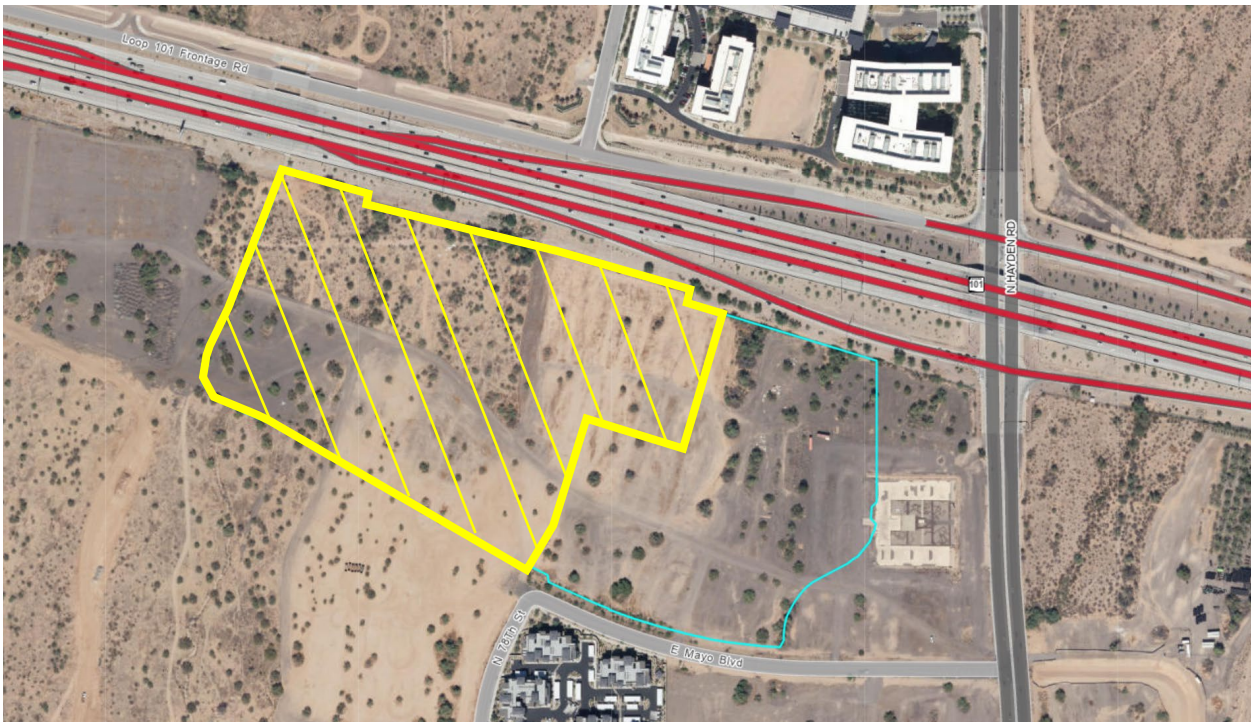
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1. Introduction

Banner Health ("Banner") is submitting concurrent applications to request approval of a Zoning Allocation and Conditional Use Permit (collectively, the "Application") to facilitate the development of a new Banner Health Scottsdale Hospital with related medical services (collectively, the "Hospital" or "Project") on the approximate 31.5 gross acres. The subject site is generally located at the northeast corner of Mayo Boulevard and Miller Road alignment (the "Site"), just south of State Route 101. The Site is comprised of the western two-thirds of Lot 2 of the Final Plat for Hayden 101, as recorded with the Maricopa County Assessor, docket recording number 2025-0260158. See Aerial Map. The remaining acreage within Lot 2 will be developed with the new Banner Health Center *Plus* ("Health Center *Plus*") and (future expansion of the Health Center *Plus*), an outpatient medical office and services facility, which is approved and under construction. (The Health Center *Plus* is not a part of this Application.)

Banner has been a fixture in Scottsdale's healthcare community for more than 45 years and currently operates 24 locations that serve the community. Banner acquired the 48 acres generally located at the northeast corner of Hayden Road and Mayo Boulevard in 2023, as the home for Banner's Scottsdale Medical Campus, which has long been part of Banner's strategic growth plan. The Banner Scottsdale Medical Campus will serve Banner's existing 50,000 members in the north Scottsdale area and meet the needs of the growing northeast Valley region, which is expected to add 100,000 new residents by 2030. The first phase of the Banner Scottsdale Medical Campus, Banner's Health Center *Plus*, recently broke ground on the land immediately adjacent to the Hospital Site and will open within two years.

The Banner Health Scottsdale Hospital represents phase 2 of the Banner Scottsdale Medical Campus and is the subject of this Application. The Banner Health Scottsdale Hospital is planned to be, at full build out, a 640,000 square-foot and state-of-the-art 300 bed hospital facility with related medical services, which will help to continue to develop Banner's care network in Scottsdale by adding emergency specialties. Banner has carefully chosen the programming for this facility to provide an optimum level of health care and medical service. The Banner Health Scottsdale Hospital fulfills Banner's mission of making health care easier so life can be better.



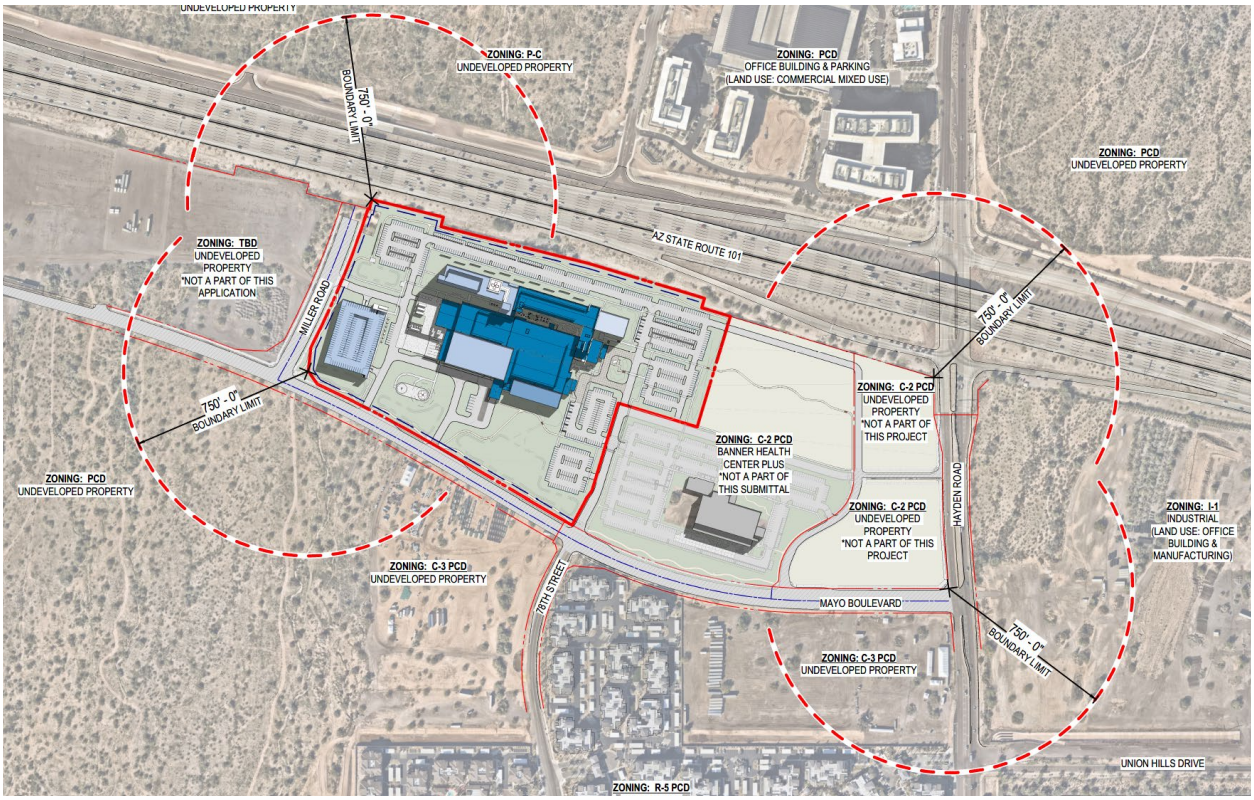
Aerial Map

2. Site, Context, and Zoning History

The Site is currently vacant and undeveloped. It is generally located west of Hayden Road, between State Route 101 to the north and Mayo Boulevard to the south, and east of the Miller Road alignment.

The Site is surrounded by a mix of existing and planned development. It is bordered to the north by the Cavasson/Nationwide campus across SR-101; to the east by the planned Banner Health Center Plus and future commercial and retail uses; to the southeast across Mayo Boulevard by the San Artes apartment community; to the south by vacant State Land Department property; and to the west across the Miller Road alignment by the Advanced Semi-conductor Materials campus ("ASM") currently under construction.

Notable uses in the surrounding area include the planned Axon global world headquarters campus to the east across Hayden Road, the Fairmont Scottsdale Princess and the TPC Scottsdale golf course to the south, and Optima McDowell Mountain condominiums to the west. See Context Aerial Map.



Context Aerial Map

The Site is within Planning Unit IV of the Crossroads East Planned Community District ("Crossroads East PCD"). The Crossroads East PCD encompasses approximately 1,000 acres generally located between Legacy Boulevard and Princess Boulevard (north-south) and Hayden Road and Scottsdale Road (east-west), bounding both sides of State Route 101. At the time of the original Crossroads East PCD approval in 2002, the Crossroads East PCD encompassed land entirely managed under trust by the Arizona State Land Department. Since that time, numerous properties within the Crossroads East PCD have been sold at public auction and are now developed, under development, or planned for development. The Site was part of a larger parcel sold at public auction by the Arizona State Land Department in 2022 to Hayden Loop 101, an entity controlled by the Van Tuyl Companies and De Rito Partners ("VT / DRP").

3. General Plan 2035 & Greater Airpark Character Area Plan

The Scottsdale General Plan 2035 (the "General Plan") designates the site as Mixed-Use Neighborhoods, which are intended to support human-scale development with access to multiple modes of transportation and major regional services. The General Plan defines Mixed-Use Neighborhoods as follows:

- Mixed-Use Neighborhoods focus on human-scale development and are located in areas with strong access to multiple modes of transportation and major regional services. These areas accommodate higher-density housing combined with complementary office or retail uses. Mixed-Use Neighborhoods are most suitable near and within Growth and Activity Areas. Mixed-Use Neighborhoods may be non-residential in the Greater Airpark Character Area.

The proposed Banner Hospital is consistent with the intent of the Mixed-Use Neighborhoods designation. The Site is located within the Crossroads East Area, which is a designated Growth Area with robust infrastructure and regional connectivity, offering direct access to Hayden Road and immediate proximity to Loop 101. Banner's investment in this location represents an appropriate, long-term land use decision that delivers a critical public service, generates economic value, and contributes to Scottsdale's overarching planning vision by aligning with the goals and policies presented in the General Plan.

The Project directly supports **Goal HC 1** of the Healthy Community Element: "Promote access to health and human services for citizens of Scottsdale." In line with **Policy HC 1.1**, which encourages the development of healthcare facilities in underserved areas. Banner's Application proposal will accommodate the construction of a new full-service hospital in North Scottsdale, that is a fast-growing area projected to add 100,000 residents by 2030 but currently lacking acute care infrastructure. The campus will provide emergency services, inpatient care, outpatient treatments, and specialty clinics, all in a location accessible to where people live and work. Its phased expansion and state-of-the-art design reflect the City's vision of fostering long-term community wellness and access to high-quality care.

The proposed campus also advances the goals within the Economic Vitality Element. It aligns with **Goal EV 1**, which calls on the city to support its core industries, specifically including healthcare, and to promote economic diversity. The hospital and medical office uses will generate hundreds of high-quality jobs across a range of skill levels, from physicians and nurses to support staff, thereby diversifying Scottsdale's employment base.

The Project is in line with **Goal EV 2**, which emphasizes expanding economic activities and employment opportunities. Banner's proposed Hospital satisfies this goal by introducing a large-scale employment center outside of the traditional downtown core. The site's location within a designated Growth Area also supports **Goal EV 3**, which encourages focusing employment-generating land uses in targeted development areas. Further, the Project embodies **Policy EV 4.3** by exemplifying a private-sector investment in critical community infrastructure that enhances the City's long-term fiscal sustainability.

From a land use perspective, the proposed Hospital campus directly reinforces **Goal LU 5** of the Land Use Element by coordinating major new development with existing transportation infrastructure and capacity. The Site's adjacency to Loop 101 and major arterial corridors will minimize potential traffic impacts on nearby residential neighborhoods while maximizing regional accessibility. In parallel, the Project fulfills the intent of the Growth Areas Element, specifically **Goal GA 1**, by locating a high-intensity medical and employment use within the Crossroads East Growth Area, an area proactively planned for an infrastructure-supported and regional-serving development. Banner's investment strengthens the City's broader land use strategy to concentrate critical services and employment uses in well-connected, strategically positioned nodes.

The Project further supports the General Plan's Character & Design Element through a context-sensitive campus layout that integrates within the surrounding development pattern. Proposed building heights and massing are consistent with the site's zoning allowances and comparable to adjacent employment uses, ensuring visual compatibility and avoiding disruption to the area's character. The site plan incorporates over 545,000 square feet of open space and is designed to foster walkability and wellness through shaded pathways, internal connections, and pedestrian-oriented amenities throughout the campus. These features observe **Goal CD 1**, which calls for design that responds to surrounding development, and **Goal CD 5**, which encourages the integration of open space and pedestrian linkages into site planning. Collectively, these design components

reinforce the Project's alignment with Scottsdale's commitment to quality, accessibility, and human-scale development.

Greater Airpark Character Area Plan

The Site is located within the Greater Airpark Character Area ("Airpark") and is designated as Airpark Mixed Use – Residential ("AMU-R") on the Future Land Use Map of the Greater Airpark Character Area Plan ("GACAP"). AMU-R is intended to accommodate the broadest variety of uses in the Airpark area, including employment, institutional, medical, office, and service-oriented uses. Residential and other sensitive uses may be included as a secondary component, provided they are appropriately designed and located outside of the Scottsdale Airport's 55 DNL noise contour. The designation emphasizes pedestrian orientation, multi-modal access, and the creation of mixed-use environments that support the City's economic development goals while respecting aviation-related considerations.

The proposed Banner Hospital is consistent with and directly advances the policy direction of the AMU-R designation. The Application proposes a full-service hospital and medical office campus that prioritizes employment and essential public services, reinforcing the Airpark's role as a regional economic engine. The campus will generate a significant increase in high-quality jobs across a range of disciplines while providing healthcare services to a fast-growing area of North Scottsdale. In doing so, the Project supports GACAP's emphasis on employment-driven, service-oriented development and avoids introducing residential uses, consistent with the policy directive that residential remain a lesser component in this land use designation.

The campus layout and program include a range of complementary elements commonly found in successful mixed-use districts, such as outpatient medical facilities, on-site support services like limited retail or food options for patients and staff, and extensive open space with integrated amenities. These features contribute to a connected, pedestrian-oriented environment and activate the campus beyond its primary medical function. The Project is designed to encourage walkability through a comprehensive system of shaded internal walkways, wellness paths, and linkages along Mayo Boulevard. Its location adjacent to major arterial roadways and freeway infrastructure ensures convenient access for patients and employees while supporting GACAP's broader mobility goals.

Importantly, the Project observes the aviation compatibility standards of the GACAP. The Site is entirely located outside of the Scottsdale Airport's 55 DNL contour, avoiding high-noise areas for any potential sensitive uses. The medical and hospital use does not introduce residential development on the subject Site, further supporting the city's longstanding policy of protecting the operational integrity of the airport while guiding compatible development patterns within its vicinity.

The proposed Project also advances several policy goals outlined in the GACAP. Under **Goal LU 6**, which promotes the Airpark as a mixed-use and employment-based center. But more specifically aligning with **Policy LU 6.1**, which prioritizes employment uses over that of residential. Its presence will complement the nearby developments such as Cavasson/Nationwide, and potential Axon headquarters, reinforcing the Airpark's position as a premier employment hub. In addition, the Project meets **Goal LU 3** by incorporating substantial setbacks and enhanced landscape buffering along its perimeter, facilitating appropriate transitions to the surrounding context, considering the residential neighborhoods to the southeast.

From an economic development standpoint, the campus will support **Goal EV 4**, which encourages the expansion of new economic opportunities that leverage market trends and the Airpark's competitive strengths. The medical and biosciences sectors are rapidly expanding, and the Banner Hospital is strategically positioned to attract investment, draw top healthcare professionals, and foster partnerships with research and academic institutions. The Project also responds to **Goal EV 5** by offering opportunities for workforce development and collaboration with regional healthcare training programs and/or academic institutions.

In terms of connectivity and open space, the Project satisfies the Community Mobility and Land Use goals within the GACAP. The site plan is designed to accommodate future transit enhancements and includes a comprehensive pedestrian network that supports multi-modal access throughout the campus, fulfilling **Goal CM 1** and **Goals CM 5–7**. The Site is allocating a greater amount of open space than the ordinance requires to directly observe **Goal LU 8**, which calls for an interconnected network of meaningful open spaces within the Airpark. The preservation of natural vegetation, use of desert-adapted landscaping, and integration of passive recreation areas all contribute to a high-quality public realm that reflects the city's commitment to environmental stewardship and livability.

4. Zoning Allocation Request

The Site is part of the Crossroads East PCD and was zoned P-C in Case No. 19-ZN-2002#6 ("Zoning Approval"). The Property is subject to the approved Crossroads East Development Plan and associated Land Use Budget, along with underlying Development Agreement, as amended. Pursuant to the requirements of the Crossroads East PCD and associated Development Agreement, the allocation of comparable zoning designations from the Land Use Budget of C-2 and I-1 were affirmed for the Property in May 2023 in Ordinance No. 4594. In accordance with the terms of the Zoning Approval and the Development Agreement, and with consent of the Arizona State Land Department as required therein, Banner requests to modify the comparable zoning designation for the Site from C-2 and I-1 to C-O, as follows:

- Relinquish and return to the Crossroads East Land Use Budget approximately 6.78 acres of I-1 (See Zone Exhibit 1) and approximately 24.88 acres C-2 (See Zone Exhibit 3) comparable zoning; and

- Assign approximately 31.66 acres of C-O (See Zone Exhibit 2) comparable zoning from the Crossroads East Land Use Budget to the Site.

The requested C-O land use designation is an approved land use designation for the Site per the Crossroads East Development Plan and is available for allocation to the Site. The proposed comparable zoning allocation is allowed pursuant to the existing Crossroads East PCD zoning framework and Development Agreement. The Arizona State Land Department has authorized the allocation of the remaining C-O comparable zoning from the Crossroads East Land Use Budget to the Site. No modifications to the approved P-C zoning or Development Plan for Crossroads East PCD, or terms of the underlying Development Agreement (as amended), are requested or required.

5. Conditional Use Permit Request

Banner seeks approval of a Conditional Use Permit in support of the development of the Hospital and Helipad as part of Banner's overall medical campus ("Medical Campus"), thus providing numerous healthcare specialties on the same campus allowing patients to benefit from seamless coordination across the care continuum:

- Conditional Use Permit (CUP) to allow for a Hospital and Off-Airport Helipad within the C-O zoning district (Table 11.201.A Land Use of the Zoning Ordinance)

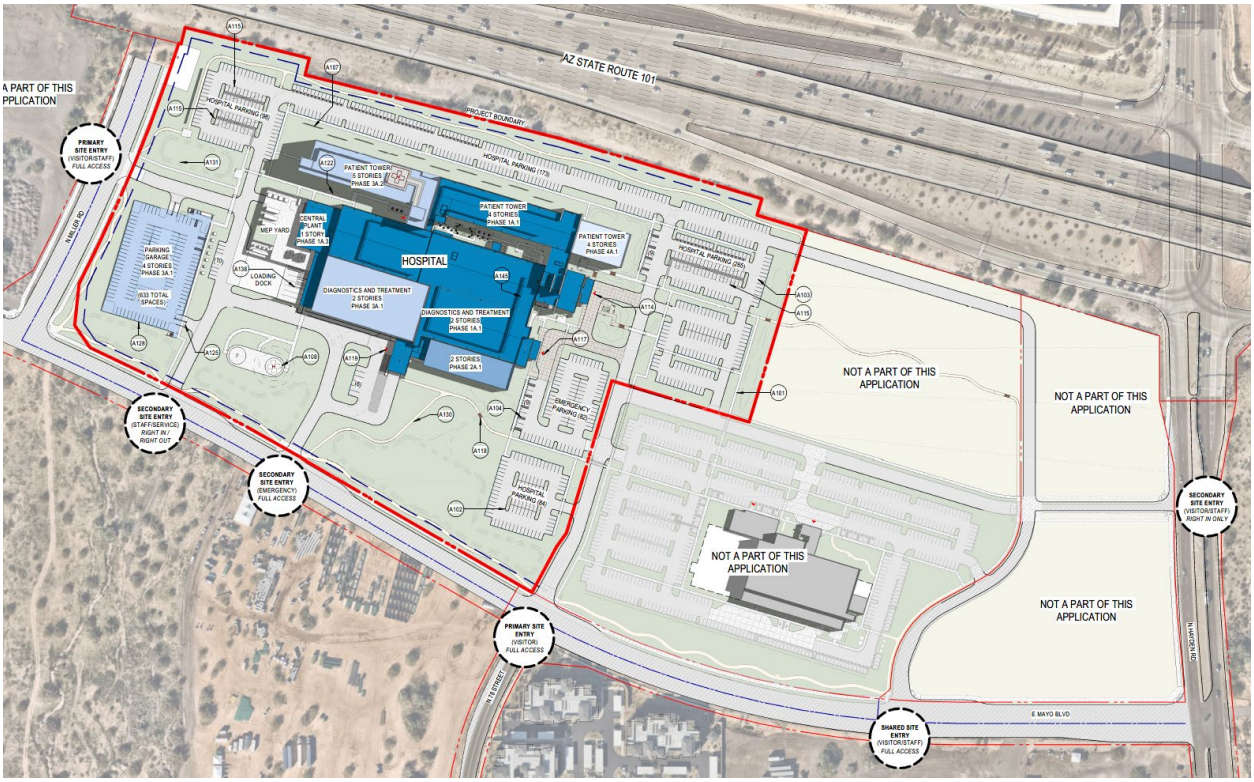
This Application seeks approval of a Conditional Use Permit to accommodate the Hospital, along with an off-airport helipad ("Helipad") utilizing the existing P-C zoning with the Commercial Office land use designation.

6. Project Overview

The Hospital is planned on the approximate 31.5 acres generally located at the northeast corner of Mayo Boulevard and Miller Road alignment. The Project includes a full-service hospital, including but not limited to, emergency, inpatient, and acute care. The Hospital building is generally positioned in the middle of the Site, with associated site improvements, such as landscaping, open space and trail network, hardscape, and parking surrounding it. The statutorily required helipads are located near the midpoint of the Site along Mayo Boulevard.

Primary vehicular access to the Hospital is planned along Mayo Boulevard, with secondary access planned along Hayden Road and Miller Road. Parking will be provided through a combination of surface and structured facilities, strategically positioned around the campus to ensure safe and convenient access for patients, visitors, and staff. Hardscape pathways are planned to provide connectivity and safe access to the facilities' various entries/exits for patients, visitors, and staff.

More specifically, Phase 1 of the Hospital is planned to include a 4-story patient tower, a 2-story diagnostics & treatment building that will house emergency, surgery, laboratory, pharmacy, and associated support services, a 1-story central utility plant and MEP yard, at-grade Helipad, loading dock, surface parking, landscaping, hardscape, and other associated site improvements. Phase 2 is planned to include a second 2-story diagnostics and treatment facility. Phase 3 is planned to include a 5-story patient tower, along with rooftop Helipad. Finally, Phase 4 is planned to include a 4-story patient tower and 4-story parking garage. At full build- out, the Hospital will accommodate approximately 300 licensed patient beds. Phasing and development may change depending on community needs.



Site Plan Exhibit

Planning, Design, & Functionality

The Hospital will provide comprehensive emergency, inpatient, and acute care, along with other related medical and ancillary services. The Hospital is designed using site-adapted Banner corporate design themes, which have been developed to maximize functional and operational efficiencies and provide state-of-the-art treatment spaces focused on exceptional patient care. Soothing color palettes, bespoke landscape design, natural trails, and accessible parking will make the facility a new healthcare landmark for the City of Scottsdale.

Design decisions were carefully evaluated by the integrated project delivery team comprised of Banner Health Design & Construction, Banner Health System clinical experts, SmithGroup, NexCore, Okland Construction Company, and construction sub-trades. Banner seeks to expand its innovative approach to full-service healthcare through development of the Banner Health Scottsdale Hospital applying learning from the other 30-hospitals that Banner operates.

The Project includes design and engineering strategies that promote health, healing, and wellness, while conserving water and energy, and respecting the natural ecosystem of the Site.

Health, Wellness, & Connectivity

The Hospital is purposely designed to promote health, wellness, & connectivity. Banner strives to lift the human spirit and support wellness through both the internal and outward design, as well as orientation to the great community. To achieve these goals, two "green" spines have been established on the campus, one in a north/south direction, and the other in an east/west direction, to provide connectivity between the buildings and the parking infrastructure, open spaces, and perimeter sidewalks. Both spines connect into an overall wellness path that encircles the Hospital and the larger medical campus, which includes emergency, surgery, laboratory, pharmacy, and associated support services. The walking path may be used for patients, visitors, and staff alike and will provide an excellent way of reflection and relieving stress. Appropriately spaced nodes may be established along these paths to pace the journey, as well as to provide ample respite space outside of the Hospital. Additional visual connectivity has been thoughtfully integrated to capture the natural desert environment, open space, and McDowell Mountains.

Landscaping & Palette Design

The general site design focuses on exterior landscape improvements along the perimeter roadways and points of entry. The character of the design includes a natural desert palette with species and forms that are native to the general Sonoran region. Visual and physical wayfinding cues guide patients and visitors to parking areas that connect to pedestrian walks linking to building entries. Areas of respite with shade and seating are located throughout the Project and adjacent to building entries, serving as gathering spaces for visitors and staff at different scales with flexible programming opportunities. Landscape micro-basins and bio-swales contribute aesthetic and ecological benefits while also retaining water and conveying it to larger detention/retention areas. The landscape planting along the Mayo Boulevard trail corridor and internal walking paths will be Sonoran native planting focused on providing ample pedestrian shade while promoting wildlife, such as local pollinators like butterflies and hummingbirds.

Landscape planting design will consist primarily of trees, shrubs, cacti, accents, and ground cover plants. Mature native trees and cacti will be salvaged and relocated on site as part of the new landscape planting design to the greatest extent possible. Plant materials will be strategically selected based on characteristics of low water-use and low maintenance requirements. Stone top-dress and plant species selection will enhance and celebrate the native, desert character of the area to create a cohesive visual experience across the Site that blends into the contextual environment. Plant selections at building entries, staff/visitor amenity spaces, and pedestrian linkages will include a mixture of scale, form, texture, and color to celebrate the dynamic forms of the Sonoran Desert and provide seasonal interest. Select high visibility areas are planned to receive increased masses and specimen materials. Plant densities will be highest within impact areas to encourage recognition of arrival points. Similar densities will occur along pedestrian walks and common areas for aesthetics and staff and visitor comfort. Tree and plant size and quantities will meet or exceed to City requirements throughout Project.



Hardscape

Premium paving materials will be used at the visitor and vehicular entries to the parking lot to further layer and define site wayfinding and reinforce the architectural design language of the Project. The perimeter wellness trail will be constructed with stabilized decomposed granite to blend in with the adjacent desert ground plane, reduce the use of concrete, and increase the porosity of the Site. The overall site paving material palette will balance aesthetics with durability, maintenance, and ease of construction.

Parking

Parking complies with City's requirement of 1.5 parking spaces per bed (450 required at buildout). Banner is providing additional parking based on Banner's extensive experience developing and operating hospitals—1,190 total parking spaces are planned, with the requisite number of ADA parking spaces clustered near the Hospital's main entry. Various surface parking areas may be canopied covered and include solar. In addition, Electrical Vehicle Charging stations are planned as part of development of the Site. Specifically, 18 Electrical Vehicle (EV) ready charging stations and 46 EV capable charging stations are planned as part of development of the Site. The parking planned by Banner results in an excess of the requirement under the Zoning Ordinance. As with its other medical campuses, Banner will closely monitor its parking demand to ensure the appropriate amount of parking. Parking will be phased as appropriate within each of the four phases of development.

Loading Dock, Central Plant, & MEP

The loading dock, central plant, and MEP areas are located on the west side of the Hospital. The loading dock also includes refuse compactors, a raised delivery truck area and a ramp down to the bottom of the dock. The central plant and MEP yard will be physically sized in Phase 1 for the ultimate build-out and will be equipped when each subsequent phase comes online. The loading dock and central plant will support all phases of the Hospital, as well as overall Medical Campus, as necessary.

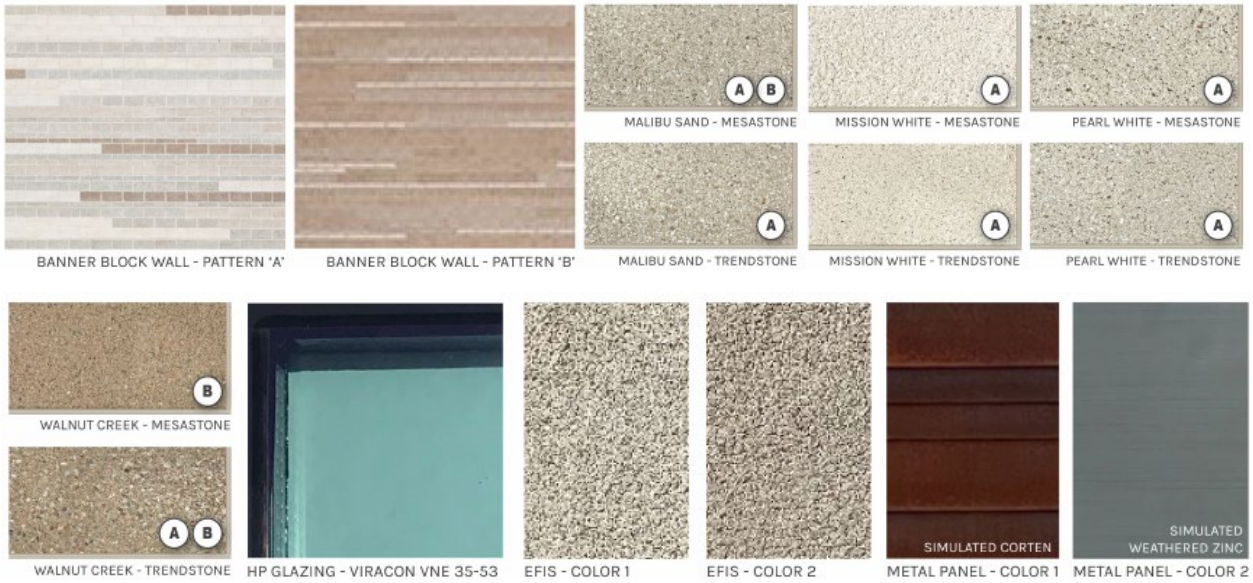
7. Architectural Character

Architectural Design & Theme

The Banner Health Scottsdale Hospital has been designed with unmatched quality, which mirrors the quality of care and commitment to the community that Banner provides in all of their facilities. The Hospital building is designed to complement the Banner Health Center *Plus* to create a cohesive, integrated design across the Banner Scottsdale Medical Campus.

This Project has been intentionally designed to reflect its Southwestern setting with quality materials and massing strategies that are responsive to the surrounding scale and context, particularly along the Loop 101 freeway corridor. The design references the evolved architectural themes established at Banner Health Center Plus at New River Trails (75th Avenue and Loop 101), while continuing it's broader legacy of high-quality healthcare architecture across the Valley, including the Banner Ironwood, Banner Ocotillo, and Banner Gateway campuses.

The architecture and building form are integrated with the Site's overall programming to support a healing and intuitive environment. Design objectives include reducing patient stress, promoting clear and efficient wayfinding for staff and visitors, and conveying a modern, high-acuity care setting. The layout and materials work together to deliver a harmonious campus environment that complements the natural desert landscape and reinforces Banner's commitment to quality, context-sensitive development.



Materials Board Exhibit

This Project represents one of Banner's most significant investments in the Scottsdale healthcare market and among its largest capital investments to date. To maximize the investment potential, the facility's design plays an important role in communicating the mission of delivering a high-quality of care to this community. To emphasize placemaking and connectivity with the community, the natural desert Site will be celebrated as well as the direct views of the neighboring McDowell Mountain Preserve.

Design perspectives are included below and as part of the included exhibits along with building elevations that visually represent the approach to design and the adherence to the City's design guidelines.

Building Design

The blend of quality building materials, which include masonry block, metals, and synthetic finishes, combined with the composition of windows and shading elements, provide for proper and appropriate massing and scale, creating a comfortable environment on-site, as well as along the surrounding streetscapes.

The color palette is comprised of a range of natural earth tones, with the intent of staying away from large amounts of warm or dark colors. Light sand and tan colors are complimented by the cooler glass and small areas of metal panels. This approach gives the building a lighter feel, relying on the rich texture of the various materials to promote a sense of elegance and quality commensurate with the consistent visual identity of Banner's facilities. To celebrate the natural environment, synthetic cor-ten metal panels will be used with the cool synthetic zinc metal panels.

Curtainwall and storefront high-performance glazing will be maximized in areas of highest public impact to connect users to the natural context on-site, as well as long range to the views outward from the Site. Glazing in staff circulation and break areas will also be maximized to allow for proper respite, collaboration, and recharge spaces.

Synthetic stucco (EIFS) of a similar color complement broken up by horizontal and vertical score lines is a predominant material on the east and west sides of the building. Punched window openings, areas of metal panel, canopies and other subtle accents provide a rich composition intended to create visual interest and avoid creating monolithic elevations.

Metal panel accents are used throughout the exterior of the building to provide a visual break from the predominant masonry or stucco exterior materials. These panels are used in a way that breaks the building's cornice line with the intent of reducing the building scale and mass.



Front Entrance Rendering Exhibit



Bird's-Eye Rendering Exhibit



Ground-Floor Rendering Exhibit



Side Exterior Rendering Exhibit

Sustainability

Banner has a long-standing history of celebrating health & wellness with the Hospital design, along with being sensitive to fiscal responsibility and hyper focus on positive outcomes for health, wellness, and patient care. Specific strategies will be developed through the design that promote energy efficiency, water/waste reduction without compromising patient care, and a respect for the natural surroundings. Banner, as a long-term community partner, intends on developing a facility that is sustainable.

Banner is a proponent of sustainable strategies and will incorporate many LEED system goals, as well as those promoted within the International Green Construction Code, to ensure Banner's commitment to health, wellness and well-being onsite. The design team is using the AIA's Framework for Design Excellence to solicit and evaluate effective solutions for the Project and its commitment to Integration, Equitable Communities, Ecosystems, Water, Economy, Energy, Well-being, Resources, Change, and Discovery. Banner will invest resources in the sustainable strategies that have the most beneficial impact for the Banner Scottsdale Medical Campus.

8. Conditional Use Permit Approval Criteria & Justification

Banner seeks approval of the following entitlements in support of the development of the Hospital and Helipad:

- Conditional Use Permit (CUP) to allow for a Hospital and Off-Airport Helipad within the C-O zoning district (Table 11.201.A Land Use of the Zoning Ordinance)

In accordance with Section 1.401 of the Zoning Ordinance, a Conditional Use Permit may be granted after the Planning Commission has made a recommendation to the City Council after finding:

A. That the granting of such conditional use permit will not be materially detrimental to the public health, safety or welfare. In reaching this conclusion, the Planning Commission and the City Council's consideration shall include, but not be limited to, the following factors:

1. ***Damage or nuisance arising from noise, smoke, odor, dust, vibration or illumination.***

RESPONSE:

Hospital

Smoke, Odor, Dust, & Vibration. The Hospital will not generate smoke, odor, dust, or vibration beyond typical ambient conditions. All operations will comply with applicable environmental regulations and air quality standards. The facility is located within a district that includes high-intensity employment and commercial uses, including the Cavasson/Nationwide campus, the permitted Health Center Plus, the planned Axon corporate headquarters, and the ASM campus under construction. In comparison to these existing and planned uses, the Hospital is a low-impact user and will operate with strict internal protocols and mechanical systems that limit emissions and on-site disturbances. The Site also fronts State Route 101, a heavily trafficked regional freeway that already produces background levels of dust, odor, and vibration. In this context, the Hospital will integrate without any adverse environmental effects.

Noise & Illumination. Banner's emergency medical dispatch system is structured to assess each call based on the type of emergency and the level of urgency. This approach ensures that only the most critical cases receive a lights-and-sirens response. By doing so, Banner promotes patient safety while also reducing unnecessary roadway noise and risk.

Lights and sirens are used only when the time saved could have a meaningful impact on the patient's medical outcome. For non-critical cases, emergency transport is completed without them. When lights and sirens are activated, Banner's standard practice is to deactivate them before turning onto Mayo Boulevard. This protocol is consistent with operations at Banner's other hospital campuses and reflects broader practices used at medical facilities throughout Scottsdale.

The Hospital campus has been designed in full compliance with the Scottdale's outdoor lighting ordinance requirements. The Site is located adjacent to Loop 101, a major freeway corridor that already includes tall, overhead lighting. It is also near the existing Nationwide/Cavasson campus, where similar lighting levels are present.

To minimize any impact on the surrounding area, all building and site lighting have been designed to reduce glare and to prevent light spillover effect. Architectural lighting and landscape illumination will prioritize energy efficiency, visual comfort, and compatibility with the desert environment. These measures ensure that the lighting plan supports the area's character while maintaining a safe and functional campus setting.

Helipad

Smoke, Odor, & Illumination. The proposed Helipad component of the Hospital has been designed to ensure there are no material impacts related to smoke, odor, or illumination beyond ambient conditions. The Site lies within the Airpark Character Area, a region already influenced by continuous vehicular emissions from Loop 101 and regular aviation activity from Scottsdale Airport. Helicopter operations will be limited to emergency use only and will not generate emissions beyond those already typical for the area.

Lighting associated with the Helipad will be limited to safety and navigation requirements and will be shielded and directed downward to prevent spillover effects. All lighting will comply with Scottsdale's outdoor lighting standards and requirements, ensuring no intrusive illumination impacts to surrounding properties. The concrete apron will be maintained in a clean, dust-controlled condition consistent with Banner's operational standards, similar to it's other emergency transport facilities.

These measures, along with the frequency and intensity of anticipated helicopter operations, ensure that the Helipad will not result in damage or nuisance arising from smoke, odor, or illumination, thereby satisfying Section 1.401.A.1 of the Scottsdale's Zoning Ordinance

Noise, Vibration, & Dust. The Helipad is intentionally located and designed to minimize potential noise, vibration, or dust impacts. The at-grade Helipad is situated approximately ±900 feet from the nearest residential development; Mark-Taylor's San Artes apartment community that is southeast of the Site and across Mayo Boulevard. This distance provides a substantial physical buffer between operations and sensitive uses. Intervening elements including the Mayo Boulevard right-of-way, planned landscaped open space, and internal Hospital development further contribute to sound attenuation and mitigation.

Helicopter operations will occur on an infrequent and limited basis. The Applicant anticipates approximately 8 to 10 takeoffs and landings per month, or an average of fewer than two per week. Helicopters will only be used when ground transport is not clinically appropriate, and a time-sensitive air evacuation is required. These transport events are brief and follow operational protocols designed to reduce noise. Emergency pilots will stop sirens before arrival, and flights will avoid direct overflight of residential properties when feasible.

The Project's location along State Loop 101 freeway provides a contextual noise backdrop, which includes elevated sound levels from continuous traffic flow. In addition, the surrounding Airpark area routinely experiences overflights and aviation-related engine noise from the nearby Scottsdale Airport. Relative to this setting, the limited and brief helicopter activity will not materially increase noise or vibration levels in a meaningful or disruptive way. Notably, the Site is located outside the 55 DNL noise contour, affirming its compatibility for sensitive uses and further reinforcing that helicopter activity will not result in a sustained nuisance or impact.

All design and operational components of the helipad will be reviewed and permitted by the Federal Aviation Administration and in accordance with CFR Title 14, Parts 77 and 157, to ensure full compliance with navigation safety and design standards.

In summation, the Project's placement, design, and limited use of the Helipad will not be materially detrimental to public health, safety, or welfare. It complies

with Section 1.401.A.1 by avoiding nuisance impacts related to noise, vibration, and dust. The Helipad supports the public interest by enabling time-sensitive emergency medical air transport and improving patient outcomes without compromising the surrounding community.

2. ***Impact on surrounding areas resulting from an unusual volume or character of traffic.***

RESPONSE:

The Hospital is located at the intersection of State Route 101, a regional thoroughfare, and Hayden Road, an arterial roadway, which allows for the anticipated traffic generated by the Hospital to be managed and dispersed to the adjoining roadway network, as set forth in the Project's Traffic Impact Analysis ("TIA"). Traffic generated by the Hospital will be directed onto Mayo Boulevard serving as a direct connection to Hayden Road, ultimately connecting to State Route 101, along with a direct connection from the Hospital to Hayden Road. Importantly, there are no access ways or streets which lead into surrounding residential areas.

The TIA evaluated the traffic impact from the Project from the projected opening day in 2025, through 2040, when the Project is expected to reach full buildout. Recommendations included:

- Provide dedicated right-in/right-out turn lanes.

- Enlarged driveways to provide separate left and right turn egress lanes to reduce vehicle queues within the parking lot.

The construction of the above mitigation strategies, in addition to right turn lanes at the planned share drive closest to Hayden Road, the primary Hospital entrance and the western-most drive to the medical office building along Mayo Boulevard, and the service/ambulance entrance, are anticipated to be constructed in the initial phase of development. Banner will work closely with the City of Scottsdale traffic and engineering departments to ensure that the traffic anticipated in this area is dispersed in the safest and most efficient

manner possible, while minimizing wait times at the signalized intersection of Hayden Road & Mayo Boulevard. The Hospital and Helipads will not generate an impact on surrounding areas resulting from an unusual volume of traffic, given the existing and planned development in and around the Property.

B. ***The characteristics of the proposed conditional use are reasonably compatible with the types of uses permitted in the surrounding areas.***

RESPONSE:

As mentioned elsewhere in this narrative, this Hospital is the second phase of the Banner Scottsdale Medical Campus, with the medical office building already under construction. The Hospital will complement the medical office building already under construction and is compatible with the employment and industrial uses in the area. Further, the medical office and hospital are meant to serve existing and planned residents, providing additional, state-of-the-art medical resources in the North Scottsdale and North Phoenix area. The proposed Hospital and Helipad uses are compatible with the types of uses that exist and are permitted in the surrounding areas, including the Mayo Hospital, HonorHealth Shea, and HonorHealth Thompson Peak medical campuses.

9. Conditions for Specific Conditional Uses - Hospitals

Section 1.403.J.2 prescribes additional conditions that must be met when a Hospital is evaluated for a Conditional Use Permit. Each of the additional conditions are shown below, and the manner in which this application satisfies the criteria is shown in bold text.

1. ***The application shall include written proof the proposal meets all state and county regulations.***

RESPONSE:

The Hospital and Helipad meet all required Federal, State, County and City regulations. There are regulations from the FAA for development within the Airpark Area, and regulations from FEMA regarding floodplain development.

Additionally, hospitals are highly regulated, including State requirements for medical reporting and licensing and local regulations for permitting and inspections.

2. Building height (excluding rooftop appurtenances). Maximum: seventy-five (75) feet.

RESPONSE:

The Hospital will comply with the maximum height limit of 75 feet.

3. Required open space.

a. Minimum open space: 0.24 multiplied by the net lot area, distributed as follows.

RESPONSE:

The Property is 1,257,577 square-feet, requiring 301,818 square-feet of open space. Banner is providing significantly more open space at 545,850 square-feet of open space (or, more than 80% otherwise required by the Zoning Ordinance). The open space is evenly distributed through the Site and will be landscaped with trees, shrubs, cacti, accents, and ground cover plant species that enhance and celebrate the native, desert character of the area to create a cohesive visual experience across the Site that blends into the contextual environment.

i. Frontage open space minimum: 0.75 multiplied by the minimum open space, except as follows:

(1) Minimum: thirty (30) square feet per one (1) linear foot of public street frontage.

RESPONSE:

Mayo Boulevard and the Miller Road alignment have approximately 1,299 and 681-feet of linear frontage, respectively, totaling approximately 1,980-feet. 1,980-linear feet of frontage results in approximately 59,490 square-feet of open space (+/- 1,980-linear feet x 30 SF). The Project provides 106,335 square-feet of frontage open space, which is well in excess of the Zoning Ordinance requirement—this is in addition to the nearly 440,000 square-feet of other open space (general, frontage, courtyard) provided throughout the Site.

(2) Not required to exceed fifty (50) square feet per one (1) linear foot of public street frontage.

ii. The remainder of the minimum open space, less the frontage open space, shall be provided as common open space.

RESPONSE:

The remainder of open space is provided in the form of open space, landscape, and hardscape, coupled with the architecture, results in a development that is contextually sensitive to the adjoining properties.

4. Yards. When the height of the building exceeds sixty (60) feet the following yard requirements shall apply. If building height is less than sixty (60) feet the district yard requirements shall apply.

RESPONSE:

The Project complies with all applicable yard requirements.

a. Side Yard.

i. A side yard of not less than 100 feet shall be maintained where the side of the lot abuts a single-family residential district, or abuts an

alley which is adjacent to a single-family residential district, shown on Table 4.100.A., or the single-family residential portion of a Planned Community P-C or any portion of a Planned Residential Development PRD with an underlying single-family residential district comparable to the residential districts shown on Table 4.100.A. The 100 feet may include the width of the alley.

RESPONSE:

Not Applicable—the rear yard of the Property does not abut a multi-or single-family residential district.

ii. A side yard of not less than seventy-five (75) feet shall be maintained where the side lot abuts a multiple-family residential district. The seventy-five (75) feet may include any alley adjacent to the multiple-family residential district.

RESPONSE:

Not Applicable—the rear yard of the Property does not abut a multi-family residential district.

b. Rear Yard.

i. A rear yard of not less than one hundred (100) feet shall be maintained where the rear lot abuts a single-family residential district or abuts an alley which is adjacent to the single-family residential district, shown on Table 4.100.A., or the single-family residential portion of a Planned Community P-C or any portion of a Planned Residential Development PRD with an underlying single-family residential district comparable to the residential districts shown on Table 4.100.A. The one hundred (100) feet may include the width of the alley.

RESPONSE:

Not Applicable—the rear yard of the Property does not abut a single-family residential district.

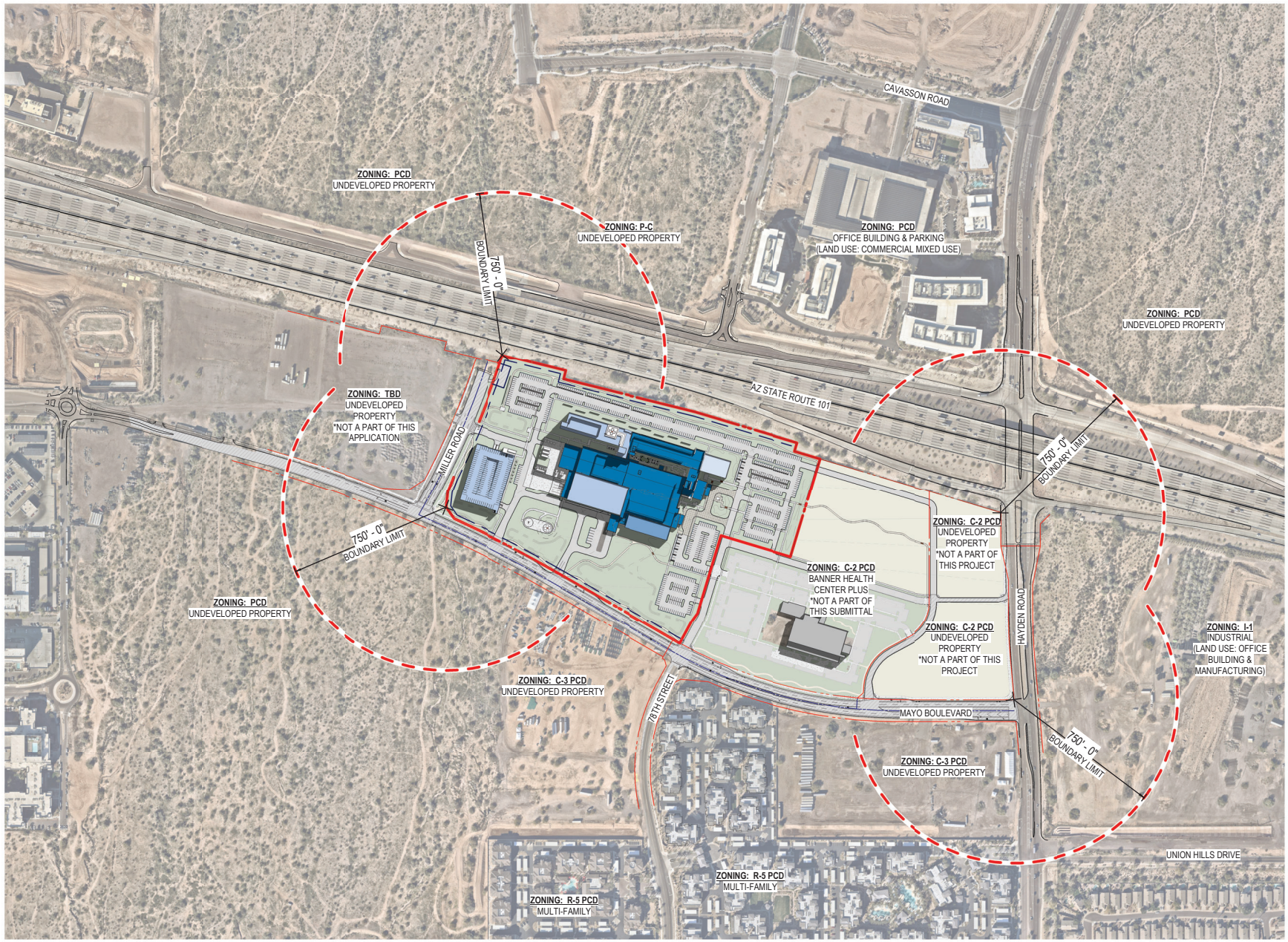
ii. A rear yard of not less than seventy-five (75) feet shall be maintained where the rear lot abuts a multiple-family residential district or abuts an alley which is adjacent to the multiple-family residential district. The seventy-five (75) feet may include the width of the alley.

RESPONSE:

Not Applicable—the rear yard of the Property does not abut a multi-family residential district.

10. Conclusion

The proposed Banner Health Medical Campus will be a high-value employment center at this important location in the City of Scottsdale. The campus is planned to serve the healthcare needs of the existing and future population of North Scottsdale and North Phoenix, and the hospital is a critical component to bringing quality care to the area. The proposed Banner development advances the goals and policies stated within General Plan and the Scottsdale Airpark Character Area Plan. It is consistent with the vision and approved zoning for the Crossroads East Planned Community District and incorporates design principles that are sensitive to the unique desert and built environment. Moreover, this project meets the criteria for a Planned Commercial Development, as well as furthers the City's goals and values of providing the community access to an exceptional healthcare provider.



CONTEXT AERIAL SITE PLAN
SCALE: 1" = 200'-0"

NORTH

0 200' 400' 600'
GRAPHIC SCALE: 1" = 200' - 0"

Plot Date: 9/19/2025 9:03:14 AM Author

Banner Scottsdale Medical Center

SCOTTSDALE CAMPUS HOSPITAL
NW Corner of Hayden Rd. and Mayo Blvd.
Scottsdale, Arizona 85255

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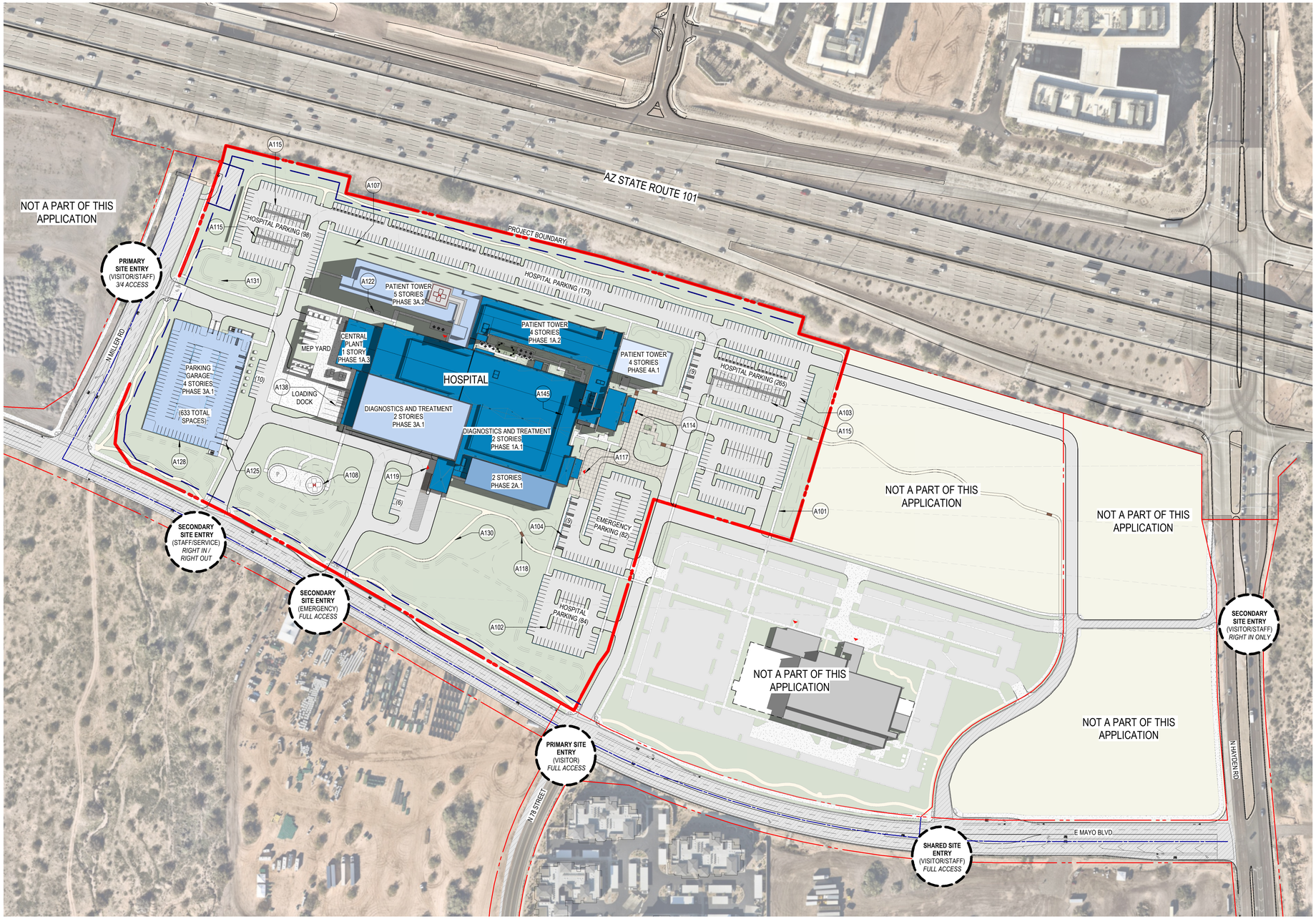
ISSUED FOR	REV	DATE
ENTITLEMENT REVIEW COMMENTS		19SEP25
ENTITLEMENT REVIEW		14JUL25

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

SHEET TITLE
CONTEXT AERIAL SITE PLAN

PROJECT NUMBER
ENT_A1.0.0
SHEET NUMBER



OVERALL SITE PLAN
SCALE: 1" = 120'-0"

NORTH

0 120' 240' 360'
GRAPHIC SCALE: 1" = 120' - 0"

SITE PLAN NOTES

A. ALL PARKING SPACES ARE 9'-0" WIDE X 18'-0" LONG W/ A MINIMUM DRIVE AISLE OF 24'-0". DRIVE AISLES ARE WIDER FOR FIRE LANES AND ARE NOTED ON THE PLANS.

B. ALL SIDEWALKS ARE A MINIMUM OF 6'-0".

C. ACCESSIBLE PARKING SPACES MEET DSPM, ZONING, AND ADA STANDARDS. THEY ARE SIZED TO BE 11'-0" WIDE X 18'-0" LONG WITH A 5'-0" ACCESS AISLES BETWEEN A MAXIMUM OF (2) ACCESSIBLE SPACES.

D. ALL PEDESTRIAN ROUTES TO MAYO BOULEVARD AND MILLER ROAD ARE PROVIDED DURING INITIAL PHASE.

E. ALL INTERNAL SITE DRIVES ARE DEVELOPED IN INITIAL PHASE.

F. REFER TO AND COORDINATE WITH CIVIL, LANDSCAPE, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ADDITIONAL SITE INFORMATION NOT SHOWN ON THIS DRAWING.

SITE DATA

PROPERTY DESCRIPTION:

NW CORNER OF HAYDEN ROAD AND MAYO BOULEVARD
SCOTTSDALE, AZ 85255
LOCATED IN SEC 36, 4N, 4E, MARICOPA COUNTY, ARIZONA

EXISTING ZONING DESIGNATION:	C2-PCD AND I-1 PCD
EXISTING USE:	VACANT
ZONING:	PCD
LAND USE DESIGNATION:	CO

SITE SIZE - GROSS / NET:

1,372,138 SQ. FT. GROSS / 1,257,577 SQ. FT. NET

PROPOSED SCREENING:

SITE WALLS, BERMS, PLANTS/TREES

OPEN SPACE: *SECTION 6.806.A SECTION 6.804.C.3*

REQUIRED: 301,818 SQ.FT.
PROVIDED: 532,142 SQ. FT.
(SEE SHEET ENT_A1.3.1 FOR BREAKDOWN)

PROPOSED USES:

HOSPITAL / CENTRAL UTILITY PLANT

HOSPITAL BUILDING AREA - GROSS:

LEVEL 1: 237,500 SQ. FT.
LEVEL 2: 227,500 SQ. FT.
LEVEL 3: 73,500 SQ.FT.
LEVEL 4: 73,500 SQ.FT.
LEVEL 5: 28,000 SQ.FT
TOTAL: 640,000 SQ.FT.
MAX BUILDING HEIGHT: 85'-0"

CENTRAL UTILITY PLANT BUILDING AREA - GROSS:

LEVEL 1: 10,000 SQ. FT.
TOTAL: 10,000 SQ.FT.
MAX BUILDING HEIGHT: 20'-0"

FLOOR AREA RATIO (FAR): *SECTION 6.804.D*

MAXIMUM: 0.60
PROVIDED: 0.52

FAR = TOTAL USABLE BUILDING AREA / NET SITE AREA
(640,000 + 10,000) SQ. FT. / 1,257,577 SQ. FT. = 0.52

PARKING STRUCTURE - GROSS:

LEVELS 1-4: 52,900 SQ. FT.
TOTAL: 211,600 SQ.FT.
MAX BUILDING HEIGHT: 75'-0"

SHEET KEYNOTES

A101	SIDEWALK
A102	LANDSCAPE PARKING ISLAND
A103	PARKING STALL: 9'-0" X 18'-0", TYP.
A104	ADA PARKING STALL: 11'-0" X 18'-0" WITH 5'-0" ACCESS AISLE
A107	CMU SITE WALL
A108	HELICOPTER PAD
A114	BUILDING ENTRY
A115	PV PARKING CANOPY
A117	EMERGENCY DEPARTMENT ENTRY
A118	LANDSCAPE FEATURE (BRIDGE)
A119	AMBULANCE ENTRY
A122	BICYCLE PARKING
A125	TRAFFIC BARRIER ARM
A128	PARKING BUILDING STRUCTURE
A130	DG WALKING PATH
A131	PHASE 1 RETENTION BASIN - REFER TO CIVIL
A138	TRASH COMPACTOR
A145	MECHANICAL SCREENWALL - TOP OF HIGHEST UNIT WILL BE SCREENED

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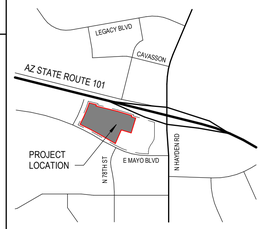
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ENTITLEMENT REVIEW COMMENTS		*19SEP25*
ENTITLEMENT REVIEW		*14JUL25*

SEALS AND SIGNATURES

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VICINITY MAP



SHEET TITLE

ARCHITECTURAL SITE PLAN - OVERALL

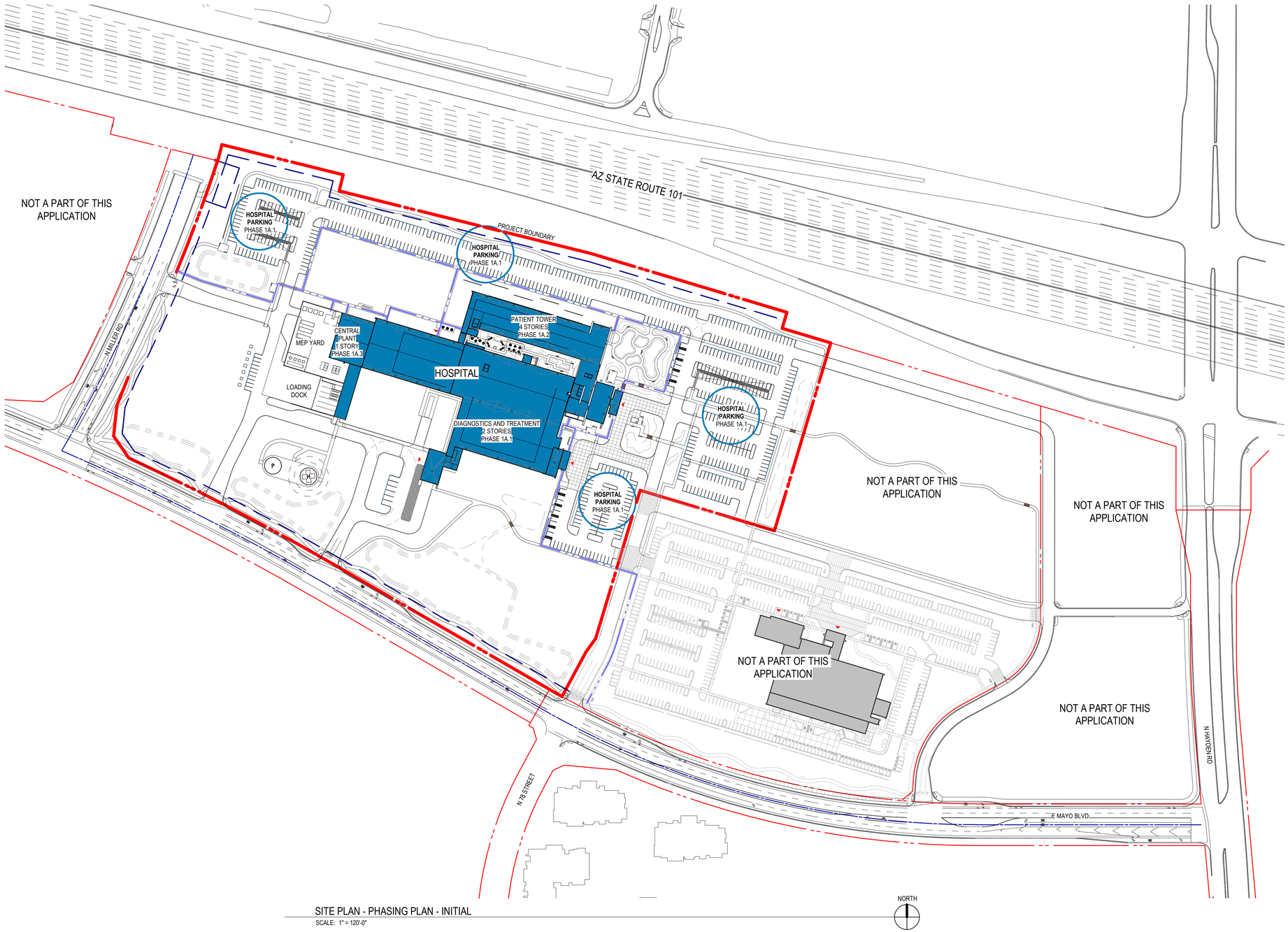
PROJECT NUMBER

ENT_A1.1.0

SHEET NUMBER

Author

Plot Date: 9/19/2025 9:03:30 AM



SITE PLAN - PHASING PLAN - INITIAL

SCALE: 1" = 120'-0"

GRAPHIC SCALE: 1" = 120' - 0"

PHASE 1

1A (COMPONENTS OF PHASE LISTED BELOW):

1A.1 - DIAGNOSTICS AND TREATMENT (2 STORIES):	= 204,000 SF
1A.2 - PATIENT TOWER AND CONNECTION (4 STORIES):	= 170,000 SF
1A.3 - CENTRAL PLANT (1 STORIES):	= 10,000 SF
SUBTOTAL:	**= 384,000 SF**

A. REFUSE SIZE, LOCATION, AND ACCESS DESIGNED IN ACCORDANCE TO CITY OF SCOTTSDALE DSPM SECTION 2-1.309 AND CITY OF SCOTTSDALE SUPPLEMENT TO MAG STANDARD DETAILS.

B. TOTAL REFUSE SIZE WILL BE PROVIDED IN INITIAL PHASE AND DESIGNED TO ACCOMODATE THE ENTIRE CAMPUS GROWTH, AS BROKEN DOWN BELOW:

TOTAL GROSS SF (COMMERCIAL):
685,500 GSF (PROJECT AREA)

TOTAL REFUSE CONTAINERS:
(685,500/30,000) X 2 = 46 CONTAINERS
23 TRASH AND 23 RECYCLING

23 CONTAINERS * 4 CY = 92 CY OF WASTE AND
92 CY OF RECYCLING

WASTE COMPATION RATIO:
92 CY / 4 =
23 CY TRASH COMPACTOR REQUIRED
40 CU TRASH COMPACTOR PROVIDED

RECYCLE COMPATION RATIO:
92 CY / 4 =
23 CY TRASH COMPACTOR REQUIRED
40 CU TRASH COMPACTOR PROVIDED

PEDESTRIAN ROUTES WILL BE PROVIDED IN INITIAL PHASE TO BOTH MAYO BOULEVARD AND MILLER ROAD. THE ROUTES HAVE BEEN SHOWN ON THE PLAN IN BLUE. ALL SIDEWALKS ARE A MINIMUM OF 6'-0" WIDE.

Banner Scottsdale Medical Center

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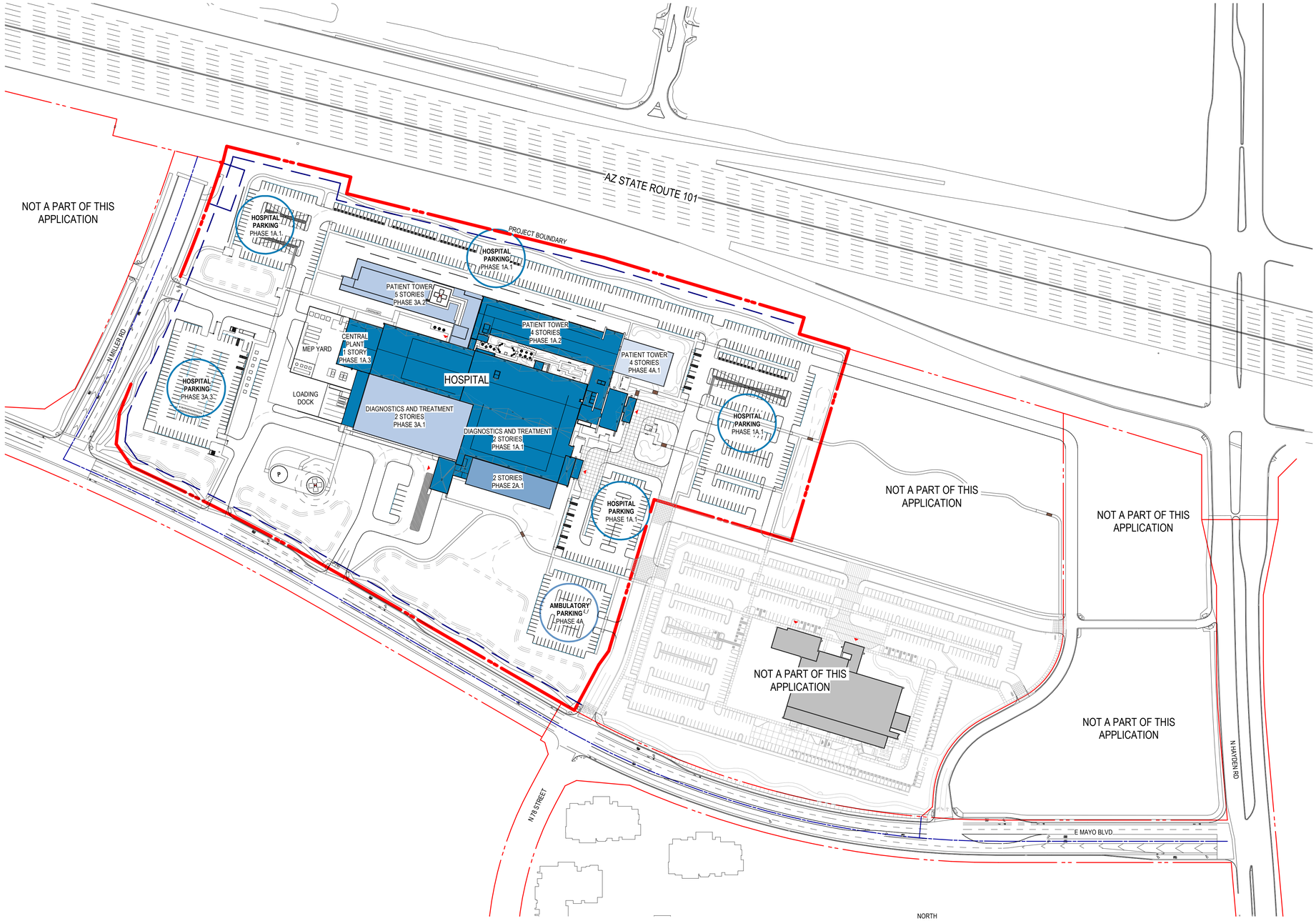
PHASING PLAN - INITIAL PHASE

PROJECT NUMBER

ENT_A1.4.2

SHEET NUMBER

Plot Date: 9/19/2025 9:04:36 AM Author



SITE PLAN - PHASING PLAN

SCALE: 1" = 120'-0"

PHASE 1

1A (COMPONENTS OF PHASE LISTED BELOW):

1A.1 - DIAGNOSTICS AND TREATMENT (2 STORIES):	= 204,000 SF
1A.2 - PATIENT TOWER AND CONNECTION (4 STORIES):	= 170,000 SF
1A.3 - CENTRAL PLANT (1 STORIES):	= 10,000 SF
SUBTOTAL:	**= 384,000 SF**

PHASE 2

2A (COMPONENTS OF PHASE LISTED BELOW)::

2A.1 - DIAGNOSTICS AND TREATMENT (2 STORIES):	= 32,000 SF
SUBTOTAL:	**= 32,000 SF**

PHASE 3

3A (COMPONENTS OF PHASE LISTED BELOW)::

3A.1 - DIAGNOSTICS AND TREATMENT (2 STORIES):	= 72,000 SF
3A.2 - PATIENT TOWER & CONNECTION (5 STORIES):	= 145,000 SF
3A.3 - PARKING STRUCTURE (4 STORIES):	= 211,600 SF
SUBTOTAL:	**= 428,600 SF**

PHASE 4

4A (COMPONENTS OF PHASE LISTED BELOW)::

4A.1 - NICU / PATIENT TOWER (4 STORIES:	= 52,500 SF
SUBTOTAL:	**= 52,500 SF**

OVERALL CAMPUS TOTAL: = 897,100 SF

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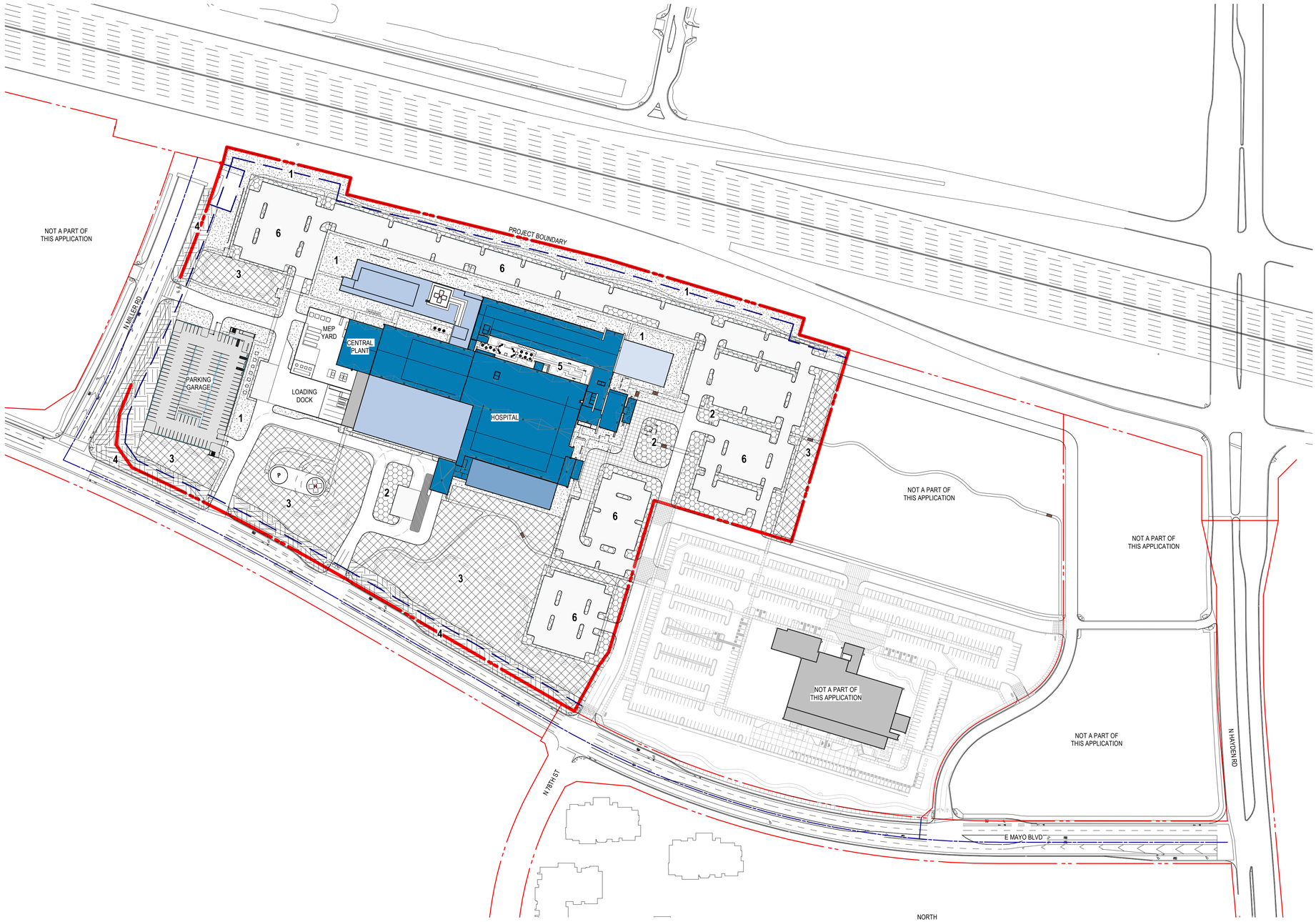
PHASING PLAN

PROJECT NUMBER

ENT_A1.4.1

SHEET NUMBER

Plot Date: 9/19/2025 9:04:23 AM Author



SITE PLAN - OPEN SPACE PLAN

SCALE: 1" = 120'-0"

NORTH

0 120' 240' 360'

GRAPHIC SCALE: 1" = 120' - 0"

GRAPHIC LEGEND

1		GENERAL SITE OPEN SPACE: 199,038 SQ. FT. *(LANDSCAPE + HARDSCAPE)*
2		PARKING LOT LANDSCAPE: 108,283 SQ. FT. *(LANDSCAPE + HARDSCAPE)*
3		RETENTION OPEN SPACE: 225,348 SQ. FT. *(LANDSCAPE)*
4		FRONTAGE OPEN SPACE: 96,313 SQ. FT. *(LANDSCAPE + HARDSCAPE)*
5		COURTYARD: 11,443 SQ. FT. *(LANDSCAPE + HARDSCAPE)*
6		PARKING AREA: 236,423 SQ. FT.
		BUILDING FOOTPRINT
		PROPERTY BOUNDARY
		UTILITY EASEMENT

OPEN SPACE CALCULATION

SITE AREA (GROSS):	1,372,138 SQ. FT. GROSS
SITE AREA (NET):	1,257,577 SQ. FT. NET
REQUIRED OPEN SPACE: *SECTION 1.403.J*	
NET SITE AREA X 0.24 *(excluding parking lot landscaping)*	301,818 SQ. FT.
TOTAL REQUIRED OPEN SPACE:	**301,818 SQ. FT.**
GENERAL SITE OPEN SPACE	199,038 SQ. FT.
RETENTION OPEN SPACE	+225,348 SQ. FT.
FRONTAGE OPEN SPACE	+96,313 SQ. FT.
COURTYARD OPEN SPACE	+ 11,443 SQ. FT.
TOTAL PROVIDED OPEN SPACE:	**532,142 SQ. FT.**
REQUIRED FRONTAGE OPEN SPACE: *SECTION 1.403.J*	
30 SQ. FT. PER 1 LINEAR FT. OF PUBLIC STREET	
MAYO BLVD. LINEAR FT.	1,299 LINEAR FT.
MILLER RD. LINEAR FT.	681 LINEAR FT.
30 X (1,299 + 681)	59,490 SQ. FT.
TOTAL PROVIDED FRONTAGE OPEN SPACE:	**96,313 SQ. FT.**
REQUIRED PARKING LOT LANDSCAPING: *SECTION 10.501.H.2*	
(PARKING LOT AREA x 15%) (236,423 x 0.15)	
TOTAL REQUIRED PARKING LOT LANDSCAPING:	35,463 SQ. FT.
TOTAL PROVIDED PARKING LOT LANDSCAPING: (INCLUDES HARDSCAPE)	**108,283 SQ. FT.**

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SEALS AND SIGNATURES

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SHEET TITLE

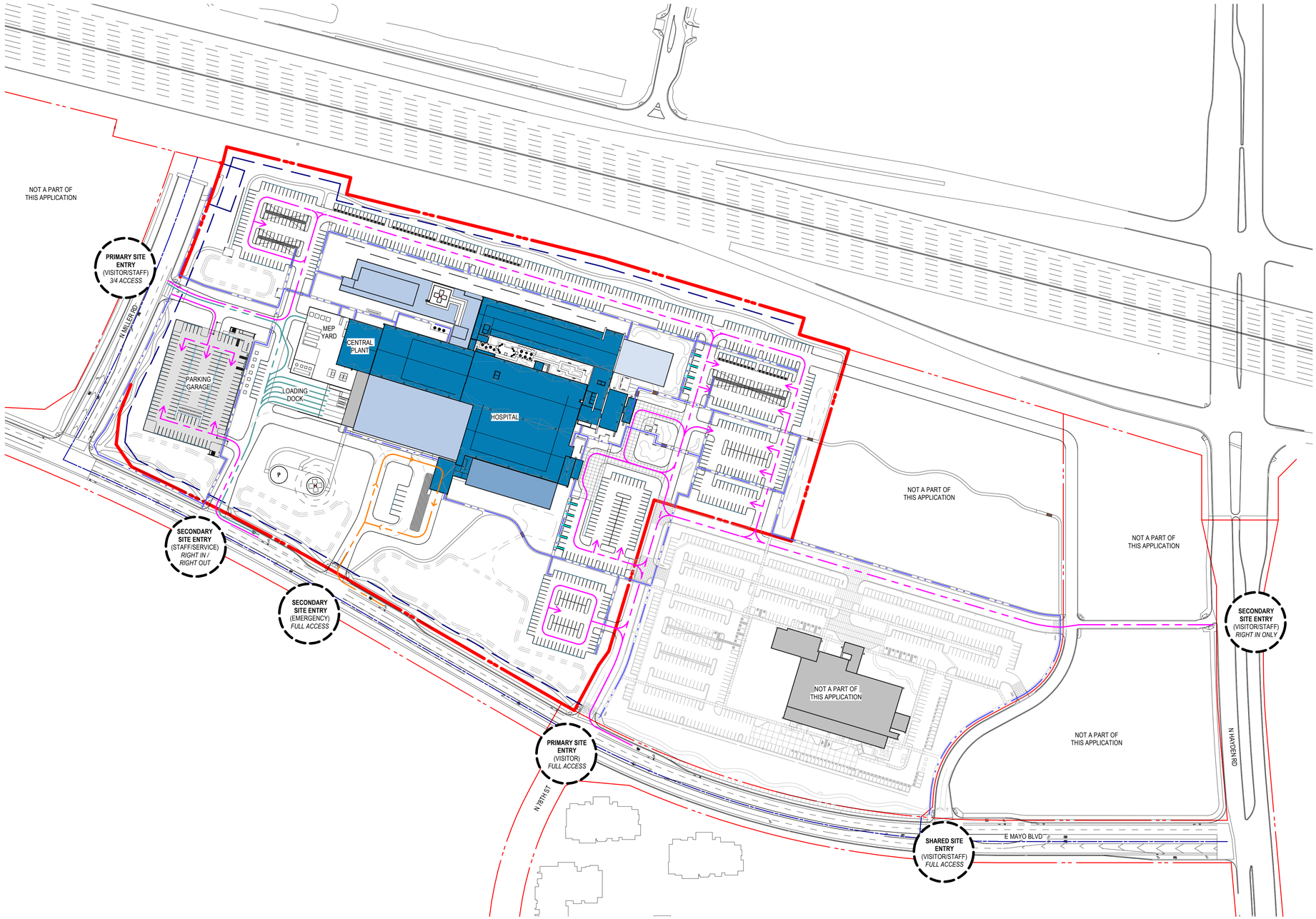
OPEN SPACE PLAN

PROJECT NUMBER

ENT_A1.3.1

SHEET NUMBER

Plot Date: 9/19/2025 9:04:05 AM Author



SITE PLAN - PEDESTRIAN AND VEHICULAR CIRCULATION PLAN

SCALE: 1" = 120'-0"

NORTH

0 120' 240' 360'

GRAPHIC SCALE: 1" = 120' - 0"

GRAPHIC LEGEND

- PROPERTY BOUNDARY
- PEDESTRIAN CIRCULATION
- SERVICE VEHICLE CIRCULATION
- EMPLOYEE/VISITOR VEHICLE CIRCULATION
- EMERGENCY VEHICLE CIRCULATION
- ACCESSIBLE CIRCULATION

SITE PLAN NOTES

A. ALL PARKING SPACES ARE 9'-0" WIDE X 18'-0" LONG W/ A MININUM DRIVE AISLE OF 24'-0". DRIVE AISLES ARE WIDER FOR FIRE LANES AND ARE NOTED ON THE PLANS.

B. ALL SIDEWALKS ARE A MINIMUM OF 6'-0".

C. ACCESSIBLE PARKING SPACES MEET DSPM, ZONING, AND ADA STANDARDS. THEY ARE SIZED TO BE 11'-0" WIDE X 18'-0" LONG WITH A 5'-0" ACCESS AISLES BETWEEN A MAXIMUM OF (2) ACCESSIBLE SPACES.

D. ALL PEDESTRIAN ROUTES TO MAYO BOULEVARD AND MILLER ROAD ARE PROVIDED DURING INITIAL PHASE.

E. ALL INTERNAL SITE DRIVES ARE DEVELOPED IN INITIAL PHASE.

F. REFER TO AND COORDINATE WITH CIVIL, LANDSCAPE, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ADDITIONAL SITE INFORMATION NOT SHOWN ON THIS DRAWING.

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SEALS AND SIGNATURES

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SHEET TITLE

PEDESTRIAN AND VEHICULAR CIRCULATION PLAN

PROJECT NUMBER

ENT_A1.5.1

SHEET NUMBER

Plot Date: 9/19/2025 9:04:52 AM Author

BANNER HEALTH CENTER SCOTTSDALE

DRAFT Traffic Impact and Mitigation Analysis

Prepared For: Banner Health

Hunter Venne

Project No.: 1124152

September 18, 2025



DIBBLE

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I. EXECUTIVE SUMMARY AND INTRODUCTION

A. Purpose of Report

The purpose of this Traffic Impact and Mitigation Analysis ("Report") is to provide a supplement to previously prepared TIMAs in order to evaluate the traffic impacts of a proposed new Hospital and parking garage to be constructed on approximately 29 acres located just west of the northwest corner of Mayo Boulevard and Hayden Road (the "Hospital Campus"). The Hospital Campus constitutes approximately 29 acres of a larger scale development planned for approximately 73.2 acres located at the northwest corner of Mayo Boulevard & Hayden Road in Scottsdale, Arizona ("Overall Site"). The Hospital Campus is designated as a hospital and a parking garage, which requires a land use budget modification and a conditional use permit. The opening year was assumed to be 2030 for the purposes of this Report. The report assumes a City of Scottsdale (City) Category II Traffic Impact and Mitigation Analysis for the Hospital Campus development to determine the offsite infrastructure needs for the Hospital Campus and to determine if and when traffic signals will be warranted for the Hospital Campus by 2030 as well as the Overall Site by 2040. Note the signal warrant was evaluated for the assumed opening day of the hospital 2030 as well as the horizon year (2040) when the Overall Site and surrounding developments are anticipated to be complete. The capacity analysis focuses on 2040 with the Overall Site completion and known surrounding developments completions to confirm the offsite infrastructure needs already planned. During previous discussions with the City of Scottsdale, the focus of this supplemental report is to determine offsite improvement needs by the full build out conditions with the exception of the traffic signal warrant analysis.

A Traffic Impact & Mitigation Analysis for the Overall Site was prepared by Kimley Horn & Associates and accepted by the City on June 14, 2023, and is included in **Appendix E** of this Report ("Kimley-Horn TIMA"). In the Kimley-Horn study, approximately 48 acres of the Overall Site were assumed to be developed for medical uses. The hospital and parking garage are a portion of the larger planned medical uses. An additional report was prepared by Dibble for a joint Banner Health and NexCore Medical Office Building, Banner Health Center Plus ("MOB+"). The MOB+ approved TIMA is included in **Appendix F**. It is important to note that the new proposed hospital and garage as well as the MOB were already accounted for as a part of the background traffic for the future horizon year of 2040 as requested by the City when the report was prepared. Therefore, the 2040 Total traffic presented in this report, matches the 2040 Total traffic for the MOB+ report. This was done to evaluate the full buildout offsite transportation infrastructure needs, which would allow the improvements to efficiently be designed and built with for the construction of Mayo Boulevard and Miller Road along the frontage of the Overall Site prior to the completion of the Hospital Campus.

B. Executive Summary

Site Location and Study Area

The Hospital Campus is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This Report includes the analysis of the following intersections:

- Mayo Boulevard & 78th Street
- Hayden Road & Mayo Boulevard
- Mayo Boulevard & Miller Road
- Loop 101 & Hayden Traffic Interchange (TI)
- Five access points to the Overall Site

Development Description

The proposed 618,000 SF hospital with 300 beds and parking garage will be developed in multiple phases that are assumed to be completed by 2030 for the purposes of this report. The planning level numbers from the Kimley Horn TIMA were used for the remainder of the Overall Site and included as a part of the background traffic for the purposes of this Report.

Principal Findings

At full buildout of the Hospital Campus, it is anticipated that multiple off-site improvements will be completed by the master developer of the Overall Site, including installing a traffic signal at Mayo Boulevard & Hayden Road, and at Mayo Boulevard & Miller Road. The signal at Mayo Boulevard & Hayden Road was MUTCD 10th Edition (2009) Part 4 warranted with the completion of the MOB+, therefore, it is assumed the signal will already be constructed by the completion of the Hospital Campus. The MOB+ TIMA found that a signal was not warranted at Mayo Boulevard and Miller Avenue nor Mayo Boulevard and 78th Street with the completion of the MOB+, but they were found to be warranted by the horizon year 2040 without the completion of the Axon development. The peak hour (warrant 3) signal warrant was therefore analyzed for the full build out of the NWC Development including the Hospital Campus.

The results of the signal warrant analysis are summarized in **Table 1**.

Table 1 –Signal Warrant Results

Intersection	Total Traffic 2040 w/o Axon
Mayo Blvd & Miller Rd	Yes (Both Peaks)
Mayo Blvd & 78th St	Yes (Both Peaks)

Development of the Hospital Campus is not anticipated to create excessive delays or significant increases in delays at the surrounding intersections. With the current site plan and recommended site access, the adjacent intersections and site driveways are anticipated to operate acceptably by 2040 with the completion of the Hospital Campus as well as the full buildout of the Overall Site with full access provided at driveways B, C and D as well as 78th Street and Mayo.

Recommendations

Based on the analysis of this Report there are no new recommendations for the Overall Site driveways. Although the traffic signal is not warranted by 2030, it will be needed by 2040 as other developments and the Overall Site are built in the area. It would therefore be beneficial to install a signal at 78th Street and Mayo Boulevard access point alongside this project.

Recommendations for 78th Street and Mayo Boulevard as well as the adjacent intersections are as follows:

Mayo Boulevard & 78th Street

A signal is not warranted with the completion of the Hospital Campus only, however, a signal is warranted by 2040 with the completion of the Hospital Campus, the Overall Site and surrounding developments. It would be beneficial to install the signal alongside the completion of the Hospital Campus as it will be warranted by the horizon year of 2040 when the surrounding developments and the Overall Site are anticipated to be complete.

Mayo Boulevard & Miller Road

A signal is warranted by 2040 with all the developments, including the Hospital Campus at this intersection from both a vehicle capacity and delay perspective. A roundabout is planned for this intersection with future development as the right-of-way becomes available. If a round-about is ruled out, a signal is warranted. The right-of-way for the intersection should be evaluated to determine if a roundabout can be installed, if not, a traffic signal should be considered.

II. PROPOSED DEVELOPMENT

A. Off-Site Development

In addition to the development planned for the Overall Site, there are several other off-site developments planned in the area. The Kimley Horn TIMA for the Overall Site includes planning level traffic assumptions for the Overall Site that included a planned Hospital Campus as well as other proposed land uses such as office, retail and hotels. The Kimley Horn TIMA can be found in **Appendix E**. The Kimley-Horn TIMA also incorporates additional planned developments within the area such as Cavasson, HonorHealth Hospital Campus, Axon Campus and Optima McDowell Mountain Village into the background traffic. The independent traffic studies for each of those developments were used to generate the background traffic numbers. Those same assumptions were utilized in this Report. At the time of this Report, it is unknown if or when the Axon development will be constructed. A traffic signal at Mayo Boulevard and Hayden Road was planned as a part of the Axon development. If the Axon development is delayed or is no longer built on the east side of the intersection of Mayo Boulevard and Hayden Road, the traffic signal will be built with the MOB+ project as a part of a master infrastructure project by others. This report assumes the traffic signal will already be built by the completion of the Hospital Campus, therefore, this report evaluates the need for a traffic signal at the intersections of both 78th Street and Miller Road with Mayo Boulevard. Kimley Horn also provided Dibble with their total 2040 traffic numbers for the surrounding intersections that excluded the Banner Health traffic. The traffic numbers provided, also included all the previously mentioned proposed developments in the area. These traffic numbers can be found in **Appendix D**.

B. Description of On-Site Development

Land Use and Intensity

The Hospital Campus is planned to be developed with a 618,000 SF Hospital with 300 beds. The hospital is anticipated to be built in phases, but for the purposes of this Report, the full build out of the Hospital Campus is evaluated. It is important to note that the full build out of the hospital campus was previously evaluated in the MOB+ TIMA as requested by City of Scottsdale. The Hospital Campus were accounted for in the background traffic. This was requested by the City in order to determine the overall offsite improvement needs, of particular note for the Mayo Boulevard as well as all access Hospital Campus access points design and construction that will precede the completion of the Hospital Campus.

Location

The proposed Hospital Campus development is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This location is shown in **Figure 1**.

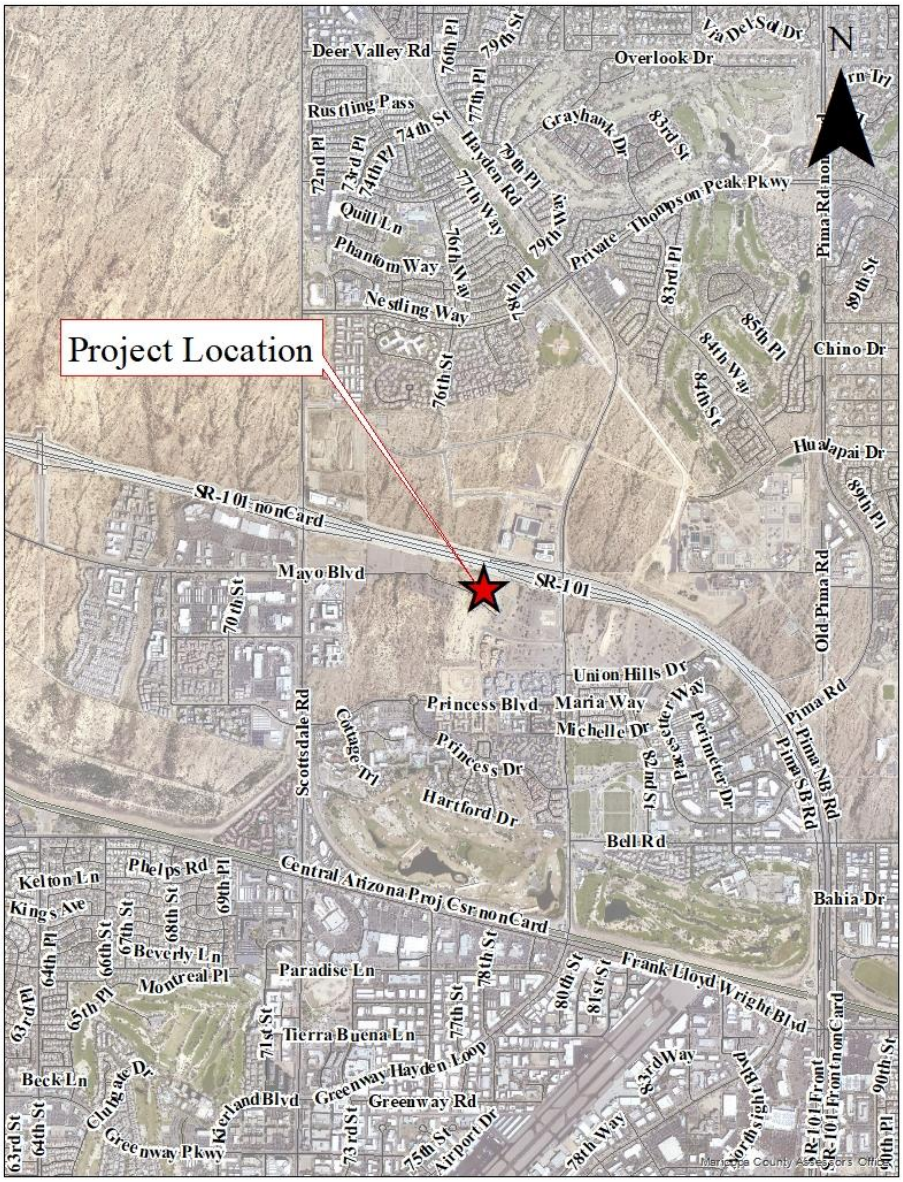


Figure 1 – Vicinity Map

Site Plan

The Overall Site is planned to have six driveways to access the Overall Site as described in the MOB+ approved TIMA. One driveway is planned to provide future full access on Miller Road (Driveway A), but will provide right-in/right-out/left-out only until Miller Road connects to the north. Four access points are initially modeled to provide full access on Mayo Boulevard (Driveways B-D and 78th Street). The sixth proposed access point (Driveway E) is on Hayden Road to provide more direct access from the freeway. Driveway E will be a right-in only access point due to the proximity to the Loop 101 ramps as well as the Mayo Boulevard and Hayden Road intersection to prevent unsafe weaving traffic exiting the site. The location of Driveway E was determined with ADOT and City of Scottsdale during the MOB+ TIMA coordination. The proposed driveways are shown in **Figure 2** followed by the current site plan in **Figure 3**.

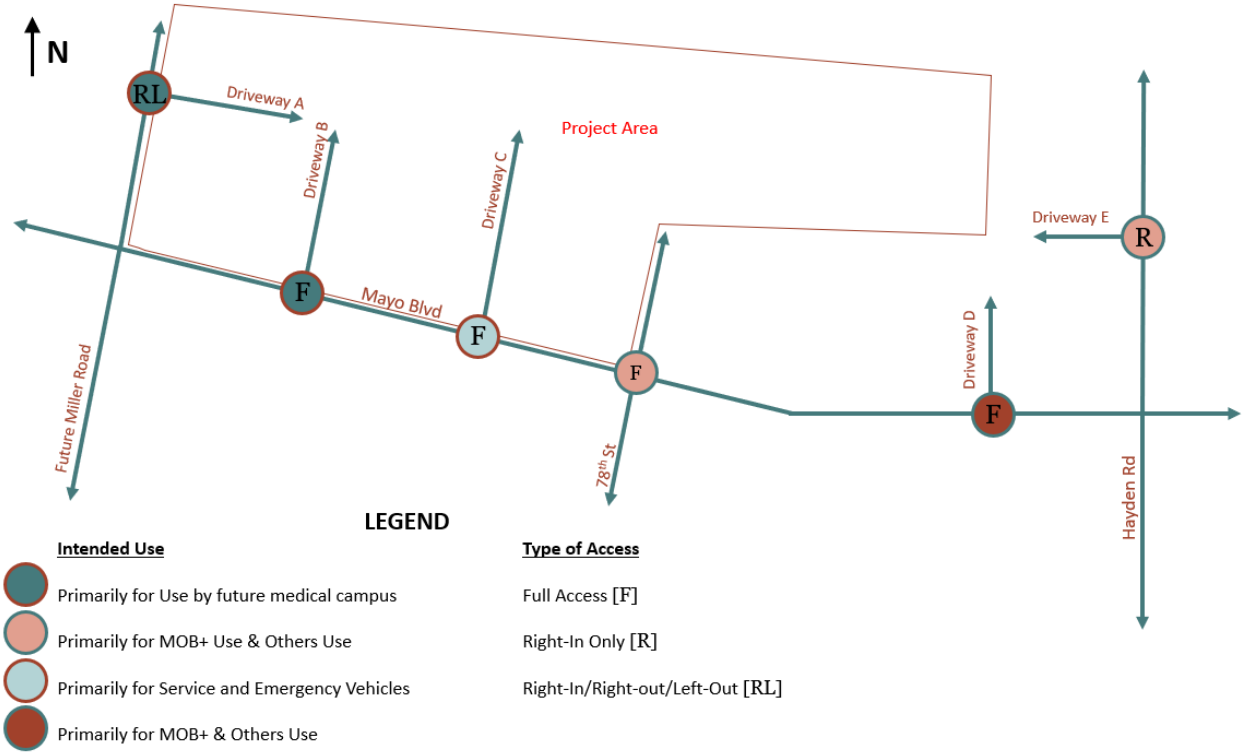


Figure 2 – Overall Site Access

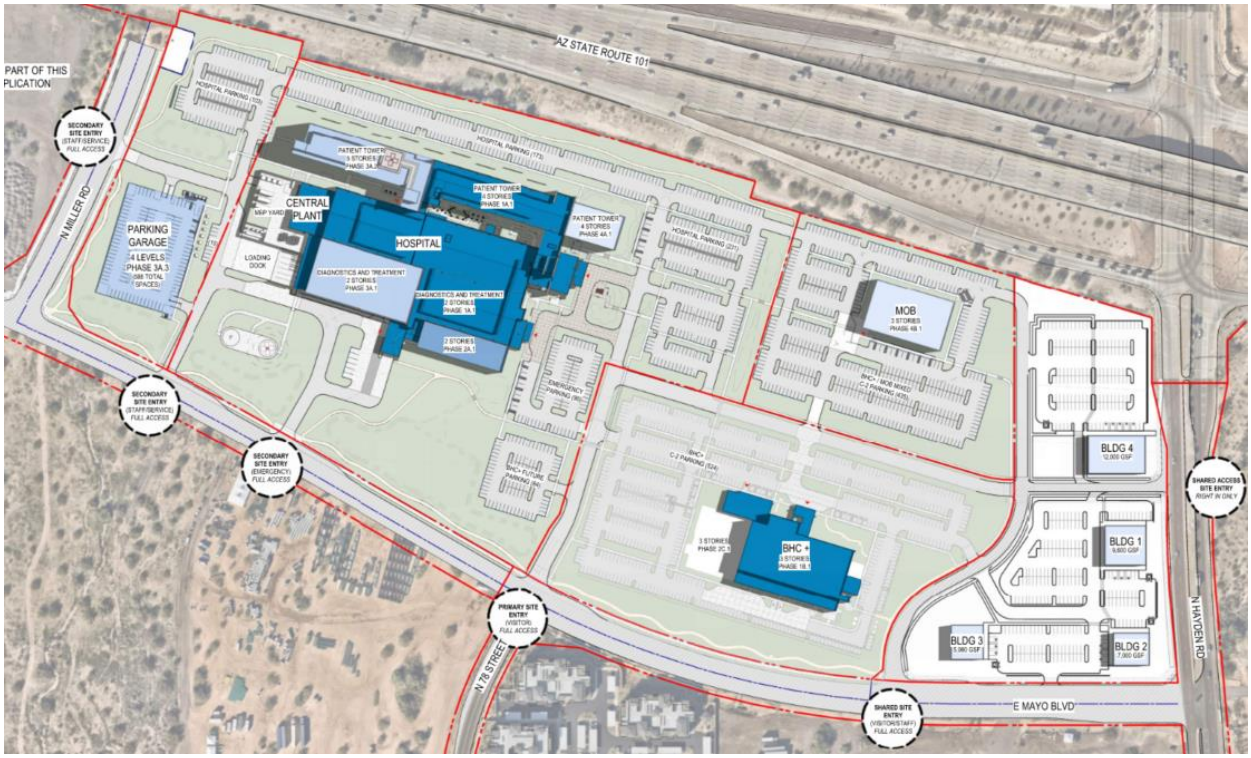


Figure 3 – Hospital Campus Plan

Phasing and Timing

The hospital will be developed in more than one phase, however, the report focuses on the projected 2040 horizon year with the full Hospital Campus build out. Conservative planning level numbers from the Kimley Horn TIMA are used for the future developments between the Hospital Campus and Hayden Road and included as a part of the background traffic for the purposes of this Report.

III. AREA CONDITIONS

A. Study Area

Area of Influence

The Hospital Campus is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This Hospital Campus planned for a portion of the Overall Site are anticipated to serve the surrounding population. There are several smaller clinics as well as other hospitals within a 5-mile radius of this site. This was considered for the trip distribution for the Hospital Campus as well as the medical services provided at other locations.

Area of Significant Traffic Impact

The area with the most traffic impact due to the addition of the remainder of the Hospital Campus planned for a portion of the Overall Site will occur along Loop 101, Hayden Road, Scottsdale Road, and Mayo Boulevard roadways. These are the major travel routes that vehicles will likely take to reach and leave the site.

This study focuses on the capacity analysis for the Overall Site driveways and the following surrounding intersections:

- Mayo Boulevard & 78th Street
- Hayden Road & Mayo Boulevard
- Mayo Boulevard & Miller Road
- Five additional access points to the Overall Site
- Loop 101 & Hayden Road

B. Study Area Land Use

Existing Land Uses and Zoning

The Hospital Campus is currently zoned as Planned Community District-Central Business District (P-C C-2).

Anticipated Future Development

As previously mentioned, the Kimley Horn TIMA included development plans for a larger Hospital Campus on the Overall Site. The planned developments analyzed in Kimley Horn TIMA include retail, senior living, office, hotel, and restaurant land uses. The trips generated by these developments (excluding the Hospital Campus) in the Kimley Horn TIMA were used in this Report as background traffic. Surrounding offsite developments include the Axon development and the Optima McDowell Mountain development. The background traffic provided from the Kimley Horn TIMA can be found in **Appendix D**. It should be noted that the Axon development may be delayed or it may not be built. At the request of the City, this Report therefore reflects scenarios that include this development and exclude this development.

C. Site Accessibility

Existing Roadway System

Roadway Segments

Hayden Road is currently a divided, four-lane, north-south minor arterial roadway. There are two northbound and two southbound lanes with a 40-mph posted speed limit in each direction and a raised median down the middle. There is curb and gutter on both sides of the road. There is a sidewalk with large gaps and a bike lane on the west side of the road with little sidewalk and no bike lane on the east side of the road. The east side of the road has a 5-foot-wide shoulder that tapers out as it nears the intersection with Loop 101.

Miller Road is not currently built but is anticipated to be a major collector. The future Miller Road alignment is expected to connect as the north leg of the Princess Boulevard & Princess Drive intersection then extend north under Loop 101 providing a grade separation. Miller Road is anticipated to be constructed as a 4-lane roadway with a two-way left-turn lane down the middle and a bike lane in each direction. It is assumed Miller Road will have a posted speed limit of 40 mph.

78th Street is currently a 2-lane divided road with a two-way left-turn lane down the middle classified by the City of Scottsdale as a minor collector. The road is built between Princess Boulevard and Mayo Boulevard. There is curb, gutter, and sidewalk on both sides of the road. There is also a bike lane and a posted speed limit of 30 mph in each direction.

Mayo Boulevard is currently a 2-lane divided road with a two-way left-turn lane down the middle classified by the City of Scottsdale as a major collector. The road is built between Hayden Road & 78th Street. There is currently curb and gutter on the south side of the road and bike lanes on both sides of the road. This road is expected to be extended to the west to connect with the Mayo Boulevard & Scottsdale Road intersection. There is a posted speed limit of 30 mph east of Scottsdale Road.

Intersections

Mayo Boulevard & 78th Street is currently a 2-way free-flowing intersection. This results in a curved roadway with a name transition between the two directions. This intersection is anticipated to be built out with the west leg being an extension of Mayo Boulevard and the south leg being stop-controlled.

Hayden Road & Mayo Boulevard is a 3-leg stop-controlled intersection with the west leg being stop controlled and the north and south legs being free-flow. There is one dedicated left turn lane (300' storage length) and one dedicated right turn lane (170' storage length) on the eastbound approach. There is one dedicated left turn lane (150' storage length) and two through lanes on the northbound approach. There are two through lanes on the southbound approach with a dedicated right turn lane (185' storage length).

Loop 101 Eastbound Ramps & Hayden Road is part of a diamond traffic interchange (TI). The eastbound approach currently provides a dedicated left turn lane, a shared left/right turn lane and a dedicated right turn lane. There are two northbound through lanes and a dedicated northbound right turn lane. There are dual lefts and two through lanes for the southbound approach. The eastbound on ramp provides two lanes that eventually merge to one lane before merging onto the freeway.

Loop 101 Westbound Ramps & Hayden Road is part of a diamond TI. The westbound approach currently provides a dedicated left turn lane, a shared through left turn lane, a shared through/right turn lane and a dedicated right turn lane. The northbound approach provides a single left turn lane and two through lanes. There are four through lanes and a dedicated right turn lane for the southbound approach. The westbound on ramp provides two lanes that eventually merge to one lane before merging onto the freeway.

Future Roadway System

There are a few improvements already planned for this area. It is anticipated that a third southbound through lane will extend south of the Loop 101 to the Mayo Boulevard intersection where the third through lane will transition to a right-turn only lane. Mayo Boulevard is anticipated to be constructed with two travel lanes and a bike lane in each direction and a center two-way left turn lane between 73rd Place and Hayden Road. Miller Road is anticipated to be constructed with two travel lanes and a bike lane in each direction with a two-way left-turn lane.

The eastbound off-ramp at the Hayden Road and Loop 101 TI will be improved with the MOB+ project to add an additional eastbound right turn lane.

There are also multiple proposed developments planned in the surrounding area that are anticipated to make improvements to the surrounding roadway network. The anticipated developments and the associated improvements with each one are listed below.

The eastbound off-ramp at the Hayden Road and Loop 101 TI will be improved with the MOB+ project to add an additional eastbound right turn lane.

General Recommendations made in the Kimley Horn TIMA: The northbound approach at Hayden Road & Mayo Boulevard is to be remarked to provide dual northbound left lanes when this intersection becomes signalized. At Miller Road & Mayo Boulevard, the eastbound approach is to have dual left turn lanes with 400 feet of storage. The Miller Road & Mayo Boulevard intersection is recommended to have dedicated right and turn lanes with 250 feet for all approaches.

Axon Development: At Hayden Road & Mayo Boulevard, there should be a third northbound through lane that is expected to continue north to the Loop 101 WB Ramp & Scottsdale Road intersection. There should also be dual westbound right turn lanes at this intersection. Additionally, this development is anticipated to construct Mayo Boulevard east of Hayden Road with two travel lanes in each direction. It is also anticipated this development will construct a traffic signal at Mayo Boulevard and Hayden Road. If this development is delayed or it is not constructed, the traffic signal will still likely be warranted due to the other developments planned in the area.

Optima McDowell Mountain: A dedicated westbound right turn lane is anticipated to be built at Scottsdale Road & Mayo Boulevard. A third westbound lane along Mayo Boulevard is anticipated to be built along Optima McDowell Mountain's frontage. This will become a dedicated westbound right turn lane at Scottsdale Road & Mayo Boulevard.

It is assumed these roadway improvements are constructed and open for public use by 2040 since the City of Scottsdale Transportation Master Plan, 2016 mentions a few of these improvements are anticipated to be completed by 2030. This includes widening Hayden to a six-lane road in this area and constructing Mayo Boulevard as a four-lane road in this area. For the purposes of this Report, the driveways are assumed to have a speed limit of 25 mph with two-lane roads at the driveway entrances.

Traffic Volumes and Conditions

The anticipated 2040 traffic volumes for this area were obtained and adjusted by Kimley Horn from the 2035 MAG model as described in the Kimley Horn TIMA (see **Appendix E**). These volumes were combined with the trips generated by the surrounding developments and were provided to Dibble. The combined volumes are used as the background traffic in this Report.

Transit Service

There are existing bus services along Mayo Boulevard to the west of this site, along Scottsdale Road, and along Bell Road south of this site. The closest bus stop is located at Scottsdale Road & Mayo Boulevard about 2/3 of a mile away from this site. There are no plans at this time to extend the bus route along Mayo Boulevard according to the City of Scottsdale Transportation Master Plan, 2008.

IV. PROJECTED TRAFFIC

A. Site Traffic

Trip Generation

The trip generation for this project was calculated using the ITE Trip Generation Manual, 11th edition. These values are for the typical peak hour times of the adjacent street (between 7:00 and 9:00 for the morning peak hour and between 4:00 and 6:00 for the afternoon peak hour). The hospital and the medical-dental office building land use codes were used for the trip generation calculations

The trips generated by the Hospital Campus development are shown in **Table 2**. The total trips generated are slightly less than the trips generated in the Kimley Horn TIMA. Kimley Horn used planning level numbers prior to having a developed site plan for the development to calculate the trip generation numbers.

Table 2 –Trip Generation

LUC	Description	Units	Quant	Weekday			AM Peak			PM Peak		
				Total	Ingress	Egress	Total	Ingress	Egress	Total	Ingress	Egress
610	Hospital	Beds	300	6787	3394	3393	537	387	150	507	167	340

Trip Distribution

The trip distribution was assessed based on the surrounding population within a 5-10 mile radius. It is assumed that most people will attempt to exit the same way they had entered with minor changes due to limited access driveways. When reviewing the surrounding street network, the main freeway used to access the study area is the Loop 101 with the closest exit ramps located both east and west of the site at Hayden Road and Scottsdale Road. The main arterials and collectors are Scottsdale Road, Hayden Road, and Mayo Boulevard. To access the site, the traffic will either enter from Miller Road, Mayo Boulevard, or Hayden Road. The trip distribution is summarized in **Figure 4**.

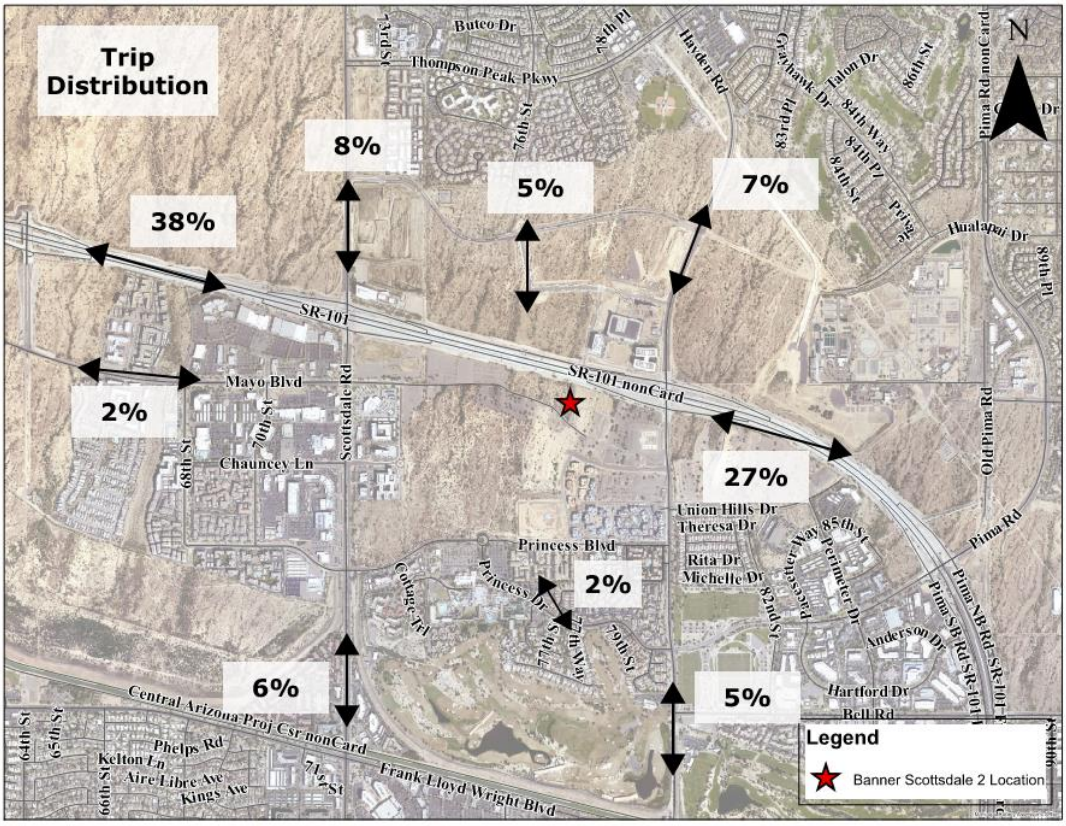


Figure 4 – Trip Distribution

Modal Split

Most traffic will likely travel to and from the site via passenger car since the surrounding area does not have heavy residential areas. If a bus route is added or extended to provide a stop near the hospital, some trips may arrive via public transportation. It is assumed in this report that all trips will be made via passenger vehicle in order to analyze the worst-case scenario.

Trip Assignment

The trip assignment is shown in **Figure 5**. The Hospital Campus trips will likely distribute across all the site access points with a larger portion of the traffic using Driveway B where the parking garage is anticipated as well as 78th Street which leads to the main entrance of the hospital. Driveway C will provide access for emergency vehicles and deliveries primarily. The access point will not provide direct access to any of the parking lots, therefore, it is not anticipated to be heavily used by passenger vehicles.



Figure 5 – Trip Assignment

B. Background Traffic

Method of Projections

One future horizon year is projected for the purposes of this Report. Existing conditions were evaluated in the Kimley Horn TIMA and were therefore not included in this supplemental TIMA. The horizon year evaluated in this report projects into 2040 when the Hospital Campus is anticipated to be complete and operational. The traffic studies for the surrounding developments from the Kimley Horn TIMA indicate that the surrounding developments are anticipated to be completed by 2040. The anticipated 2040 traffic volumes for this area were obtained and adjusted by Kimley Horn from the 2035 MAG model as described in Kimley Horn TIMA. These volumes were combined with the trips generated by the surrounding developments. These combined volumes are used as the background traffic in this Report. Note that the trips generated by the parcels to the east of this site along Hayden Road were assigned to use two of the driveways studied in this Report as well as a driveway not studied in this Report.

Estimated Volumes

Figure 6 and **Figure 7** show the calculated background traffic volumes used for the Future (2040) analysis with and without the Axon development. Note, the scenario excluding Axon development was an additional scenario requested by City of Scottsdale for evaluation of the impacts of the Hospital Campus with and without the site for signal warrant analysis and offsite improvement needs along Mayo Boulevard. The TI was, therefore, not evaluated for the scenario without Axon. This is when all four phases of the Overall Site are anticipated to be completed.

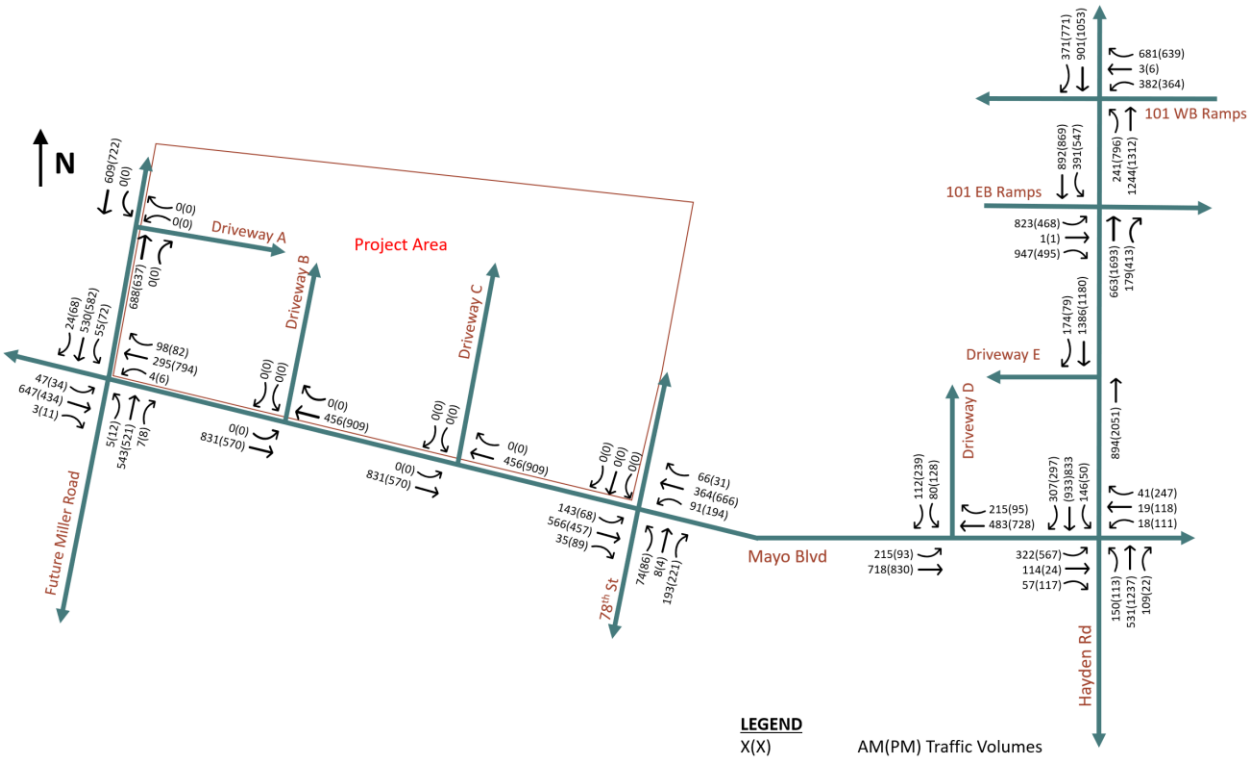


Figure 6 – Future Background Traffic w/Axon (2040)

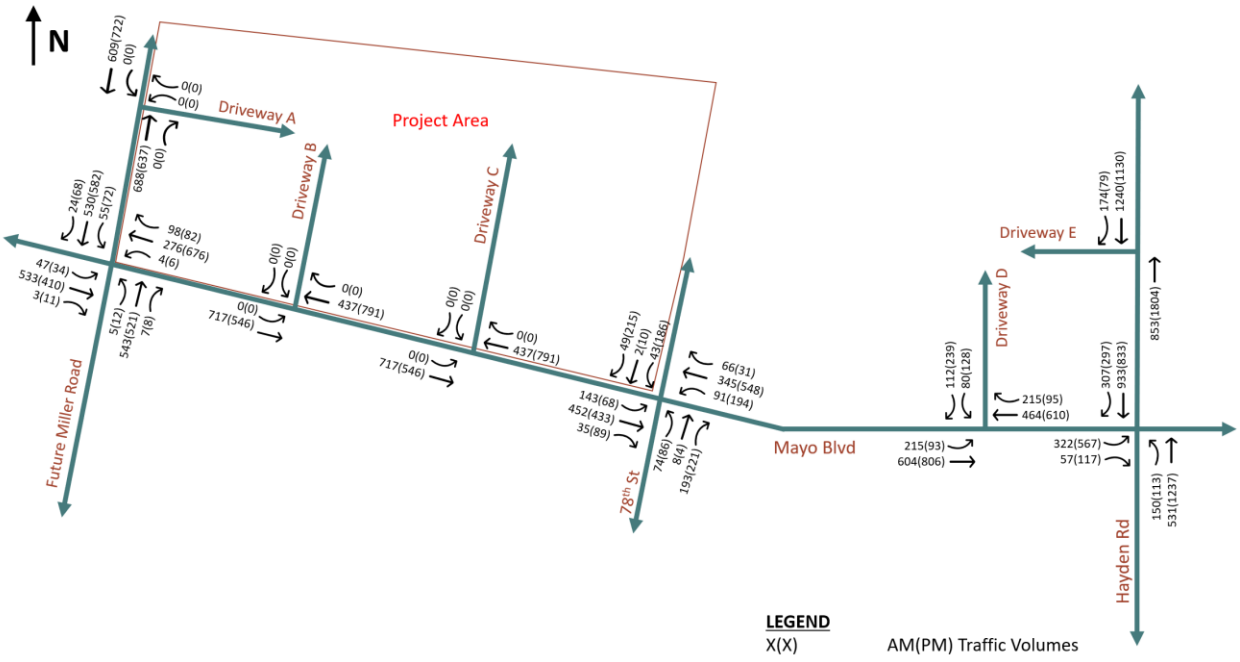


Figure 7 – Future Background Traffic w/o Axon (2040)

C. Total Traffic

The background traffic and anticipated site traffic were combined to calculate the total anticipated traffic for 2040 with and without Axon. **Figure 8** and **Figure 9** show the anticipated total traffic for the 2040 horizon year.

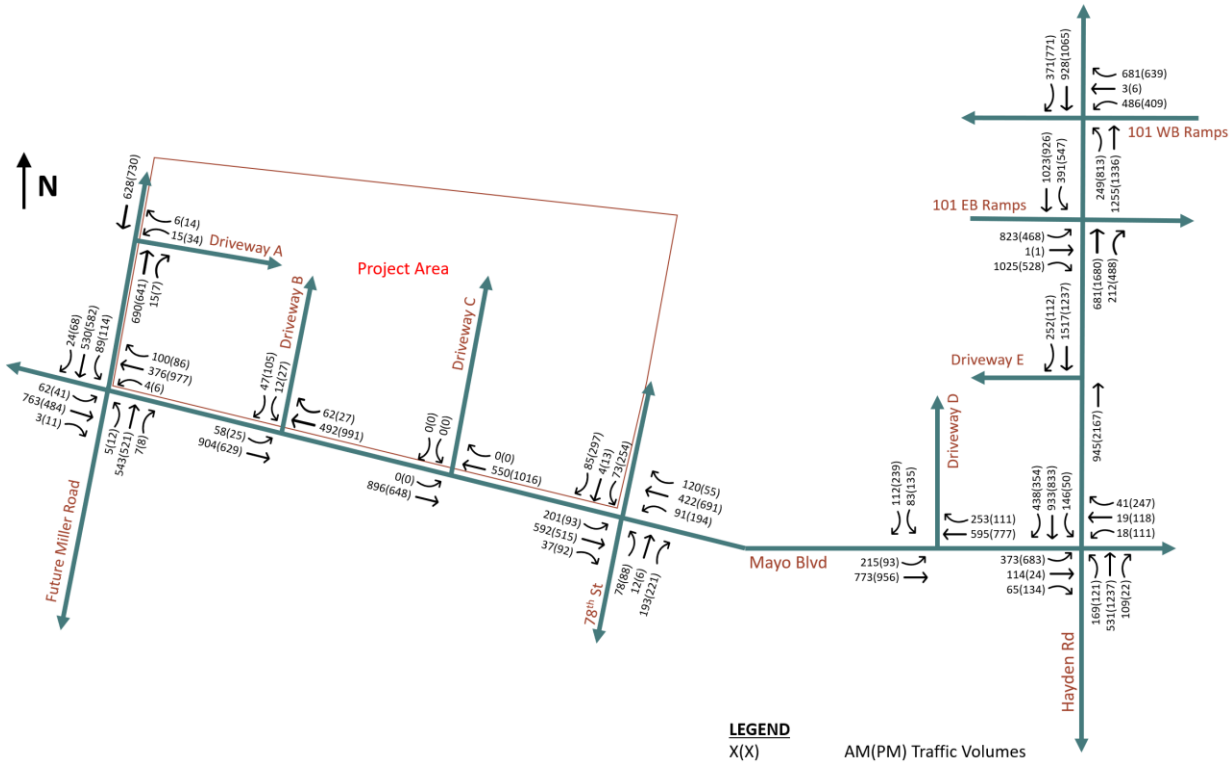


Figure 8 – Future Total Traffic (2040)

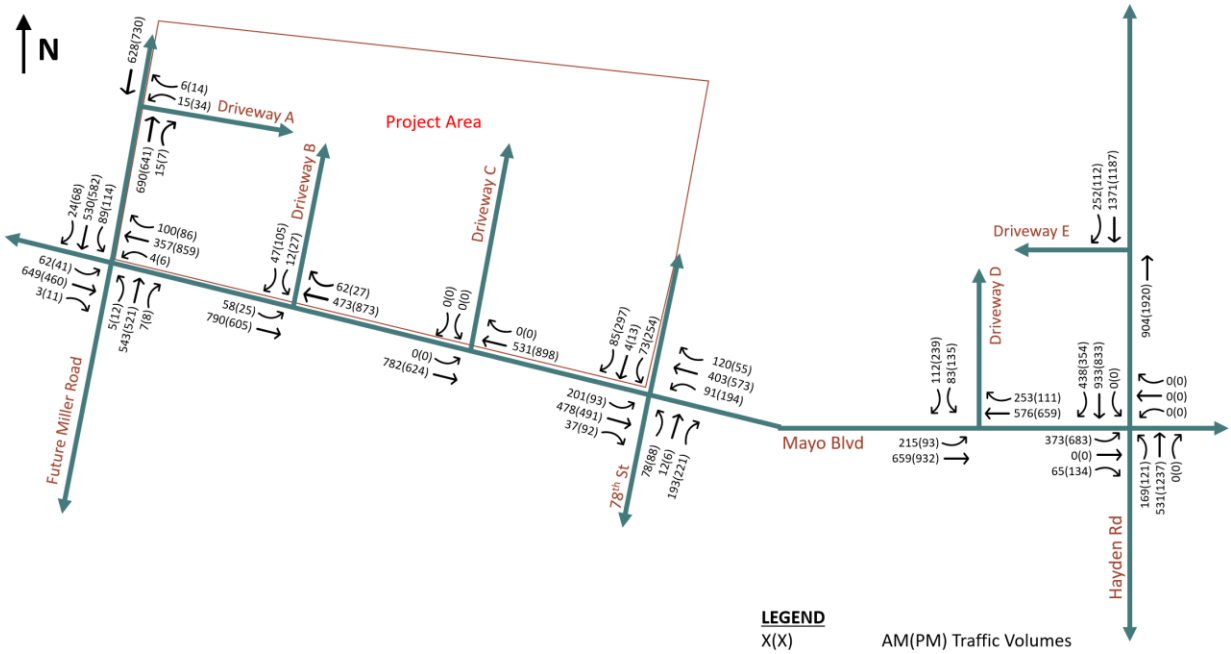


Figure 9 – Future Total Traffic w/o Axon (2040)

V. TRAFFIC ANALYSIS

A. Site Access

The Overall Site is planned to have six access points for the portion of the development bound by Miller Road, Hayden Road, Loop 101, and Mayo Boulevard. One of these is planned to provide full access from Miller Road (Driveway A). Four of these access points are planned to provide direct access from Mayo Boulevard (Driveway B, C, D and 78th Street). The Mayo Boulevard and 78th Street access as well as Driveway B are expected to primarily provide access to patients and staff entering or exiting the site for the Hospital Campus in addition to Driveways A, D, and E. Mayo Boulevard & Driveway D is a proposed full access driveway and will be shared with the future retail, office and hotel uses directly adjacent to Hayden Road. Driveway E will provide the most direct access to the future planned emergency room for hospital patients. The close proximity to the Loop 101 interchange is vital in providing quick access to the planned hospital when needed. This access has been approved for right in access only by both ADOT and City of Scottsdale. **Figure 10** provides a schematic layout of the proposed site driveways.

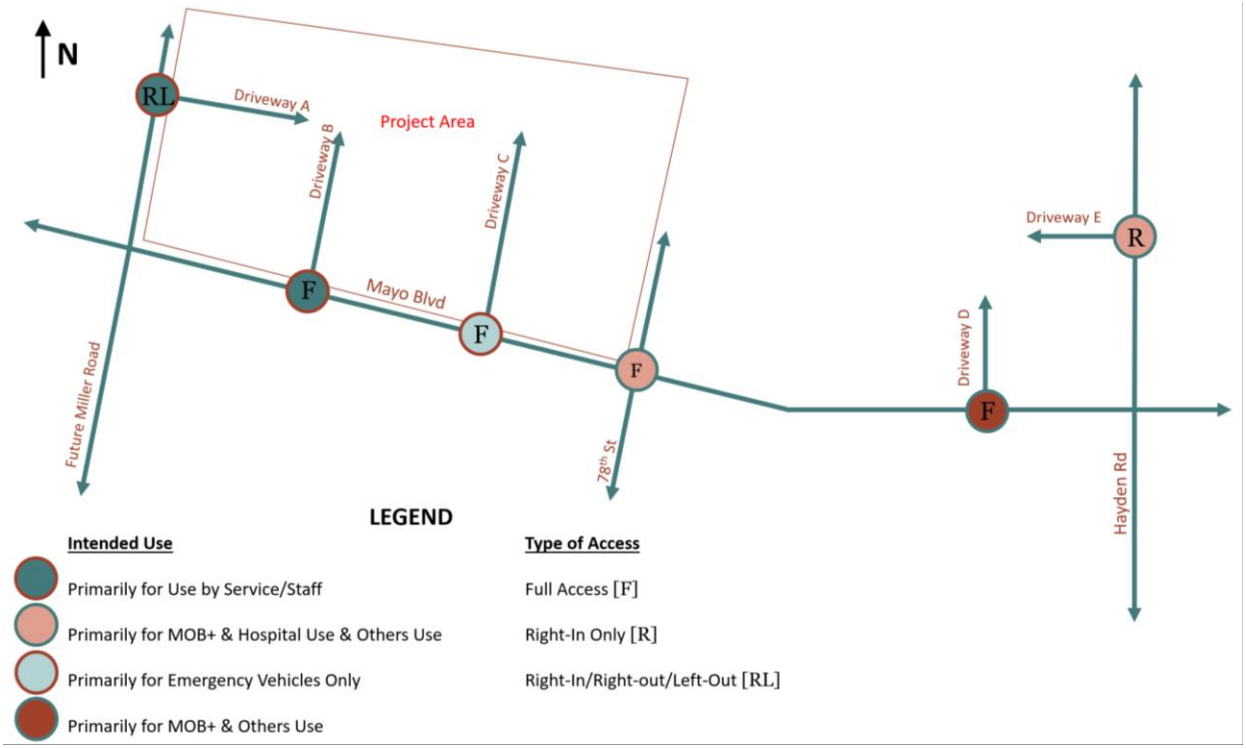


Figure 10 – Site Access

B. Turn Lane Warrants

The following turn lane warrants were completed in accordance with the City of Scottsdale 2018 Design Standards and Policies Manual Chapter 5 Section 3. The manual states that dedicated right turn lanes are required at all street intersections on major arterials while dedicated left turn lanes are required at all street intersections on major collectors and arterials. Note the turn lane warrants were previously evaluated for the "MOB+" development and the results have not changed as the Hospital Campus traffic was accounted for in the background traffic. The westbound right turn lanes at Driveways B, C, and D and at Mayo and 78th Street as well as the southbound right turn lane at Driveway E are notated as planned based on the "MOB+" approved TIMA. Additionally, the Kimley Horn TIMA was approved by the City of Scottsdale with comments and stipulations. One of the comments requires right turn lanes at all driveways along Mayo Boulevard and Miller Road. The results are summarized in **Table 3** for right turn lanes and in **Table 4** for left turn lanes. Turning movements that have an existing dedicated turn lane are not included in these tables. Additionally, future anticipated turn lanes from other developments are included in both tables.

Dedicated turn lanes planned or warranted in the following tables were assumed to be built in the capacity analysis included in this Report.

Table 3 –Right Turn Lane Warrants

Intersection	Access	Turning Movement	Lane Warranted Due to City Prescriptive Requirements?
Miller Rd & Driveway A	Full	NBR	No
		SBR	No
Mayo Blvd & Driveway B	Full	EBR	No
		WBR	Planned
Mayo Blvd & 78th St	Full	EBR	No
		WBR	Planned
		NBR	No
		SBR	No
Mayo Blvd & Driveway C	Full	EBR	No
		WBR	Planned
Mayo Blvd & Driveway D	Full	EBR	No
		WBR	Planned
Hayden Rd & Driveway E	RI	SBR	Planned
Hayden Rd & Mayo Blvd	Full	WBR	Planned*
		NBR	No
Mayo Blvd & Miller Rd	Full	EBR	Planned
		WBR	Planned
		NBR	Planned
		SBR	Planned

City Prescriptive Requirements includes a right turn lane on all major arterials and a left turn lane on all major collectors or arterials in accordance with the City of Scottsdale Design Standards and Policies Manual, 2018 Chapter 5

RI = Right-In Only

Planned = already planned by other developments, does not yet exist

**Planned to be a dual*

The MOB+ approved TIMA included an additional mitigation as requested by ADOT during review. This included the addition of an eastbound right turn lane at the Loop 101 and Hayden Road traffic interchange (TI). The capacity analysis in this report assumes the eastbound right turn lane for the eastbound off ramp of the TI as this will be constructed with the completion of the MOB+ and prior to the completion of the hospital and parking garage.

Table 4 –Left Turn Lane Warrants

Intersection	Access	Turning Movement	Lane Warranted Due to City Prescriptive Requirements?
Miller Rd & Driveway A	Full	NBL	Yes
		SBL	Planned
Mayo Blvd & Driveway B	Full	EBL	Planned
		WBL	Yes
Mayo Blvd & 78th St	Full	EBL	Planned
		WBL	Planned
		NBL	Yes
		SBL	Yes
Mayo Blvd & Driveway C	Full	EBL	Yes
		WBL	Planned
Mayo Blvd & Driveway D	Full	EBL	Yes
		WBL	Planned
Hayden Rd & Mayo Blvd	Full	EBL	Exists*
		WBL	Yes
		NBL	Exists*
		SBL	Planned*
Mayo Blvd & Miller Rd	Full	EBL	Planned
		WBL	Planned
		NBL	Planned
		SBL	Planned

City Prescriptive Requirements includes a left turn lane on all major arterials and a left turn lane on all major collectors or arterials in accordance with the City of Scottsdale Design Standards and Policies Manual, 2018 Chapter 5

Planned = already planned by other developments, does not yet exist

**Planned to be a dual*

A. Traffic Signals

The intersection of Hayden Road & Mayo Boulevard is already planned to be signalized with the addition of the MOB+ or Axon (whichever is built first). It is also already anticipated that Mayo Boulevard & Miller Road will be a roundabout or signalized intersection for future developments. Based on City of Scottsdale comments for the approved Master Plan TIMA, a roundabout is to be built at the intersection once the right-of-way is available unless it is ruled out, in which case, a traffic signal would be considered. If the signal or roundabout are not constructed prior to the hospital and parking garage project due to other surrounding developments, the signal or roundabout is anticipated to be needed with the completion of the hospital.

All other intersections studied in this Report are anticipated to operate acceptably given the conditions and mitigations mentioned in this report. As previously mentioned, the Axon development may be delayed or the project may not be built. The Axon development is currently responsible for the signal at Mayo Boulevard and Hayden Road, however if the MOB+ and/or the remainder of the Overall Site is built before Axon, the signal is warranted with the completion of the MOB+ as determined in the MOB+ approved TIMA. Therefore, a signal will be built at the intersection prior to the completion of the hospital. The

capacity analysis for this report was therefore conducted assuming the traffic signal will already be built either with the Axon development or the MOB+ prior to the completion of the hospital.

The MOB+ TIMA found that the signal at 78th Street and Mayo Boulevard as well as Miller Road and Mayo Boulevard were not warranted with the completion of the MOB+ only. A signal warrant analysis for the peak hour was therefore conducted based on the Manual on Uniform Traffic Control Devices (MUTCD) with the addition of the hospital for both the opening year of the hospital 2030 and the projected 2040 horizon year. The warrant was evaluated without the Axon development traffic. The results are summarized in **Table 5**. The warrant analysis is also included in **Appendix F**.

Table 5 – MUTCD Signal Warrant Results

Intersection	Total Traffic 2030 w/o Axon	Total Traffic 2040 w/o Axon
Mayo Blvd & Miller Rd	No (Both Peaks)	Yes (Both Peaks)
Mayo Blvd & 78th St	No (Both Peaks)	Yes (Both Peaks)

Per City of Scottsdale's direction during a comment resolution meeting for the MOB+ approved TIMA on May 22, 2024, the intersection at Mayo Boulevard and Miller Road will operate as an all-way stop control intersection until the right-of-way is obtained to construct a roundabout at the intersection. If a roundabout is ruled out, a signal should be installed in its place.

B. Capacity and Level of Service

The capacity analysis was conducted using Synchro 11 software. **Table 6** through **Table 13** summarize the level of service (LOS) and the 95th percentile queue length results for the analyzed turning movements for the 2040 horizon year both without site traffic (background traffic) and with site traffic (total traffic), respectively. Note that 25 feet per vehicle was assumed for the queue lengths for unsignalized, stop controlled intersections. Note that a level of service "E" or "F" is typically considered a "failing" level of service during peak traffic times and will sometimes require some sort of mitigation to bring the level of service back to a "D" or better, if possible. However, sometimes it is not feasible nor warranted to mitigate due to a number of considerations including the current traffic demand. Additionally, sometimes it is simply not feasible to invest in a lot of additional capacity improvements to support one or both peak hour traffic times at one or two locations. Especially, when it is put into the context of all the other capacity or capacity utilization improvements that will be provided for this proposed development.

As stated in the previous section, the intersection of Mayo Boulevard and Miller Road is to operate as an stop controlled intersection until such time that the right-of-way is obtained to construct a roundabout at the intersection or a traffic signal if the roundabout is ruled out. **Table 10** through **Table 13** assume the intersection will still be stop controlled to show how that scenario is anticipated to operate by 2040. A roundabout should be constructed by 2040, however, or a signal should be installed if the roundabout is ruled out. **Table 15** summarizes the LOS and Delay results for both a roundabout and a signal for 2040 (with Axon development worst case scenario).

The southbound left turning movement at Driveway D experiences what would be considered an undesirable level of service for the 2040 horizon year both with and without the Axon development. It is important to note that this delay is experienced on site and the vehicle queues do not exceed more than 2-3 vehicles (roughly 40-60 feet) depending on the peak hour.

Additionally, some of the turning movements at the 101 and Hayden Road interchange are experiencing undesirable LOS for the opening day Background traffic scenario in 2040. The completion of the Hospital Campus adds more delay to the turning movements that are already experiencing undesirable LOS. These turning movements include the eastbound left movements during the morning and afternoon peak hour as well as the northbound left during both peak hours and the southbound left during the afternoon peak hour.

Table 6 –Opening Day Background w/Axon (2040) LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Mayo Blvd & 78th St	AM	6.6	A	8.3	A	6.5	A	6.5	A	8.1	A	5.7	A	2.1	A	12.4	B	5.0	A	5.0	A	11.8	-	5.2	A	5.2	A
	PM	12.3	B	13.0	B	10.1	B	10.1	B	20.3	C	11.2	B	4.1	A	19.2	B	4.6	A	4.6	A	25.4	-	8.8	A	8.8	A
Mayo Blvd & Driveway D	AM	-	-	10.9	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	31.3	D	-	-	10.9	B
	PM	-	-	10.5	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	41.0	E	-	-	15.4	C
Hayden Rd & Mayo Blvd	AM	23.1	C	46.5	D	28.3	C	7.9	A	51.7	D	46.0	D	1.1	A	48.4	D	14.0	B	14.0	B	49.8	D	19.8	B	3.0	A
	PM	30.4	C	39.4	D	14.1	B	3.2	A	51.3	D	37.0	D	7.0	A	44.7	D	30.7	C	30.7	C	45.2	D	36.7	D	7.3	A
Mayo Blvd & Miller Rd	AM	121.8	F	17.5	C	262.2	F	42.7	E	16.3	C	42.5	E	39.5	E	15.7	C	177.9	F	35.6	E	18.4	C	158.3	F	37.5	E
	PM	210.5	F	20.4	C	131.6	F	37.1	E	16.4	C	468.0	F	176.9	F	18.0	C	207.2	F	43.2	E	22.1	C	246.8	F	81.4	F
Hayden Rd & 101 WB Ramps	AM	40.2	D	-	-	-	-	-	-	65.2	E	12.6	B	12.1	B	65.2	E	52.2	D	-	-	-	-	41.2	D	7.0	A
	PM	94.1	F	-	-	-	-	-	-	54.8	D	11.4	B	10.6	B	400.1	F	11.5	B	-	-	-	-	50.7	D	66.1	E
Hayden Rd & 101 EB Ramps	AM	43.7	D	109.1	F	8.9	A	8.8	A	-	-	-	-	-	-	-	-	39.6	D	6.7	A	48.1	D	29.0	C	-	-
	PM	56.4	E	121.5	F	12.7	B	12.6	B	-	-	-	-	-	-	-	-	43.8	D	8.7	A	145.2	F	36.9	D	-	-

Table 7 –Opening Day Background w/Axon (2040) Queue Lengths (ft)

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Mayo Blvd & 78th St	AM	43.0	61.0	0.0	30.0	36.0	11.0	37.0	35.0	0.0	25.0	17.0	0.0
	PM	53.0	138.0	0.0	159.0	178.0	14.0	81.0	51.0	0.0	174.0	95.0	0.0
Mayo Blvd & Driveway D	AM	27.5	0.0	-	-	0.0	0.0	-	-	-	45.0	-	15.0
	PM	12.5	0.0	-	-	0.0	0.0	-	-	-	85.0	-	55.0
Hayden Rd & Mayo Blvd	AM	163.0	55.0	30.0	38.0	20.0	0.0	89.0	129.0	0.0	89.0	355.0	50.0
	PM	250.0	12.0	30.0	136.0	67.0	38.0	70.0	418.0	0.0	38.0	451.0	89.0
Mayo Blvd & Miller Rd	AM	15.0	627.5	142.5	0.0	125.0	120.0	2.5	442.5	107.5	17.5	407.5	0.0
	PM	12.5	295.0	85.0	2.5	965.0	427.5	5.0	440.0	115.0	27.5	522.5	0.0
Hayden Rd & 101 WB Ramps	AM	-	-	-	234.0	103.0	100.0	245.0	417.0	-	-	193.0	0.0
	PM	-	-	-	196.0	97.0	89.0	1161.0	150.0	-	-	291.0	595.0
Hayden Rd & 101 EB Ramps	AM	550.0	110.0	108.0	-	-	-	-	168.0	58.0	237.0	116.0	-
	PM	390.0	90.0	89.0	-	-	-	-	411.0	132.0	378.0	152.0	-

Table 8 –Opening Day Background w/o Axon (2040) LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Mayo Blvd & 78th St	AM	6.5	A	8.8	A	6.3	A	6.3	A	7.8	A	5.9	A	2.2	A	11.6	B	4.7	A	4.7	A	11.0	-	4.9	-	4.9	-
	PM	11.5	B	12.3	B	10.2	B	10.2	B	20.5	C	10.9	B	4.3	A	17.6	B	4.3	A	4.3	A	23.0	-	4.7	-	4.7	-
Mayo Blvd & Driveway D	AM	-	-	10.7	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	28.6	D	-	-	10.7	B
	PM	-	-	9.8	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	32.5	D	-	-	13.9	B
Hayden Rd & Mayo Blvd	AM	14.5	B	39.1	D	-	-	0.8	A	-	-	-	-	-	-	40.0	D	3.8	A	-	-	-	-	12.9	B	2.2	A
	PM	15.3	B	34.8	C	-	-	4.8	A	-	-	-	-	-	-	38.9	D	7.8	A	-	-	-	-	16.1	B	2.8	A
Mayo Blvd & Miller Rd	AM	93.3	F	17.2	C	150.9	F	30.8	D	15.7	C	36.0	E	35.2	E	15.1	C	164.2	F	32.9	D	17.6	C	145.3	F	34.5	D
	PM	171	F	19.8	C	111.6	F	33.9	D	16.3	C	343.3	F	125.6	F	17.4	C	205.9	F	41.8	E	21.3	C	241.2	F	77.9	F

Table 9 –Opening Day Background w/o Axon (2040) Queue Lengths (ft)

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Mayo Blvd & 78th St	AM	41.0	48.0	0.0	28.0	34.0	11.0	35.0	33.0	0.0	24.0	16.0	0.0
	PM	52.0	133.0	0.0	158.0	146.0	15.0	75.0	48.0	0.0	162.0	52.0	0.0
Mayo Blvd & Driveway D	AM	27.5	0.0	-	-	0.0	0.0	-	-	-	40.0	-	15.0
	PM	10.0	0.0	-	-	0.0	0.0	-	-	-	70.0	-	47.5
Hayden Rd & Mayo Blvd	AM	140.0	0.0	0.0	0.0	0.0	0.0	76.0	46.0	0.0	0.0	253.0	39.0
	PM	208.0	0.0	31.0	0.0	0.0	0.0	60.0	165.0	0.0	0.0	246.0	44.0
Mayo Blvd & Miller Rd	AM	15.0	410.0	95.0	0.0	107.5	110.0	2.5	435.0	102.5	17.5	400.0	0.0
	PM	12.5	270.0	80.0	2.5	735.0	327.5	5.0	455.0	115.0	27.5	532.5	0.0
Hayden Rd & 101 WB Ramps	AM	-	-	-	246.0	103.0	100.0	153.0	410.0	-	-	215.0	71.0
	PM	-	-	-	53.5	11.1	10.4	14.7	12.7	-	-	48.9	35.6
Hayden Rd & 101 EB Ramps	AM	598.0	102.0	102.0	-	-	-	-	158.0	61.0	215.0	121.0	-
	PM	354.0	80.0	78.0	-	-	-	-	397.0	132.0	447.0	142.0	-

Table 10 – Future (2040) Total Traffic w/Axon LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	16.7	C	-	-	10.9	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	17.2	C	-	-	10.7	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	8.9	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	17.0	C	-	-	10.3	B
	PM	-	-	11.0	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	24.2	C	-	-	14.6	B
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	7.3	A	10.9	B	6.6	A	6.6	A	8.1	A	5.9	A	1.9	A	15.7	B	5.8	A	5.8	A	16.2	B	5.8	A	5.8	A
	PM	16.9	B	20.7	C	14.1	B	14.1	B	32.6	C	15.2	B	4.3	A	21.7	C	4.3	A	4.3	A	31.9	C	13.1	B	13.1	B
Mayo Blvd & Driveway D	AM	-	-	12.2	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	39.7	E	-	-	11.5	B
	PM	-	-	10.9	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	53.7	F	-	-	16.2	C
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	23.6	C	47.1	D	27.8	C	7.4	A	52.9	D	46.9	D	1.1	A	49.8	D	14.8	B	14.8	B	51.0	D	21.2	C	3.4	A
	PM	33.2	C	39.8	D	13.3	B	13.3	B	55.2	E	39.7	D	7.3	A	47.9	D	34.6	C	34.6	C	48.3	D	42.5	D	8.2	A
Mayo Blvd & Miller Rd	AM	172.6	F	19.8	C	420.5	F	74.3	F	17.0	C	80.6	F	57.5	F	16.8	C	214.8	F	42.1	E	23.6	C	192.8	F	45.2	E
	PM	291	F	21.2	C	182.3	F	43.1	E	16.6	C	690.6	F	287.9	F	18.5	C	217.8	F	45.6	E	29.9	D	258.4	F	89.2	F
Hayden Rd & 101 WB Ramps	AM	45.5	D	-	-	-	-	-	-	96.8	F	12.3	B	11.9	B	72.4	E	53.2	D	-	-	-	-	41.1	D	6.9	A
	PM	97.6	F	-	-	-	-	-	-	55.3	E	10.8	B	10.1	B	417.6	F	12.0	B	-	-	-	-	52.1	D	66.6	E
Hayden Rd & 101 EB Ramps	AM	47.5	D	127.6	F	9.5	A	9.4	A	-	-	-	-	-	-	-	-	39.9	D	6.6	A	47.1	D	34.7	C	-	-
	PM	60.1	E	144.5	F	13.6	B	13.5	B	-	-	-	-	-	-	-	-	48.0	D	10.1	B	145.8	F	41.7	D	-	-

Table 11 – Future (2040) Total Traffic w/Axon Queue Lengths (ft)

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Miller & Driveway A	AM	-	-	-	5.0	-	0.0	-	0.0	0.0	0.0	0.0	-
	PM	-	-	-	10.0	-	2.5	-	0.0	0.0	0.0	0.0	-
Mayo Blvd & Driveway B	AM	5.0	0.0	-	-	0.0	0.0	-	-	-	2.5	-	5.0
	PM	2.5	0.0	-	-	0.0	0.0	-	-	-	12.5	-	22.5
Mayo Blvd & Driveway C	AM	0.0	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
	PM	0.0	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
Mayo Blvd & 78th St	AM	19.0	81.0	0.0	36.0	53.0	17.0	52.0	45.0	0.0	50.0	29.0	0.0
	PM	95.0	201.0	0.0	222.0	240.0	22.0	90.0	51.0	0.0	265.0	175.0	0.0
Mayo Blvd & Driveway D	AM	35.0	0.0	-	-	0.0	0.0	-	-	-	57.5	-	17.5
	PM	12.5	0.0	-	-	0.0	0.0	-	-	-	110.0	-	57.5
Mayo Blvd & Driveway E	AM	-	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
	PM	-	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
Hayden Rd & Mayo Blvd	AM	188.0	54.0	32.0	39.0	20.0	0.0	102.0	134.0	0.0	91.0	368.0	59.0
	PM	306.0	11.0	30.0	144.0	71.0	39.0	77.0	459.0	0.0	39.0	490.0	107.0
Mayo Blvd & Miller Rd	AM	22.5	890.0	222.5	0.0	220.0	167.5	2.5	475.0	120.0	35.0	432.5	0.0
	PM	15.0	377.5	105.0	2.5	1362.5	622.5	5.0	445.0	117.5	52.5	497.5	0.0
Hayden Rd & 101 WB Ramps	AM	-	-	-	336.0	103.0	100.0	252.0	408.0	-	-	238.0	81.0
	PM	-	-	-	221.0	97.0	89.0	1171.0	156.0	-	-	295.0	596.0
Hayden Rd & 101 EB Ramps	AM	550.0	116.0	115.0	-	-	-	-	172.0	62.0	165.0	141.0	-
	PM	390.0	94.0	93.0	-	-	-	-	425.0	166.0	375.0	249.0	-

Table 12 – Future (2040) Total Traffic w/o Axon LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	16.7	C	-	-	10.9	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	17.2	C	-	-	10.7	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	8.9	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	16.1	C	-	-	10.2	B
	PM	-	-	10.3	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	21.2	C	-	-	13.5	B
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	7.2	A	11.2	B	6.3	A	6.3	A	7.7	A	6.0	A	1.9	A	14.6	B	5.4	A	5.4	A	15.0	B	5.4	A	5.4	A
	PM	15.7	B	17.7	B	13.6	B	13.6	B	30.6	C	14.1	B	4.2	A	21.2	C	4.3	A	4.3	A	30.8	C	9.2	A	9.2	A
Mayo Blvd & Driveway D	AM	-	-	12.0	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	35.9	E	-	-	11.4	B
	PM	-	-	10.2	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	41.1	E	-	-	14.5	B
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	15.3	B	39.9	D	-	-	0.8	A	-	-	-	-	-	-	41.3	D	4.2	A	4.2	A	-	-	14.1	B	2.6	A
	PM	17.4	B	35.1	D	-	-	5.5	A	-	-	-	-	-	-	42.0	D	9.6	A	9.6	A	-	-	18.7	B	3.2	A
Mayo Blvd & Miller Rd	AM	134.8	F	19.4	C	293.2	F	48.7	E	16.5	C	66.9	F	51.2	F	16.3	C	202.2	F	39.4	E	22.4	C	178.4	F	41.6	E
	PM	240.4	F	20.7	C	157.8	F	39.5	E	16.5	C	556.5	F	224.7	F	18.1	C	215.3	F	44.5	E	28.5	D	253.9	F	85.7	F

Table 13 – Future (2040) Total Traffic w/o Axon Queue Lengths (ft)

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Miller & Driveway A	AM	-	-	-	5.0	-	0.0	-	0.0	0.0	0.0	0.0	-
	PM	-	-	-	10.0	-	2.5	-	0.0	0.0	0.0	0.0	-
Mayo Blvd & Driveway B	AM	5.0	0.0	-	-	0.0	0.0	-	-	-	2.5	-	5.0
	PM	2.5	0.0	-	-	`	0.0	-	-	-	10.0	-	20.0
Mayo Blvd & Driveway C	AM	0.0	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
	PM	0.0	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
Mayo Blvd & 78th St	AM	77.0	63.0	0.0	34.0	50.0	17.0	49.0	43.0	0.0	47.0	27.0	0.0
	PM	86.0	188.0	0.0	211.0	190.0	22.0	91.0	52.0	0.0	267.0	132.0	0.0
Mayo Blvd & Driveway D	AM	32.5	0.0	-	-	0.0	0.0	-	-	-	52.5	-	15.0
	PM	0.0	10.0	-	-	0.0	0.0	-	-	-	90.0	-	50.0
Mayo Blvd & Driveway E	AM	-	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
	PM	-	0.0	-	-	0.0	0.0	-	-	-	-	-	0.0
Hayden Rd & Mayo Blvd	AM	161.0	0.0	0.0	0.0	0.0	0.0	86.0	50.0	0.0	0.0	266.0	47.0
	PM	255.0	0.0	41.0	0.0	0.0	0.0	68.0	191.0	0.0	0.0	272.0	51.0
Mayo Blvd & Miller Rd	AM	22.5	657.5	152.5	0.0	195.0	155.0	2.5	470.0	115.0	35.0	427.5	0.0
	PM	15.0	345.0	97.5	2.5	1117.5	510.0	5.0	452.5	117.5	52.5	512.5	0.0
Hayden Rd & 101 WB Ramps	AM	-	-	-	353.0	103.0	100.0	263.0	369.0	-	-	217.0	71.0
	PM	-	-	-	215.0	92.0	84.0	1267.0	152.0	-	-	292.0	482.0
Hayden Rd & 101 EB Ramps	AM	598.0	153.0	152.0	-	-	-	-	173.0	61.0	193.0	147.0	-
	PM	377.0	94.0	92.0	-	-	-	-	409.0	128.0	449.0	182.0	-

Table 14 – Future (2040) Total Traffic Miller & Mayo Roundabout & Signal w/Axon LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Roundabout																											
Mayo Blvd & Miller Rd	AM	14.8	C	17.9	C	20.0	C	20.0	C	10.3	B	10.6	B	10.6	B	17.7	C	18.5	C	18.5	C	9.6	A	10.2	B	10.2	B
	PM	25.6	D	12.6	B	13.1	B	13.1	B	26.3	D	33.2	D	33.2	D	11.7	B	12.1	B	12.1	B	35.6	E	40.8	E	40.8	E
Signal																											
Mayo Blvd & Miller Rd	AM	11.9	B	9.9	A	11.2	B	11.2	B	8.8	A	8.3	A	8.3	A	11.4	B	13.5	B	13.5	B	17.8	B	13.4	B	13.4	B
	PM	12.8	B	14.1	B	11.2	B	11.2	B	10.3	B	13.2	B	13.2	B	11.5	B	12.4	B	12.4	B	17.5	B	13.2	B	13.2	B

Table 15 – Future (2040) Total Traffic Miller & Mayo Roundabout & Signal w/Axon Queue Lengths (ft)

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
RAB													
Mayo Blvd & Miller Rd	AM	125.0	-	150.0	50.0	-	50.0	75.0	-	100.0	50.0	-	50.0
	PM	50.0	-	75.0	200.0	-	250.0	50.0	-	50.0	200.0	-	225.0
Signal													
Mayo Blvd & Miller Rd	AM	36.0	159.0	0.0	5.0	88.0	0.0	7.0	124.0	0.0	62.0	125.0	0.0
	PM	45.0	125.0	0.0	9.0	317.0	0.0	17.0	171.0	0.0	108.0	212.0	0.0

C. Site Circulation and Parking

The traffic accessing the Overall Site will generally be split between all driveways except for Driveway C and E, depending on where the traffic is traveling to across the Overall Site. Driveway C will be used for emergency vehicles and deliveries mainly and does not provide any direct access to parking on site. Driveway E is intended for ingress only and provides a direct route to the emergency room for those traveling southbound on Hayden Road from the north or the 101. The remaining driveways provide direct access to the parking around site depending on staff, patient and visitor destinations on site. 78th Street and Mayo Boulevard will provide access to the main entrance of the hospital. Driveways A and B will provide the closest access to the planned parking garage on the northeast corner of Mayo Boulevard and Miller Road. See **Appendix G** for the Development Circulation Plan.

VI. IMPROVEMENT ANALYSIS

A. Mitigation Analysis

The development team for the Overall Site met with ADOT to discuss mitigation options for the 101 and Hayden Road TI as a part of the Overall Site traffic study coordination. The eastbound off ramps and the northbound left turns at the TI were experiencing the most delays for both the morning and afternoon peak hours by 2040 when the area is more built out. ADOT recognizes that the Overall Site is not the only contributor of the delays at the intersection as there are many developments planned for the area, therefore, widening the bridge at the TI will not be required of the Overall Site development. To help mitigate delays and queues for the eastbound off ramp turning movements as well as provide an opportunity to reallocate signal timing for other turning movements by increasing the eastbound capacity, the development team and ADOT discussed the option of providing an additional eastbound turn lane for the off ramp. The new configuration will match the westbound ramps with dual left turn lanes, a shared through/right turn lane and a dedicated right turn lane. The resulting level of service and delay benefits with the addition of the lane are summarized in the MOB+ TIMA. The Hospital Campus were included in the background traffic for the MOB+ traffic study with slightly higher traffic calculations due to the use of planning level numbers. The comparison of the 2040 background traffic capacity analysis to the total traffic capacity analysis results with the Axon development show that the westbound left sees an 11 seconds increase in delay with the Hospital Campus traffic added to the background traffic. Since the ramp is already built out with four lanes, it is recommended to evaluate the signal timing as the developments are built in this area to balance to balance the signal timing with the approach demands at the interchange.

VII. FINDINGS

A. Site Accessibility

The proposed site accesses are anticipated to mostly operate acceptably with the given conditions and the construction of the turn lanes and traffic signals, and roundabout mentioned in the Report. One exception includes Driveway D for the southbound egress traffic. This approach experiences some delay which was accounted for in the MOB+ TIMA and site plan by providing a dedicated left and right turn lane as well as extended storage to accommodate any vehicle queues that may form during the peak hour.

B. Traffic Impacts

The addition of this Hospital Campus is anticipated to have some impact along Mayo Boulevard and Hayden Road, therefore, improvements were evaluated and recommended to mitigate impacts as described in the following section.

C. Need for Improvements

Mayo Boulevard & 78th Street

This intersection no longer operates with an acceptable level of service as a two-way stop-controlled intersection with Mayo Boulevard traffic free flowing by 2040. A traffic signal becomes warranted with the

addition of the Hospital Campus. This intersection should maintain two egress southbound lanes for a dedicated left turn lane and a dedicated right turn lane to minimize the vehicle queue. A westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Miller Road

This intersection operates with an undesirable level of service with and without the addition of the Hospital Campus traffic by 2040. The Hospital Campus traffic do make the delays worse. A roundabout if right-of-way is available, or a warranted traffic signal should be installed before the completion of the Hospital Campus as well as the surrounding developments. As previously stated, the roundabout should be installed unless it is ruled out.

Miller Road & Driveway A

This driveway operates with an acceptable level of service as a right-in/right-out and left-in only driveway. A preliminary assessment was conducted as a part of the MOB+ TIMA for sight visibility for a left-out at the driveway. Based on the preliminary design plans for Miller Road under Loop 101, there will be adequate visibility for a driver to turn left from Driveway A onto Miller Road. A southbound left from Miller Road to Driveway A, is not likely to be feasible with the available width for the roadway passing under Loop 101.

In general, it is recommended to provide a dedicated right-turn lane for driveways along Mayo Boulevard and Miller Road, however, a right turn lane is not warranted at this location based on the anticipated turning movement volumes. Note the City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring all site driveways along Mayo Boulevard and Miller Road. Therefore, as stated in the MOB+ TIMA, a westbound right turn lane should still be provided at this driveway.

Mayo Boulevard & Driveway B

This driveway operates with an acceptable level of service as a right-in/right-out only driveway. In general, it is recommended to provide a dedicated right-turn lane for driveways along Mayo Boulevard and Miller Road. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring right turn lanes at all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Driveway D

This driveway should also maintain two egress southbound lanes for a dedicated left turn lane and a dedicated right turn lane to minimize the vehicle queues. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring right turn lanes for all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Hayden Road & Driveway E

As determined in the MOB+ TIMA, this driveway shall include a southbound right turn lane to account for any potential queue for the southbound right turn lane and to avoid conflicts with the Loop 101 egress ramp traffic.

D. Compliance with Applicable City Codes

The City of Scottsdale Design Standards and Policies Manual, 2018 was referenced throughout this analysis as mentioned throughout this Report.

VIII. RECOMMENDATIONS

A. Roadway Improvements

Based on the analysis of this Report there are no new recommendations for the Overall Site driveways. Although the traffic signal is not warranted by 2030, it will be needed by 2040 as other developments and

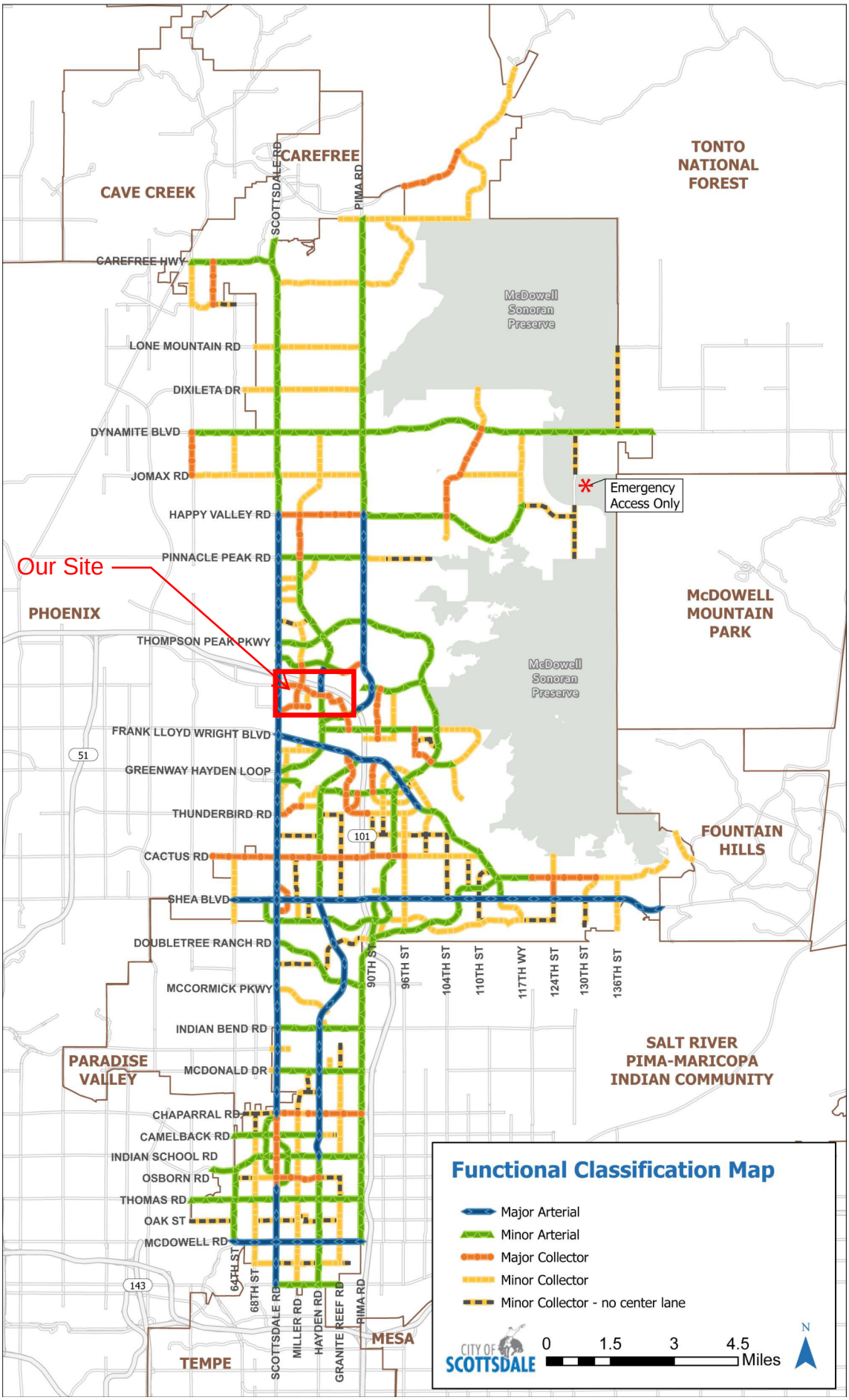
the Overall Site are built in the area. It would therefore be beneficial to install a signal at 78th Street and Mayo Boulevard access point alongside this project.

Recommendations for 78th Street and Mayo Boulevard as well as the adjacent intersections are as follows:

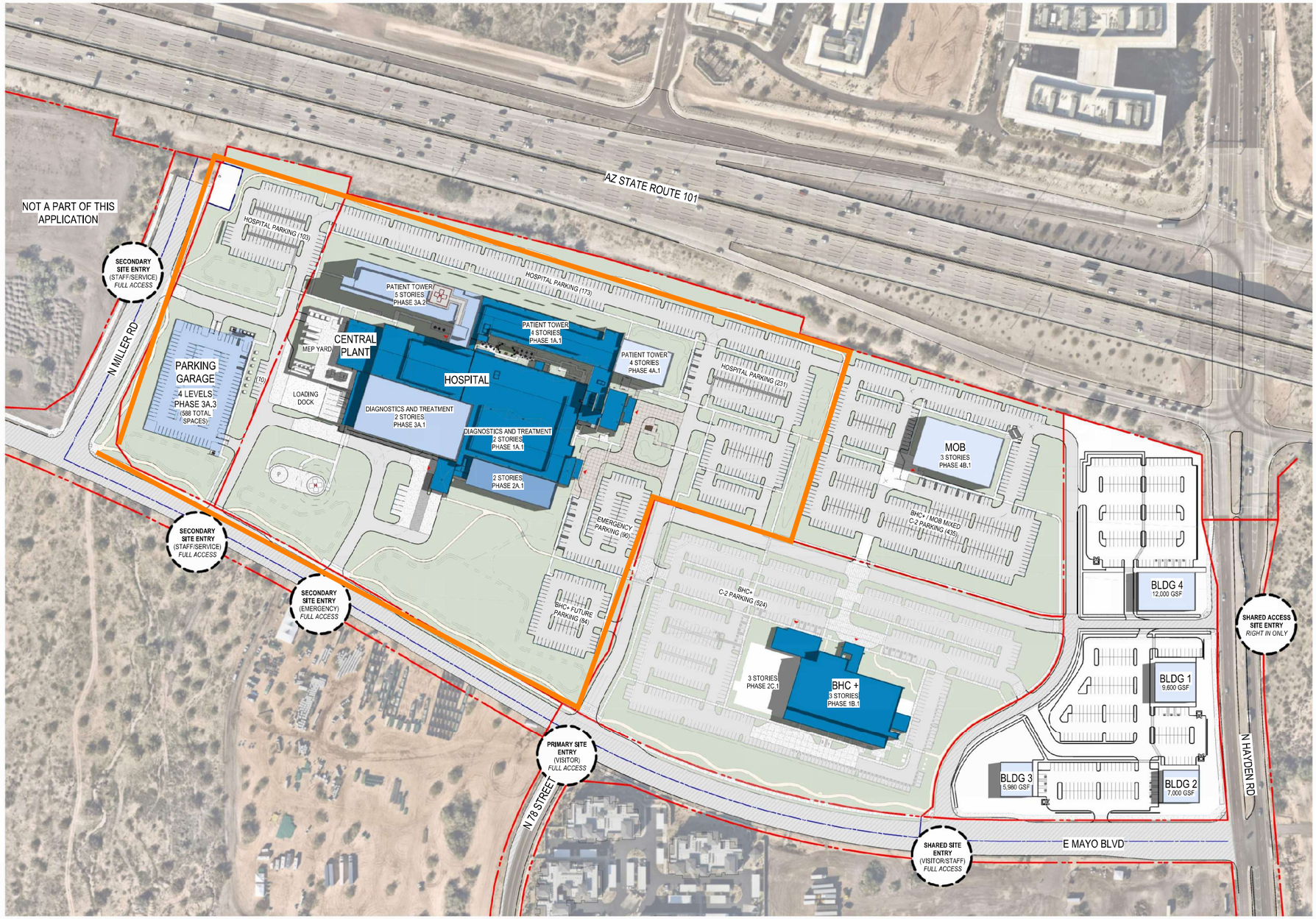
Mayo Boulevard & 78th Street
A signal is not warranted with the completion of the Hospital Campus only, however, a signal is warranted by 2040 with the completion of the Hospital Campus, the Overall Site and surrounding developments. It would be beneficial to install the signal alongside the completion of the Hospital Campus as it will be warranted by the horizon year of 2040 when the surrounding developments and the Overall Site are anticipated to be complete.

Mayo Boulevard & Miller Road
A signal is warranted by 2040 with all the developments, including the Hospital Campus at this intersection from both a vehicle capacity and delay perspective. A roundabout is planned for this intersection with future development as the right-of-way becomes available. If a round-about is ruled out, a signal is warranted. The right-of-way for the intersection should be evaluated to determine if a roundabout can be installed, if not, a traffic signal should be considered.

Appendix A Scottsdale Roadway Functional Classification Map


CAREFREE
CAVE CREEK
TONTO NATIONAL FOREST
SCOTTSDALE RD
PIMA RD
CAREFREE HWY
McDowell Sonoran Preserve
LONE MOUNTAIN RD
DIXILETA DR
DYNAMITE BLVD
JOMAX RD
Emergency Access Only
HAPPY VALLEY RD
PINNACLE PEAK RD
Our Site
PHOENIX
McDOWELL MOUNTAIN PARK
THOMPSON PEAK PKWY
McDowell Sonoran Preserve
FRANK LLOYD WRIGHT BLVD
51
GREENWAY HAYDEN LOOP
THUNDERBIRD RD
101
FOUNTAIN HILLS
CACTUS RD
SHEA BLVD
DOUBLETREE RANCH RD
90TH ST
96TH ST
104TH ST
110TH ST
117TH WY
124TH ST
130TH ST
136TH ST
MCCORMICK PKWY
INDIAN BEND RD
SALT RIVER PIMA-MARICOPA INDIAN COMMUNITY
PARADISE VALLEY
MCDONALD DR
CHAPARRAL RD
CAMELBACK RD
INDIAN SCHOOL RD
OSBORN RD
THOMAS RD
OAK ST
MCDOWELL RD
64TH ST
68TH ST
143
SCOTTSDALE RD
MILLER RD
HAYDEN RD
GRANITE REEF RD
PIMA RD
MESA
TEMPE
Functional Classification Map
Major Arterial
Minor Arterial
Major Collector
Minor Collector
Minor Collector - no center lane
CITY OF SCOTTSDALE
0
1.5
3
4.5
Miles
N

Appendix B Site Plan



OVERALL DEVELOPMENT SITE PLAN
SCALE: 1" = 120'-0"

NORTH

0 120' 240' 360'
GRAPHIC SCALE: 1" = 120' - 0"

Plot Date: 8/26/2024 10:30:07 AM Author

SITE DATA

PARKING DATA

Banner Scottsdale Medical Center

SCOTTSDALE CAMPUS HOSPITAL
NW Corner of Hayden Rd. and Mayo Blvd.
Scottsdale, Arizona 85255

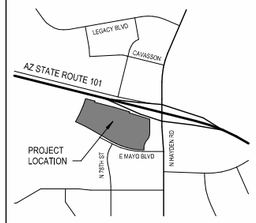
SMITHGROUP
455 NORTH THIRD STREET
SUITE 250
PHOENIX, AZ 85004
602.265.2200
smithgroup.com

ISSUED FOR	REV	DATE
ENTITLEMENT REVIEW		09MAY23

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

VICINITY MAP

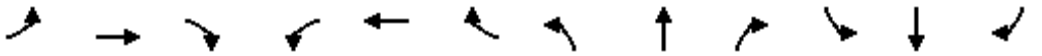


SHEET TITLE
OVERALL DEVELOPMENT SITE PLAN

PROJECT NUMBER
CUP_A1.1.1
SHEET NUMBER

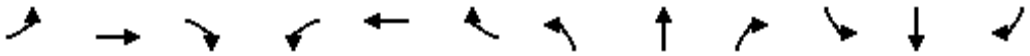
Appendix C Synchro Reports

Background Traffic w/Axon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	382	3	681	241	1244	0	0	901	371
Future Volume (vph)	0	0	0	382	3	681	241	1244	0	0	901	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.851	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					370	370						403
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	415	3	740	262	1352	0	0	979	403
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	415	373	370	262	1352	0	0	979	403
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	46.0			46.0	46.0
Total Split (s)				25.0	25.0	25.0	24.0	37.0			37.0	37.0
Total Split (%)				20.8%	20.8%	20.8%	20.0%	30.8%			30.8%	30.8%
Maximum Green (s)				18.0	18.0	18.0	18.0	31.0			31.0	31.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0		5.0			5.0	5.0
Flash Dont Walk (s)				33.0	33.0	33.0		35.0			35.0	35.0
Pedestrian Calls (#/hr)				0	0	0		0			0	0
Act Effct Green (s)				17.4	17.4	17.4	18.0	31.0			30.4	30.4
Actuated g/C Ratio				0.14	0.14	0.14	0.15	0.26			0.25	0.25
v/c Ratio				0.84	0.70	0.69	0.99	1.03			0.60	0.57
Control Delay				65.2	12.6	12.1	65.2	48.4			41.2	7.0
Queue Delay				0.0	0.0	0.0	0.0	3.9			0.0	0.0
Total Delay				65.2	12.6	12.1	65.2	52.2			41.2	7.0
LOS				E	B	B	E	D			D	A
Approach Delay					31.3			54.3			31.2	
Approach LOS					C			D			C	
Queue Length 50th (ft)				162	2	0	139	~418			193	0
Queue Length 95th (ft)				#234	103	100	m#245	m#417			231	81
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				514	540	540	265	1313			1655	707
Starvation Cap Reductn				0	0	0	0	14			0	0
Spillback Cap Reductn				0	0	0	0	0			0	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.81	0.69	0.69	0.99	1.04			0.59	0.57

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 40.2		Intersection LOS: D	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	24.0	34.0
Total Split (%)	20%	28%
Maximum Green (s)	18.0	27.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

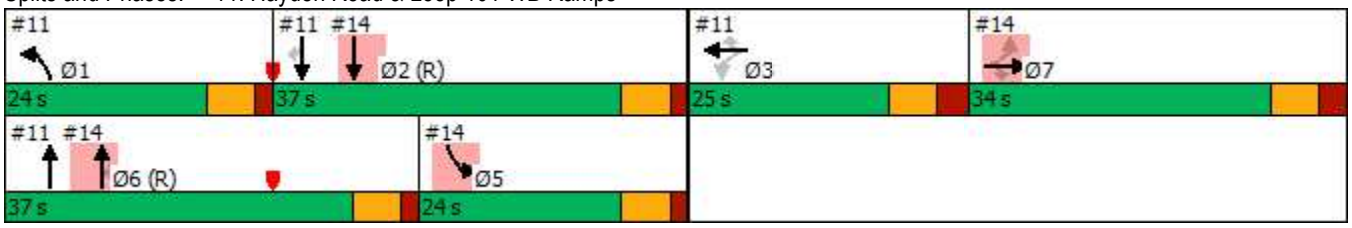
Queue shown is maximum after two cycles.

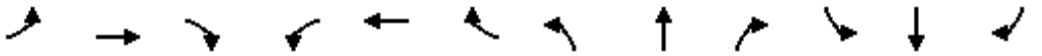
\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

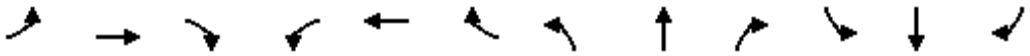
Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	823	1	947	0	0	0	0	663	179	391	892	0
Future Volume (vph)	823	1	947	0	0	0	0	663	179	391	892	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.850	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		515	514						195			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	895	1	1029	0	0	0	0	721	195	425	970	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	895	516	514	0	0	0	0	721	195	425	970	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					46.0	46.0	18.0	46.0	
Total Split (s)	34.0	34.0	34.0					37.0	37.0	24.0	37.0	
Total Split (%)	28.3%	28.3%	28.3%					30.8%	30.8%	20.0%	30.8%	
Maximum Green (s)	27.0	27.0	27.0					31.0	31.0	18.0	31.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0		5.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0		35.0	
Pedestrian Calls (#/hr)	0	0	0					0	0		0	
Act Effct Green (s)	28.2	28.2	28.2					31.0	31.0	17.4	30.4	
Actuated g/C Ratio	0.24	0.24	0.24					0.26	0.26	0.14	0.25	
v/c Ratio	1.11	0.69	0.69					0.44	0.35	0.86	0.75	
Control Delay	109.1	8.9	8.8					38.2	6.7	48.1	28.9	
Queue Delay	0.0	0.0	0.0					1.4	0.0	0.0	0.1	
Total Delay	109.1	8.9	8.8					39.6	6.7	48.1	29.0	
LOS	F	A	A					D	A	D	C	
Approach Delay		55.4						32.6			34.8	
Approach LOS		E						C			C	
Queue Length 50th (ft)	~422	1	0					136	0	144	100	
Queue Length 95th (ft)	#550	110	108					168	58	m#237	116	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	806	747	746					1655	553	514	1313	
Starvation Cap Reductn	0	0	0					0	0	0	18	
Spillback Cap Reductn	0	0	0					693	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	1.11	0.69	0.69					0.75	0.35	0.83	0.75	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 160
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 43.7 Intersection LOS: D
Intersection Capacity Utilization 67.2% ICU Level of Service C
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	24.0	25.0
Total Split (%)	20%	21%
Maximum Green (s)	18.0	18.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

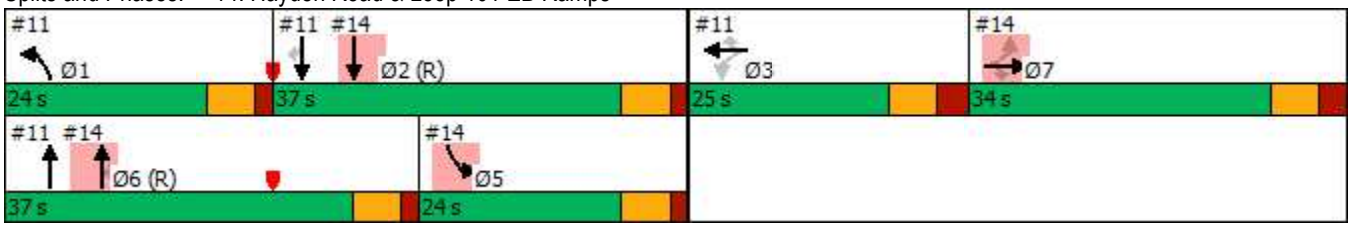
Queue shown is maximum after two cycles.

\# 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: 14: Hayden Road & Loop 101 EB Ramps

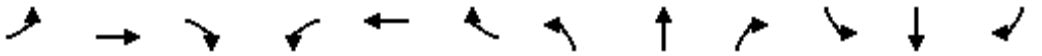


Intersection	
Intersection Delay, s/veh	121.8
Intersection LOS	F

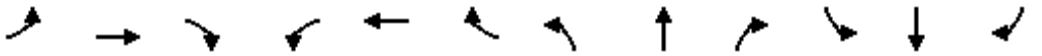
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	647	3	4	295	98	5	543	7	55	530	24
Future Vol, veh/h	47	647	3	4	295	98	5	543	7	55	530	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	703	3	4	321	107	5	590	8	60	576	26
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	176.8	40.8	128.2	105.9
HCM LOS	F	E	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	99%	0%	100%	50%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	1%	0%	0%	50%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	362	188	47	431	219	4	197	196	55	353
LT Vol	5	0	0	47	0	0	4	0	0	55	0
Through Vol	0	362	181	0	431	216	0	197	98	0	353
RT Vol	0	0	7	0	0	3	0	0	98	0	0
Lane Flow Rate	5	393	204	51	469	238	4	214	213	60	384
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.018	1.267	0.657	0.168	1.48	0.75	0.015	0.717	0.696	0.197	1.216
Departure Headway (Hd)	12.746	12.246	12.22	12.292	11.792	11.782	13.357	12.857	12.508	12.642	12.142
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	283	299	298	294	314	309	270	282	290	286	303
Service Time	10.446	9.946	9.92	9.992	9.492	9.482	11.057	10.557	10.208	10.342	9.842
HCM Lane V/C Ratio	0.018	1.314	0.685	0.173	1.494	0.77	0.015	0.759	0.734	0.21	1.267
HCM Control Delay	15.7	177.9	35.6	17.5	262.2	42.7	16.3	42.5	39.5	18.4	158.3
HCM Lane LOS	C	F	E	C	F	E	C	E	E	C	F
HCM 95th-tile Q	0.1	17.7	4.3	0.6	25.1	5.7	0	5	4.8	0.7	16.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	114	57	18	19	41	150	531	109	146	933	307
Future Volume (vph)	322	114	57	18	19	41	150	531	109	146	933	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850			0.850		0.975				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	1770	3539	2787	3433	4958	0	3433	3539	1583
Flt Permitted	0.950			0.678			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	1263	3539	2787	3433	4958	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			62			95		45				334
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	350	124	62	20	21	45	163	577	118	159	1014	334
Shared Lane Traffic (%)												
Lane Group Flow (vph)	350	124	62	20	21	45	163	695	0	159	1014	334
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6

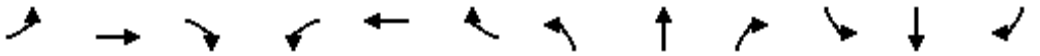


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	27.0	49.5	49.5	22.5	22.5	22.5	17.0	55.5		15.0	53.5	53.5
Total Split (%)	22.5%	41.3%	41.3%	18.8%	18.8%	18.8%	14.2%	46.3%		12.5%	44.6%	44.6%
Maximum Green (s)	22.5	45.0	45.0	18.0	18.0	18.0	12.5	51.0		10.5	49.0	49.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	15.4	24.8	24.8	7.3	7.3	7.3	10.0	51.5		9.4	50.9	50.9
Actuated g/C Ratio	0.16	0.25	0.25	0.07	0.07	0.07	0.10	0.52		0.09	0.51	0.51
v/c Ratio	0.66	0.14	0.14	0.22	0.08	0.15	0.47	0.27		0.49	0.56	0.34
Control Delay	46.5	28.3	7.9	51.7	46.0	1.1	48.4	14.0		49.8	19.8	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.5	28.3	7.9	51.7	46.0	1.1	48.4	14.0		49.8	19.8	3.0
LOS	D	C	A	D	D	A	D	B		D	B	A
Approach Delay		37.9			23.8			20.5			19.2	
Approach LOS		D			C			C			B	
Queue Length 50th (ft)	111	32	0	13	6	0	52	85		51	233	0
Queue Length 95th (ft)	163	55	30	38	20	0	89	129		89	355	50
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170	150		130	150			355		
Base Capacity (vph)	785	1620	758	231	647	587	436	2594		366	1815	974
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.45	0.08	0.08	0.09	0.03	0.08	0.37	0.27		0.43	0.56	0.34

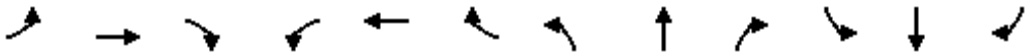
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 99.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 57.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hayden Road & Mayo Blvd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	566	35	91	364	66	74	8	193	43	2	49
Future Volume (vph)	143	566	35	91	364	66	74	8	193	43	2	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991				0.850		0.856			0.855	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3507	0	1770	3539	1583	1770	1595	0	1770	1593	0
Flt Permitted	0.518			0.404			0.721			0.621		
Satd. Flow (perm)	965	3507	0	753	3539	1583	1343	1595	0	1157	1593	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				72		210			53	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	155	615	38	99	396	72	80	9	210	47	2	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	653	0	99	396	72	80	219	0	47	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	78.0	78.0		78.0	78.0	78.0	42.0	42.0		42.0	42.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%	65.0%	35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	73.5	73.5		73.5	73.5	73.5	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	13.7	13.7		13.7	13.7	13.7	7.6	7.6		7.6	7.6	
Actuated g/C Ratio	0.45	0.45		0.45	0.45	0.45	0.25	0.25		0.25	0.25	
v/c Ratio	0.36	0.41		0.29	0.25	0.10	0.24	0.40		0.16	0.13	
Control Delay	8.3	6.5		8.1	5.7	2.1	12.4	5.0		11.8	5.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.3	6.5		8.1	5.7	2.1	12.4	5.0		11.8	5.2	
LOS	A	A		A	A	A	B	A		B	A	
Approach Delay		6.8			5.6			7.0			8.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	13	30		8	16	0	10	1		6	0	
Queue Length 95th (ft)	43	61		30	36	11	37	35		25	17	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	965	3507		753	3539	1583	1333	1585		1149	1582	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.19		0.13	0.11	0.05	0.06	0.14		0.04	0.03	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 30.6			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 6.6		Intersection LOS: A	
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	683	0	0	609
Future Vol, veh/h	0	0	683	0	0	609
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	742	0	0	662

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1073	371	0	0	-	-
Stage 1	742	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	215	626	-	-	0	-
Stage 1	432	-	-	-	0	-
Stage 2	700	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	215	626	-	-	-	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	432	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	831	456	0	0	0
Future Vol, veh/h	0	831	456	0	0	0
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	903	496	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	496	0	-	0	948	248
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	452	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1064	-	-	-	259	752
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	608	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1064	-	-	-	259	752
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	608	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1064	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0	0
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	831	456	0	0	0
Future Vol, veh/h	0	831	456	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	903	496	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	496	0	-	0	948	248
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	452	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1064	-	-	-	259	752
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	608	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1064	-	-	-	259	752
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	608	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1064	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	215	718	483	215	80	112
Future Vol, veh/h	215	718	483	215	80	112
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	780	525	234	87	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	759	0	-	0	1383	263
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	858	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	848	-	-	-	135	735
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	376	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	848	-	-	-	98	735
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	19.4
HCM LOS			C

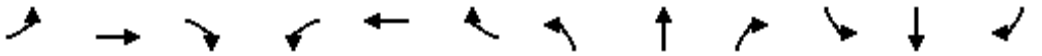
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	848	-	-	-	222	735
HCM Lane V/C Ratio	0.276	-	-	-	0.392	0.166
HCM Control Delay (s)	10.9	-	-	-	31.3	10.9
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	1.1	-	-	-	1.8	0.6

Intersection	
Intersection Delay, s/veh	210.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	434	11	6	794	82	12	521	8	72	582	68
Future Vol, veh/h	34	434	11	6	794	82	12	521	8	72	582	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	472	12	7	863	89	13	566	9	78	633	74
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

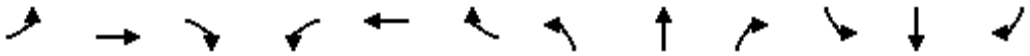
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	93	350.5	147.9	164.4
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	93%	0%	100%	76%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	7%	0%	0%	24%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	347	182	34	289	156	6	529	347	72	388
LT Vol	12	0	0	34	0	0	6	0	0	72	0
Through Vol	0	347	174	0	289	145	0	529	265	0	388
RT Vol	0	0	8	0	0	11	0	0	82	0	0
Lane Flow Rate	13	378	197	37	314	169	7	575	377	78	422
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.048	1.325	0.691	0.135	1.109	0.594	0.023	1.95	1.26	0.276	1.428
Departure Headway (Hd)	14.597	14.097	14.066	15.353	14.853	14.804	13.347	12.847	12.681	14.102	13.602
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	247	261	259	235	248	245	270	288	290	257	270
Service Time	12.297	11.797	11.766	13.053	12.553	12.504	11.047	10.547	10.381	11.802	11.302
HCM Lane V/C Ratio	0.053	1.448	0.761	0.157	1.266	0.69	0.026	1.997	1.3	0.304	1.563
HCM Control Delay	18	207.2	43.2	20.4	131.6	37.1	16.4	468	176.9	22.1	246.8
HCM Lane LOS	C	F	E	C	F	E	C	F	F	C	F
HCM 95th-tile Q	0.2	17.6	4.6	0.5	11.8	3.4	0.1	38.6	17.1	1.1	20.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	364	6	639	796	1312	0	0	1053	771
Future Volume (vph)	0	0	0	364	6	639	796	1312	0	0	1053	771
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.853	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					348	347						567
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	396	7	695	865	1426	0	0	1145	838
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	396	355	347	865	1426	0	0	1145	838
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	89.5			46.0	46.0
Total Split (s)				31.0	31.0	31.0	38.0	47.0			32.0	32.0
Total Split (%)				25.8%	25.8%	25.8%	31.7%	39.2%			26.7%	26.7%
Maximum Green (s)				24.0	24.0	24.0	32.0	41.0			26.0	26.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0	5.0	5.0			0.0	0.0
Flash Dont Walk (s)				33.0	33.0	33.0	20.0	35.0			45.0	45.0
Pedestrian Calls (#/hr)				0	0	0	0	0			0	0
Act Effct Green (s)				19.4	19.4	19.4	32.0	41.0			26.0	26.0
Actuated g/C Ratio				0.16	0.16	0.16	0.27	0.34			0.22	0.22
v/c Ratio				0.71	0.66	0.65	1.83	0.82			0.82	1.06
Control Delay				54.8	11.4	10.6	400.1	10.5			50.7	66.1
Queue Delay				0.0	0.0	0.0	0.0	1.0			0.0	0.0
Total Delay				54.8	11.4	10.6	400.1	11.5			50.7	66.1
LOS				D	B	B	F	B			D	E
Approach Delay					26.8			158.2			57.2	
Approach LOS					C			F			E	
Queue Length 50th (ft)				150	5	0	~983	116			247	~348
Queue Length 95th (ft)				196	97	89	m#1161	m150			291	#595
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				686	580	578	472	1737			1388	787
Starvation Cap Reductn				0	0	0	0	119			0	0
Spillback Cap Reductn				0	0	0	0	0			0	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.58	0.61	0.60	1.83	0.88			0.82	1.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.83			
Intersection Signal Delay: 94.1		Intersection LOS: F	
Intersection Capacity Utilization 121.2%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	23.0	19.0
Total Split (%)	19%	16%
Maximum Green (s)	17.0	12.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	30.0	33.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

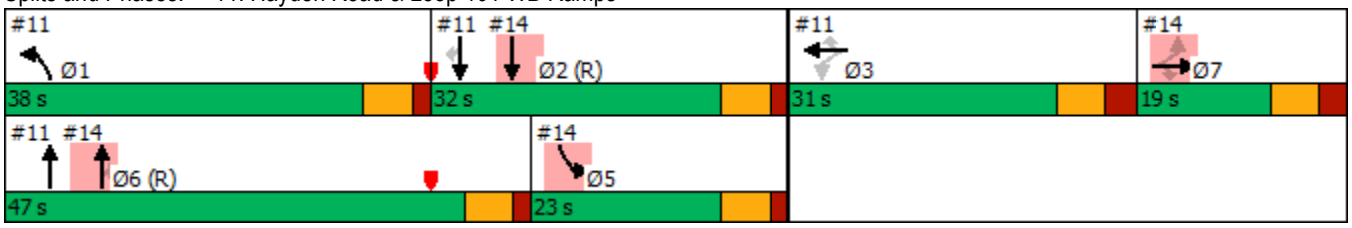
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

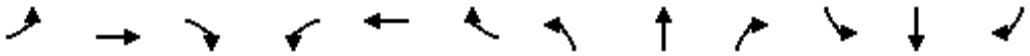
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	468	1	495	0	0	0	0	1639	413	547	869	0
Future Volume (vph)	468	1	495	0	0	0	0	1639	413	547	869	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.851	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		269	269						379			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	509	1	538	0	0	0	0	1782	449	595	945	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	509	270	269	0	0	0	0	1782	449	595	945	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					89.5	89.5	18.0	46.0	
Total Split (s)	19.0	19.0	19.0					47.0	47.0	23.0	32.0	
Total Split (%)	15.8%	15.8%	15.8%					39.2%	39.2%	19.2%	26.7%	
Maximum Green (s)	12.0	12.0	12.0					41.0	41.0	17.0	26.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0	0.0	0.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0	30.0	45.0	
Pedestrian Calls (#/hr)	0	0	0					0	0	0	0	
Act Effct Green (s)	16.6	16.6	16.6					41.0	41.0	17.0	26.0	
Actuated g/C Ratio	0.14	0.14	0.14					0.34	0.34	0.14	0.22	
v/c Ratio	1.07	0.62	0.61					0.81	0.57	1.22	0.86	
Control Delay	111.2	12.7	12.6					39.7	8.7	145.2	36.9	
Queue Delay	10.3	0.0	0.0					4.1	0.0	0.0	0.0	
Total Delay	121.5	12.7	12.6					43.8	8.7	145.2	36.9	
LOS	F	B	B					D	A	F	D	
Approach Delay		65.5						36.7			78.7	
Approach LOS		E						D			E	
Queue Length 50th (ft)	~231	1	0					363	37	~267	98	
Queue Length 95th (ft)	#390	90	89					411	132	m#378	152	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	474	439	439					2189	790	486	1101	
Starvation Cap Reductn	0	0	0					0	0	0	0	
Spillback Cap Reductn	23	0	0					328	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	1.13	0.62	0.61					0.96	0.57	1.22	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.83			
Intersection Signal Delay: 56.4		Intersection LOS: E	
Intersection Capacity Utilization 121.2%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	38.0	31.0
Total Split (%)	32%	26%
Maximum Green (s)	32.0	24.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)	5.0	7.0
Flash Dont Walk (s)	20.0	33.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

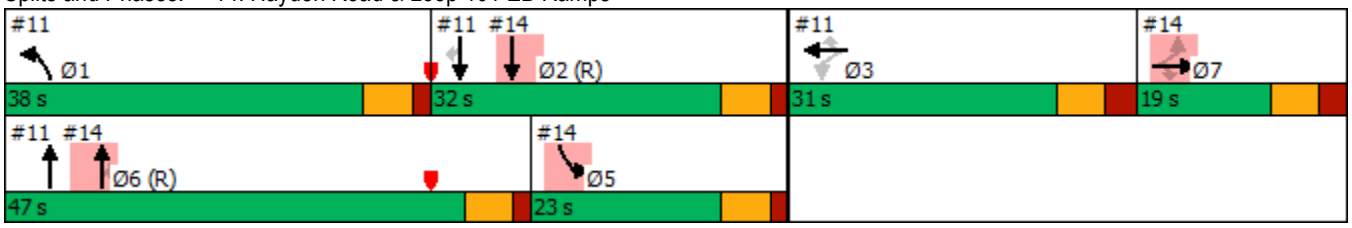
Queue shown is maximum after two cycles.

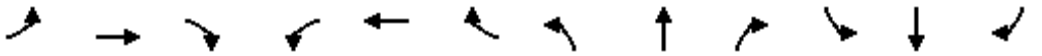
\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

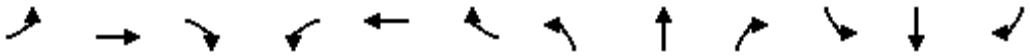
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Hayden Road & Loop 101 EB Ramps





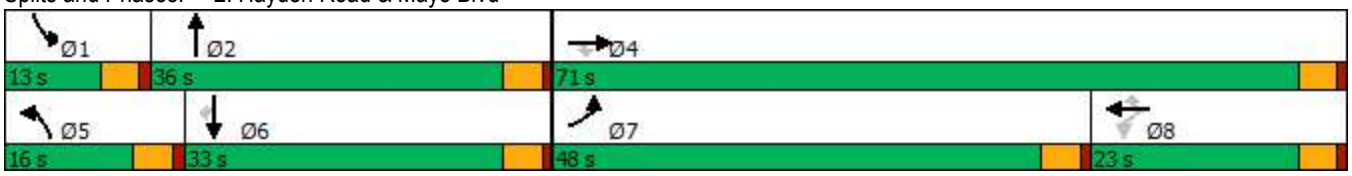
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	567	24	117	111	118	247	113	1237	22	50	833	297
Future Volume (vph)	567	24	117	111	118	247	113	1237	22	50	833	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	1770	3539	2787	3433	5070	0	3433	3539	1583
Flt Permitted	0.950			0.739			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	1377	3539	2787	3433	5070	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			268		2				294
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	616	26	127	121	128	268	123	1345	24	54	905	323
Shared Lane Traffic (%)												
Lane Group Flow (vph)	616	26	127	121	128	268	123	1369	0	54	905	323
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6

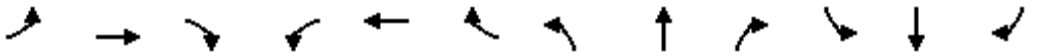


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	48.0	71.0	71.0	23.0	23.0	23.0	16.0	36.0		13.0	33.0	33.0
Total Split (%)	40.0%	59.2%	59.2%	19.2%	19.2%	19.2%	13.3%	30.0%		10.8%	27.5%	27.5%
Maximum Green (s)	43.5	66.5	66.5	18.5	18.5	18.5	11.5	31.5		8.5	28.5	28.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	21.9	39.9	39.9	13.5	13.5	13.5	8.8	33.9		6.9	29.6	29.6
Actuated g/C Ratio	0.24	0.43	0.43	0.15	0.15	0.15	0.10	0.37		0.08	0.32	0.32
v/c Ratio	0.75	0.02	0.17	0.60	0.25	0.42	0.38	0.73		0.21	0.79	0.46
Control Delay	39.4	14.1	3.2	51.3	37.0	7.0	44.7	30.7		45.2	36.7	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	39.4	14.1	3.2	51.3	37.0	7.0	44.7	30.7		45.2	36.7	7.3
LOS	D	B	A	D	D	A	D	C		D	D	A
Approach Delay		32.5			24.8			31.9			29.7	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	173	4	0	67	35	0	35	263		15	253	12
Queue Length 95th (ft)	250	12	30	136	67	38	70	#418		38	#451	89
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170	150		130	150			355		
Base Capacity (vph)	1645	2594	1194	280	721	781	435	1867		321	1139	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.37	0.01	0.11	0.43	0.18	0.34	0.28	0.73		0.17	0.79	0.46

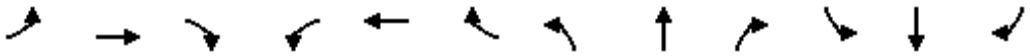
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 92			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 30.4		Intersection LOS: C	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Hayden Road & Mayo Blvd





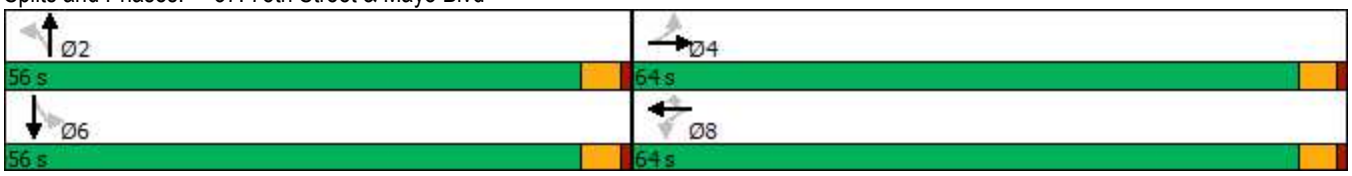
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	457	89	194	666	31	86	4	221	186	10	215
Future Volume (vph)	68	457	89	194	666	31	86	4	221	186	10	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976				0.850		0.852			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3454	0	1770	3539	1583	1770	1587	0	1770	1596	0
Flt Permitted	0.332			0.403			0.566			0.568		
Satd. Flow (perm)	618	3454	0	751	3539	1583	1054	1587	0	1058	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27				34		240			160	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	497	97	211	724	34	93	4	240	202	11	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	594	0	211	724	34	93	244	0	202	245	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	64.0	64.0		64.0	64.0	64.0	56.0	56.0		56.0	56.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%	53.3%	46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	59.5	59.5		59.5	59.5	59.5	51.5	51.5		51.5	51.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	28.1	28.1		28.1	28.1	28.1	20.2	20.2		20.2	20.2	
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.34	0.34		0.34	0.34	
v/c Ratio	0.25	0.36		0.59	0.43	0.04	0.26	0.35		0.56	0.38	
Control Delay	13.0	10.1		20.3	11.2	4.1	19.2	4.6		25.4	8.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	13.0	10.1		20.3	11.2	4.1	19.2	4.6		25.4	8.8	
LOS	B	B		C	B	A	B	A		C	A	
Approach Delay		10.5			12.9			8.7			16.3	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	12	52		43	69	0	20	1		49	18	
Queue Length 95th (ft)	53	138		159	178	14	81	51		174	95	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	547	3063		665	3135	1406	891	1379		895	1374	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.14	0.19		0.32	0.23	0.02	0.10	0.18		0.23	0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 59.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 12.3		Intersection LOS: B	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	637	0	0	722
Future Vol, veh/h	0	0	637	0	0	722
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	692	0	0	785

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1085	346	0	0	-	-
Stage 1	692	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	211	650	-	-	0	-
Stage 1	458	-	-	-	0	-
Stage 2	651	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	211	650	-	-	-	-
Mov Cap-2 Maneuver	337	-	-	-	-	-
Stage 1	458	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	570	909	0	0	0
Future Vol, veh/h	0	570	909	0	0	0
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	620	988	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	988	0	-	0	1298	494
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	695	-	-	-	153	521
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	717	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	695	-	-	-	153	521
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	695	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0	0
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	570	909	0	0	0
Future Vol, veh/h	0	570	909	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	620	988	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	988	0	-	0	1298	494
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	695	-	-	-	153	521
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	717	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	695	-	-	-	153	521
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	695	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	93	830	728	95	128	239
Future Vol, veh/h	93	830	728	95	128	239
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	902	791	103	139	260

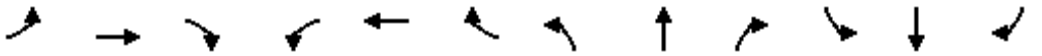
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	894	0	-	0	1444	396
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	653	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	755	-	-	-	~ 123	603
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	480	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	755	-	-	-	~ 107	603
Mov Cap-2 Maneuver	-	-	-	-	233	-
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	480	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	24.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	755	-	-	-	233	603
HCM Lane V/C Ratio	0.134	-	-	-	0.597	0.431
HCM Control Delay (s)	10.5	-	-	-	41	15.4
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	0.5	-	-	-	3.4	2.2

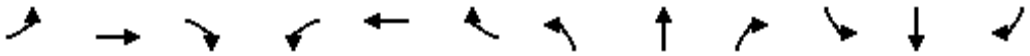
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Background Traffic w/o Axon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	395	3	681	179	1253	0	0	927	371
Future Volume (vph)	0	0	0	395	3	681	179	1253	0	0	927	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.851	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					370	370						403
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	429	3	740	195	1362	0	0	1008	403
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	429	373	370	195	1362	0	0	1008	403
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	46.0			46.0	46.0
Total Split (s)				25.0	25.0	25.0	20.0	35.0			45.0	45.0
Total Split (%)				20.8%	20.8%	20.8%	16.7%	29.2%			37.5%	37.5%
Maximum Green (s)				18.0	18.0	18.0	14.0	29.0			39.0	39.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0		5.0			5.0	5.0
Flash Dont Walk (s)				33.0	33.0	33.0		35.0			35.0	35.0
Pedestrian Calls (#/hr)				0	0	0		0			0	0
Act Effct Green (s)				17.8	17.8	17.8	14.0	29.0			36.4	36.4
Actuated g/C Ratio				0.15	0.15	0.15	0.12	0.24			0.30	0.30
v/c Ratio				0.84	0.69	0.69	0.95	1.11			0.52	0.53
Control Delay				65.5	12.4	11.9	64.3	76.5			35.3	5.6
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				65.5	12.4	11.9	64.3	76.5			35.3	5.6
LOS				E	B	B	E	E			D	A
Approach Delay					31.7			75.0			26.8	
Approach LOS					C			E			C	
Queue Length 50th (ft)				168	2	0	124	~451			181	0
Queue Length 95th (ft)				#246	103	100	m#153	m#410			215	71
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				522	543	543	206	1228			2082	786
Starvation Cap Reductn				0	0	0	0	5			0	0
Spillback Cap Reductn				0	0	0	0	0			0	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.82	0.69	0.68	0.95	1.11			0.48	0.51

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 46.3		Intersection LOS: D	
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	30.0	30.0
Total Split (%)	25%	25%
Maximum Green (s)	24.0	23.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

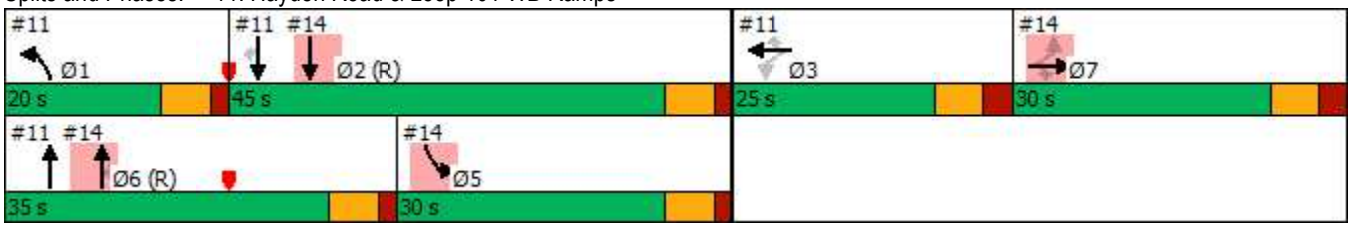
Queue shown is maximum after two cycles.

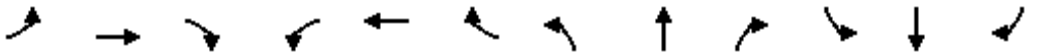
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

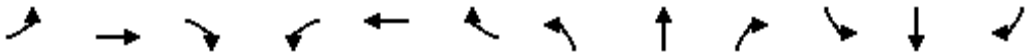
Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	823	1	773	0	0	0	0	609	199	391	930	0
Future Volume (vph)	823	1	773	0	0	0	0	609	199	391	930	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.850	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		420	420						216			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	895	1	840	0	0	0	0	662	216	425	1011	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	895	421	420	0	0	0	0	662	216	425	1011	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					46.0	46.0	18.0	46.0	
Total Split (s)	30.0	30.0	30.0					35.0	35.0	30.0	45.0	
Total Split (%)	25.0%	25.0%	25.0%					29.2%	29.2%	25.0%	37.5%	
Maximum Green (s)	23.0	23.0	23.0					29.0	29.0	24.0	39.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0		5.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0		35.0	
Pedestrian Calls (#/hr)	0	0	0					0	0		0	
Act Effct Green (s)	25.8	25.8	25.8					29.0	29.0	21.4	36.4	
Actuated g/C Ratio	0.22	0.22	0.22					0.24	0.24	0.18	0.30	
v/c Ratio	1.21	0.65	0.64					0.43	0.40	0.69	0.66	
Control Delay	149.6	9.2	9.1					39.5	7.1	38.9	25.6	
Queue Delay	0.0	0.0	0.0					3.0	0.0	0.0	0.1	
Total Delay	149.6	9.2	9.1					42.4	7.1	38.9	25.7	
LOS	F	A	A					D	A	D	C	
Approach Delay		81.6						33.7			29.6	
Approach LOS		F						C			C	
Queue Length 50th (ft)	~470	1	0					126	0	164	104	
Queue Length 95th (ft)	#598	102	102					158	61	m215	121	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	737	652	652					1548	546	686	1652	
Starvation Cap Reductn	0	0	0					0	0	0	69	
Spillback Cap Reductn	0	0	0					752	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	1.21	0.65	0.64					0.83	0.40	0.62	0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 52.8		Intersection LOS: D	
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	20.0	25.0
Total Split (%)	17%	21%
Maximum Green (s)	14.0	18.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

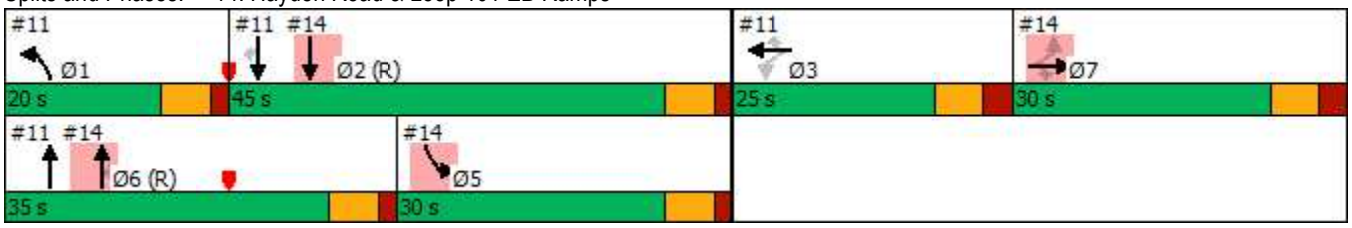
Queue shown is maximum after two cycles.

\# 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: 14: Hayden Road & Loop 101 EB Ramps

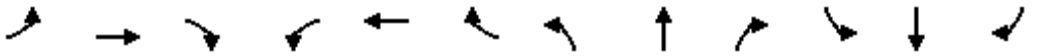


Intersection	
Intersection Delay, s/veh	93.3
Intersection LOS	F

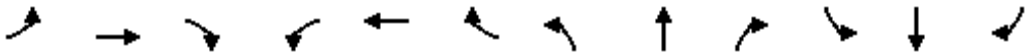
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	533	3	4	276	98	5	543	7	55	530	24
Future Vol, veh/h	47	533	3	4	276	98	5	543	7	55	530	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	579	3	4	300	107	5	590	8	60	576	26
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	102.9	35.4	118.4	97.3
HCM LOS	F	E	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	98%	0%	100%	48%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	2%	0%	0%	52%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	362	188	47	355	181	4	184	190	55	353
LT Vol	5	0	0	47	0	0	4	0	0	55	0
Through Vol	0	362	181	0	355	178	0	184	92	0	353
RT Vol	0	0	7	0	0	3	0	0	98	0	0
Lane Flow Rate	5	393	204	51	386	196	4	200	207	60	384
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.018	1.237	0.641	0.166	1.202	0.611	0.015	0.66	0.661	0.193	1.187
Departure Headway (Hd)	12.138	11.638	11.612	12.068	11.568	11.557	12.8	12.3	11.939	12.014	11.514
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	297	315	313	299	317	314	281	296	306	301	319
Service Time	9.838	9.338	9.312	9.768	9.268	9.257	10.5	10	9.639	9.714	9.214
HCM Lane V/C Ratio	0.017	1.248	0.652	0.171	1.218	0.624	0.014	0.676	0.676	0.199	1.204
HCM Control Delay	15.1	164.2	32.9	17.2	150.9	30.8	15.7	36	35.2	17.6	145.3
HCM Lane LOS	C	F	D	C	F	D	C	E	E	C	F
HCM 95th-tile Q	0.1	17.4	4.1	0.6	16.4	3.8	0	4.3	4.4	0.7	16



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	0	57	0	0	0	150	531	0	0	933	307
Future Volume (vph)	322	0	57	0	0	0	150	531	0	0	933	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850									0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186									334
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	350	0	62	0	0	0	163	577	0	0	1014	334
Shared Lane Traffic (%)												
Lane Group Flow (vph)	350	0	62	0	0	0	163	577	0	0	1014	334
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Perm		Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6

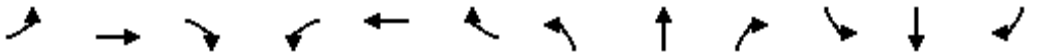


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	27.0	49.5	49.5	22.5	22.5	22.5	17.0	61.0		9.5	53.5	53.5
Total Split (%)	22.5%	41.3%	41.3%	18.8%	18.8%	18.8%	14.2%	50.8%		7.9%	44.6%	44.6%
Maximum Green (s)	22.5	45.0	45.0	18.0	18.0	18.0	12.5	56.5		5.0	49.0	49.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	14.1		14.1				9.5	63.2			49.1	49.1
Actuated g/C Ratio	0.16		0.16				0.11	0.73			0.57	0.57
v/c Ratio	0.62		0.15				0.43	0.15			0.50	0.32
Control Delay	39.1		0.8				40.0	3.8			12.9	2.2
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	39.1		0.8				40.0	3.8			12.9	2.2
LOS	D		A				D	A			B	A
Approach Delay		33.3						11.8			10.3	
Approach LOS		C						B			B	
Queue Length 50th (ft)	92		0				43	28			161	0
Queue Length 95th (ft)	140		0				76	46			253	39
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170				150					
Base Capacity (vph)	897		916				498	3723			2015	1045
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	0.39		0.07				0.33	0.15			0.50	0.32

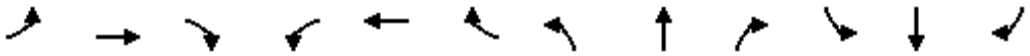
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 86.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 50.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Hayden Road & Mayo Blvd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	452	35	91	345	66	74	8	193	43	2	49
Future Volume (vph)	143	452	35	91	345	66	74	8	193	43	2	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989				0.850		0.856			0.855	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3500	0	1770	3539	1583	1770	1595	0	1770	1593	0
Flt Permitted	0.529			0.456			0.721			0.621		
Satd. Flow (perm)	985	3500	0	849	3539	1583	1343	1595	0	1157	1593	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				72		210			53	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	155	491	38	99	375	72	80	9	210	47	2	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	529	0	99	375	72	80	219	0	47	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	77.0	77.0		77.0	77.0	77.0	43.0	43.0		43.0	43.0	
Total Split (%)	64.2%	64.2%		64.2%	64.2%	64.2%	35.8%	35.8%		35.8%	35.8%	
Maximum Green (s)	72.5	72.5		72.5	72.5	72.5	38.5	38.5		38.5	38.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	12.0	12.0		12.0	12.0	12.0	7.5	7.5		7.5	7.5	
Actuated g/C Ratio	0.42	0.42		0.42	0.42	0.42	0.26	0.26		0.26	0.26	
v/c Ratio	0.38	0.36		0.28	0.25	0.10	0.23	0.38		0.16	0.12	
Control Delay	8.8	6.3		7.8	5.9	2.2	11.6	4.7		11.0	4.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.8	6.3		7.8	5.9	2.2	11.6	4.7		11.0	4.9	
LOS	A	A		A	A	A	B	A		B	A	
Approach Delay		6.9			5.7			6.6			7.7	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	13	23		8	15	0	9	1		5	0	
Queue Length 95th (ft)	41	48		28	34	11	35	33		24	16	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	985	3500		849	3539	1583	1343	1595		1157	1593	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.15		0.12	0.11	0.05	0.06	0.14		0.04	0.03	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 28.8			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	688	0	0	609
Future Vol, veh/h	0	0	688	0	0	609
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	748	0	0	662

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1079	374	0	0	-	-
Stage 1	748	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	213	623	-	-	0	-
Stage 1	429	-	-	-	0	-
Stage 2	700	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	213	623	-	-	-	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	717	437	0	0	0
Future Vol, veh/h	0	717	437	0	0	0
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	779	475	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	475	0	-	0	865	238
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	390	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1083	-	-	-	293	763
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1083	-	-	-	293	763
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1083	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0	0
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	717	437	0	0	0
Future Vol, veh/h	0	717	437	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	779	475	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	475	0	-	0	865	238
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	390	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1083	-	-	-	293	763
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1083	-	-	-	293	763
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1083	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	215	604	464	215	80	112
Future Vol, veh/h	215	604	464	215	80	112
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	657	504	234	87	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	738	0	-	0	1301	252
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	797	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	864	-	-	-	153	748
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	404	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	864	-	-	-	112	748
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	18.2
HCM LOS			C

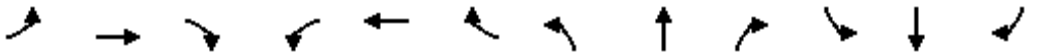
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	864	-	-	-	238	748
HCM Lane V/C Ratio	0.27	-	-	-	0.365	0.163
HCM Control Delay (s)	10.7	-	-	-	28.6	10.7
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	1.1	-	-	-	1.6	0.6

Intersection	
Intersection Delay, s/veh	171
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	410	11	6	676	82	12	521	8	72	582	68
Future Vol, veh/h	34	410	11	6	676	82	12	521	8	72	582	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	446	12	7	735	89	13	566	9	78	633	74
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

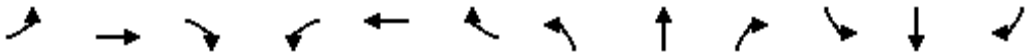
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	79.5	253.2	146.6	160
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	93%	0%	100%	73%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	7%	0%	0%	27%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	347	182	34	273	148	6	451	307	72	388
LT Vol	12	0	0	34	0	0	6	0	0	72	0
Through Vol	0	347	174	0	273	137	0	451	225	0	388
RT Vol	0	0	8	0	0	11	0	0	82	0	0
Lane Flow Rate	13	378	197	37	297	161	7	490	334	78	422
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.048	1.327	0.692	0.136	1.052	0.566	0.023	1.664	1.118	0.274	1.419
Departure Headway (Hd)	14.016	13.516	13.485	14.747	14.247	14.194	13.241	12.741	12.554	13.543	13.043
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	257	272	271	245	258	257	272	289	291	267	283
Service Time	11.716	11.216	11.185	12.447	11.947	11.894	10.941	10.441	10.254	11.243	10.743
HCM Lane V/C Ratio	0.051	1.39	0.727	0.151	1.151	0.626	0.026	1.696	1.148	0.292	1.491
HCM Control Delay	17.4	205.9	41.8	19.8	111.6	33.9	16.3	343.3	125.6	21.3	241.2
HCM Lane LOS	C	F	E	C	F	D	C	F	F	C	F
HCM 95th-tile Q	0.2	18.2	4.6	0.5	10.8	3.2	0.1	29.4	13.3	1.1	21.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	357	6	639	733	1330	0	0	1060	771
Future Volume (vph)	0	0	0	357	6	639	733	1330	0	0	1060	771
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.853	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					348	347						653
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	388	7	695	797	1446	0	0	1152	838
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	388	355	347	797	1446	0	0	1152	838
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	89.5			46.0	46.0
Total Split (s)				35.0	35.0	35.0	32.0	47.0			33.0	33.0
Total Split (%)				29.2%	29.2%	29.2%	26.7%	39.2%			27.5%	27.5%
Maximum Green (s)				28.0	28.0	28.0	26.0	41.0			27.0	27.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0		5.0			5.0	5.0
Flash Dont Walk (s)				33.0	33.0	33.0		35.0			35.0	35.0
Pedestrian Calls (#/hr)				0	0	0		0			0	0
Act Effct Green (s)				19.6	19.6	19.6	26.0	41.0			27.0	27.0
Actuated g/C Ratio				0.16	0.16	0.16	0.22	0.34			0.22	0.22
v/c Ratio				0.69	0.66	0.65	2.08	0.83			0.80	0.97
Control Delay				53.5	11.1	10.4	514.7	11.7			48.9	35.6
Queue Delay				0.0	0.0	0.0	0.0	0.9			0.0	0.0
Total Delay				53.5	11.1	10.4	514.7	12.7			48.9	35.6
LOS				D	B	B	F	B			D	D
Approach Delay					26.0			191.0			43.3	
Approach LOS					C			F			D	
Queue Length 50th (ft)				147	5	0	~946	120			246	180
Queue Length 95th (ft)				188	94	87	#1194	150			289	#481
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				801	618	616	383	1737			1441	862
Starvation Cap Reductn				0	0	0	0	104			0	0
Spillback Cap Reductn				0	0	0	0	0			0	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.48	0.57	0.56	2.08	0.89			0.80	0.97

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.08			
Intersection Signal Delay: 102.0		Intersection LOS: F	
Intersection Capacity Utilization 117.7%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	18.0	20.0
Total Split (%)	15%	17%
Maximum Green (s)	12.0	13.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

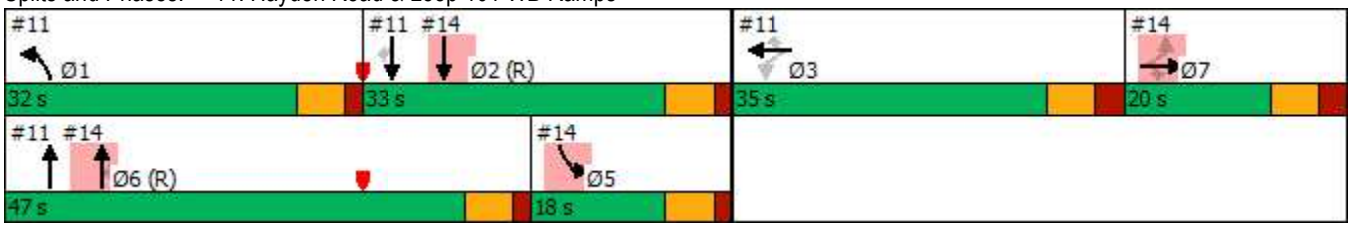
Intersection Summary

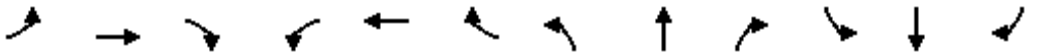
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

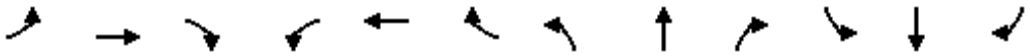
Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	468	1	412	0	0	0	0	1594	443	547	869	0
Future Volume (vph)	468	1	412	0	0	0	0	1594	443	547	869	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.851	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		224	224						418			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	509	1	448	0	0	0	0	1733	482	595	945	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	509	225	224	0	0	0	0	1733	482	595	945	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					89.5	89.5	18.0	46.0	
Total Split (s)	20.0	20.0	20.0					47.0	47.0	18.0	33.0	
Total Split (%)	16.7%	16.7%	16.7%					39.2%	39.2%	15.0%	27.5%	
Maximum Green (s)	13.0	13.0	13.0					41.0	41.0	12.0	27.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0		5.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0		35.0	
Pedestrian Calls (#/hr)	0	0	0					0	0		0	
Act Effct Green (s)	21.4	21.4	21.4					41.0	41.0	12.0	27.0	
Actuated g/C Ratio	0.18	0.18	0.18					0.34	0.34	0.10	0.22	
v/c Ratio	0.83	0.50	0.50					0.79	0.59	1.73	0.83	
Control Delay	61.3	10.4	10.3					38.9	8.3	365.5	33.2	
Queue Delay	15.0	0.0	0.0					4.1	0.0	0.0	0.0	
Total Delay	76.2	10.4	10.3					43.0	8.3	365.5	33.2	
LOS	E	B	B					D	A	F	C	
Approach Delay		45.3						35.4			161.6	
Approach LOS		D						D			F	
Queue Length 50th (ft)	198	1	0					350	34	~328	87	
Queue Length 95th (ft)	#354	80	78					397	132	#447	142	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	611	452	452					2189	816	343	1144	
Starvation Cap Reductn	0	0	0					0	0	0	0	
Spillback Cap Reductn	96	0	0					373	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	0.99	0.50	0.50					0.95	0.59	1.73	0.83	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.08			
Intersection Signal Delay: 78.7		Intersection LOS: E	
Intersection Capacity Utilization 117.7%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	32.0	35.0
Total Split (%)	27%	29%
Maximum Green (s)	26.0	28.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

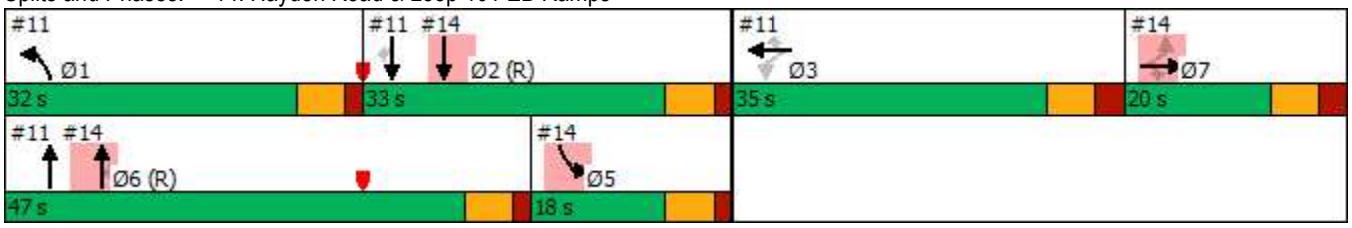
Intersection Summary

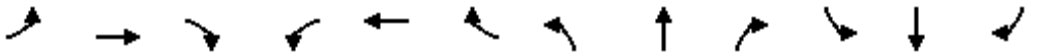
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

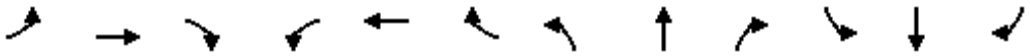
Queue shown is maximum after two cycles.

Splits and Phases: 14: Hayden Road & Loop 101 EB Ramps





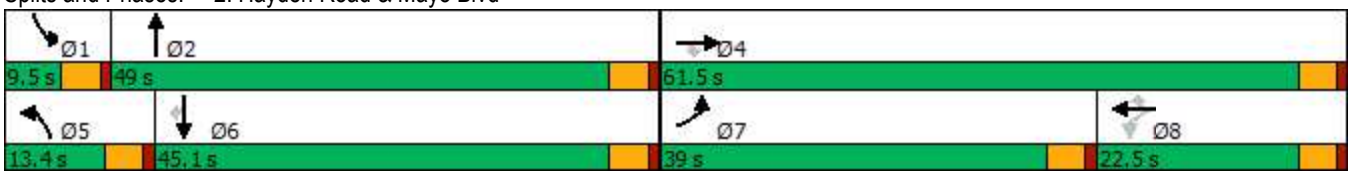
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	567	0	117	0	0	0	113	1237	0	0	833	297
Future Volume (vph)	567	0	117	0	0	0	113	1237	0	0	833	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850									0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146									323
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	616	0	127	0	0	0	123	1345	0	0	905	323
Shared Lane Traffic (%)												
Lane Group Flow (vph)	616	0	127	0	0	0	123	1345	0	0	905	323
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Perm		Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6



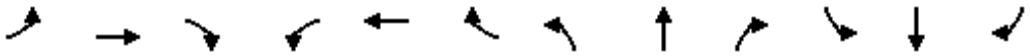
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	39.0	61.5	61.5	22.5	22.5	22.5	13.4	49.0		9.5	45.1	45.1
Total Split (%)	32.5%	51.3%	51.3%	18.8%	18.8%	18.8%	11.2%	40.8%		7.9%	37.6%	37.6%
Maximum Green (s)	34.5	57.0	57.0	18.0	18.0	18.0	8.9	44.5		5.0	40.6	40.6
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	19.9		19.9				8.0	53.3			40.7	40.7
Actuated g/C Ratio	0.24		0.24				0.10	0.65			0.50	0.50
v/c Ratio	0.74		0.26				0.37	0.41			0.52	0.34
Control Delay	34.8		4.8				38.9	7.8			16.1	2.8
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	34.8		4.8				38.9	7.8			16.1	2.8
LOS	C		A				D	A			B	A
Approach Delay		29.7						10.4			12.6	
Approach LOS		C						B			B	
Queue Length 50th (ft)	152		0				30	106			159	0
Queue Length 95th (ft)	208		31				60	165			246	44
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170				150					
Base Capacity (vph)	1445		1145				372	3296			1754	947
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	0.43		0.11				0.33	0.41			0.52	0.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 82.2			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 55.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hayden Road & Mayo Blvd



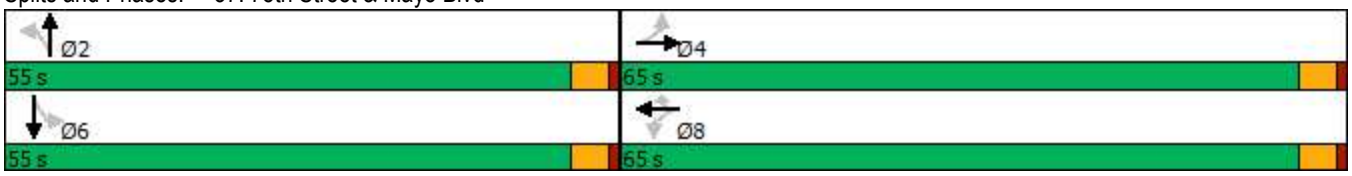
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	433	89	194	548	31	86	4	221	186	10	215
Future Volume (vph)	68	433	89	194	548	31	86	4	221	186	10	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974				0.850		0.852			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3447	0	1770	3539	1583	1770	1587	0	1770	1596	0
Flt Permitted	0.401			0.418			0.576			0.578		
Satd. Flow (perm)	747	3447	0	779	3539	1583	1073	1587	0	1077	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29				34		240			233	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	471	97	211	596	34	93	4	240	202	11	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	568	0	211	596	34	93	244	0	202	245	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	65.0	65.0		65.0	65.0	65.0	55.0	55.0		55.0	55.0	
Total Split (%)	54.2%	54.2%		54.2%	54.2%	54.2%	45.8%	45.8%		45.8%	45.8%	
Maximum Green (s)	60.5	60.5		60.5	60.5	60.5	50.5	50.5		50.5	50.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	25.8	25.8		25.8	25.8	25.8	19.7	19.7		19.7	19.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.35	0.35		0.35	0.35	
v/c Ratio	0.22	0.36		0.59	0.37	0.05	0.25	0.34		0.54	0.35	
Control Delay	12.3	10.2		20.5	10.9	4.3	17.6	4.3		23.0	4.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	12.3	10.2		20.5	10.9	4.3	17.6	4.3		23.0	4.7	
LOS	B	B		C	B	A	B	A		C	A	
Approach Delay		10.5			13.0			8.0			13.0	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	12	47		41	53	0	19	1		45	2	
Queue Length 95th (ft)	52	133		158	146	15	75	48		162	52	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	678	3132		707	3213	1440	919	1394		923	1401	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.11	0.18		0.30	0.19	0.02	0.10	0.18		0.22	0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 56.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	637	0	0	722
Future Vol, veh/h	0	0	637	0	0	722
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	692	0	0	785

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1085	346	0	0	-	-
Stage 1	692	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	211	650	-	-	0	-
Stage 1	458	-	-	-	0	-
Stage 2	651	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	211	650	-	-	-	-
Mov Cap-2 Maneuver	337	-	-	-	-	-
Stage 1	458	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	546	791	0	0	0
Future Vol, veh/h	0	546	791	0	0	0
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	593	860	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	860	0	-	0	1157	430
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	297	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	777	-	-	-	190	573
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	777	-	-	-	190	573
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	728	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	777	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0	0
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	546	791	0	0	0
Future Vol, veh/h	0	546	791	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	593	860	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	860	0	-	0	1157	430
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	297	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	777	-	-	-	190	573
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	777	-	-	-	190	573
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	728	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	777	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	93	806	610	95	128	239
Future Vol, veh/h	93	806	610	95	128	239
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	876	663	103	139	260

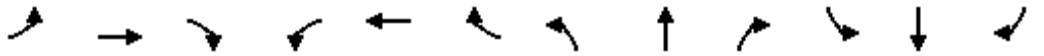
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	766	0	-	0	1303	332
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	640	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	843	-	-	-	152	664
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	843	-	-	-	~ 134	664
Mov Cap-2 Maneuver	-	-	-	-	266	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	487	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	20.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	843	-	-	-	266	664
HCM Lane V/C Ratio	0.12	-	-	-	0.523	0.391
HCM Control Delay (s)	9.9	-	-	-	32.5	13.9
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.4	-	-	-	2.8	1.9

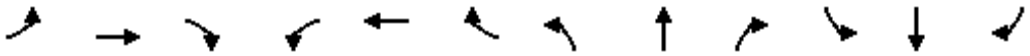
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Total Traffic w/Axon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	486	3	681	249	1255	0	0	928	371
Future Volume (vph)	0	0	0	486	3	681	249	1255	0	0	928	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.851	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					370	370						403
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	528	3	740	271	1364	0	0	1009	403
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	528	373	370	271	1364	0	0	1009	403
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	46.0			46.0	46.0
Total Split (s)				25.0	25.0	25.0	24.0	37.0			37.0	37.0
Total Split (%)				20.8%	20.8%	20.8%	20.0%	30.8%			30.8%	30.8%
Maximum Green (s)				18.0	18.0	18.0	18.0	31.0			31.0	31.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0		5.0			5.0	5.0
Flash Dont Walk (s)				33.0	33.0	33.0		35.0			35.0	35.0
Pedestrian Calls (#/hr)				0	0	0		0			0	0
Act Effct Green (s)				18.0	18.0	18.0	18.0	31.0			31.0	31.0
Actuated g/C Ratio				0.15	0.15	0.15	0.15	0.26			0.26	0.26
v/c Ratio				1.03	0.69	0.69	1.02	1.04			0.61	0.57
Control Delay				96.8	12.3	11.9	72.4	50.0			41.0	6.9
Queue Delay				0.0	0.0	0.0	0.0	3.2			0.1	0.0
Total Delay				96.8	12.3	11.9	72.4	53.2			41.1	6.9
LOS				F	B	B	E	D			D	A
Approach Delay					47.3			56.4			31.4	
Approach LOS					D			E			C	
Queue Length 50th (ft)				~224	2	0	~149	~425			200	0
Queue Length 95th (ft)				#336	103	100	m#252	m#408			238	81
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				514	540	540	265	1313			1655	707
Starvation Cap Reductn				0	0	0	0	11			0	0
Spillback Cap Reductn				0	0	0	0	0			64	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				1.03	0.69	0.69	1.02	1.05			0.63	0.57

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 45.5		Intersection LOS: D	
Intersection Capacity Utilization 72.9%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	24.0	34.0
Total Split (%)	20%	28%
Maximum Green (s)	18.0	27.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

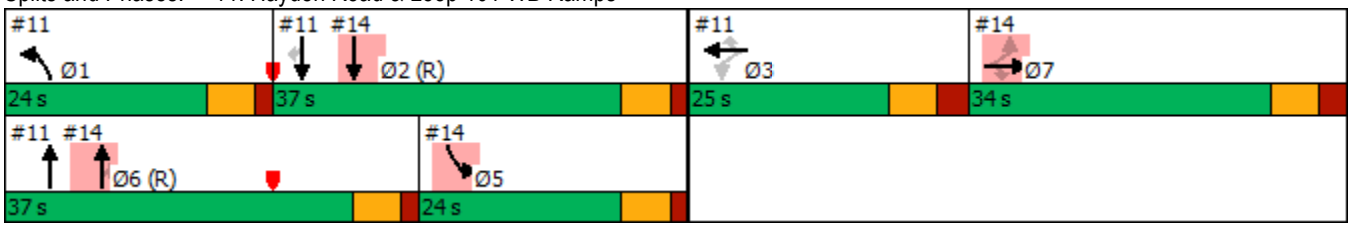
Queue shown is maximum after two cycles.

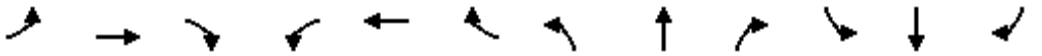
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

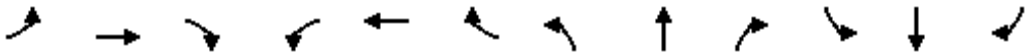
Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	823	1	1025	0	0	0	0	681	212	391	1023	0
Future Volume (vph)	823	1	1025	0	0	0	0	681	212	391	1023	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.850	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		557	557						230			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	895	1	1114	0	0	0	0	740	230	425	1112	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	895	558	557	0	0	0	0	740	230	425	1112	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					46.0	46.0	18.0	46.0	
Total Split (s)	34.0	34.0	34.0					37.0	37.0	24.0	37.0	
Total Split (%)	28.3%	28.3%	28.3%					30.8%	30.8%	20.0%	30.8%	
Maximum Green (s)	27.0	27.0	27.0					31.0	31.0	18.0	31.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0		5.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0		35.0	
Pedestrian Calls (#/hr)	0	0	0					0	0		0	
Act Effct Green (s)	27.0	27.0	27.0					31.0	31.0	18.0	31.0	
Actuated g/C Ratio	0.22	0.22	0.22					0.26	0.26	0.15	0.26	
v/c Ratio	1.16	0.72	0.72					0.45	0.40	0.83	0.85	
Control Delay	127.6	9.5	9.4					38.3	6.6	47.1	34.6	
Queue Delay	0.0	0.0	0.0					1.5	0.0	0.0	0.2	
Total Delay	127.6	9.5	9.4					39.9	6.6	47.1	34.7	
LOS	F	A	A					D	A	D	C	
Approach Delay		62.0						32.0			38.2	
Approach LOS		E						C			D	
Queue Length 50th (ft)	~422	1	0					140	0	144	129	
Queue Length 95th (ft)	#550	116	115					172	62	m165	m141	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	772	770	770					1655	579	514	1313	
Starvation Cap Reductn	0	0	0					0	0	0	13	
Spillback Cap Reductn	0	0	0					690	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	1.16	0.72	0.72					0.77	0.40	0.83	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 47.5		Intersection LOS: D	
Intersection Capacity Utilization 72.9%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	24.0	25.0
Total Split (%)	20%	21%
Maximum Green (s)	18.0	18.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

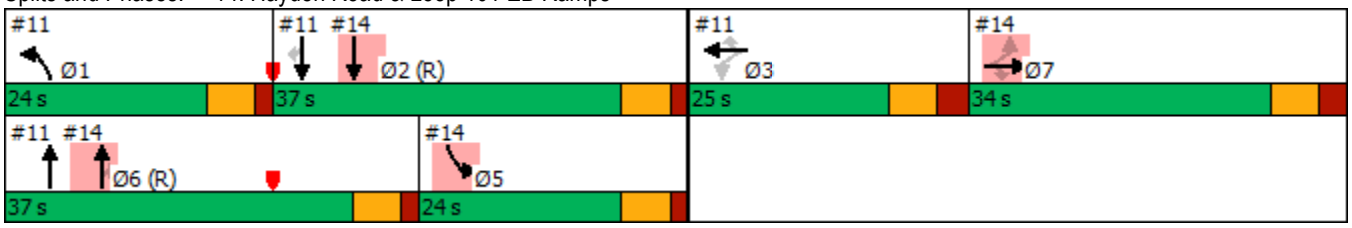
Queue shown is maximum after two cycles.

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: 14: Hayden Road & Loop 101 EB Ramps

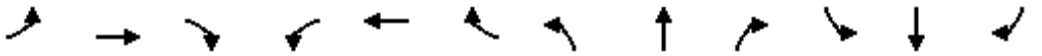


Intersection	
Intersection Delay, s/veh	172.6
Intersection LOS	F

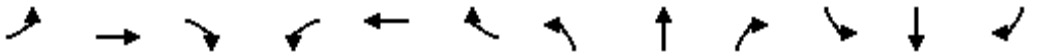
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	763	3	4	376	100	5	543	7	89	530	24
Future Vol, veh/h	62	763	3	4	376	100	5	543	7	89	530	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	829	3	4	409	109	5	590	8	97	576	26
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	282.9	69.2	154.5	123.3
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	99%	0%	100%	56%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	1%	0%	0%	44%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	362	188	62	509	257	4	251	225	89	353
LT Vol	5	0	0	62	0	0	4	0	0	89	0
Through Vol	0	362	181	0	509	254	0	251	125	0	353
RT Vol	0	0	7	0	0	3	0	0	100	0	0
Lane Flow Rate	5	393	204	67	553	280	4	272	245	97	384
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.019	1.351	0.7	0.234	1.843	0.932	0.016	0.944	0.828	0.339	1.294
Departure Headway (Hd)	13.84	13.34	13.314	13.115	12.615	12.606	14.062	13.562	13.252	13.952	13.452
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	260	275	274	276	293	291	256	270	274	259	273
Service Time	11.54	11.04	11.014	10.815	10.315	10.306	11.762	11.262	10.952	11.652	11.152
HCM Lane V/C Ratio	0.019	1.429	0.745	0.243	1.887	0.962	0.016	1.007	0.894	0.375	1.407
HCM Control Delay	16.8	214.8	42.1	19.8	420.5	74.3	17	80.6	57.5	23.6	192.8
HCM Lane LOS	C	F	E	C	F	F	C	F	F	C	F
HCM 95th-tile Q	0.1	19	4.8	0.9	35.6	8.9	0	8.8	6.7	1.4	17.3



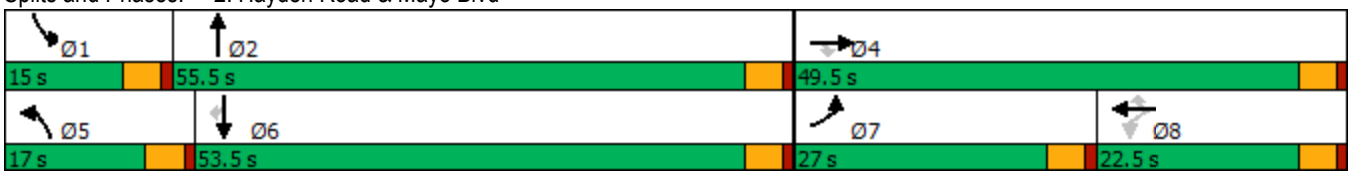
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	114	65	18	19	41	169	531	109	146	933	438
Future Volume (vph)	373	114	65	18	19	41	169	531	109	146	933	438
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850			0.850		0.975				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	1770	3539	2787	3433	4958	0	3433	3539	1583
Flt Permitted	0.950			0.678			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	1263	3539	2787	3433	4958	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			71			95		45				476
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	405	124	71	20	21	45	184	577	118	159	1014	476
Shared Lane Traffic (%)												
Lane Group Flow (vph)	405	124	71	20	21	45	184	695	0	159	1014	476
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6



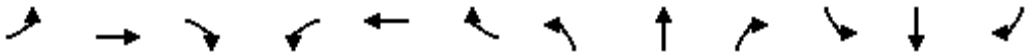
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	27.0	49.5	49.5	22.5	22.5	22.5	17.0	55.5		15.0	53.5	53.5
Total Split (%)	22.5%	41.3%	41.3%	18.8%	18.8%	18.8%	14.2%	46.3%		12.5%	44.6%	44.6%
Maximum Green (s)	22.5	45.0	45.0	18.0	18.0	18.0	12.5	51.0		10.5	49.0	49.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	17.1	26.5	26.5	7.3	7.3	7.3	10.5	51.6		9.4	50.5	50.5
Actuated g/C Ratio	0.17	0.26	0.26	0.07	0.07	0.07	0.10	0.51		0.09	0.50	0.50
v/c Ratio	0.70	0.13	0.15	0.22	0.08	0.16	0.52	0.27		0.50	0.57	0.46
Control Delay	47.1	27.8	7.4	52.9	46.9	1.1	49.8	14.8		51.0	21.2	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.1	27.8	7.4	52.9	46.9	1.1	49.8	14.8		51.0	21.2	3.4
LOS	D	C	A	D	D	A	D	B		D	C	A
Approach Delay		38.4			24.4			22.1			18.9	
Approach LOS		D			C			C			B	
Queue Length 50th (ft)	131	32	0	13	6	0	60	89		52	246	0
Queue Length 95th (ft)	188	54	32	39	20	0	102	134		91	368	59
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170	150		130	150			355		
Base Capacity (vph)	772	1592	751	227	637	579	429	2550		360	1766	1028
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.52	0.08	0.09	0.09	0.03	0.08	0.43	0.27		0.44	0.57	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 101.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hayden Road & Mayo Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	592	37	91	422	120	78	12	193	73	4	85
Future Volume (vph)	201	592	37	91	422	120	78	12	193	73	4	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991				0.850		0.859			0.856	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3507	0	1770	3539	1583	1770	1600	0	1770	1595	0
Flt Permitted	0.488			0.389			0.695			0.619		
Satd. Flow (perm)	909	3507	0	725	3539	1583	1295	1600	0	1153	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				130		210			92	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	643	40	99	459	130	85	13	210	79	4	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	683	0	99	459	130	85	223	0	79	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	78.0	78.0		78.0	78.0	78.0	42.0	42.0		42.0	42.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%	65.0%	35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	73.5	73.5		73.5	73.5	73.5	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	18.3	18.3		18.3	18.3	18.3	9.5	9.5		9.5	9.5	
Actuated g/C Ratio	0.49	0.49		0.49	0.49	0.49	0.25	0.25		0.25	0.25	
v/c Ratio	0.49	0.40		0.28	0.27	0.15	0.26	0.40		0.27	0.20	
Control Delay	10.9	6.6		8.1	5.9	1.9	15.7	5.8		16.2	5.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.9	6.6		8.1	5.9	1.9	15.7	5.8		16.2	5.8	
LOS	B	A		A	A	A	B	A		B	A	
Approach Delay		7.6			5.5			8.5			10.5	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)	24	36		10	23	0	13	2		12	1	
Queue Length 95th (ft)	79	81		36	53	17	52	45		50	29	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	909	3507		725	3539	1583	1184	1481		1055	1467	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.24	0.19		0.14	0.13	0.08	0.07	0.15		0.07	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 37.5			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	6	690	15	0	628
Future Vol, veh/h	15	6	690	15	0	628
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	7	750	16	0	683

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1100	383	0	0	-	-
Stage 1	758	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	206	615	-	-	0	-
Stage 1	423	-	-	-	0	-
Stage 2	691	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	206	615	-	-	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	325	615	-
HCM Lane V/C Ratio	-	-	0.05	0.011	-
HCM Control Delay (s)	-	-	16.7	10.9	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	58	904	492	62	12	47
Future Vol, veh/h	58	904	492	62	12	47
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	983	535	67	13	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	602	0	-	0	1153	268
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	618	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	971	-	-	-	191	730
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	971	-	-	-	179	730
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	500	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	971	-	-	-	313	730
HCM Lane V/C Ratio	0.065	-	-	-	0.042	0.07
HCM Control Delay (s)	9	-	-	-	17	10.3
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	896	550	0	0	0
Future Vol, veh/h	0	896	550	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	974	598	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	598	0	-	0	1085	299
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	487	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	975	-	-	-	211	697
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	975	-	-	-	211	697
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	583	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	975	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	215	773	595	253	83	112
Future Vol, veh/h	215	773	595	253	83	112
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	840	647	275	90	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	922	0	-	0	1535	324
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	888	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	736	-	-	-	107	672
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	362	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	736	-	-	-	~ 73	672
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	329	-
Stage 2	-	-	-	-	362	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	23.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	736	-	-	-	191	672
HCM Lane V/C Ratio	0.318	-	-	-	0.472	0.181
HCM Control Delay (s)	12.2	-	-	-	39.7	11.5
HCM Lane LOS	B	-	-	-	E	B
HCM 95th %tile Q(veh)	1.4	-	-	-	2.3	0.7

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

Intersection	
Intersection Delay, s/veh	291
Intersection LOS	F

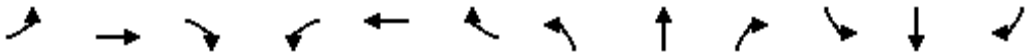
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	484	11	6	977	86	12	521	8	114	582	68
Future Vol, veh/h	41	484	11	6	977	86	12	521	8	114	582	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	526	12	7	1062	93	13	566	9	124	633	74
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	125.2	531.7	155.6	166.3
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	94%	0%	100%	79%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	6%	0%	0%	21%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	347	182	41	323	172	6	651	412	114	388
LT Vol	12	0	0	41	0	0	6	0	0	114	0
Through Vol	0	347	174	0	323	161	0	651	326	0	388
RT Vol	0	0	8	0	0	11	0	0	86	0	0
Lane Flow Rate	13	378	197	45	351	187	7	708	447	124	422
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.048	1.348	0.704	0.165	1.252	0.666	0.023	2.452	1.532	0.442	1.445
Departure Headway (Hd)	15.037	14.537	14.506	15.478	14.978	14.934	13.601	13.101	12.955	15.487	14.987
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	240	253	251	233	246	244	265	283	286	234	245
Service Time	12.737	12.237	12.206	13.178	12.678	12.634	11.301	10.801	10.655	13.187	12.687
HCM Lane V/C Ratio	0.054	1.494	0.785	0.193	1.427	0.766	0.026	2.502	1.563	0.53	1.722
HCM Control Delay	18.5	217.8	45.6	21.2	182.3	43.1	16.6	690.6	287.9	29.9	258.4
HCM Lane LOS	C	F	E	C	F	E	C	F	F	D	F
HCM 95th-tile Q	0.2	17.8	4.7	0.6	15.1	4.2	0.1	54.5	24.9	2.1	19.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	409	6	639	813	1336	0	0	1065	771
Future Volume (vph)	0	0	0	409	6	639	813	1336	0	0	1065	771
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.853	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					348	347						566
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	445	7	695	884	1452	0	0	1158	838
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	445	355	347	884	1452	0	0	1158	838
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	89.5			46.0	46.0
Total Split (s)				31.0	31.0	31.0	38.0	47.0			32.0	32.0
Total Split (%)				25.8%	25.8%	25.8%	31.7%	39.2%			26.7%	26.7%
Maximum Green (s)				24.0	24.0	24.0	32.0	41.0			26.0	26.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0	5.0	5.0			0.0	0.0
Flash Dont Walk (s)				33.0	33.0	33.0	20.0	35.0			45.0	45.0
Pedestrian Calls (#/hr)				0	0	0	0	0			0	0
Act Effct Green (s)				20.8	20.8	20.8	32.0	41.0			26.0	26.0
Actuated g/C Ratio				0.17	0.17	0.17	0.27	0.34			0.22	0.22
v/c Ratio				0.75	0.65	0.63	1.87	0.84			0.83	1.07
Control Delay				55.3	10.8	10.1	417.6	10.8			51.2	66.6
Queue Delay				0.0	0.0	0.0	0.0	1.2			0.9	0.0
Total Delay				55.3	10.8	10.1	417.6	12.0			52.1	66.6
LOS				E	B	B	F	B			D	E
Approach Delay					27.8			165.5			58.2	
Approach LOS					C			F			E	
Queue Length 50th (ft)				169	5	0	~1014	117			251	~349
Queue Length 95th (ft)				221	97	89	m#1171	m156			295	#596
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				686	580	578	472	1737			1388	786
Starvation Cap Reductn				0	0	0	0	120			0	0
Spillback Cap Reductn				0	0	0	0	0			67	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.65	0.61	0.60	1.87	0.90			0.88	1.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.87			
Intersection Signal Delay: 97.6		Intersection LOS: F	
Intersection Capacity Utilization 122.1%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	23.0	19.0
Total Split (%)	19%	16%
Maximum Green (s)	17.0	12.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	30.0	33.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

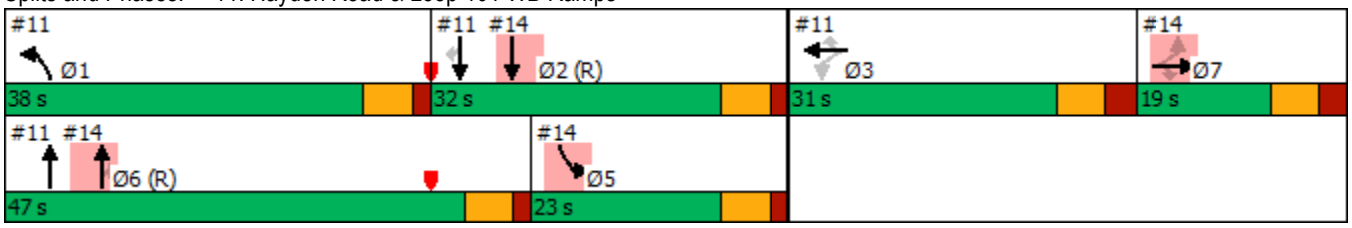
Queue shown is maximum after two cycles.

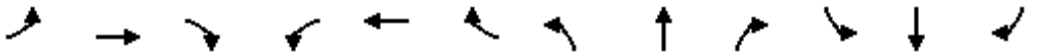
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

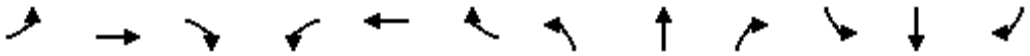
Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	468	1	528	0	0	0	0	1680	488	547	926	0
Future Volume (vph)	468	1	528	0	0	0	0	1680	488	547	926	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.851	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		287	287						437			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	509	1	574	0	0	0	0	1826	530	595	1007	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	509	288	287	0	0	0	0	1826	530	595	1007	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					89.5	89.5	18.0	46.0	
Total Split (s)	19.0	19.0	19.0					47.0	47.0	23.0	32.0	
Total Split (%)	15.8%	15.8%	15.8%					39.2%	39.2%	19.2%	26.7%	
Maximum Green (s)	12.0	12.0	12.0					41.0	41.0	17.0	26.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0	0.0	0.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0	30.0	45.0	
Pedestrian Calls (#/hr)	0	0	0					0	0	0	0	
Act Effct Green (s)	15.2	15.2	15.2					41.0	41.0	17.0	26.0	
Actuated g/C Ratio	0.13	0.13	0.13					0.34	0.34	0.14	0.22	
v/c Ratio	1.17	0.65	0.65					0.83	0.64	1.22	0.91	
Control Delay	144.1	13.6	13.5					40.5	10.1	145.8	41.7	
Queue Delay	0.6	0.0	0.0					7.4	0.0	0.0	0.0	
Total Delay	144.6	13.6	13.5					48.0	10.1	145.8	41.7	
LOS	F	B	B					D	B	F	D	
Approach Delay		75.1						39.4			80.4	
Approach LOS		E						D			F	
Queue Length 50th (ft)	~251	1	0					376	50	~269	112	
Queue Length 95th (ft)	#390	94	93					425	166	m#375	#249	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	435	441	441					2189	828	486	1101	
Starvation Cap Reductn	0	0	0					0	0	0	0	
Spillback Cap Reductn	26	0	0					337	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	1.24	0.65	0.65					0.99	0.64	1.22	0.91	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.87			
Intersection Signal Delay: 60.1		Intersection LOS: E	
Intersection Capacity Utilization 122.1%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	38.0	31.0
Total Split (%)	32%	26%
Maximum Green (s)	32.0	24.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)	5.0	7.0
Flash Dont Walk (s)	20.0	33.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

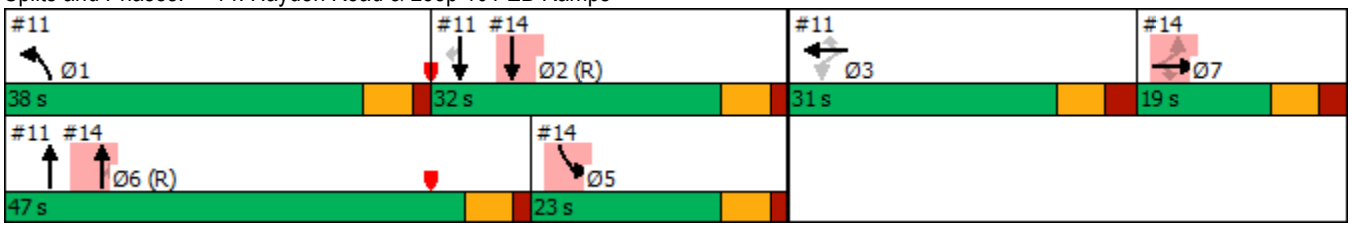
Queue shown is maximum after two cycles.

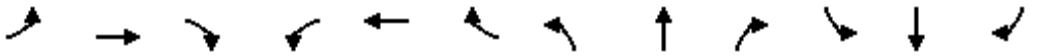
\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

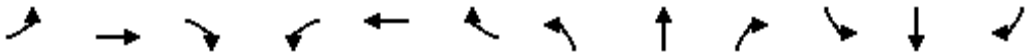
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Hayden Road & Loop 101 EB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	683	24	134	111	118	247	121	1237	22	50	833	354
Future Volume (vph)	683	24	134	111	118	247	121	1237	22	50	833	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	1770	3539	2787	3433	5070	0	3433	3539	1583
Flt Permitted	0.950			0.739			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	1377	3539	2787	3433	5070	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146			268		2				350
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	742	26	146	121	128	268	132	1345	24	54	905	385
Shared Lane Traffic (%)												
Lane Group Flow (vph)	742	26	146	121	128	268	132	1369	0	54	905	385
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6

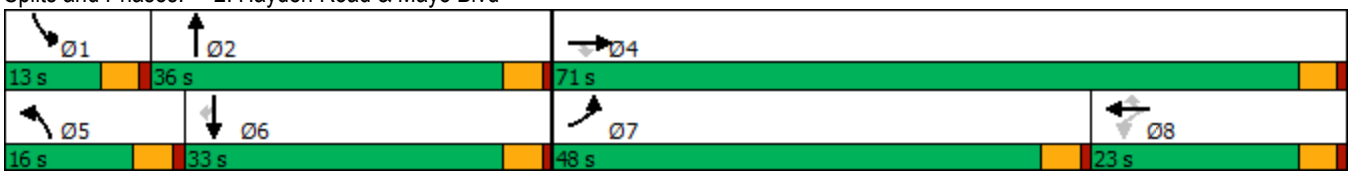


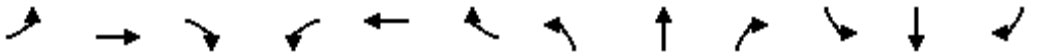
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	48.0	71.0	71.0	23.0	23.0	23.0	16.0	36.0		13.0	33.0	33.0
Total Split (%)	40.0%	59.2%	59.2%	19.2%	19.2%	19.2%	13.3%	30.0%		10.8%	27.5%	27.5%
Maximum Green (s)	43.5	66.5	66.5	18.5	18.5	18.5	11.5	31.5		8.5	28.5	28.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	26.6	45.0	45.0	13.8	13.8	13.8	9.1	34.0		7.0	29.5	29.5
Actuated g/C Ratio	0.27	0.46	0.46	0.14	0.14	0.14	0.09	0.35		0.07	0.30	0.30
v/c Ratio	0.79	0.02	0.18	0.62	0.25	0.43	0.41	0.77		0.22	0.84	0.53
Control Delay	39.8	13.3	2.9	55.2	39.7	7.3	47.9	34.6		48.3	42.5	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	39.8	13.3	2.9	55.2	39.7	7.3	47.9	34.6		48.3	42.5	8.2
LOS	D	B	A	E	D	A	D	C		D	D	A
Approach Delay		33.1			26.5			35.7			32.9	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	221	4	0	72	37	0	41	291		17	282	16
Queue Length 95th (ft)	306	11	30	144	71	39	77	#459		39	#490	107
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170	150		130	150			355		
Base Capacity (vph)	1561	2460	1144	266	684	754	412	1774		305	1072	723
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.48	0.01	0.13	0.45	0.19	0.36	0.32	0.77		0.18	0.84	0.53

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 97.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 33.2		Intersection LOS: C	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

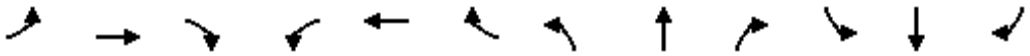
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Hayden Road & Mayo Blvd





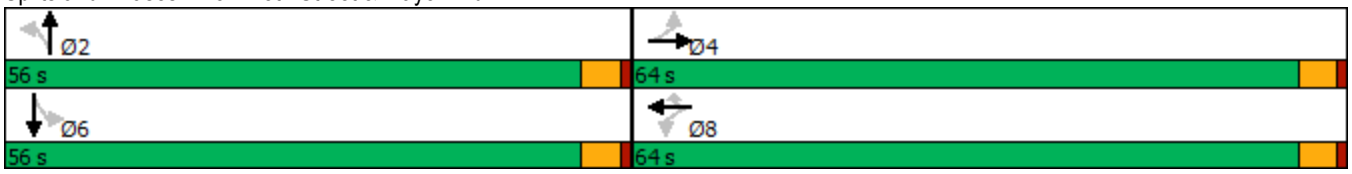
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	515	92	194	691	55	88	6	221	254	13	297
Future Volume (vph)	93	515	92	194	691	55	88	6	221	254	13	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977				0.850		0.854			0.856	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3458	0	1770	3539	1583	1770	1591	0	1770	1595	0
Flt Permitted	0.301			0.348			0.450			0.554		
Satd. Flow (perm)	561	3458	0	648	3539	1583	838	1591	0	1032	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				60		240			149	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	560	100	211	751	60	96	7	240	276	14	323
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	660	0	211	751	60	96	247	0	276	337	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	64.0	64.0		64.0	64.0	64.0	56.0	56.0		56.0	56.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%	53.3%	46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	59.5	59.5		59.5	59.5	59.5	51.5	51.5		51.5	51.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	35.0	35.0		35.0	35.0	35.0	29.2	29.2		29.2	29.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.47	0.47	0.39	0.39		0.39	0.39	
v/c Ratio	0.39	0.41		0.70	0.45	0.08	0.30	0.32		0.69	0.47	
Control Delay	20.7	14.1		32.6	15.2	4.3	21.7	4.3		31.9	13.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.7	14.1		32.6	15.2	4.3	21.7	4.3		31.9	13.1	
LOS	C	B		C	B	A	C	A		C	B	
Approach Delay		15.0			18.1			9.2			21.6	
Approach LOS		B			B			A			C	
Queue Length 50th (ft)	26	87		67	106	0	28	2		97	55	
Queue Length 95th (ft)	95	201		222	240	22	90	51		265	175	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	442	2733		511	2792	1261	615	1232		758	1211	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.23	0.24		0.41	0.27	0.05	0.16	0.20		0.36	0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 75.1			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	14	641	7	0	730
Future Vol, veh/h	34	14	641	7	0	730
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	15	697	8	0	793

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1098	353	0	0	-	-
Stage 1	701	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	207	643	-	-	0	-
Stage 1	453	-	-	-	0	-
Stage 2	648	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	207	643	-	-	-	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	648	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	333	643	-
HCM Lane V/C Ratio	-	-	0.111	0.024	-
HCM Control Delay (s)	-	-	17.2	10.7	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	629	991	27	27	105
Future Vol, veh/h	25	629	991	27	27	105
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	684	1077	29	29	114

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1106	0	-	0	1473	539
Stage 1	-	-	-	-	1077	-
Stage 2	-	-	-	-	396	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	627	-	-	-	118	487
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	649	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	627	-	-	-	113	487
Mov Cap-2 Maneuver	-	-	-	-	217	-
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	649	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	627	-	-	-	217	487
HCM Lane V/C Ratio	0.043	-	-	-	0.135	0.234
HCM Control Delay (s)	11	-	-	-	24.2	14.6
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	0.9

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	648	1016	0	0	0
Future Vol, veh/h	0	648	1016	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	704	1104	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1104	0	-	0	1456	552
Stage 1	-	-	-	-	1104	-
Stage 2	-	-	-	-	352	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	628	-	-	-	121	477
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	628	-	-	-	121	477
Mov Cap-2 Maneuver	-	-	-	-	223	-
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

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

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	93	956	777	111	135	239
Future Vol, veh/h	93	956	777	111	135	239
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	1039	845	121	147	260

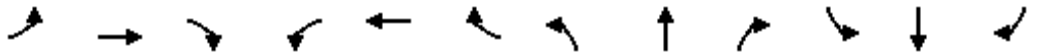
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	966	0	-	0	1567	423
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	722	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	709	-	-	-	~ 102	579
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	442	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	709	-	-	-	~ 88	579
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	328	-
Stage 2	-	-	-	-	442	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	29.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	709	-	-	-	211	579
HCM Lane V/C Ratio	0.143	-	-	-	0.695	0.449
HCM Control Delay (s)	10.9	-	-	-	53.7	16.2
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.5	-	-	-	4.4	2.3

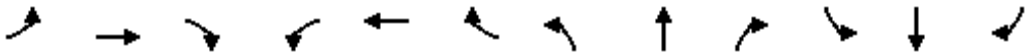
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Total Traffic w/o Axon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	504	3	681	245	1249	0	0	933	371
Future Volume (vph)	0	0	0	504	3	681	245	1249	0	0	933	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.851	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1506	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					370	370						403
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	548	3	740	266	1358	0	0	1014	403
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	548	373	370	266	1358	0	0	1014	403
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	46.0			46.0	46.0
Total Split (s)				25.0	25.0	25.0	20.0	35.0			45.0	45.0
Total Split (%)				20.8%	20.8%	20.8%	16.7%	29.2%			37.5%	37.5%
Maximum Green (s)				18.0	18.0	18.0	14.0	29.0			39.0	39.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0		5.0			5.0	5.0
Flash Dont Walk (s)				33.0	33.0	33.0		35.0			35.0	35.0
Pedestrian Calls (#/hr)				0	0	0		0			0	0
Act Effct Green (s)				19.2	19.2	19.2	14.0	29.0			37.8	37.8
Actuated g/C Ratio				0.16	0.16	0.16	0.12	0.24			0.32	0.32
v/c Ratio				1.00	0.68	0.67	1.29	1.11			0.50	0.52
Control Delay				88.8	11.7	11.3	172.5	71.7			34.3	5.5
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				88.8	11.7	11.3	172.5	71.7			34.3	5.5
LOS				F	B	B	F	E			C	A
Approach Delay					44.3			88.2			26.1	
Approach LOS					D			F			C	
Queue Length 50th (ft)				~241	2	0	~243	~448			182	0
Queue Length 95th (ft)				#353	103	100	m#263	m#369			217	71
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				549	552	551	206	1228			2082	786
Starvation Cap Reductn				0	0	0	0	2			0	0
Spillback Cap Reductn				0	0	0	0	0			74	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				1.00	0.68	0.67	1.29	1.11			0.50	0.51

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 54.8		Intersection LOS: D	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	30.0	30.0
Total Split (%)	25%	25%
Maximum Green (s)	24.0	23.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

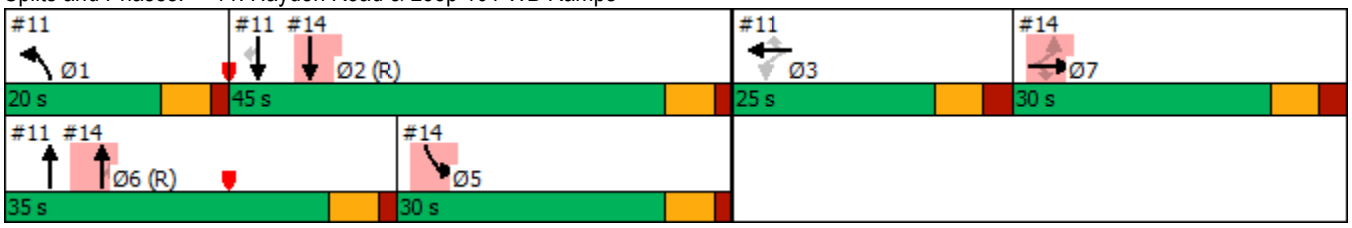
Queue shown is maximum after two cycles.

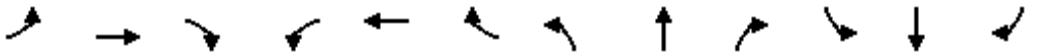
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

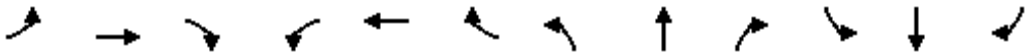
Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	823	1	1038	0	0	0	0	671	196	391	1046	0
Future Volume (vph)	823	1	1038	0	0	0	0	671	196	391	1046	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.850	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1504	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		542	542						213			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	895	1	1128	0	0	0	0	729	213	425	1137	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	895	565	564	0	0	0	0	729	213	425	1137	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					46.0	46.0	18.0	46.0	
Total Split (s)	30.0	30.0	30.0					35.0	35.0	30.0	45.0	
Total Split (%)	25.0%	25.0%	25.0%					29.2%	29.2%	25.0%	37.5%	
Maximum Green (s)	23.0	23.0	23.0					29.0	29.0	24.0	39.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0		5.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0		35.0	
Pedestrian Calls (#/hr)	0	0	0					0	0		0	
Act Effct Green (s)	23.0	23.0	23.0					29.0	29.0	22.8	37.8	
Actuated g/C Ratio	0.19	0.19	0.19					0.24	0.24	0.19	0.32	
v/c Ratio	1.36	0.78	0.78					0.47	0.39	0.65	0.71	
Control Delay	210.6	13.1	13.0					40.1	7.1	40.4	29.9	
Queue Delay	0.0	0.0	0.0					3.2	0.0	0.0	0.1	
Total Delay	210.6	13.1	13.0					43.3	7.1	40.4	30.0	
LOS	F	B	B					D	A	D	C	
Approach Delay		100.4						35.1			32.8	
Approach LOS		F						D			C	
Queue Length 50th (ft)	~470	15	14					140	0	166	135	
Queue Length 95th (ft)	#598	153	152					173	61	m193	m147	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	657	726	726					1548	544	686	1652	
Starvation Cap Reductn	0	0	0					0	0	0	53	
Spillback Cap Reductn	0	0	0					693	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	1.36	0.78	0.78					0.85	0.39	0.62	0.71	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 98 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 63.5		Intersection LOS: E	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	20.0	25.0
Total Split (%)	17%	21%
Maximum Green (s)	14.0	18.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

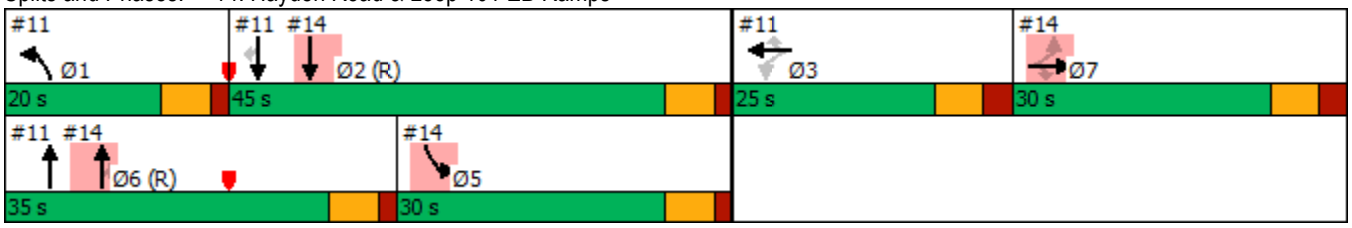
Queue shown is maximum after two cycles.

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: 14: Hayden Road & Loop 101 EB Ramps

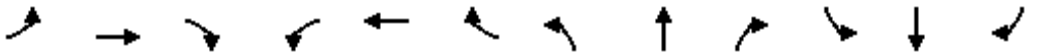


Intersection	
Intersection Delay, s/veh	134.8
Intersection LOS	F

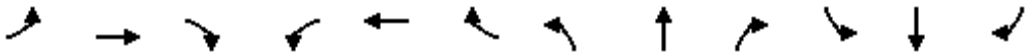
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	649	3	4	357	100	5	543	7	89	530	24
Future Vol, veh/h	62	649	3	4	357	100	5	543	7	89	530	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	705	3	4	388	109	5	590	8	97	576	26
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	194.3	59	145.4	114.1
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	99%	0%	100%	54%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	1%	0%	0%	46%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	362	188	62	433	219	4	238	219	89	353
LT Vol	5	0	0	62	0	0	4	0	0	89	0
Through Vol	0	362	181	0	433	216	0	238	119	0	353
RT Vol	0	0	7	0	0	3	0	0	100	0	0
Lane Flow Rate	5	393	204	67	470	238	4	259	238	97	384
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.019	1.324	0.686	0.231	1.549	0.785	0.015	0.886	0.794	0.331	1.263
Departure Headway (Hd)	13.317	12.817	12.79	12.905	12.405	12.395	13.628	13.128	12.809	13.272	12.772
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	270	287	284	280	296	293	264	279	286	273	288
Service Time	11.017	10.517	10.49	10.605	10.105	10.095	11.328	10.828	10.509	10.972	10.472
HCM Lane V/C Ratio	0.019	1.369	0.718	0.239	1.588	0.812	0.015	0.928	0.832	0.355	1.333
HCM Control Delay	16.3	202.2	39.4	19.4	293.2	48.7	16.5	66.9	51.2	22.4	178.4
HCM Lane LOS	C	F	E	C	F	E	C	F	F	C	F
HCM 95th-tile Q	0.1	18.8	4.6	0.9	26.3	6.1	0	7.8	6.2	1.4	17.1



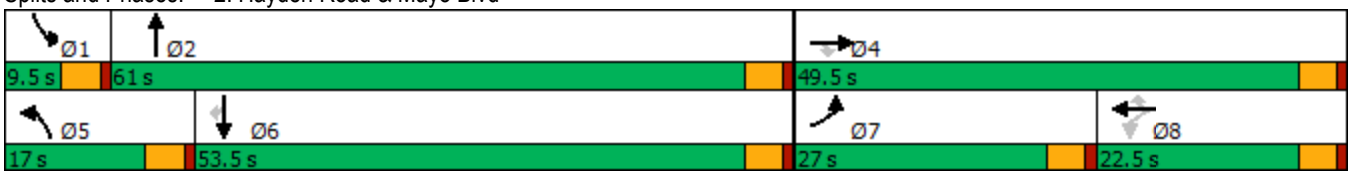
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	0	65	0	0	0	169	531	0	0	933	438
Future Volume (vph)	373	0	65	0	0	0	169	531	0	0	933	438
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850									0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186									476
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	405	0	71	0	0	0	184	577	0	0	1014	476
Shared Lane Traffic (%)												
Lane Group Flow (vph)	405	0	71	0	0	0	184	577	0	0	1014	476
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Perm		Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6



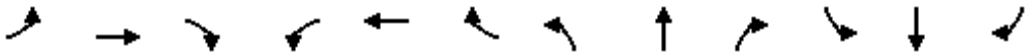
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	27.0	49.5	49.5	22.5	22.5	22.5	17.0	61.0		9.5	53.5	53.5
Total Split (%)	22.5%	41.3%	41.3%	18.8%	18.8%	18.8%	14.2%	50.8%		7.9%	44.6%	44.6%
Maximum Green (s)	22.5	45.0	45.0	18.0	18.0	18.0	12.5	56.5		5.0	49.0	49.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	15.6		15.6				10.1	63.7			49.1	49.1
Actuated g/C Ratio	0.18		0.18				0.11	0.72			0.56	0.56
v/c Ratio	0.67		0.16				0.47	0.16			0.52	0.44
Control Delay	39.9		0.8				41.3	4.2			14.1	2.6
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	39.9		0.8				41.3	4.2			14.1	2.6
LOS	D		A				D	A			B	A
Approach Delay		34.0						13.2			10.4	
Approach LOS		C						B			B	
Queue Length 50th (ft)	109		0				50	31			173	0
Queue Length 95th (ft)	161		0				86	50			266	47
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170				150					
Base Capacity (vph)	876		899				486	3665			1967	1091
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		0.08				0.38	0.16			0.52	0.44

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 88.4			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 52.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Hayden Road & Mayo Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	478	37	91	403	120	78	12	193	73	4	85
Future Volume (vph)	201	478	37	91	403	120	78	12	193	73	4	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989				0.850		0.859			0.856	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3500	0	1770	3539	1583	1770	1600	0	1770	1595	0
Flt Permitted	0.498			0.442			0.695			0.619		
Satd. Flow (perm)	928	3500	0	823	3539	1583	1295	1600	0	1153	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				130		210			92	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	520	40	99	438	130	85	13	210	79	4	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	560	0	99	438	130	85	223	0	79	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	77.0	77.0		77.0	77.0	77.0	43.0	43.0		43.0	43.0	
Total Split (%)	64.2%	64.2%		64.2%	64.2%	64.2%	35.8%	35.8%		35.8%	35.8%	
Maximum Green (s)	72.5	72.5		72.5	72.5	72.5	38.5	38.5		38.5	38.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	16.7	16.7		16.7	16.7	16.7	9.2	9.2		9.2	9.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.47	0.47	0.26	0.26		0.26	0.26	
v/c Ratio	0.50	0.34		0.26	0.26	0.16	0.25	0.39		0.27	0.20	
Control Delay	11.2	6.3		7.7	6.0	1.9	14.6	5.4		15.0	5.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.2	6.3		7.7	6.0	1.9	14.6	5.4		15.0	5.4	
LOS	B	A		A	A	A	B	A		B	A	
Approach Delay		7.7			5.5			8.0			9.8	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	23	27		9	21	0	12	2		11	1	
Queue Length 95th (ft)	77	63		34	50	17	49	43		47	27	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	928	3500		823	3539	1583	1225	1525		1091	1514	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.23	0.16		0.12	0.12	0.08	0.07	0.15		0.07	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 35.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	6	690	15	0	628
Future Vol, veh/h	15	6	690	15	0	628
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	7	750	16	0	683

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1100	383	0	0	-	-
Stage 1	758	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	206	615	-	-	0	-
Stage 1	423	-	-	-	0	-
Stage 2	691	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	206	615	-	-	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	325	615	-
HCM Lane V/C Ratio	-	-	0.05	0.011	-
HCM Control Delay (s)	-	-	16.7	10.9	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	58	790	473	62	12	47
Future Vol, veh/h	58	790	473	62	12	47
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	859	514	67	13	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	581	0	-	0	1070	257
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	556	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	989	-	-	-	216	742
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	538	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	989	-	-	-	202	742
Mov Cap-2 Maneuver	-	-	-	-	336	-
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	989	-	-	-	336	742
HCM Lane V/C Ratio	0.064	-	-	-	0.039	0.069
HCM Control Delay (s)	8.9	-	-	-	16.1	10.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	782	531	0	0	0
Future Vol, veh/h	0	782	531	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	850	577	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	577	0	-	0	1002	289
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	993	-	-	-	239	708
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	993	-	-	-	239	708
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	993	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	215	659	576	253	83	112
Future Vol, veh/h	215	659	576	253	83	112
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	716	626	275	90	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	901	0	-	0	1452	313
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	826	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	750	-	-	-	121	683
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	390	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	750	-	-	-	~ 83	683
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	390	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	21.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	750	-	-	-	204	683
HCM Lane V/C Ratio	0.312	-	-	-	0.442	0.178
HCM Control Delay (s)	12	-	-	-	35.9	11.4
HCM Lane LOS	B	-	-	-	E	B
HCM 95th %tile Q(veh)	1.3	-	-	-	2.1	0.6

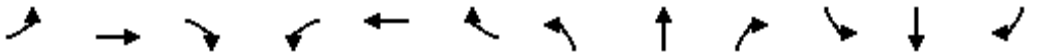
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	240.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	460	11	6	859	86	12	521	8	114	582	68
Future Vol, veh/h	41	460	11	6	859	86	12	521	8	114	582	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	500	12	7	934	93	13	566	9	124	633	74
Number of Lanes	1	2	0	1	2	0	1	2	0	1	2	0

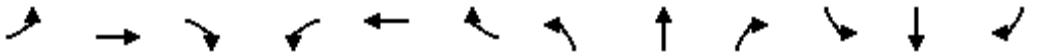
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	108.9	423.2	153.6	162.6
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	96%	0%	100%	93%	0%	100%	77%	0%	100%
Vol Right, %	0%	0%	4%	0%	0%	7%	0%	0%	23%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	347	182	41	307	164	6	573	372	114	388
LT Vol	12	0	0	41	0	0	6	0	0	114	0
Through Vol	0	347	174	0	307	153	0	573	286	0	388
RT Vol	0	0	8	0	0	11	0	0	86	0	0
Lane Flow Rate	13	378	197	45	333	179	7	622	405	124	422
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.048	1.345	0.702	0.165	1.189	0.635	0.023	2.15	1.38	0.44	1.44
Departure Headway (Hd)	14.674	14.174	14.143	15.068	14.568	14.521	13.522	13.022	12.861	14.743	14.243
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	245	261	257	240	253	250	266	286	287	247	257
Service Time	12.374	11.874	11.843	12.768	12.268	12.221	11.222	10.722	10.561	12.443	11.943
HCM Lane V/C Ratio	0.053	1.448	0.767	0.188	1.316	0.716	0.026	2.175	1.411	0.502	1.642
HCM Control Delay	18.1	215.3	44.5	20.7	157.8	39.5	16.5	556.5	224.7	28.5	253.9
HCM Lane LOS	C	F	E	C	F	E	C	F	F	D	F
HCM 95th-tile Q	0.2	18.1	4.7	0.6	13.8	3.9	0.1	44.7	20.4	2.1	20.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	417	6	639	792	1307	0	0	1067	771
Future Volume (vph)	0	0	0	417	6	639	792	1307	0	0	1067	771
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	240		0	0		190
Storage Lanes	0		0	2		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	1.00	1.00	0.86	1.00
Frt					0.853	0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	3433	1509	1504	1770	5085	0	0	6408	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					348	347						652
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		699			661			409			989	
Travel Time (s)		10.6			10.0			7.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	453	7	695	861	1421	0	0	1160	838
Shared Lane Traffic (%)						50%						
Lane Group Flow (vph)	0	0	0	453	355	347	861	1421	0	0	1160	838
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2			2	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				20	100	20	20	100			100	20
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				20	6	20	20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					3		1	6			2	
Permitted Phases				3		3						2

Lane Group	Ø5	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	5	7
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3	3	3	1	6			2	2
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	12.0	5.0			16.0	16.0
Minimum Split (s)				47.0	47.0	47.0	18.0	89.5			46.0	46.0
Total Split (s)				35.0	35.0	35.0	32.0	47.0			33.0	33.0
Total Split (%)				29.2%	29.2%	29.2%	26.7%	39.2%			27.5%	27.5%
Maximum Green (s)				28.0	28.0	28.0	26.0	41.0			27.0	27.0
Yellow Time (s)				4.3	4.3	4.3	4.4	4.4			4.4	4.4
All-Red Time (s)				2.7	2.7	2.7	1.6	1.6			1.6	1.6
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				7.0	7.0	7.0	6.0	6.0			6.0	6.0
Lead/Lag				Lead	Lead	Lead	Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	5.0	5.0			2.0	2.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0		5.0			5.0	5.0
Flash Dont Walk (s)				33.0	33.0	33.0		35.0			35.0	35.0
Pedestrian Calls (#/hr)				0	0	0		0			0	0
Act Effct Green (s)				22.1	22.1	22.1	26.0	41.0			27.0	27.0
Actuated g/C Ratio				0.18	0.18	0.18	0.22	0.34			0.22	0.22
v/c Ratio				0.72	0.63	0.62	2.25	0.82			0.80	0.97
Control Delay				52.4	10.0	9.3	587.9	11.0			49.1	35.9
Queue Delay				0.0	0.0	0.0	0.0	0.9			0.6	0.0
Total Delay				52.4	10.0	9.3	587.9	11.9			49.7	35.9
LOS				D	B	A	F	B			D	D
Approach Delay					26.4			229.2			43.9	
Approach LOS					C			F			D	
Queue Length 50th (ft)				172	5	0	~1049	116			248	182
Queue Length 95th (ft)				215	92	84	m#1267	m152			292	#482
Internal Link Dist (ft)		619			581			329			909	
Turn Bay Length (ft)							240					190
Base Capacity (vph)				801	618	616	383	1737			1441	861
Starvation Cap Reductn				0	0	0	0	119			0	0
Spillback Cap Reductn				0	0	0	0	0			72	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.57	0.57	0.56	2.25	0.88			0.85	0.97

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.25			
Intersection Signal Delay: 118.0		Intersection LOS: F	
Intersection Capacity Utilization 120.9%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø5	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	18.0	20.0
Total Split (%)	15%	17%
Maximum Green (s)	12.0	13.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

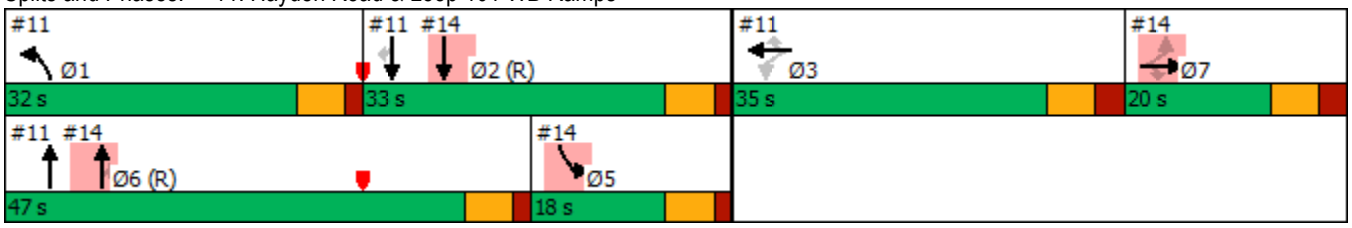
Queue shown is maximum after two cycles.

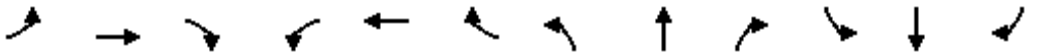
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

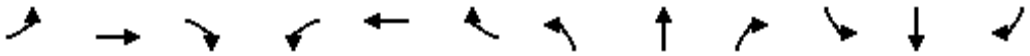
Splits and Phases: 11: Hayden Road & Loop 101 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	468	1	534	0	0	0	0	1630	405	547	936	0
Future Volume (vph)	468	1	534	0	0	0	0	1630	405	547	936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		215	245		0
Storage Lanes	2		1	0		0	0		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	1.00	0.86	1.00	0.97	0.91	1.00
Frt		0.851	0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	1506	1504	0	0	0	0	6408	1583	3433	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		290	290						374			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		604			554			812			409	
Travel Time (s)		9.2			8.4			13.8			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	509	1	580	0	0	0	0	1772	440	595	1017	0
Shared Lane Traffic (%)			50%									
Lane Group Flow (vph)	509	291	290	0	0	0	0	1772	440	595	1017	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		7						6		5	2	
Permitted Phases	7		7						6			

Lane Group	Ø1	Ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	3
Permitted Phases		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	7	7					6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					5.0	5.0	12.0	16.0	
Minimum Split (s)	47.0	47.0	47.0					89.5	89.5	18.0	46.0	
Total Split (s)	20.0	20.0	20.0					47.0	47.0	18.0	33.0	
Total Split (%)	16.7%	16.7%	16.7%					39.2%	39.2%	15.0%	27.5%	
Maximum Green (s)	13.0	13.0	13.0					41.0	41.0	12.0	27.0	
Yellow Time (s)	4.3	4.3	4.3					4.4	4.4	4.4	4.4	
All-Red Time (s)	2.7	2.7	2.7					1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0					6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lag					Lead	Lead	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0					5.0	5.0	2.0	2.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Walk Time (s)	7.0	7.0	7.0					5.0	5.0		5.0	
Flash Dont Walk (s)	33.0	33.0	33.0					35.0	35.0		35.0	
Pedestrian Calls (#/hr)	0	0	0					0	0		0	
Act Effct Green (s)	18.9	18.9	18.9					41.0	41.0	12.0	27.0	
Actuated g/C Ratio	0.16	0.16	0.16					0.34	0.34	0.10	0.22	
v/c Ratio	0.94	0.60	0.60					0.81	0.56	1.73	0.89	
Control Delay	77.3	11.6	11.5					39.5	8.5	365.9	38.2	
Queue Delay	44.7	0.0	0.0					8.1	0.0	0.0	0.0	
Total Delay	121.9	11.6	11.5					47.6	8.5	365.9	38.2	
LOS	F	B	B					D	A	F	D	
Approach Delay		63.1						39.8			159.1	
Approach LOS		E						D			F	
Queue Length 50th (ft)	203	1	0					360	35	~330	104	
Queue Length 95th (ft)	#377	94	92					409	128	#449	#182	
Internal Link Dist (ft)		524			474			732			329	
Turn Bay Length (ft)									215	245		
Base Capacity (vph)	541	481	481					2189	787	343	1144	
Starvation Cap Reductn	0	0	0					0	0	0	0	
Spillback Cap Reductn	100	0	0					395	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	1.15	0.60	0.60					0.99	0.56	1.73	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 205			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.25			
Intersection Signal Delay: 84.1		Intersection LOS: F	
Intersection Capacity Utilization 120.9%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Lane Group	Ø1	Ø3
Detector Phase		
Switch Phase		
Minimum Initial (s)	12.0	7.0
Minimum Split (s)	18.0	47.0
Total Split (s)	32.0	35.0
Total Split (%)	27%	29%
Maximum Green (s)	26.0	28.0
Yellow Time (s)	4.4	4.3
All-Red Time (s)	1.6	2.7
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	5.0	2.0
Recall Mode	None	None
Walk Time (s)		7.0
Flash Dont Walk (s)		33.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

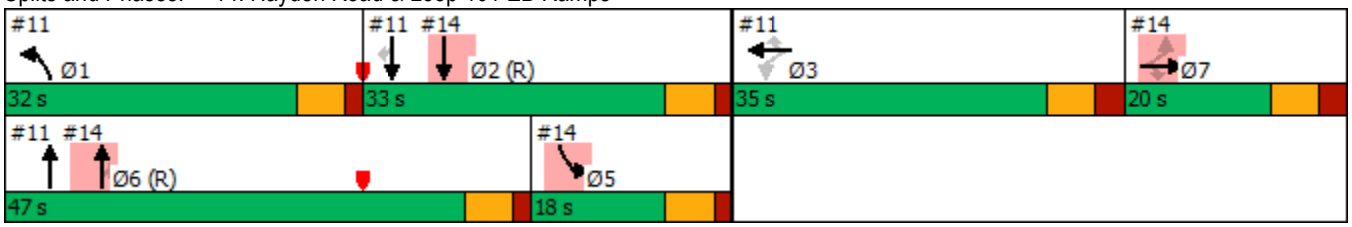
Intersection Summary

Queue shown is maximum after two cycles.

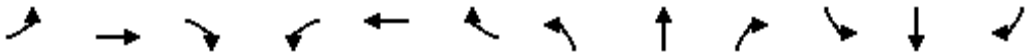
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 14: Hayden Road & Loop 101 EB Ramps



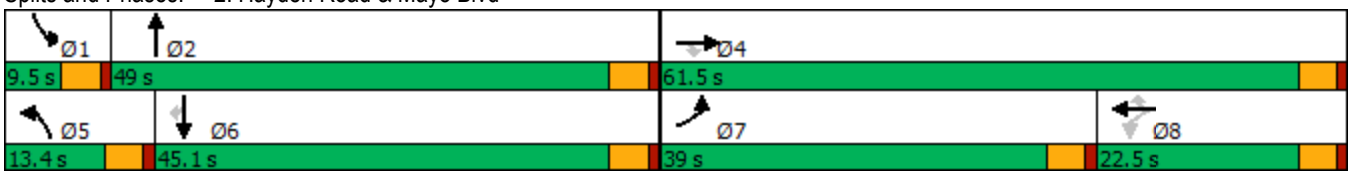
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	683	0	134	0	0	0	121	1237	0	0	833	354
Future Volume (vph)	683	0	134	0	0	0	121	1237	0	0	833	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		170	150		130	150		0	355		0
Storage Lanes	2		1	1		2	2		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.97	0.95	1.00
Frt			0.850									0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	1583	1863	3539	3278	3433	5085	0	3614	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146									385
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		700			1025			944			517	
Travel Time (s)		15.9			23.3			16.1			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	742	0	146	0	0	0	132	1345	0	0	905	385
Shared Lane Traffic (%)												
Lane Group Flow (vph)	742	0	146	0	0	0	132	1345	0	0	905	385
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot		Perm	Perm		Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8						6

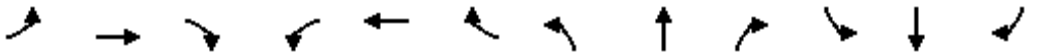


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	39.0	61.5	61.5	22.5	22.5	22.5	13.4	49.0		9.5	45.1	45.1
Total Split (%)	32.5%	51.3%	51.3%	18.8%	18.8%	18.8%	11.2%	40.8%		7.9%	37.6%	37.6%
Maximum Green (s)	34.5	57.0	57.0	18.0	18.0	18.0	8.9	44.5		5.0	40.6	40.6
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0			0	0
Act Effct Green (s)	24.0		24.0				8.2	53.5			40.8	40.8
Actuated g/C Ratio	0.28		0.28				0.09	0.62			0.47	0.47
v/c Ratio	0.78		0.27				0.40	0.43			0.54	0.41
Control Delay	35.1		5.5				42.0	9.6			18.7	3.2
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	35.1		5.5				42.0	9.6			18.7	3.2
LOS	D		A				D	A			B	A
Approach Delay		30.2						12.5			14.0	
Approach LOS		C						B			B	
Queue Length 50th (ft)	193		0				35	128			182	0
Queue Length 95th (ft)	255		41				68	191			272	51
Internal Link Dist (ft)		620			945			864			437	
Turn Bay Length (ft)	400		170				150					
Base Capacity (vph)	1373		1096				354	3143			1666	949
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	0.54		0.13				0.37	0.43			0.54	0.41

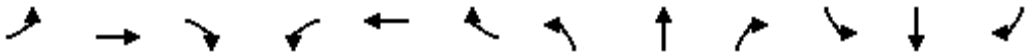
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 86.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hayden Road & Mayo Blvd





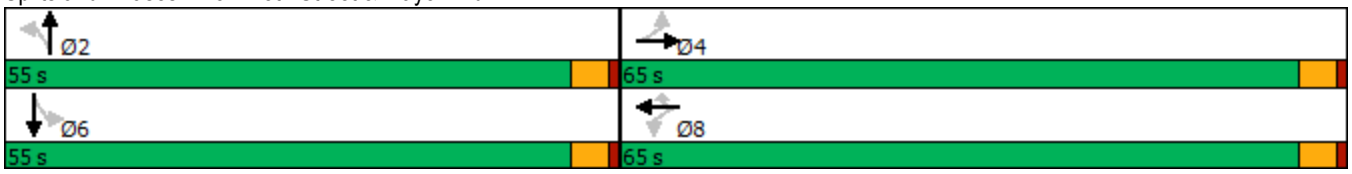
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	491	92	194	573	55	88	6	221	254	13	297
Future Volume (vph)	93	491	92	194	573	55	88	6	221	254	13	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976				0.850		0.854			0.856	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3454	0	1770	3539	1583	1770	1591	0	1770	1595	0
Flt Permitted	0.368			0.362			0.456			0.559		
Satd. Flow (perm)	685	3454	0	674	3539	1583	849	1591	0	1041	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26				60		240			217	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		337			945			1455			417	
Travel Time (s)		7.7			21.5			33.1			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	534	100	211	623	60	96	7	240	276	14	323
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	634	0	211	623	60	96	247	0	276	337	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	65.0	65.0		65.0	65.0	65.0	55.0	55.0		55.0	55.0	
Total Split (%)	54.2%	54.2%		54.2%	54.2%	54.2%	45.8%	45.8%		45.8%	45.8%	
Maximum Green (s)	60.5	60.5		60.5	60.5	60.5	50.5	50.5		50.5	50.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	32.9	32.9		32.9	32.9	32.9	28.1	28.1		28.1	28.1	
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.39	0.39		0.39	0.39	
v/c Ratio	0.32	0.40		0.69	0.39	0.08	0.29	0.32		0.68	0.45	
Control Delay	17.7	13.6		30.6	14.1	4.2	21.2	4.3		30.8	9.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.7	13.6		30.6	14.1	4.2	21.2	4.3		30.8	9.2	
LOS	B	B		C	B	A	C	A		C	A	
Approach Delay		14.2			17.3			9.0			18.9	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	24	78		62	80	0	26	2		90	31	
Queue Length 95th (ft)	86	188		211	190	22	91	52		267	132	
Internal Link Dist (ft)		257			865			1375			337	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	558	2818		549	2882	1300	633	1247		776	1245	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.18	0.22		0.38	0.22	0.05	0.15	0.20		0.36	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 72			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 37: 78th Street & Mayo Blvd



Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	14	641	7	0	730
Future Vol, veh/h	34	14	641	7	0	730
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	15	697	8	0	793

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1098	353	0	0	-	-
Stage 1	701	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	207	643	-	-	0	-
Stage 1	453	-	-	-	0	-
Stage 2	648	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	207	643	-	-	-	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	648	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	-	333	643	-
HCM Lane V/C Ratio	-	-	0.111	0.024	-
HCM Control Delay (s)	-	-	17.2	10.7	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	605	873	27	27	105
Future Vol, veh/h	25	605	873	27	27	105
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	-	-	100	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	658	949	29	29	114

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	978	0	-	0	1332	475
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	383	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	701	-	-	-	146	536
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	701	-	-	-	140	536
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	659	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	701	-	-	-	252	536
HCM Lane V/C Ratio	0.039	-	-	-	0.116	0.213
HCM Control Delay (s)	10.3	-	-	-	21.2	13.5
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.8

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	624	898	0	0	0
Future Vol, veh/h	0	624	898	0	0	0
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	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	678	976	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	976	0	-	0	1315	488
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	339	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	703	-	-	-	149	526
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	703	-	-	-	149	526
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	693	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	703	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	93	932	659	111	135	239
Future Vol, veh/h	93	932	659	111	135	239
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	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	1013	716	121	147	260

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	837	0	-	0	1425	358
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	709	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	793	-	-	-	~ 126	638
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	793	-	-	-	~ 110	638
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	449	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	24.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	793	-	-	-	240	638
HCM Lane V/C Ratio	0.127	-	-	-	0.611	0.407
HCM Control Delay (s)	10.2	-	-	-	41.1	14.5
HCM Lane LOS	B	-	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	3.6	2

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

Total Traffic w/Axon
Mayo Blvd & Miller Rd
Signal

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	899	522	603	699
Demand Flow Rate, veh/h	917	532	615	714
Vehicles Circulating, veh/h	691	675	1013	426
Vehicles Exiting, veh/h	449	953	595	781
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	19.0	10.5	18.1	9.9
Approach LOS	C	B	C	A

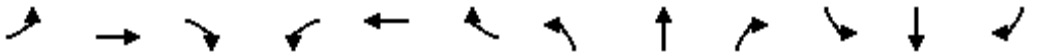
Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.471	0.529
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	431	486	250	282	289	326	336	378
Cap Entry Lane, veh/h	673	697	681	704	529	556	821	839
Entry HV Adj Factor	0.981	0.981	0.981	0.981	0.981	0.981	0.978	0.981
Flow Entry, veh/h	423	477	245	277	284	320	329	371
Cap Entry, veh/h	660	683	668	691	519	545	803	822
V/C Ratio	0.640	0.698	0.367	0.400	0.547	0.586	0.409	0.451
Control Delay, s/veh	17.9	20.0	10.3	10.6	17.7	18.5	9.6	10.2
LOS	C	C	B	B	C	C	A	B
95th %tile Queue, veh	5	6	2	2	3	4	2	2

Intersection	
Intersection Delay, s/veh	25.6
Intersection LOS	D

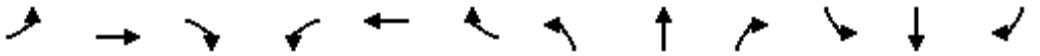
Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	583	1162	588	831
Demand Flow Rate, veh/h	595	1185	599	847
Vehicles Circulating, veh/h	779	636	709	1103
Vehicles Exiting, veh/h	1171	672	665	718
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.9	29.9	11.9	38.3
Approach LOS	B	D	B	E

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.471	0.529	0.470	0.530	0.471	0.529	0.470	0.530
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	280	315	557	628	282	317	398	449
Cap Entry Lane, veh/h	630	655	701	724	664	688	494	522
Entry HV Adj Factor	0.979	0.982	0.980	0.980	0.979	0.983	0.982	0.981
Flow Entry, veh/h	274	309	546	616	276	311	391	441
Cap Entry, veh/h	617	643	687	710	650	676	485	512
V/C Ratio	0.444	0.481	0.794	0.867	0.425	0.461	0.806	0.860
Control Delay, s/veh	12.6	13.1	26.3	33.2	11.7	12.1	35.6	40.8
LOS	B	B	D	D	B	B	E	E
95th %tile Queue, veh	2	3	8	10	2	2	8	9

Total Traffic w/Axon
Mayo Blvd & Miller Rd
Roundabout



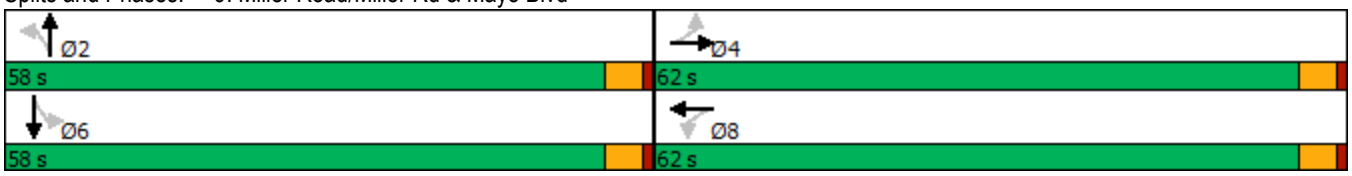
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	763	3	4	376	100	5	543	7	89	530	24
Future Volume (vph)	62	763	3	4	376	100	5	543	7	89	530	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		250	250		250	250		250
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.999			0.968			0.998			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3536	0	1770	3426	0	1770	3532	0	1770	3518	0
Flt Permitted	0.461			0.279			0.378			0.381		
Satd. Flow (perm)	859	3536	0	520	3426	0	704	3532	0	710	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					38			1			5	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		2264			949			2008			642	
Travel Time (s)		51.5			21.6			34.2			10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	829	3	4	409	109	5	590	8	97	576	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	832	0	4	518	0	5	598	0	97	602	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes						Yes	
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		



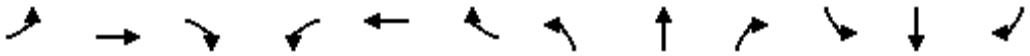
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	62.0	62.0		62.0	62.0		58.0	58.0		58.0	58.0	
Total Split (%)	51.7%	51.7%		51.7%	51.7%		48.3%	48.3%		48.3%	48.3%	
Maximum Green (s)	57.5	57.5		57.5	57.5		53.5	53.5		53.5	53.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	20.1	20.1		20.1	20.1		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.35	0.35		0.35	0.35	
v/c Ratio	0.18	0.53		0.02	0.34		0.02	0.48		0.39	0.49	
Control Delay	10.2	11.2		8.8	8.8		11.4	13.5		17.8	13.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.2	11.2		8.8	8.8		11.4	13.5		17.8	13.4	
LOS	B	B		A	A		B	B		B	B	
Approach Delay		11.1			8.8			13.5			14.0	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	9	71		1	36		1	58		17	58	
Queue Length 95th (ft)	36	159		5	88		7	124		62	125	
Internal Link Dist (ft)		2184			869			1928			562	
Turn Bay Length (ft)	250			250			250			250		
Base Capacity (vph)	841	3464		509	3357		681	3416		687	3403	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.08	0.24		0.01	0.15		0.01	0.18		0.14	0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 45.5			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 12.0		Intersection LOS: B	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Miller Road/Miller Rd & Mayo Blvd



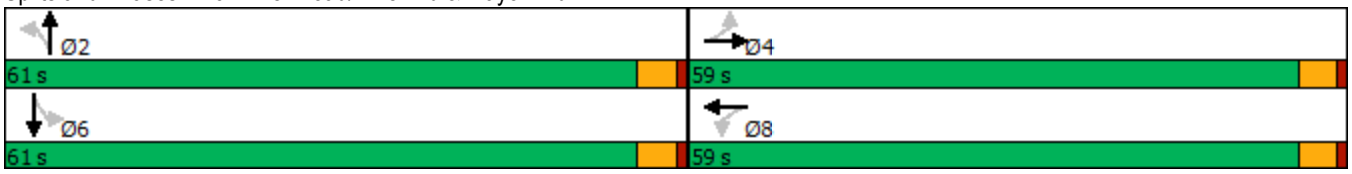
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	484	11	6	977	86	12	521	8	114	582	68
Future Volume (vph)	41	484	11	6	977	86	12	521	8	114	582	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		250	250		250	250		250
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.997			0.988			0.998			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3529	0	1770	3497	0	1770	3532	0	1770	3483	0
Flt Permitted	0.151			0.430			0.286			0.369		
Satd. Flow (perm)	281	3529	0	801	3497	0	533	3532	0	687	3483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			10			2			14	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		2264			949			2008			642	
Travel Time (s)		51.5			21.6			34.2			10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	526	12	7	1062	93	13	566	9	124	633	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	538	0	7	1155	0	13	575	0	124	707	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes						Yes	
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		



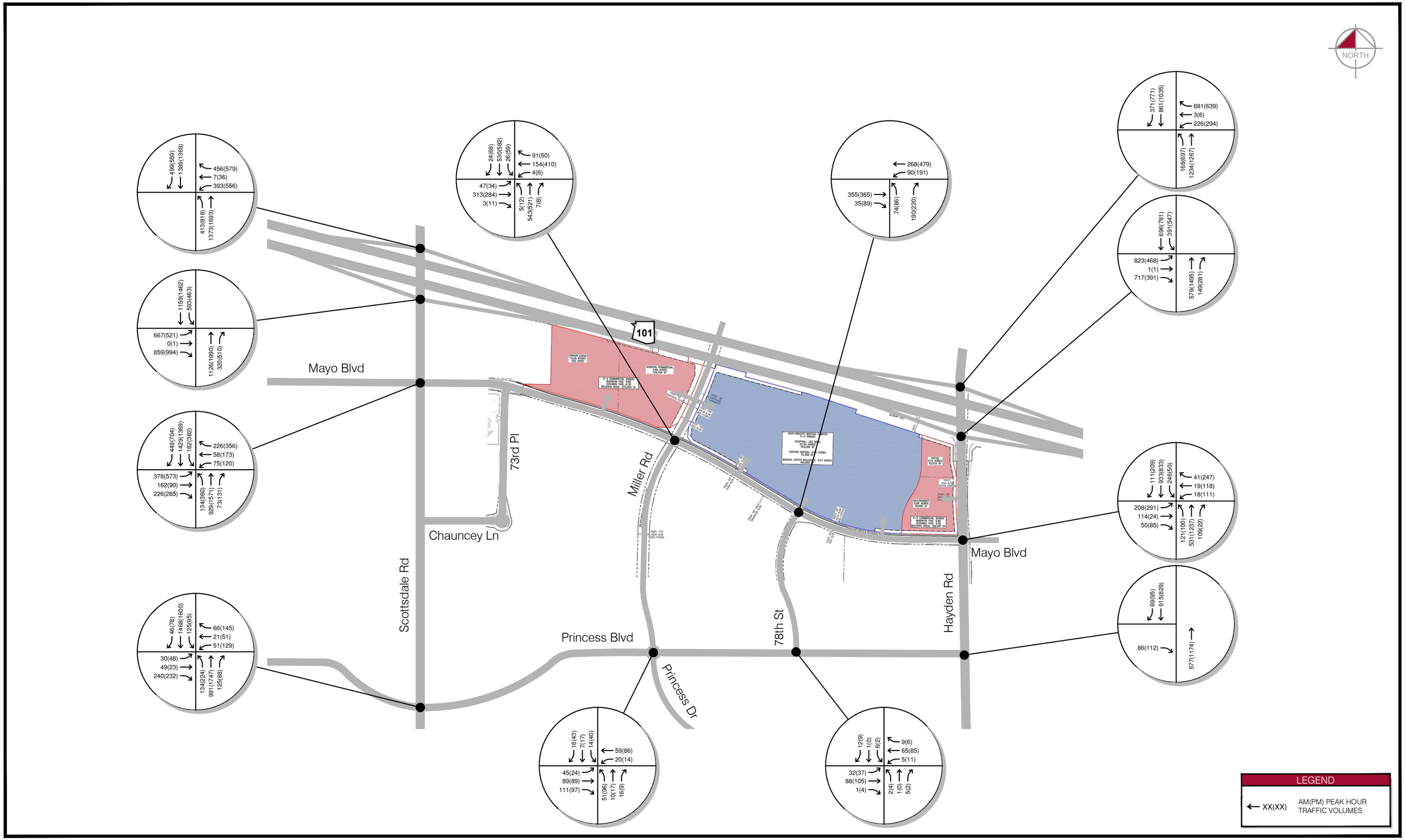
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	59.0	59.0		59.0	59.0		61.0	61.0		61.0	61.0	
Total Split (%)	49.2%	49.2%		49.2%	49.2%		50.8%	50.8%		50.8%	50.8%	
Maximum Green (s)	54.5	54.5		54.5	54.5		56.5	56.5		56.5	56.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	30.8	30.8		30.8	30.8		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36		0.36	0.36	
v/c Ratio	0.33	0.31		0.02	0.68		0.07	0.45		0.50	0.55	
Control Delay	19.9	11.0		10.3	15.4		16.8	17.4		25.9	18.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.9	11.0		10.3	15.4		16.8	17.4		25.9	18.4	
LOS	B	B		B	B		B	B		C	B	
Approach Delay		11.7			15.4			17.4			19.5	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	9	56		1	153		3	79		34	101	
Queue Length 95th (ft)	45	125		9	317		17	171		108	212	
Internal Link Dist (ft)		2184			869			1928			562	
Turn Bay Length (ft)	250			250			250			250		
Base Capacity (vph)	240	3017		684	2991		464	3078		598	3037	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.18		0.01	0.39		0.03	0.19		0.21	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 63.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 67.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Miller Road/Miller Rd & Mayo Blvd



Appendix D Background Traffic Exhibit



Kimley»Horn

March 2023

Figure

2040 Total Traffic Without Banner Site Traffic

NWC Hayden Road & Mayo Boulevard | Traffic Impact & Mitigation Analysis

Appendix E Kimley Horn TIMA Report

TRAFFIC IMPACT AND MITIGATION ANALYSIS

NWC Hayden Road and Mayo Boulevard

Scottsdale, Arizona

Prepared for:

Hayden Loop 101 Investors, LLC

Kimley»Horn

TRAFFIC IMPACT AND MITIGATION ANALYSIS

NWC Hayden Road and Mayo Boulevard
Scottsdale, Arizona

Prepared for:

Hayden Loop 101 Investors, LLC
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Prepared By:

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7740 North 16th Street, Suite 300
Phoenix, Arizona 85020

ACCEPTED WITH COMMENTS
CITY OF SCOTTSDALE
TRANSPORTATION DEPARTMENT

DATE: 6/14/2023

REVIEWER: P Murphy

37-SA-2023 v2 rec. 5/18/23

291268016
April 2023
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Kimley»Horn

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1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

This report documents a traffic impact and mitigation analysis (TIMA) performed for the master plan associated with a proposed mixed-use development located on the northwest corner of the intersection of Hayden Road and Mayo Boulevard in Scottsdale, Arizona. The site is anticipated to include hospital, medical office, retail, senior living, office, and restaurant land uses. This report documents a 2040 build out analysis of the key street intersections in the area.

1.2 REPORT PURPOSE AND OBJECTIVES

Kimley-Horn and Associates, Inc. has been retained by Hayden Loop 101 Investors, LLC to perform the TIMA for the proposed development.

The purpose of this study is to address traffic and transportation impacts of the proposed development on surrounding streets and intersections. This traffic impact analysis was prepared based on the Category 3 TIMA criteria set forth by the City of Scottsdale. The specific objectives of this study are:

- To evaluate lane requirements on all existing roadway links and at all existing intersections within the study area;
- To determine future level of service (LOS) for all existing intersections within the study area and recommend any capacity-related improvements;
- To determine appropriate functional classification and cross-section at buildout of all study area roadways; and
- To evaluate the need for auxiliary lanes at all study area intersections.

1.3 PRINCIPAL FINDINGS AND RECOMMENDATIONS

The proposed development is expected to add 30,854 new daily trips, 1,878 new AM peak hour trips, and 2,570 new PM peak hour trips to the roadway network. The purpose of this report was to review key street intersections for a 2040 buildout scenario to determine appropriate intersection geometry. It is recommended that volumes in the area be monitored and additional analysis be considered with detailed site plans or adjacent development plans.

- The intersections of Mayo Boulevard with Miller Road and 78th Street were evaluated as standard intersections with this report. The addition of traffic signal control is anticipated to be necessary at the Miller Road & Mayo Boulevard intersection. The intersection of 78th Street & Mayo Boulevard operates acceptably as a two-way stop-controlled intersection except for the northbound and southbound left-turn movements. Traffic signal warrants should be reviewed with a more detailed site plan. Alternate intersection configurations could also be considered at these intersections. Previous documents have contemplated roundabouts in addition to a standard intersection configuration. At the City's request, the intersection of Miller Road & Mayo Boulevard was also evaluated as a roundabout and the LOS was satisfactory under that condition.

- At the Loop 101 TI, Hayden Road was constructed to accommodate a third southbound through lane. It is anticipated that a third southbound through lane will extend south of the Loop 101 to the Mayo Boulevard intersection where the third through lane is anticipated to transition to a right-turn only lane. The Axon signing and pavement marking plans include a third northbound through lane at the intersection of Hayden Road and Mayo Boulevard that is anticipated to continue north to the Loop 101 TI. Hayden Road has three travel lanes in each direction north of the Loop 101.

- Mayo Boulevard is anticipated to be constructed to a City of Scottsdale urban major collector cross-section between 73rd Place and Hayden Road with two travel lanes and bike lanes in each direction and a two-way left-turn lane.

- Miller Road is anticipated to be constructed to an urban major collector cross-section with two travel lanes and bike lanes in each direction and a two-way left-turn lane.

- The unsignalized and signalized intersections are anticipated to operate at an overall acceptable level of service in the 2040 total traffic condition except for the Hayden Road & Loop 101 TI during the PM peak hour. The overall level of service at the Hayden Road & Loop 101 TI is driven by the delay associated with the northbound left-turn movement. Considerations for improvement to the northbound left-turn movement for the 2040 total traffic condition are discussed in additional detail with the next item.

- The Hayden Road & Loop 101 northbound left-turn storage should be reconfigured and coordinated with the Axon development to extend the left-turn storage. The signing and pavement marking plans associated with the Axon development include proposed 355-foot dual southbound left-turn lanes at the intersection of Hayden Road & Mayo Boulevard. The northbound left-turn lane storage at the Hayden Road & Loop 101 traffic interchange could provide approximately 550 feet of storage to maximize the available space between intersections; however, there may be an ability to extend the storage further if the dual southbound left-turn length is reduced at the Hayden Road and Mayo Boulevard intersection into the Axon development. As an additional consideration, the inside through lane at the Hayden Rd & Loop 101 TI may be able to be utilized as a second northbound left-turn lane, and two northbound through lanes would be maintained through the TI. Traffic volumes should be monitored and coordination with surrounding development should occur.

- The westbound left-turn lane at the intersection of Scottsdale Road & Princess Boulevard may require additional storage in future traffic conditions. Volumes are recommended to be monitored at this location. Consider refining the storage length with development of the land on the northeast corner of the intersection.

- It is recommended that the northbound approach to the intersection of Hayden Road & Mayo Boulevard by re-striped to provided dual left-turn lanes. The pavement marking modifications should occur at or after the time of signalization of the intersection.

- It is recommended that the eastbound approach to the intersection of Hayden Road & Mayo Boulevard provide dual left-turn lanes with 400 feet of storage in each lane. The Crossroads East Planning Unit VII Circulation Plan indicated that there may be an ability to provide two full-access driveway locations along Mayo Boulevard between 78th Street and Hayden Road; however, a single

full-access driveway location is recommended given the eastbound left-turn storage demand at the Hayden Road & Mayo Boulevard intersection. It is recommended that the full-access driveway be located approximately at the midpoint of the approximate 1,600-foot Mayo Boulevard roadway segment between 78th Street and Hayden Road to provide full access to both sides of Mayo Boulevard. Cross access should be considered between the restaurant/office portion of the plan and medical campus portion of the current proposed plan.

- It is recommended that 250 feet of left-turn lane and right-turn lane storage be provided along all approaches to the intersection of Miller Road & Mayo Boulevard. This more conservative recommendation is provided due to the higher level of uncertainty associated with the background traffic volumes at the intersection. When the intersection is constructed, a reassignment of traffic volumes will occur to utilize the Miller Road underpass.

- The future westbound right-turn lane at the intersection of Scottsdale Road & Mayo Boulevard is anticipated to be constructed by the Optima McDowell Mountain Village development. A continuous right-turn lane should be provided to accommodate the anticipated queue demand of 575 feet, while not interfering with the planned roundabout at the intersection of 73rd Place and Mayo Boulevard.

- Access spacing, turn lane warrants, and storage recommendations at driveway locations should be reviewed with development of detailed site plans.

- It is recommended that sight triangles be provided at all intersections to give drivers exiting the site a clear view of oncoming traffic. The landscaping within sight triangles must not obstruct drivers' views of the adjacent travel lanes.

2.0 PROPOSED DEVELOPMENT

2.1 SITE LOCATION

The proposed development is located on the northwest corner of the intersection of Hayden Road and Mayo Boulevard in the City of Scottsdale, Arizona. The project location is shown in **Figure 1**.

2.2 LAND USE AND SITE PLAN

The overall development consists of hospital, medical office, retail, senior living, office, and restaurant land uses. The total site area is approximately 73.2 acres. **Table 1** illustrates the land uses of the proposed development.

Table 1. Land Uses

General Description	ITE Land Use	Size
Senior Adult Housing-Multifamily	252	250 Dwelling Units
Hospital	610	352 Beds
General Office Building	710	32,670 Square Feet
Medical-Dental Office Building	720	276,100 Square Feet
Shopping Plaza (40-150k)	821	144,780 Square Feet
High-Turnover (Sit-Down) Restaurant	932	30,000 Square Feet

The layout of the site is illustrated in **Figure 2**.

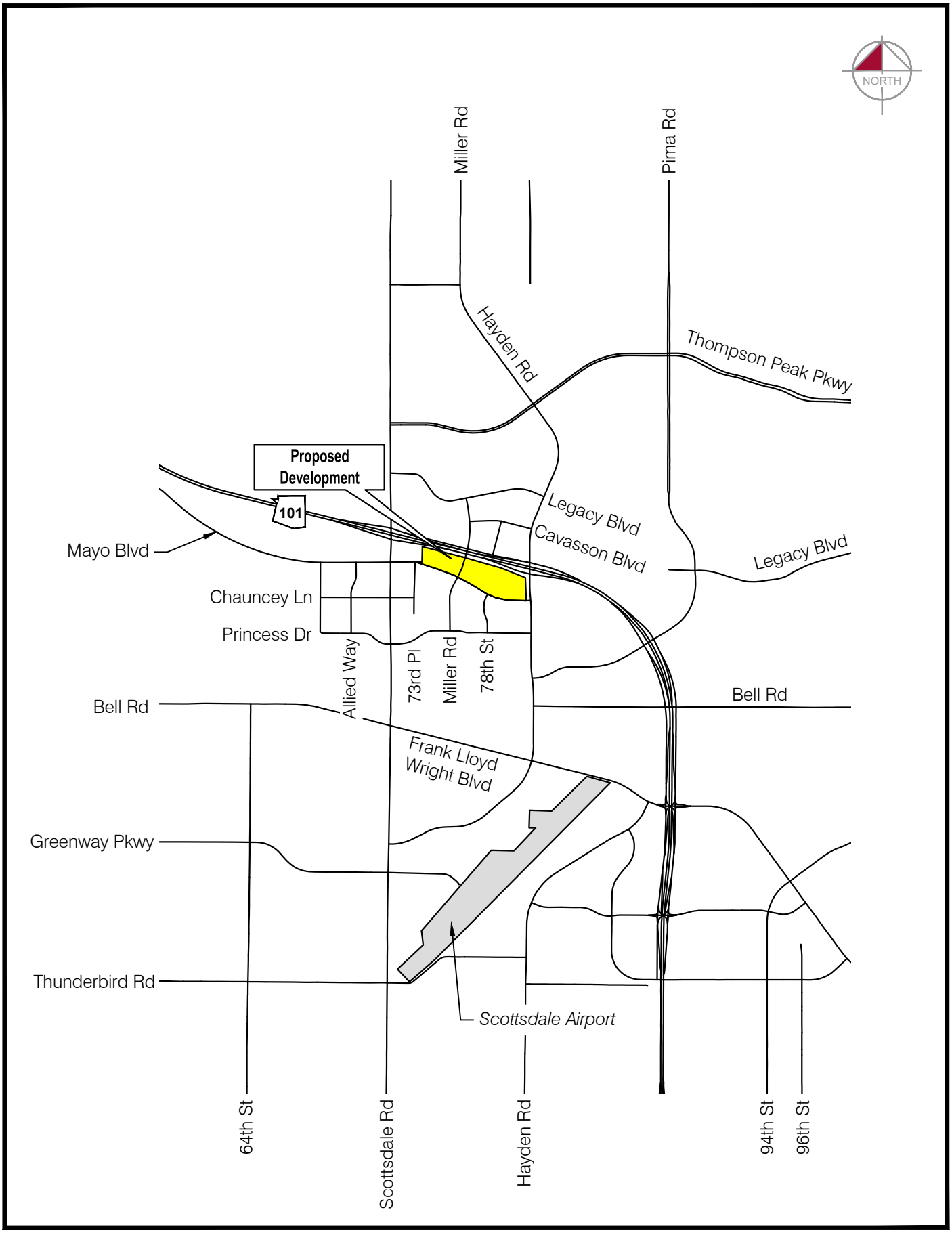
2.3 SITE ACCESSIBILITY

The site will be accessed locally via Mayo Boulevard, Miller Road, and Hayden Road. Regional access is expected to be provided by Pima Freeway (Loop 101) and by the other arterial streets in the vicinity such as Scottsdale Road.

2.4 SITE CIRCULATION

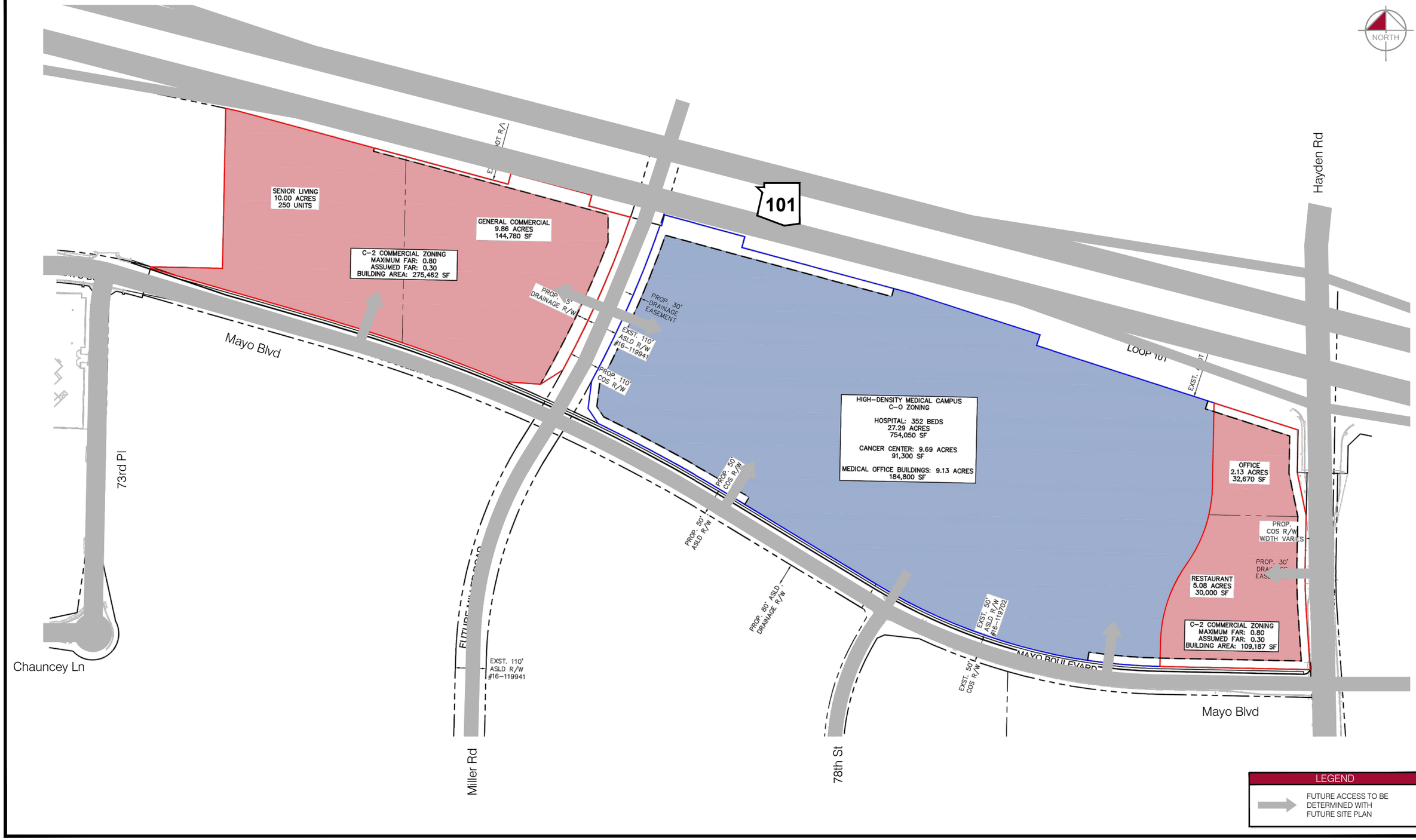
The site plan is shown in previously referenced **Figure 2**.

The site is anticipated to construct a full-access driveway on the north leg of the intersection of 78th Street and Mayo Boulevard to provide access to the site. Additional access to the development is anticipated to be provided along Mayo Boulevard, Hayden Road, and the future Miller Road alignment. Anticipated site access points included in this study are preliminary and do not necessarily reflect the ultimate access point locations. Final access locations and provisions to the site will be determined with a more detailed site plan.



Kimley»Horn

Figure 1
Vicinity Map



Kimley»Horn

Figure 2
Site Plan

3.0 STUDY AREA

3.1 STUDY AREA

The study area includes the following existing intersections:

- Scottsdale Road & Loop 101 WB Ramps;
- Scottsdale Road & Loop 101 EB Ramps;
- Hayden Road & Loop 101 WB Ramps;
- Hayden Road & Loop 101 EB Ramps;
- Scottsdale Road & Mayo Boulevard;
- Scottsdale Road and Princess Boulevard;
- Princess Drive & Princess Boulevard;
- 78th Street & Princess Boulevard;
- 78th Street & Mayo Boulevard;
- Hayden Road & Mayo Boulevard; and
- Hayden Road & Princess Boulevard.

Additionally, the future intersection of Miller Road and Mayo Boulevard was analyzed.

3.2 ADJACENT LAND USE

The area in the vicinity of the site primarily includes retail, residential, and undeveloped land uses. The land north, east, and south of the site is largely undeveloped, with commercial and residential land uses located further from the site. The land west of the site contains various retail land uses. Loop 101 borders the north of the site.

The following adjacent developments are anticipated to be built prior to the proposed site:

The **Cavasson** development is currently under construction on the northwest corner of Hayden Road and Loop 101. An addendum to the approved Cavasson Master TIMA was approved on October 23, 2020. The development contains shopping center, office building, hotel, restaurant, and multifamily residential land uses and is planned to be constructed in three phases, with Phase 1, Phase 2, and Phase 3 constructing the southeast, southwest, and northern portions of the site, respectively. Phase 1 is currently under construction. All phases of the development are anticipated to be completed by the year 2030. The Cavasson site traffic assignment volumes were included in the 2040 background traffic volumes in this study. Relevant excerpts from the Cavasson TIMA addendum are included in the **Appendix**.

The **HonorHealth Medical Campus** development is proposed on the northeast corner of Hayden Road and Loop 101. The site was previously proposed to be a Banner Health Medical Campus. A TIMA, titled *Banner Scottsdale Transportation Impact & Mitigation Study* (Banner Health TIMA), was accepted for the former development plan on September 20, 2022. The Banner Health site consisted of hospital and medical-dental office land uses. Due to the similar land uses between the former Banner Health campus and the new HonorHealth campus, the full buildout site traffic assignment volumes from the Banner Health TIMA were included in the 2040 background traffic volumes in this study. Relevant excerpts from the Banner Health TIMA are included in the **Appendix**.

The **Axon Campus** development is proposed on the northeast corner of Hayden Road and Mayo Boulevard. An enhanced traffic impact statement for the Axon Campus development was submitted on September 10, 2020. The development proposes warehousing and general office land uses and is anticipated to be completed by 2035. The Axon Campus development is anticipated to construct an additional northbound travel lane on Hayden Road from Mayo Boulevard to the Loop 101 WB Ramps as well as construct Mayo Boulevard with two travel lanes in each direction east of Hayden Road as part of the development's offsite improvements. The Axon Campus site traffic assignment volumes were included in the 2040 background traffic volumes in this study. The signing and pavement marking plans associated with the development offsite improvements include dual southbound left-turn lanes and dual westbound right-turn lanes at the intersection of Hayden Road and Mayo Boulevard. A third northbound through lane is also reflected in the plans along with the addition of traffic signal control at the intersection. Relevant excerpts from the Axon Campus enhanced traffic statement and signing and pavement marking plans are included in the **Appendix**.

The **Optima McDowell Mountain Village** development is proposed on the northeast corner of Scottsdale Road and Mayo Boulevard. A TIMA for the development was submitted in August 2022 and has since been accepted by the City of Scottsdale. The development proposes mid-rise multifamily residential housing and retail land uses and is anticipated to be completed by 2025. The Optima McDowell Mountain Village development is anticipated to widen Mayo Boulevard to three lanes per direction along its site frontage as part of its offsite improvements. The Optima McDowell Mountain Village site traffic assignment volumes were included in the 2040 background traffic volumes in this study. Relevant excerpts from the Optima McDowell Mountain Village TIMA are included in the **Appendix**.

The **Crossroads East Planning Unit VII** is located on the southwest corner of the intersection of Hayden Road and Mayo Boulevard and includes the area bound by Hayden Road, Princess Boulevard, and the future Mayo Boulevard and Miller Road alignments. A traffic master plan was completed by Kimley-Horn for the planning unit in May 2018. Planning Unit VII is anticipated to include residential, office, and retail land uses. A multifamily residential development was under construction or had been constructed at the time of this analysis. Planning Unit VII traffic assignment volumes were projected for the intersection of 78th Street and Mayo Boulevard and included in the 2040 background traffic volumes. According to the Planning Unit VII circulation plan, the geometry concept shows the intersections of Mayo Boulevard with Miller Road and 78th Street with roundabout or standard intersection configuration options. For the purposes of this study, the intersections were evaluated as standard intersections. The alternate intersection configuration could be considered with development of detailed site plans. Relevant excerpts from the Crossroads East Planning Unit VII traffic master plan are included in the **Appendix**.

4.0 EXISTING CONDITIONS

4.1 PHYSICAL CHARACTERISTICS

The existing roadway network within the study area includes the Loop 101, Scottsdale Road, Hayden Road, Princess Boulevard, Princess Drive, Mayo Boulevard, and 78th Street. The existing intersection lane use and traffic control are shown in **Figure 3**.

Loop 101 extends east-west in the vicinity of the site and borders the site to the north. Loop 101 has traffic interchanges (TIs) with Scottsdale Road and Hayden Road in the vicinity of the site.

Scottsdale Road extends north-south with three travel lanes and a bike lane in each direction and a raised median. Curb, gutter, and sidewalk are in place along both sides of Scottsdale Road. The posted speed limit is 45 miles per hour (mph) within the vicinity of the site. The City of Scottsdale classifies Scottsdale Road as a major arterial roadway in the vicinity of the site. The City of Scottsdale Functional Classification Map is included in the **Appendix**.

Hayden Road extends north-south with two travel lanes and a bike lane in each direction and a raised median adjacent to the site. Hayden Road becomes Greenway-Hayden Loop south of the site and transitions to become Miller Road north of the Loop 101. Curb, gutter, and sidewalk are generally in place along both sides of Hayden Road north of the Loop 101 TI and south of Mayo Boulevard. The posted speed limit is 45 mph north of Loop 101 and 40 mph south of Loop 101. The City of Scottsdale classifies Hayden Road as a minor arterial roadway.

At the Loop 101 TI, Hayden Road was constructed to accommodate a third southbound through lane. It is anticipated that a third southbound through lane will extend south of the Loop 101 to the Mayo Boulevard intersection, where the third through lane is anticipated to transition to a right-turn only lane. The Axon signing and pavement marking plans include a third northbound through lane at the intersection of Hayden Road and Mayo Boulevard that is anticipated to continue north to the Loop 101 TI. Hayden Road has three travel lanes in each direction north of the Loop 101.

Princess Boulevard extends east-west with two travel lanes in each direction and a raised median. Princess Boulevard becomes Princess Drive west of Scottsdale Road and terminates at Hayden Road to the east. Concrete curb, gutter, and sidewalk are in place along the south side of Princess Boulevard between Scottsdale Road and 78th Street and along both sides of Princess Boulevard west of Scottsdale Road and east of 78th Street. The posted speed limit is generally 30 mph in the vicinity of the site. The City of Scottsdale classifies Princess Boulevard as a major collector roadway.

Princess Drive is a curvilinear roadway with two travel lanes in each direction and a raised median. Princess Drive extends south from Princess Boulevard and curves east before turning into Pima Road at Loop 101. Concrete curb, gutter, and sidewalk are in place along both sides of Princess Drive. The posted speed limit is 25 mph within the vicinity of the site.

Mayo Boulevard is a discontinuous roadway that currently extends east-west with three eastbound travel lanes, two westbound travel lanes, bike lanes in each direction, and a raised median in the vicinity of the Scottsdale Road intersection. Mayo Boulevard currently extends east of Scottsdale Road to 73rd Place

and between 78th Street and Hayden Road. Concrete curb, gutter, and sidewalk are in place on both sides of Mayo Boulevard west of 73rd Place. The posted speed limit is 45 mph west of Scottsdale Road and 30 mph east of 78th Street. The City of Scottsdale classifies Mayo Boulevard as a major collector roadway east of Scottsdale Road. The City of Phoenix classifies Mayo Boulevard as an arterial roadway with an "A" cross-section west of Scottsdale Road. Mayo Boulevard is anticipated to be constructed to a City of Scottsdale urban major collector cross-section between 73rd Place and Hayden Road with two travel lanes and bike lanes in each direction and a two-way left-turn lane. Mayo Road is then anticipated to transition to a City of Phoenix "A" cross-section between 73rd Place and Scottsdale Road to match the street section on the west side of Scottsdale Road. Relevant City of Scottsdale and City of Phoenix cross-sections are included in the **Appendix**.

78th Street extends north-south with one travel lane and a bike lane in each direction. A two-way left-turn lane is present for approximately 620 feet north of Princess Boulevard. 78th Street terminates at Mayo Boulevard to the north and Princess Boulevard to the south. Concrete curb, gutter, and sidewalk are in place along the west side of 78th Street for approximately 620 feet north of Princess Boulevard and along the entire east side. The posted speed limit is 30 mph. The City of Scottsdale classifies 78th Street as a minor collector roadway.

The future ***Miller Road*** alignment will extend generally north-south between Princess Boulevard and Legacy Boulevard. Miller Road will tie into the existing Princess Drive to the south and the future 76th Street to the north. The existing Miller Road Underpass will provide grade separation for traffic on Miller Road and the Loop 101, allowing for free flow on both facilities. The City of Scottsdale classifies Miller Road as a major collector roadway in the vicinity of the site. Miller Road is anticipated to be constructed to an urban major collector cross-section with two travel lanes and bike lanes in each direction and a two-way left-turn lane.

The following existing intersections are analyzed in this report:

- Scottsdale Road & Loop 101 WB Ramps (signalized; protected left-turn phasing);
- Scottsdale Road & Loop 101 EB Ramps (signalized; protected left-turn phasing);
- Scottsdale Road & Mayo Boulevard (signalized; NB/SB protected left-turn phasing, EB/WB split phasing);
- Scottsdale Road & Princess Boulevard (signalized; protected + permitted left-turn phasing);
- Princess Drive & Princess Boulevard (roundabout);
- 78th Street & Princess Boulevard (all-way stop control);
- Hayden Road & Loop 101 WB Ramps (signalized; protected left-turn phasing);
- Hayden Road & Loop 101 EB Ramps (signalized; protected left-turn phasing);
- Hayden Road & Mayo Boulevard (eastbound stop-control); and
- Hayden Road & Princess Boulevard (eastbound stop-control).

4.2 TRAFFIC VOLUMES

Turning movement counts were collected at the intersections of Scottsdale Road & Loop 101 WB Ramps, Scottsdale Road & Loop 101 EB Ramps, Scottsdale Road & Mayo Boulevard, Scottsdale Road & Princess Boulevard, Princess Drive & Princess Boulevard, 78th Street & Princess Boulevard, Hayden Road & Loop 101 WB Ramps, Hayden Road & Loop 101 EB Ramps, Hayden Road & Mayo Boulevard,

and Hayden Road & Princess Boulevard on Thursday, October 27, 2022. The counts were performed between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM.

Additionally, 24-hour bidirectional traffic counts were collected on Scottsdale Road and Hayden Road north of Mayo Boulevard on Thursday, October 27, 2022. Copies of the traffic counts are attached in the **Appendix.**

The City of Scottsdale generally requires that collected volumes be adjusted to account for seasonal variations in traffic volumes. Based on the monthly adjustment factors provided in the City of Scottsdale average daily segment traffic volume map (0.99 for the 2020 map and 1.00 for the 2018 map), the collected counts are representative of annual average conditions since they were taken in October. The results of these traffic counts are shown in **Figure 3**. The City of Scottsdale 2020 and 2018 average daily segment traffic volume maps are included in the **Appendix**. The 2018 map was looked at in addition to the 2020 map for purposes of reviewing monthly adjustment factors since the 2020 adjustment factors were during atypical conditions with the COVID pandemic; however, there was not a discernable difference in the monthly factors. With both maps, October was representative of typical conditions.

4.3 LEVEL OF SERVICE

The LOS at the existing study area intersections was evaluated using the traffic counts collected on Thursday, October 27, 2022. The LOS for the intersections was evaluated using the *Highway Capacity Manual 6th Edition* methodology for unsignalized and signalized intersections using *Synchro 11* analysis software. The intersections at the traffic interchanges of Loop 101 with Scottsdale Road and Hayden Road were analyzed using Synchro methodology for signalized traffic interchanges. The existing intersection geometry and control, shown in **Figure 3**, was used to obtain the LOS. Signalized intersections were evaluated using the existing signal timing data provided by City of Scottsdale. The results of this analysis are shown in **Table 2** and **Table 3**. LOS analysis worksheets and existing signal timing data are included in the **Appendix**.

Table 2. Existing Level of Service: Unsignalized Intersections

Intersection	NB			SB			EB			WB		
	L	T	R	L	T	R	L	T	R	L	T	R
Princess Drive & Princess Boulevard												
AM Peak	A		A					A	A	A		
PM Peak	A		A					A	A	A		
78th Street & Princess Boulevard												
AM Peak	A			A		A	A		A	A		A
PM Peak	A			A		A	A		A	A		A
Hayden Road & Princess Boulevard												
AM Peak		-			-	-			B			
PM Peak		-			-	-			A			
Hayden Road & Mayo Boulevard												
AM Peak	A	-			-	-	B		B			
PM Peak	A	-			-	-	C		A			

The existing unsignalized intersections operate at a satisfactory LOS.

Table 3. Existing Level of Service: Signalized Intersections

Intersection	NB			SB			EB			WB			Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	LOS
Scottsdale Road & Loop 101 WB Ramps													
AM Peak	B	A			C	A				D	D	B	B
PM Peak	B	A			D	C				D	E	D	C
Scottsdale Road & Loop 101 EB Ramps													
AM Peak		D	B	B	A		E	D	D				C
PM Peak		C	B	C	A		D	E	D				C
Hayden Road & Loop 101 WB Ramps													
AM Peak	D	C			C	A				E	B	B	C
PM Peak	F	B			D	A				E	B	B	D
Hayden Road & Loop 101 EB Ramps													
AM Peak		D	A	C	B		D	C	A				C
PM Peak		C	A	F	B		D	D	A				D
Scottsdale Road & Mayo Boulevard													
AM Peak	D	C	C	E	E	E	D	D	E	D	D	E	D
PM Peak	D	D	C	E	E	F	E	D	F	D	D	E	F
Scottsdale Road & Princess Boulevard													
AM Peak	C	D	D	A	C	B	D	D	F	E	D	E	D
PM Peak	C	D	C	B	C	B	D	D	F	E	D	F	E

The existing signalized intersections operate at an overall satisfactory LOS except for the intersections of Scottsdale Road with Mayo Boulevard and Princess Boulevard during the PM peak hour. The intersection of Scottsdale Road & Mayo Boulevard currently operates with split east-west left-turn phasing due to the low traffic volumes associated with the east leg of the intersection in the existing condition. The intersections are anticipated to operate at acceptable levels of service with signal timing adjustments,

including the change from split phasing to protected left-turn phasing at the Scottsdale Road & Mayo Boulevard intersection.

4.4 CRASH HISTORY

Crash data at the existing study area intersections was obtained from the City of Scottsdale for the years 2019 to 2021. The City of Scottsdale also provided the 2020 Traffic Volume & Collision Report, revised June 2022, which contains segment and intersection crash volumes and rates for 2018 to 2020. The crash data provided by the City of Scottsdale is included in the **Appendix**.

Table 4 summarizes the number of crashes by injury severity at each intersection, and **Table 5** summarizes the number of crashes by crash type at each intersection for the years 2019 to 2021.

Table 4. Crashes by Injury Severity

Intersection	Injury Severity						Total
	No Injury	Possible Injury	Non-Incapacitating Injury	Incapacitating Injury	Fatal Injury	Not Reported/ Unknown	
Scottsdale Road & Loop 101 TI	5	0	1	0	0	0	6
Scottsdale Road & Mayo Boulevard	38	6	3	2	0	1	50
Scottsdale Road & Princess Boulevard	47	13	11	1	0	1	73
Hayden Road & Loop 101 TI	34	5	2	0	0	0	41
Hayden Road & Mayo Boulevard	2	0	1	0	0	0	3
Hayden Road & Princess Boulevard	1	1	0	0	0	0	2

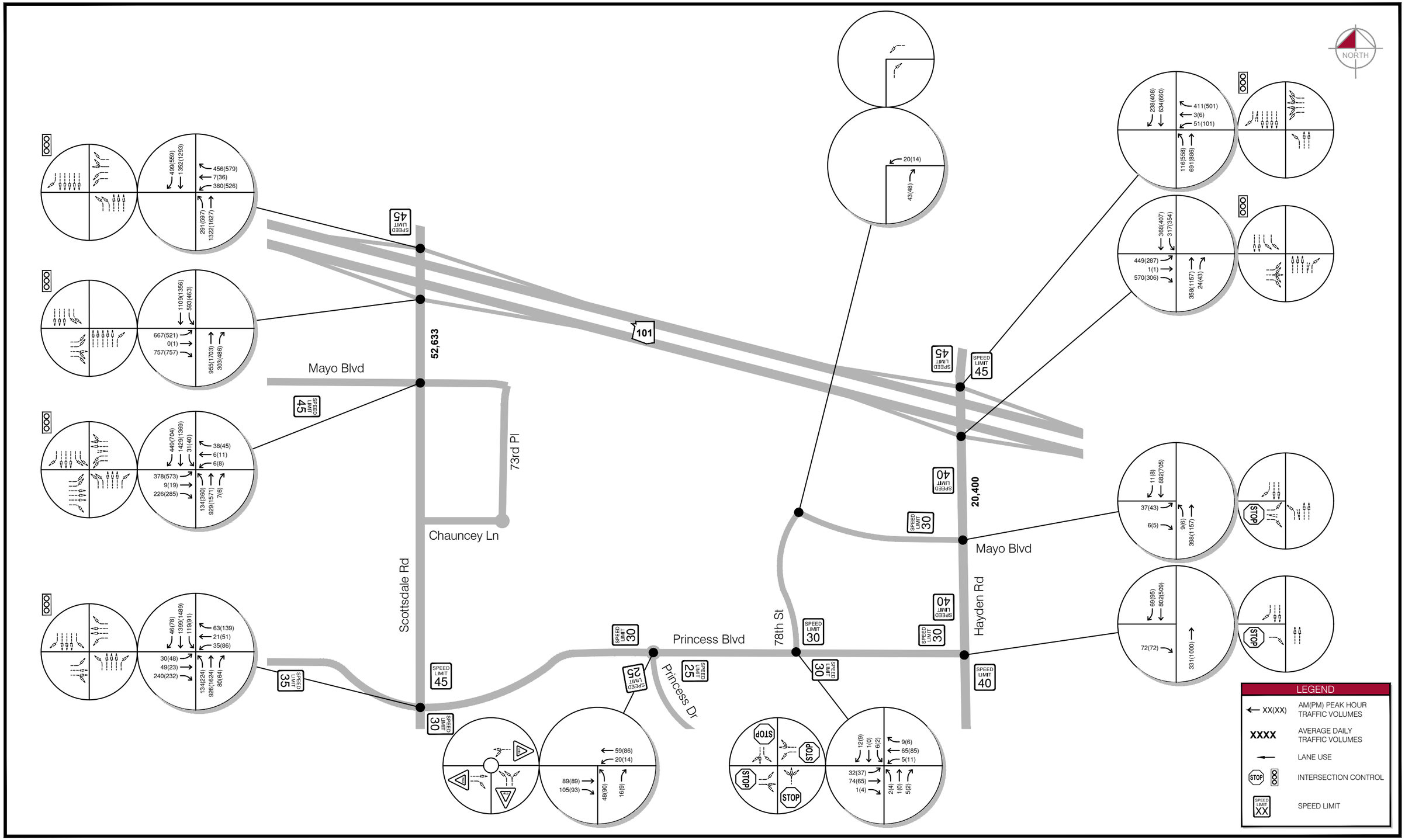
Table 5. Crashes by Crash Type

Intersection	Crash Type											Total
	Single Vehicle	Angle	Left Turn	Rear End	Head-on	Sideswipe (same direction)	Sideswipe (opposite direction)	Rear-to-Side	Rear-to-Rear	Other	Unknown	
Scottsdale Road & Loop 101 TI	0	3	0	0	1	2	0	0	0	0	0	6
Scottsdale Road & Mayo Boulevard	2	3	5	31	0	9	0	0	0	0	0	50
Scottsdale Road & Princess Boulevard	5	6	13	43	0	5	0	0	0	1	0	73
Hayden Road & Loop 101 TI	3	7	2	28	0	1	0	0	0	0	0	41
Hayden Road & Mayo Boulevard	0	0	1	1	0	1	0	0	0	0	0	3
Hayden Road & Princess Boulevard	1	0	0	0	0	1	0	0	0	0	0	2

Based on the 2020 intersection crash rate data provided in the COS 2020 Traffic Volume & Collision Report, the Scottsdale Road & Loop 101 TI has the fifth highest crash rate of all intersections and interchanges within the City of Scottsdale, with a rate of 1.56 crashes per million entering vehicles. It is worth noting that the number of TIs included in the COS crash data is limited, and the data is largely comprised of standard intersections.

The City of Scottsdale average intersection crash rate was 0.54 crashes per million entering vehicles across 202 intersections included with the data. The average crash rate at major arterial/major arterial intersections was 1.03 crashes per million entering vehicles. The average crash rate at the intersection of a minor arterial roadway with a major arterial or minor arterial roadway was 0.60 and 0.58 crashes per million entering vehicles, respectively. The average crash rate at the intersection of a major collector roadway with a major arterial, minor arterial, or major collector roadway was 0.56, 0.66, and 0.74 crashes per million entering vehicles, respectively.

The intersection of Scottsdale Road & Princess Boulevard had the 46th highest crash rate at 0.81 crashes per million entering vehicles, the Hayden Road & Loop 101 TI had the 59th highest crash rate at 0.74 crashes per million entering vehicles, and the intersection of Scottsdale Road & Mayo Boulevard had the 85th highest crash rate at 0.55 crashes per million entering vehicles.



Kimley»Horn

April 2023

Figure 3
Existing Conditions

5.0 PROJECTED TRAFFIC

5.1 SITE TRAFFIC FORECASTS

5.1.1 TRIP GENERATION

The Institute of Transportation Engineers' (ITE) *Trip Generation, 11th Edition* was used to obtain daily and peak hour trip generation rates and inbound-outbound percentages, which were then used to estimate the number of daily and peak hour trips that can be attributed to the proposed development. The trip generation characteristics of the site are summarized in **Table 6**. Trip generation calculations can be found in the **Appendix**.

Table 6. Project Trip Generation

Land Use	ITE Code	Quantity	Units	Daily Total	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
Senior Adult Housing-Multifamily	252	250	DUs	810	17	33	50	35	28	63
Hospital	610	352	Beds	7,858	454	176	630	196	399	595
General Office Building	710	32,760	SF	440	56	8	64	11	55	66
Medical-Dental Office Building	720	276,100	SF	9,700	607	142	749	209	626	835
Shopping Plaza (40-150k)	821	144,780	SF	9,776	155	95	250	368	383	751
High-Turnover (Sit-Down) Restaurant	932	30,000	SF	3,216	158	129	287	166	106	272
Trips Subtotal				**31,800**	**1,447**	**583**	**2,030**	**985**	**1,596**	**2,581**
Internal Capture Trip Reductions				-946	-76	-76	-152	-6	-6	-12
Total Trips				**30,854**	**1,371**	**507**	**1,878**	**979**	**1,591**	**2,570**

The proposed development is expected to generate 31,800 daily trips, with 2,030 trips occurring in the AM peak hour and 2,581 trips occurring in the PM peak hour. Owing to the proposed land uses, trip reductions are anticipated and justified below.

5.1.2 TRIP REDUCTIONS

It is reasonable to expect that internal trip interaction will result considering the hospital, medical office building, office building, and restaurant land uses. To account for this interaction, the methodology for estimating internally captured trips described in the *ITE Trip Generation Handbook, 3rd Edition* was used. The worksheets calculating internal capture using the ITE method and the resulting internal trip generation are shown in the **Appendix**. Interaction is also anticipated with the retail and senior adult residential uses; however, reductions were not considered for those uses to remain conservative since the uses are anticipated to be located on the west side of Miller Road.

Taking into consideration internal capture trips, the proposed development is expected to add 30,854 new daily trips, 1,878 new AM peak hour trips, and 2,570 new PM peak hour trips to the roadway network.

5.1.3 TRIP DISTRIBUTION

Daily trips were distributed over the cardinal directions based on the Maricopa Association of Governments' (MAG) estimate of total households within an 11.5-mile radius of the site. This radius is based on the average employment-based trip length as reported in the *2017 National Household Travel Survey*.

Percent to and from:	2020	2040
North	11 %	13 %
East	9 %	9 %
South	31 %	29 %
West	49 %	49 %

The results of this distribution were used as a basis for determining the ultimate trip distribution for the site. In addition to the MAG land use database for current and future land use projections, the ultimate surrounding roadway system was also taken into consideration when trip distribution was determined; therefore, the distribution shown above was further refined by considering the future roadway network near the site. **Figure 4** illustrates the trip distribution for the study area.

5.1.4 SITE TRAFFIC ASSIGNMENT

Trips generated by the proposed development were assigned to the roadway network based on the trip distribution and the likely travel patterns to and from the site. **Figure 5** shows the results of the site traffic assignment.

5.2 FUTURE TRAFFIC FORECASTING

The background traffic volumes for the buildout year 2040 were calculated based on the 2022 traffic counts and anticipated adjacent site traffic. Adjacent site traffic volumes from the previously discussed Cavasson, HonorHealth Medical Campus, Axon Campus, and Optima McDowell Mountain Village were included in the analysis. A 15% adjustment was applied to these site assignment volumes to account for an internal interaction factor between the sites. Additionally, since the Crossroads East Planning Unit VII traffic master plan did not include intersection volumes, turning movement volumes were estimated at the intersection of 78th Street & Mayo Boulevard based on the trip generation and anticipated traffic patterns to and from the development.

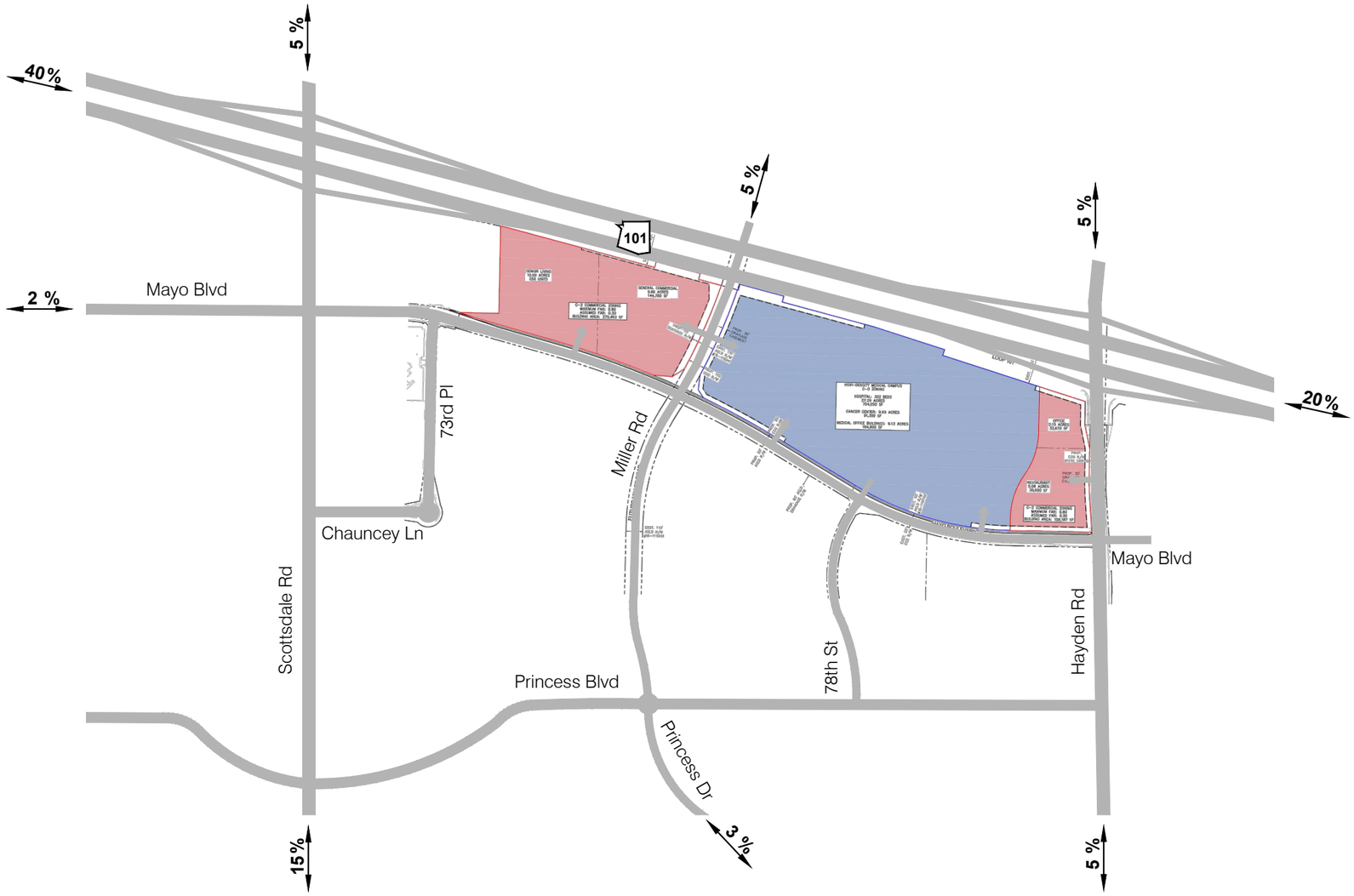
The City of Scottsdale provided 2040 average daily traffic (ADT) volumes from the MAG model that were used in concert with the 2035 transportation network map as a basis for providing additional future traffic growth projections. Review of the MAG traffic volume projections indicated that an additional adjustment to the Miller Road volumes was appropriate for consistency with the magnitude of the 2040 buildout traffic volumes. An additional 500 vehicles per hour were added to the through traffic volumes along Miller Road north of Princess Boulevard in the 2040 background traffic scenario. The 2035 transportation network map was provided by the City during development of the Crossroads East Planning Unit VII circulation plan. The 2035 network included higher level of granularity as the City model had five traffic analysis

zones where the MAG model had one traffic analysis zone, TAZ 1745. The Mayo Boulevard traffic volume projections were higher with the 2035 traffic model projections than the 2040 MAG projections. The 2035 projections appear to be a more refined traffic volume projection. Therefore, the Mayo Boulevard through volumes were increased by an additional 20% for consistency with the 2035 model projections.

The adjusted adjacent site traffic volumes were added to the existing turning movements to obtain background traffic volumes for the year 2040. The resulting 2040 background traffic volumes are shown in **Figure 6**. The adjacent site traffic assignment volumes with the adjustments described above is shown in the **Appendix**.

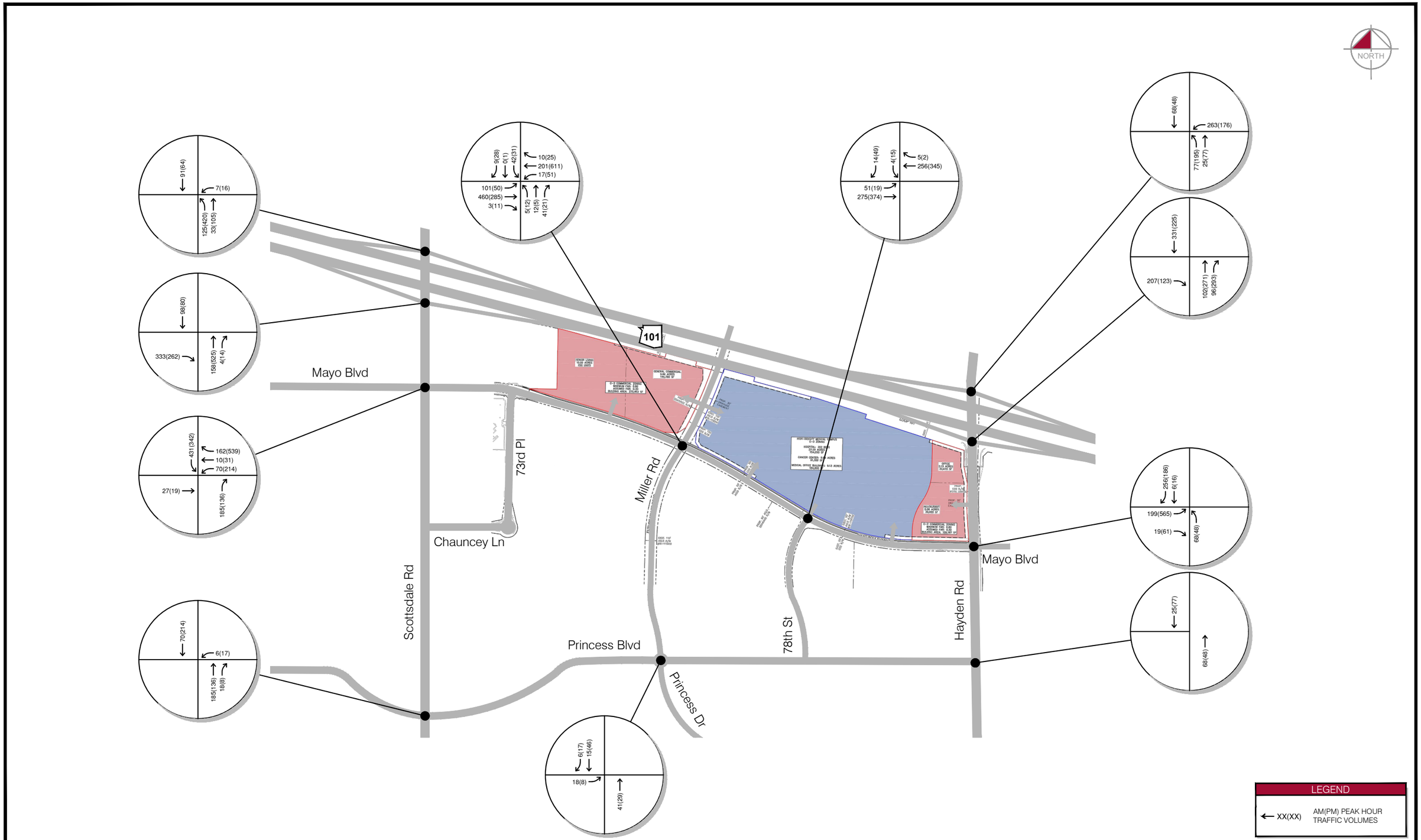
5.3 TOTAL TRAFFIC

The results of the site traffic assignment were added to the 2040 background traffic volumes shown in **Figure 6** to produce total traffic volumes for the study area. These total traffic volumes are shown in **Figure 7**.



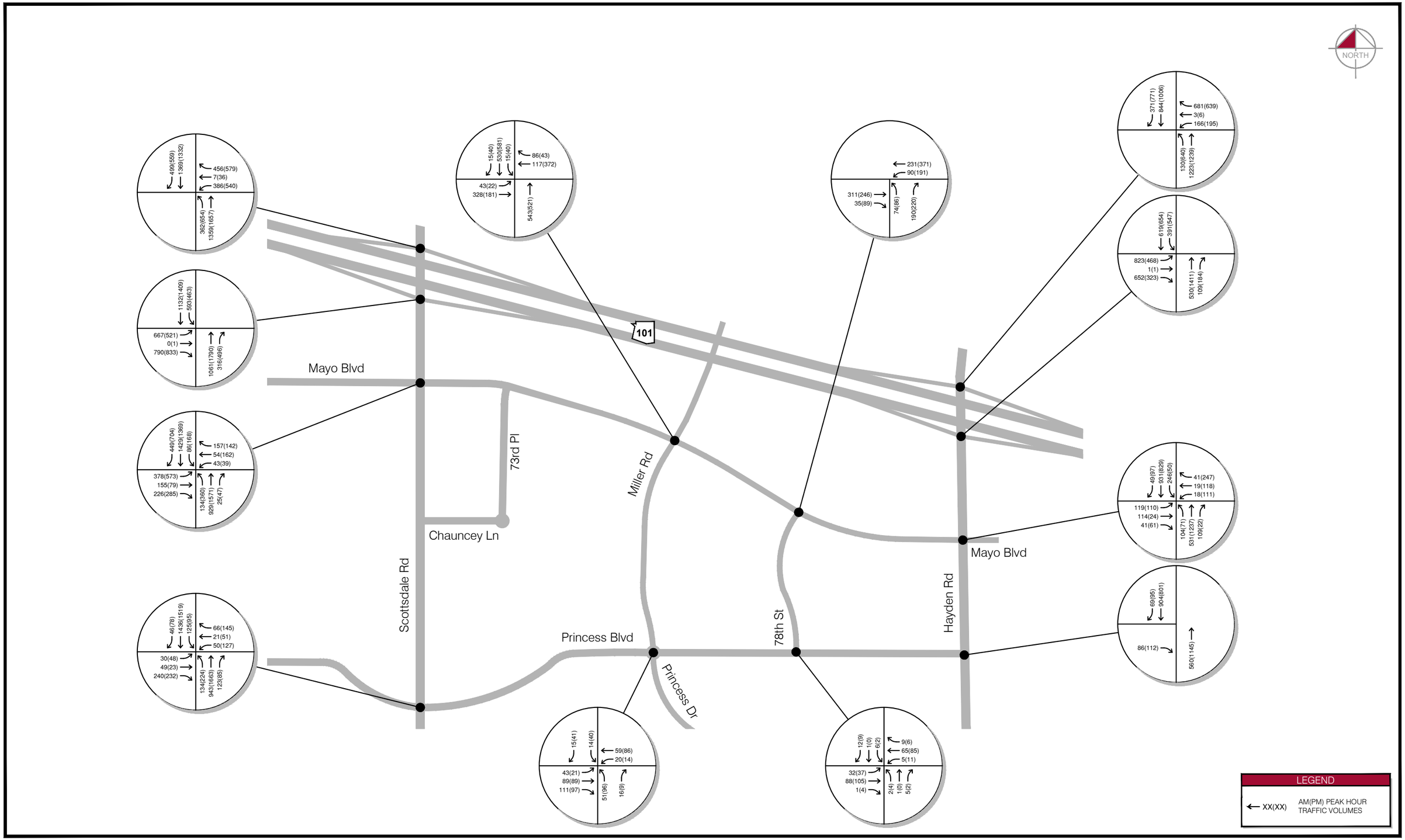
Kimley»Horn

Figure 4
Trip Distribution



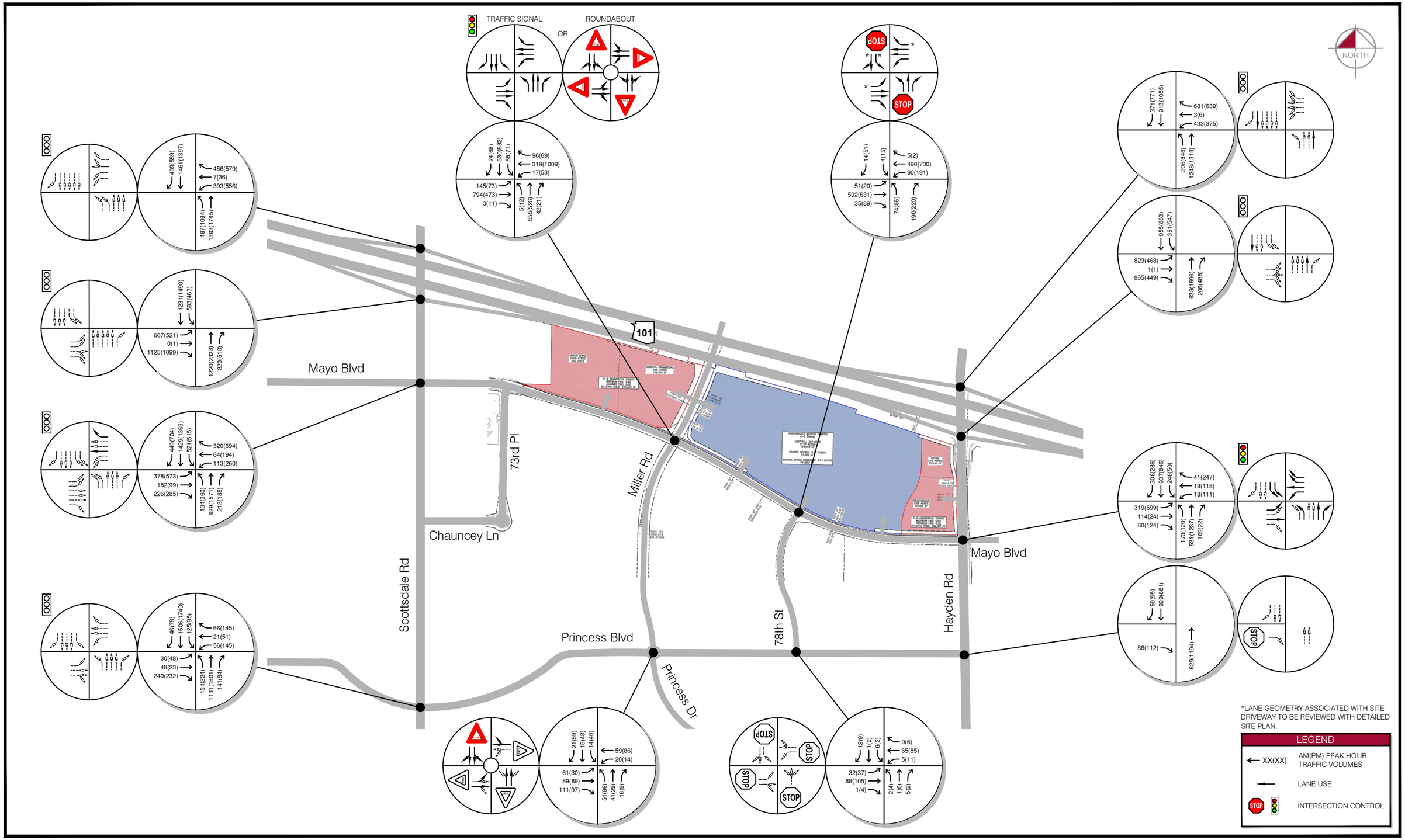
Kimley»Horn

Figure 5
Site Traffic Assignment



Kimley»Horn

Figure 6
2040 Background Traffic



Kimley»Horn

April 2023

Figure 7
2040 Total Traffic and Geometry

NWC Hayden Road & Mayo Boulevard | Traffic Impact & Mitigation Analysis

6.0 TRAFFIC AND IMPROVEMENT ANALYSIS

6.1 LEVEL OF SERVICE ANALYSIS

The LOS for the study area intersections for 2040 was evaluated using the *Highway Capacity Manual 6th Edition* methodology for unsignalized and signalized intersections using *Synchro 11* analysis software. The intersections at the traffic interchanges of Loop 101 with Scottsdale Road and Hayden Road were analyzed using Synchro methodology for signalized traffic interchanges. The existing signal timing data provided by the City of Scottsdale was used as a basis for evaluating and optimizing future traffic signal operations in the background and total traffic conditions. LOS analysis worksheets and signal timing assumptions are included in the **Appendix**.

6.1.1 2040 BACKGROUND TRAFFIC LEVEL OF SERVICE ANALYSIS

The unsignalized intersections in the study area were evaluated based on the 2040 background traffic shown in **Figure 6** and the future geometry shown in **Figure 7**. The results of this analysis are shown in **Table 7**.

Table 7. 2040 Background Level of Service: Unsignalized Intersections

Intersection	NB			SB			EB			WB		
	L	T	R	L	T	R	L	T	R	L	T	R
Princess Drive/Miller Road & Princess Boulevard												
AM Peak	A		A	A		A	A		A	A		A
PM Peak	A		A	A		A	A		A	A		A
78th Street & Princess Boulevard												
AM Peak	A			A		A	A		A	A		
PM Peak	A			A		A	A		A	A		
Hayden Road & Princess Boulevard												
AM Peak		-			-	-			B			
PM Peak		-			-	-			B			
78th Street & Mayo Boulevard												
AM Peak	B		B					-	-	A	-	
PM Peak	C		B					-	-	A	-	

The unsignalized intersections are expected to operate at a satisfactory LOS in 2040 background traffic conditions.

The signalized intersections in the study area were evaluated based on the 2040 background traffic shown in **Figure 6** and the future geometry shown in **Figure 7**. Additionally, a right-turn overlap phase was considered at the southbound and westbound approaches to the intersection of Scottsdale Road and Mayo Boulevard as well as at the westbound approach to the intersection of Hayden Road and Mayo Boulevard. The results of this analysis are shown in **Table 8**.

Table 8. 2040 Background Level of Service: Signalized Intersections

Intersection	NB			SB			EB			WB			Intersection LOS
	L	T	R	L	T	R	L	T	R	L	T	R	
Scottsdale Road & Loop 101 WB Ramps													
AM Peak	D	A			D	A				D	D	B	C
PM Peak	D	A			D	B				D	D	B	C
Scottsdale Road & Loop 101 EB Ramps													
AM Peak		D	B	D	B		C	B	B				C
PM Peak		D	B	E	B		C	D	C				D
Hayden Road & Loop 101 WB Ramps													
AM Peak	D	C			C	A				C	A	A	C
PM Peak	E	A			D	D				D	A	A	C
Hayden Road & Loop 101 EB Ramps													
AM Peak		C	A	D	B		D	D	A				C
PM Peak		D	B	D	C		E	D	A				C
Scottsdale Road & Mayo Boulevard													
AM Peak	E	D	C	E	D	C	E	D	E	D	D	D	D
PM Peak	E	D	C	E	D	D	E	D	E	D	D	D	D
Scottsdale Road & Princess Boulevard													
AM Peak	C	D	D	B	C	B	D	D	E	E	D	E	D
PM Peak	D	D	C	D	D	C	D	D	E	E	D	E	D
Hayden Road & Mayo Boulevard													
AM Peak	E	B	A	D	A	A	E	E	D	E	D	E	C
PM Peak	E	C	B	E	A	A	E	D	E	E	E	F	D
Miller Road & Mayo Boulevard													
AM Peak	A	A	A	A	A	A	A	A	A	A	A	A	A
PM Peak	A	A	A	A	A	A	A	A	A	A	A	A	A

The signalized intersections are expected to operate at a satisfactory overall LOS in 2040 background traffic conditions.

6.1.2 2040 TOTAL TRAFFIC LEVEL OF SERVICE ANALYSIS

The unsignalized intersections in the study area were evaluated based on the 2040 total traffic and geometry shown in **Figure 7**. The results of this analysis are shown in **Table 9**.

Table 9. 2040 Total Traffic Level of Service: Unsignalized Intersections

Intersection	NB			SB			EB			WB		
	L	T	R	L	T	R	L	T	R	L	T	R
Princess Drive/Miller Road & Princess Boulevard												
AM Peak	A		A	A		A	A		A	A		A
PM Peak	A		A	A		A	A		A	A		A
78th Street & Princess Boulevard												
AM Peak	A			A		A	A			A		A
PM Peak	A			A		A	A			A		A
Hayden Road & Princess Boulevard												
AM Peak		-			-	-			B			
PM Peak		-			-	-			B			
78th Street & Mayo Boulevard												
AM Peak	E	A	B	D		A	A	-	-	A	-	-
PM Peak	F	A	B	F		A	A	-	-	B	-	-

The unsignalized intersections are expected to operate at a satisfactory overall LOS in 2040 total traffic conditions except for the northbound and southbound left-turn movements at the intersection of 78th Street & Mayo Boulevard. It is common for left-turn movements from a two-way stop-controlled minor street to experience a poor level of service during peak hours due to a reduction in acceptable gaps in major street through traffic. It is anticipated that the intersection operates at an acceptable level of service outside of peak hours. For comparative purposes, the intersection of 78th Street & Mayo Boulevard was also analyzed with traffic signal control below. Alternate intersection configurations could be evaluated at the intersection of 78th Street & Mayo Boulevard with development of a detailed site plan.

The signalized intersections in the study area were evaluated based on the 2040 total traffic and geometry shown in **Figure 7**. A right-turn overlap phase was considered at the southbound and westbound approaches to the intersection of Scottsdale Road and Mayo Boulevard as well as at the westbound approach to the intersection of Hayden Road and Mayo Boulevard, which was consistent with the 2040 background traffic analysis. The results of this analysis are shown in **Table 10**.

Table 10. 2040 Total Traffic Level of Service: Signalized Intersections

Intersection	NB			SB			EB			WB			Intersection LOS
	L	T	R	L	T	R	L	T	R	L	T	R	
Scottsdale Road & Loop 101 WB Ramps													
AM Peak	D	A			D	A				D	D	B	C
PM Peak	E	A			D	C				D	E	B	D
Scottsdale Road & Loop 101 EB Ramps													
AM Peak		D	B	D	B		C	C	C				C
PM Peak		E	A	E	C		C	E	D				D
Hayden Road & Loop 101 WB Ramps													
AM Peak	D	D			D	A				C	A	A	C
PM Peak	F	B			D	D				D	B	A	E
Hayden Road & Loop 101 EB Ramps													
AM Peak		D	A	D	C		D	D	A				C
PM Peak		C	A	D	C		D	D	A				C
Scottsdale Road & Mayo Boulevard													
AM Peak	E	D	D	E	D	C	E	D	D	E	D	C	D
PM Peak	E	D	C	E	D	B	E	C	D	E	D	E	D
Scottsdale Road & Princess Boulevard													
AM Peak	D	D	C	B	C	B	D	D	E	E	D	E	D
PM Peak	D	D	C	D	D	B	D	D	E	E	D	E	D
Hayden Road & Mayo Boulevard													
AM Peak	E	B	B	E	A	A	E	D	D	E	E	D	C
PM Peak	E	D	C	E	B	B	E	D	D	E	F	E	D
Miller Road & Mayo Boulevard													
AM Peak	B	B	A	B	B	A	A	A	A	B	A	A	A
PM Peak	B	B	B	B	B	B	B	A	A	A	A	A	B
78th Street & Mayo Boulevard													
AM Peak	A	A	B	A	A	A	A	A	A	A	A	A	A
PM Peak	B	A	B	B	A	B	A	A	A	A	A	A	A

The signalized intersections are expected to operate at a satisfactory overall LOS in 2040 total traffic conditions except for the intersection of Hayden Road & Loop 101 WB Ramps during the PM peak hour. The poor LOS is driven by the northbound left-turn movement, which is constrained to a single turn lane. The interchange cannot accommodate dual left-turn lanes without substantial changes to the existing interchange geometry. Consideration could be given to repurposing one of the northbound through lanes as a northbound left-turn lane in the future as described in the left-turn storage analysis section.

The City requested that the intersection of Miller Road & Mayo Boulevard also be analyzed as a roundabout. Therefore, the intersection was analyzed as a roundabout in addition to a signalized intersection. The results of the roundabout analysis are shown in **Table 11**.

Table 11. 2040 Total Traffic Level of Service: Roundabout Alternative

Intersection	NB			SB			EB			WB			Intersection LOS
	L	T	R	L	T	R	L	T	R	L	T	R	
Miller Road & Mayo Boulevard													
AM Peak	C	C		A	A		C	C		B	A		B
PM Peak	B	A		E	E		B	B		D	D		C

The intersection of Miller Road & Mayo Boulevard is expected to operate at a satisfactory overall LOS in 2040 total traffic conditions.

6.2 LEFT-TURN STORAGE ANALYSIS

The City of Scottsdale requires left-turn lanes at all street intersections on major collector and arterial roadways. Turn lane lengths are to be determined based on the anticipated turning volume and the traffic control type. The City of Scottsdale recommends that left-turn lanes be constructed with a standard storage length of 150 feet. The minimum storage length is 100 feet per City of Scottsdale guidelines. Left-turn lanes should be constructed with a reverse curve length per COS Standard Detail 2225. Where raised median is not present, an appropriate striping gap of 100 feet should be provided for the turn lane opening.

The signalized and unsignalized intersections in the study area were analyzed to determine the left-turn storage needed to accommodate the expected traffic volumes in the buildout year 2040. The left-turn storage calculations at the traffic interchanges utilized ADOT turn lane criteria. Per ADOT TGP 430, ADOT calculates storage length by summing queue length multiplied by a factor of 1.5 to 2 times plus braking distance. The left-turn storage calculations at the remaining intersections utilized AASHTO turn lane criteria. Additionally, Synchro 95th percentile queues were analyzed at the traffic interchanges, and HCM 95th percentile queues were analyzed at all other intersections. **Table 12** provides the recommended left-turn storage at the study area intersections. The recommended storage lengths are based on total traffic volumes shown in **Figure 7**. The calculations associated with these conclusions and the relevant COS and ADOT standards are included in the **Appendix**.

Table 12. Left-Turn Storage

Intersection and Approach	*Existing Storage Length*	Calculated Queue Length	Desired (Minimum) Braking Distance	95th Percentile Storage Length	**Recommended Storage**
Scottsdale Road & Loop 101 WB Ramps					
Northbound Approach	625 feet (Dual)	685 feet (Dual)	200 feet (85 feet)	501 feet (Dual)	625 feet (Dual) [(1)(3)]
Westbound Approach	315 feet (Dual)	355 feet (Dual)	200 feet (85 feet)	260 feet (Dual)	315 feet (Dual) [(1)(2)]
Scottsdale Road & Loop 101 EB Ramps					
Southbound Approach	710 feet (Dual)	375 feet (Dual)	200 feet (85 feet)	381 feet (Dual)	710 feet (Dual) [(1)]
Eastbound Approach	200 feet (Dual)	420 feet (Dual)	200 feet (85 feet)	265 feet (Dual)	200 feet (Dual) [(2)]
Hayden Road & Loop 101 WB Ramps					
Northbound Approach	385 feet	1060 feet	200 feet (85 feet)	1312 feet	550 feet [(3)]
Westbound Approach	495 feet (LT) 495 feet (Th/LT)	280 feet (LT) 280 feet (Th/LT)	200 feet (85 feet)	275 feet (LT) 275 feet (Th/LT)	495 feet (LT) [(1)(2)] 495 feet (Th/LT)

Intersection and Approach	*Existing Storage Length*	Calculated Queue Length	Desired (Minimum) Braking Distance	95th Percentile Storage Length	**Recommended Storage**
Hayden Road & Loop 101 EB Ramps					
Southbound Approach	545 feet (Dual)	345 feet (Dual)	200 feet (85 feet)	312 feet (Dual)	545 feet (Dual) [(1)]
Eastbound Approach	430 feet (LT) 430 feet (LT/Th/RT)	690 feet (LT) 690 feet (LT/Th/RT)	200 feet (85 feet)	710 feet (LT) 710 feet (LT/Th/RT)	430 feet (LT) [(2)(4)] 430 feet (LT/Th/RT)
Scottsdale Road & Mayo Boulevard					
Northbound Approach	240 feet (Dual)	225 feet (Dual)	N/A	275 feet (Dual)	240 feet (Dual) [(1)(4)]
Southbound Approach	165 feet (Dual)	325 feet (Dual)	N/A	375 feet (Dual)	165 feet (Dual) [(3)]
Eastbound Approach	325 feet (Dual)	350 feet (Dual)	N/A	450 feet (Dual)	325 feet (Dual) [(4)]
Westbound Approach	165 feet (Dual)	175 feet (Dual)	N/A	200 feet (Dual)	165 feet (Dual) [(3)]
Scottsdale Road & Princess Boulevard					
Northbound Approach	250 feet	300 feet	N/A	300 feet	250 feet [(4)]
Southbound Approach	235 feet	200 feet	N/A	125 feet	235 feet [(1)]
Eastbound Approach	205 feet	100 feet	N/A	75 feet	205 feet [(1)]
Westbound Approach	165 feet	225 feet	N/A	225 feet	225 feet
Hayden Road & Mayo Boulevard					
Northbound Approach	150 feet	125 feet (Dual)	N/A	150 feet (Dual)	150 feet (Dual)
Southbound Approach	-	175 feet (Dual)	N/A	200 feet (Dual)	355 feet (Dual) [(4)(5)]
Eastbound Approach	300 feet	400 feet (Dual)	N/A	525 feet (Dual)	400 feet (Dual)
Westbound Approach	-	175 feet	N/A	575 feet	150 feet [(4)(5)]
78th Street & Princess Boulevard					
Southbound Approach	100 feet	50 feet	N/A	25 feet	100 feet [(1)]
Eastbound Approach	110 feet	50 feet	N/A	25 feet	110 feet [(1)]
Westbound Approach	100 feet	50 feet	N/A	25 feet	100 feet [(1)]

Intersection and Approach	*Existing Storage Length*	Calculated Queue Length	Desired (Minimum) Braking Distance	95th Percentile Storage Length	**Recommended Storage**
Miller Road & Mayo Boulevard					
Northbound Approach	-	50 feet	N/A	25 feet	250 feet
Southbound Approach	-	75 feet	N/A	50 feet	250 feet
Eastbound Approach	-	125 feet	N/A	50 feet	250 feet
Westbound Approach	-	75 feet	N/A	25 feet	250 feet
78th Street & Mayo Boulevard					
Northbound Approach	-	200 feet	N/A	150 feet	200 feet [(4)]
Westbound Approach	-	125 feet	N/A	25 feet	150 feet [(4)]

LT = Exclusive left-turn lane.

Th/LT = Shared through/left-turn lane.

LT/Th/RT = Shared left-turn/through/right-turn lane.

Dual = Two left-turn lanes.

[(1)] Calculated or 95% Percentile Storage Length value less than or equal to existing.

[(2)] Additional storage available beyond striped turn lane.

[(3)] Turn lane is geometrically constrained.

[(4)] Site does not contribute or minimally contributes traffic to movement.

[(5)] Value represents proposed storage per adjacent site traffic report/roadway plan.

The left-turn lanes should provide the storage recommended in **Table 12** and an appropriate reverse curve length per COS Standard Detail 2225 with development of detailed site plans or with adjacent development.

The Hayden Road & Loop 101 northbound left-turn storage should be reconfigured and coordinated with the Axon development to extend the left-turn storage. The signing and pavement marking plans associated with the Axon development include proposed 355-foot dual southbound left-turn lanes at the intersection of Hayden Road & Mayo Boulevard. The northbound left-turn lane storage at the Hayden Road & Loop 101 traffic interchange could provide approximately 550 feet of storage to maximize the available space between intersections; however, the storage may be extended further if the dual southbound left-turn length is reduced at the Hayden Road and Mayo Boulevard intersection into the Axon development. The Axon TIA and calculations from this report indicate that the 355 feet of dual southbound left-turn storage may be more than necessary for typical peak hour conditions. As an additional consideration, the inside through lane at the Hayden Rd & Loop 101 TI may be able to be utilized as a second northbound left-turn lane, and two northbound through lanes would be maintained through the TI. Traffic volumes should be monitored and coordination with surrounding development should occur.

The westbound left-turn lane at the intersection of Scottsdale Road & Princess Boulevard may require additional storage in future traffic conditions. Volumes are recommended to be monitored at this location. The storage length should be refined with development of the land on the northeast corner of the intersection.

It is recommended that the northbound approach to the intersection of Hayden Road & Mayo Boulevard by re-striped to provided dual left-turn lanes. The pavement marking modifications should occur at or after the time of signalization of the intersection.

It is recommended that the eastbound approach to the intersection of Hayden Road & Mayo Boulevard provide dual left-turn lanes with 400 feet of storage in each lane. The Crossroads East Planning Unit VII Circulation Plan indicated that there may be an ability to provide two full-access driveway locations along Mayo Boulevard between 78th Street and Hayden Road; however, a single full-access driveway location is recommended given the eastbound left-turn storage demand at the Hayden Road & Mayo Boulevard intersection. It is recommended that the full-access driveway be located approximately at the midpoint of the approximate 1,600-foot Mayo Boulevard roadway segment between 78th Street and Hayden Road to provide full access to both sides of Mayo Boulevard. Cross access should be considered between the restaurant/office portion of the plan and medical campus portion of the current proposed plan.

It is recommended that 250 feet of left-turn storage be provided along all approaches to the intersection of Miller Road & Mayo Boulevard. This more conservative recommendation is provided due to the higher level of uncertainty associated with the background traffic volumes at the intersection. When the intersection is constructed, a reassignment of traffic volumes will occur to utilize the Miller Road underpass.

Southbound and eastbound left-turn storage at the intersection of 78th Street & Mayo Boulevard should be determined with a more detailed site plan along with turn storage recommendations at all other site driveway locations.

6.3 RIGHT-TURN LANES

Right-turn lanes are often recommended on roadways where right-turning vehicles create delays or safety concerns for other traffic movements. The need for a right-turn lane depends on the speed of traffic on the road, the volume of traffic turning right, and the through traffic volume in the same lane as the right-turning traffic.

6.3.1 INTERSECTIONS

The City of Scottsdale recommends a right-turn deceleration lane at all street intersections on major arterial roadways and on other roadways based on anticipated turning volumes and traffic control. The City of Scottsdale recommends that right-turn lanes be constructed with a standard storage length of 150 feet. The minimum storage length for right-turn lanes per City of Scottsdale requirements is 100 feet. Right-turn lanes should be constructed with a reverse curve length per COS Standard Detail 2225.

The signalized and unsignalized intersections in the study area were analyzed to determine the right-turn storage needed to accommodate the expected traffic volumes in the horizon year 2040. The right-turn storage calculations at the traffic interchanges utilized ADOT turn lane criteria. Per ADOT TGP 430, ADOT calculates storage length by summing queue length multiplied by a factor of 1.5 to 2 times plus braking distance. The right-turn storage calculations at the remaining intersections utilized AASHTO turn lane criteria. Additionally, Synchro 95th percentile queues were analyzed at the traffic interchanges, and HCM 95th percentile queues were analyzed at all other intersections. **Table 13** provides the recommended right-turn storage at the study area intersections. The recommended storage lengths are based on total traffic volumes shown in **Figure 7**. The calculations associated with these conclusions and the relevant COS and ADOT standards are included in the **Appendix**.

Table 13. Right-Turn Storage

Intersection and Approach	*Existing Storage Length*	Calculated Queue Length	Desired (Minimum) Braking Distance	95th Percentile Storage Length	**Recommended Storage**
Scottsdale Road & Loop 101 WB Ramps					
Southbound Approach	400 feet	425 feet	200 feet (85 feet)	313 feet	400 feet [(1)(4)]
Westbound Approach	320 feet (RT) 320 feet (Th/RT)	255 feet (RT) 255 feet (Th/RT)	200 feet (85 feet)	189 feet (RT) 189 feet (Th/RT)	320 feet (RT) [(1)(4)] 320 feet (Th/RT)
Scottsdale Road & Loop 101 EB Ramps					
Northbound Approach	600 feet	400 feet	200 feet (85 feet)	173 feet	600 feet [(1)]
Eastbound Approach	205 feet (RT) 205 feet (Th/RT)	495 feet (RT) 495 feet (Th/RT)	200 feet (85 feet)	556 feet (RT) 556 feet (Th/RT)	205 feet (RT) [(2)] 205 feet (Th/RT)

Intersection and Approach	*Existing Storage Length*	Calculated Queue Length	Desired (Minimum) Braking Distance	95th Percentile Storage Length	**Recommended Storage**
Hayden Road & Loop 101 WB Ramps					
Southbound Approach	180 feet	585 feet	200 feet (85 feet)	563 feet	180 feet [4]
Westbound Approach	500 feet (RT) 500 feet (Th/RT)	300 feet (RT) 300 feet (Th/RT)	200 feet (85 feet)	73 feet (RT) 73 feet (Th/RT)	500 feet (RT) [1][4] 500 feet (Th/RT)
Hayden Road & Loop 101 EB Ramps					
Northbound Approach	200 feet	375 feet	200 feet (85 feet)	128 feet	200 feet [1]
Eastbound Approach	435 feet (RT) 435 feet (LT/Th/RT)	510 feet (RT) 510 feet (LT/Th/RT)	200 feet (85 feet)	180 feet (RT) 180 feet (LT/Th/RT)	435 feet (RT) [1][2] 435 feet (LT/Th/RT)
Scottsdale Road & Mayo Boulevard					
Northbound Approach	155 feet	225 feet	N/A	225 feet	155 feet [3]
Southbound Approach	340 feet	600 feet	N/A	375 feet	340 feet [4]
Eastbound Approach	330 feet	275 feet	N/A	250 feet	330 feet [1][4]
Westbound Approach	-	575 feet	N/A	700 feet	575 feet [6]
Scottsdale Road & Princess Boulevard					
Northbound Approach	250 feet	175 feet	N/A	125 feet	250 feet [1]
Southbound Approach	250 feet	125 feet	N/A	50 feet	250 feet [1]
Westbound Approach	80 feet	175 feet	N/A	175 feet	80 feet [4]
Hayden Road & Mayo Boulevard					
Northbound Approach	-	150 feet	N/A	50 feet	210 feet [4][5]
Southbound Approach	185 feet	300 feet	N/A	125 feet	185 feet (Trap) [2]
Eastbound Approach	165 feet	150 feet	N/A	125 feet	165 feet [1]
Westbound Approach	-	125 feet (Dual)	N/A	450 feet (Dual)	130 feet (Dual) [4][5]

Intersection and Approach	*Existing Storage Length*	Calculated Queue Length	Desired (Minimum) Braking Distance	95th Percentile Storage Length	**Recommended Storage**
Miller Road & Mayo Boulevard					
Northbound Approach	-	50 feet	N/A	25 feet	250 feet
Southbound Approach	-	75 feet	N/A	25 feet	250 feet
Eastbound Approach	-	50 feet	N/A	25 feet	250 feet
Westbound Approach	-	75 feet	N/A	25 feet	250 feet
78th Street & Mayo Boulevard					
Northbound Approach	-	200 feet	N/A	50 feet	200 feet (4)
Eastbound Approach	-	75 feet	N/A	25 feet	150 feet (4)

RT = Exclusive right-turn lane.

Th/RT = Shared through/right-turn lane.

LT/Th/RT = Shared left-turn/through/right-turn lane.

Dual = Two right-turn lanes.

Trap = Through lane that transitions to right-turn only lane.

(1) Calculated or 95% Percentile Storage Length value less than or equal to existing.

(2) Additional storage available beyond striped turn lane.

(3) Turn lane is geometrically constrained.

(4) Site does not contribute or minimally contributes traffic to movement.

(5) Value represents proposed storage per adjacent site traffic report/roadway plan.

(6) Turn lane anticipated to be constructed by Optima McDowell Mountain Village development. Proposed storage not clearly stated in traffic report. A continuous right-turn lane should be provided to accommodate the anticipated queue demand, while not interfering with the planned roundabout at the intersection of 73rd Place and Mayo Boulevard.

The right-turn lanes should provide the storage recommended in **Table 13** and an appropriate reverse curve length per COS Standard Detail 2225 with development of detailed site plans or with adjacent development.

The future westbound right-turn lane at the intersection of Scottsdale Road & Mayo Boulevard is anticipated to be constructed by the Optima McDowell Mountain Village development. A continuous right-turn lane should be provided to accommodate the anticipated queue demand of 575 feet, while not interfering with the planned roundabout at the intersection of 73rd Place and Mayo Boulevard.

It is recommended that the anticipated third southbound through lane along Hayden Road, south of the Loop 101, transition to a right-turn only lane at the Mayo Boulevard intersection.

It is recommended that 250 feet of right-turn storage be provided along all approaches to the intersection of Miller Road & Mayo Boulevard. This more conservative recommendation is provided due to the higher

level of uncertainty associated with the background traffic volumes at the intersection. When the intersection is constructed, a reassignment of traffic volumes will occur to utilize the Miller Road underpass.

Westbound right-turn lane warrants and storage at the intersection of 78th Street & Mayo Boulevard should be determined with a more detailed site plan along with turn storage recommendations at all other site driveway locations.

6.4 SIGHT TRIANGLES

Per City of Scottsdale DSPM Section 5-3.123D, it is recommended that sight triangles be provided at all intersections to give drivers exiting the site a clear view of oncoming traffic. The landscaping within sight triangles must not obstruct drivers' views of the adjacent travel lanes.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The proposed development is expected to add 30,854 new daily trips, 1,878 new AM peak hour trips, and 2,570 new PM peak hour trips to the roadway network. The purpose of this report was to review key street intersections for a 2040 buildout scenario to determine appropriate intersection geometry. It is recommended that volumes in the area be monitored and additional analysis be considered with detailed site plans or adjacent development plans.

The intersections of Mayo Boulevard with Miller Road and 78th Street were evaluated as standard intersections with this report. The addition of traffic signal control is anticipated to be necessary at the Miller Road & Mayo Boulevard intersection. The intersection of 78th Street & Mayo Boulevard operates acceptably as a two-way stop-controlled intersection except for the northbound and southbound left-turn movements. Traffic signal warrants should be reviewed with a more detailed site plan. Alternate intersection configurations could also be considered at these intersections. Previous documents have contemplated roundabouts in addition to a standard intersection configuration. At the City's request, the intersection of Miller Road & Mayo Boulevard was also evaluated as a roundabout and the LOS was satisfactory under that condition.

At the Loop 101 TI, Hayden Road was constructed to accommodate a third southbound through lane. It is anticipated that a third southbound through lane will extend south of the Loop 101 to the Mayo Boulevard intersection where the third through lane is anticipated to transition to a right-turn only lane. The Axon signing and pavement marking plans include a third northbound through lane at the intersection of Hayden Road and Mayo Boulevard that is anticipated to continue north to the Loop 101 TI. Hayden Road has three travel lanes in each direction north of the Loop 101.

Mayo Boulevard is anticipated to be constructed to a City of Scottsdale urban major collector cross-section between 73rd Place and Hayden Road with two travel lanes and bike lanes in each direction and a two-way left-turn lane.

Miller Road is anticipated to be constructed to an urban major collector cross-section with two travel lanes and bike lanes in each direction and a two-way left-turn lane.

The unsignalized and signalized intersections are anticipated to operate at an overall acceptable level of service in the 2040 total traffic condition except for the Hayden Road & Loop 101 TI during the PM peak hour. The overall level of service at the Hayden Road & Loop 101 TI is driven by the delay associated with the northbound left-turn movement. Considerations for improvement to the northbound left-turn movement for the 2040 total traffic condition are discussed in additional detail with the next item.

The Hayden Road & Loop 101 northbound left-turn storage should be reconfigured and coordinated with the Axon development to extend the left-turn storage. The signing and pavement marking plans associated with the Axon development include proposed 355-foot dual southbound left-turn lanes at the intersection of Hayden Road & Mayo Boulevard. The northbound left-turn lane storage at the Hayden Road & Loop 101 traffic interchange could provide approximately 550 feet of storage to maximize the available space between intersections; however, there may be an ability to extend the storage further if the dual southbound left-turn length is reduced at the Hayden Road and Mayo Boulevard intersection into the Axon development. As an additional consideration, the inside through lane at the Hayden Rd & Loop

101 TI may be able to be utilized as a second northbound left-turn lane, and two northbound through lanes would be maintained through the TI. Traffic volumes should be monitored and coordination with surrounding development should occur.

The westbound left-turn lane at the intersection of Scottsdale Road & Princess Boulevard may require additional storage in future traffic conditions. Volumes are recommended to be monitored at this location. Consider refining the storage length with development of the land on the northeast corner of the intersection.

It is recommended that the northbound approach to the intersection of Hayden Road & Mayo Boulevard by re-striped to provided dual left-turn lanes. The pavement marking modifications should occur at or after the time of signalization of the intersection.

It is recommended that the eastbound approach to the intersection of Hayden Road & Mayo Boulevard provide dual left-turn lanes with 400 feet of storage in each lane. The Crossroads East Planning Unit VII Circulation Plan indicated that there may be an ability to provide two full-access driveway locations along Mayo Boulevard between 78th Street and Hayden Road; however, a single full-access driveway location is recommended given the eastbound left-turn storage demand at the Hayden Road & Mayo Boulevard intersection. It is recommended that the full-access driveway be located approximately at the midpoint of the approximate 1,600-foot Mayo Boulevard roadway segment between 78th Street and Hayden Road to provide full access to both sides of Mayo Boulevard. Cross access should be considered between the restaurant/office portion of the plan and medical campus portion of the current proposed plan.

It is recommended that 250 feet of left-turn lane and right-turn lane storage be provided along all approaches to the intersection of Miller Road & Mayo Boulevard. This more conservative recommendation is provided due to the higher level of uncertainty associated with the background traffic volumes at the intersection. When the intersection is constructed, a reassignment of traffic volumes will occur to utilize the Miller Road underpass.

The future westbound right-turn lane at the intersection of Scottsdale Road & Mayo Boulevard is anticipated to be constructed by the Optima McDowell Mountain Village development. A continuous right-turn lane should be provided to accommodate the anticipated queue demand of 575 feet, while not interfering with the planned roundabout at the intersection of 73rd Place and Mayo Boulevard.

Access spacing, turn lane warrants, and storage recommendations at driveway locations should be reviewed with development of detailed site plans.

It is recommended that sight triangles be provided at all intersections to give drivers exiting the site a clear view of oncoming traffic. The landscaping within sight triangles must not obstruct drivers' views of the adjacent travel lanes.

APPENDIX

- Adjacent Site Traffic Study/Plan Excerpts
- Traffic Counts
- City of Scottsdale Average Daily Segment Volume Maps
- City of Scottsdale Signal Timing Data
- Existing AM Traffic Capacity Analysis
- Existing PM Traffic Capacity Analysis
- City of Scottsdale Crash Data
- Trip Generation and Reductions
- Adjusted Adjacent Site Traffic Assignment
- 2040 Background AM Traffic Capacity Analysis
- 2040 Background PM Traffic Capacity Analysis
- 2040 Total AM Traffic Capacity Analysis
- 2040 Total PM Traffic Capacity Analysis
- AASHTO Storage Calculations
- ADOT Storage Calculations
- Relevant City of Scottsdale Standards
- Relevant ADOT Standards
- Relevant City of Phoenix Standards

Adjacent Site Traffic Study/Plan Excerpts

CivTech

October 12, 2020

NWGH, LLC

ICO:
Mr. James K. Rost, Vice-President
Nationwide Reality Investors
375 North Front Street, Suite 200
Phone: 614.857.2330
Email: rostj@nationwide.com

Registered Professional Engineer (Civil)
CERTIFICATE NO.
35879
DAWN D.
CARTIER
Date Signed 10-13-2020
ARIZONA, U.S.A.

RE: MASTER TRAFFIC IMPACT AND MITIGATION ANALYSIS FOR THE NRI – SCOTTSDALE DEVELOPMENT – SCOTTSDALE, ARIZONA

Dear Mr. Rost:

CivTech is pleased to present this addendum to the Master Traffic Impact and Analysis for the Cavasson Development located on the northwest corner of Hayden Road and Loop 101, south of Legacy Boulevard in Scottsdale, Arizona.

BACKGROUND

The Cavasson development is a ±134-acre project located on the southwest corner of Hayden Road and Legacy Boulevard in Scottsdale, Arizona. This development is separated into three (3) phases. Phase 1 consists of a 135-key hotel, 350 multi-family residential dwelling units, 11,000 square feet of retail with 6,000 square feet of restaurant attached, and 740,000 square feet of office space. Previously, the approved TIMA considered all of Phase 2 and Phase 3 to be included in a single buildout phase (in its entirety noted as Phase 2). Therefore, the TIMA Phase 2 included both the Cavasson Phase 2 and Phase 3 plans of development.

This second buildout phase of Cavasson was to consist of multiple hotels totaling 265 keys, 1,250 multi-family dwelling units, 183,000 square feet of retail with 6,000 square feet of restaurant attached, and 1,060,000 square feet of office space. Previously, there was not a comprehensive site plan available that depicted the exact location of each of the land uses for the buildout condition, so it was assumed that of all the Phase 3 site trips, approximately 77% of them would be located north of Cavasson Boulevard and 23% of them would be located in the southwest quadrant known as Phase 2. The north half of the site, noted as Phase 3 in the plan of development, as provided in an updated site plan, will now consist of 67,500 square feet of retail, 219,000 square feet of office space, 18,000 square feet of fast-casual restaurant, a 265-key hotel and approximately 400 multi-family residential units.

There are 15 access points and internal intersections that are associated with this project which will be-reanalyzed in this addendum. The land uses and sizes in the northeast quadrant of the site have changed from the approved Cavasson TIMA, sealed May 17, 2019. Along with the updated land uses

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and sizes, two additional connections have been added since the previous TIMA. The purpose of this addendum is to compare the previous trip generation with an updated trip generation with the revised land uses to determine is the queue storage length recommendations and other recommended offsite improvements from the previous TIA are sufficient. The proposed site plan can be found in **Attachment A**.

FUTURE ROADWAY CONDITIONS

Miller Road will be expanded from the northern subdivision, south to Legacy Boulevard, during the construction of Phase 1. This expansion will provide access to the Cavasson development and the surrounding Crossroads East development. By phase 2 opening year 2030, Miller Road will be constructed south as an underpass for the Loop 101 and will terminate at Princess Boulevard, creating a new four-legged intersection.

Internal to the site, Cavasson Boulevard has been constructed east-west bisecting the north and south halves of the site. Claret Drive has been constructed north-south to connect the Loop 101 Frontage Road to Cavasson Boulevard and will continue north, connecting to Legacy Boulevard. Construction of both Cavasson Boulevard and Claret Drive south of Cavasson Boulevard were contemplated with Phase 1 and are nearing completion. The north connection of Claret Drive, as well as construction of two additional north-south roadways, connecting Claret Drive to Legacy Boulevard, will be a part of phase 3.

SITE ACCESS

The site can be accessed via Miller Road alignment, Hayden Road, Legacy Boulevard and Westbound SR-101 Frontage Road.

- **Access *A*** is a proposed full unsignalized access located north of the westbound SR-101 Frontage Road along the future Miller Road alignment. Access A is planned to directly service Phase II of the proposed Cavasson development and may need to be restricted in the future if sight distance cannot be achieved after the construction of the Miller Road underpass.
- **Access *B*** is the proposed full movement signalized site access (Cavasson Boulevard and Miller Road intersection) which is located between the SR-101 Frontage Road and Legacy Boulevard. Access B is generally located north of Access A and south of Access C along the Miller Road Alignment. Access B is planned to be constructed as part of the Phase I development and will serve as one of the primary access points into the proposed Cavasson development.
- **Access *C*** is a proposed restricted ¾ unsignalized access providing left-in/right-in/right-out movements only. Access C is located south of Legacy Boulevard and north of Access B along the Miller Road Alignment. Access C is planned to be constructed as part of Phase II of the Cavasson development.
- **Access *D*** is a proposed full movement unsignalized access located east of Miller Road. Access D is planned to be constructed as part of the Phase II development.
- **Access *E*** is a proposed full movement unsignalized access located between Miller Road and Hayden Road, located generally east of Access D and west of Access F along Legacy Boulevard. Access E is planned to be constructed as part of the Phase II development.

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Table 2 – New Phase 3 Trip Generation Summary

Proposed Use	ITE LUC	Size	Units	Weekday Trips						
				Daily	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out	Total
Shopping Center	820	67.5	KSF	2,548	39	24	63	123	134	257
General Office Building	710	218.5	KSF	2,264	200	32	232	38	201	239
Hotel or motel	310	265	Rooms	2,564	75	52	127	88	85	173
Fast Casual Restaurant	930	17.5	KSF	5,516	24	12	36	136	111	247
Apartments	220	400	DU	2,984	41	137	178	128	75	203
			Subtotals	15,876	379	257	636	513	606	1,119
			Internal Capture Reduction	*(2,858)*	*(30)*	*(21)*	*(51)*	*(104)*	*(120)*	*(224)*
			External Trips	**13,018**	**349**	**236**	**585**	**409**	**486**	**895**
			Difference in Trips	*-6,092*	*-338*	*-238*	*-576*	*-337*	*-446*	*-783*

With the updated Phase 3 land use densities and intensities, the new northern half of the Cavasson development is anticipated to generate 13,018 external daily trips with 585 trips occurring during the AM peak hour (349 in/236 out) and 895 trips occurring during the PM peak hour (409 in/486 out).

This new site plan is anticipated to generate 6,092 fewer weekday daily trips with 576 fewer trips occurring during the AM peak hour (338 fewer in/238 fewer out) and 783 fewer trips occurring during the PM peak hour (337 fewer in/446 fewer out) when compared to the trip generation included in the May 2019 TIMA. The site generated trips resulting from the new trip generation, which includes all trips produced by the site during both phase 1, phase 2, and phase 3 have been included as **Attachment C**.

QUEUE STORAGE ANALYSIS

Adequate turn storage should be supplied on any approach where turn lanes are permitted and/or warranted. A queuing analysis was performed for all warranted/recommended and existing intersection turn lanes where site traffic is expected as well as left turn lanes adjacent to the site. According to the methodology documented in *A Policy on Geometric Design of Highways and Streets* (the AASHTO "Green Book"*)*, the storage length for a turn lane is typically estimated as the length required to hold the average number of arriving vehicles per two minutes, where unsignalized, or per one-and-a half signal cycles, where signalized.[1] The formulas used for the calculations are shown below.

For signalized intersections, the storage length is determined by the following formula:

[1] *The American Association of Highway and Transportation Officials on pages 714-715 of its publication,* Geometric Design of Highways and Streets *("AASHTO Green Book"), indicates that storage length for a turn lane, exclusive of taper, "should usually be based on one and one-half to two times the average number of vehicles that would store per cycle" at a signalized intersection.*

Conclusions

The following conclusions and recommendations have been documented in this statement:

- With the new Phase 3 land use densities and intensities, the new northern half of the Cavasson development is anticipated to generate 13,018 external daily trips with 585 trips occurring during the AM peak hour (349 in/236 out) and 895 trips occurring during the PM peak hour (409 in/486 out).
    - This new site plan is anticipated to generate 6,092 fewer weekday daily trips with 576 fewer trips occurring during the AM peak hour (338 fewer in/238 fewer out) and 783 fewer trips occurring during the PM peak hour (337 fewer in/446 fewer out) when compared to the trip generation included in the May 2019 TIMA.
    - All proposed turn lanes will only require the City of Scottsdale minimum turn lane requirement with the exception of the northbound left turn lane at Access H, which will require 155 feet of queue length, the westbound left turn lane at Hayden Road and Legacy Boulevard, which will require 205 feet and the eastbound right turn lane at the same intersection, which will require 255 feet.
        - The northbound left turn, eastbound left turn and eastbound right turn approaches at the intersection of Hayden Road and Cavasson Boulevard are all recommended to be constructed with dual turn lanes, each striped at 150 feet. Dual left turn lanes are also recommended on the northbound and eastbound approaches at the intersection of Hayden Road and Legacy Boulevard as well as the northbound approach at the intersection of Miller Road and Legacy Boulevard.

Thank you for allowing CivTech to assist you on this project. We wish you the best as you proceed with the development. Please call me if you have any questions about this statement and/or if we can be of further assistance.

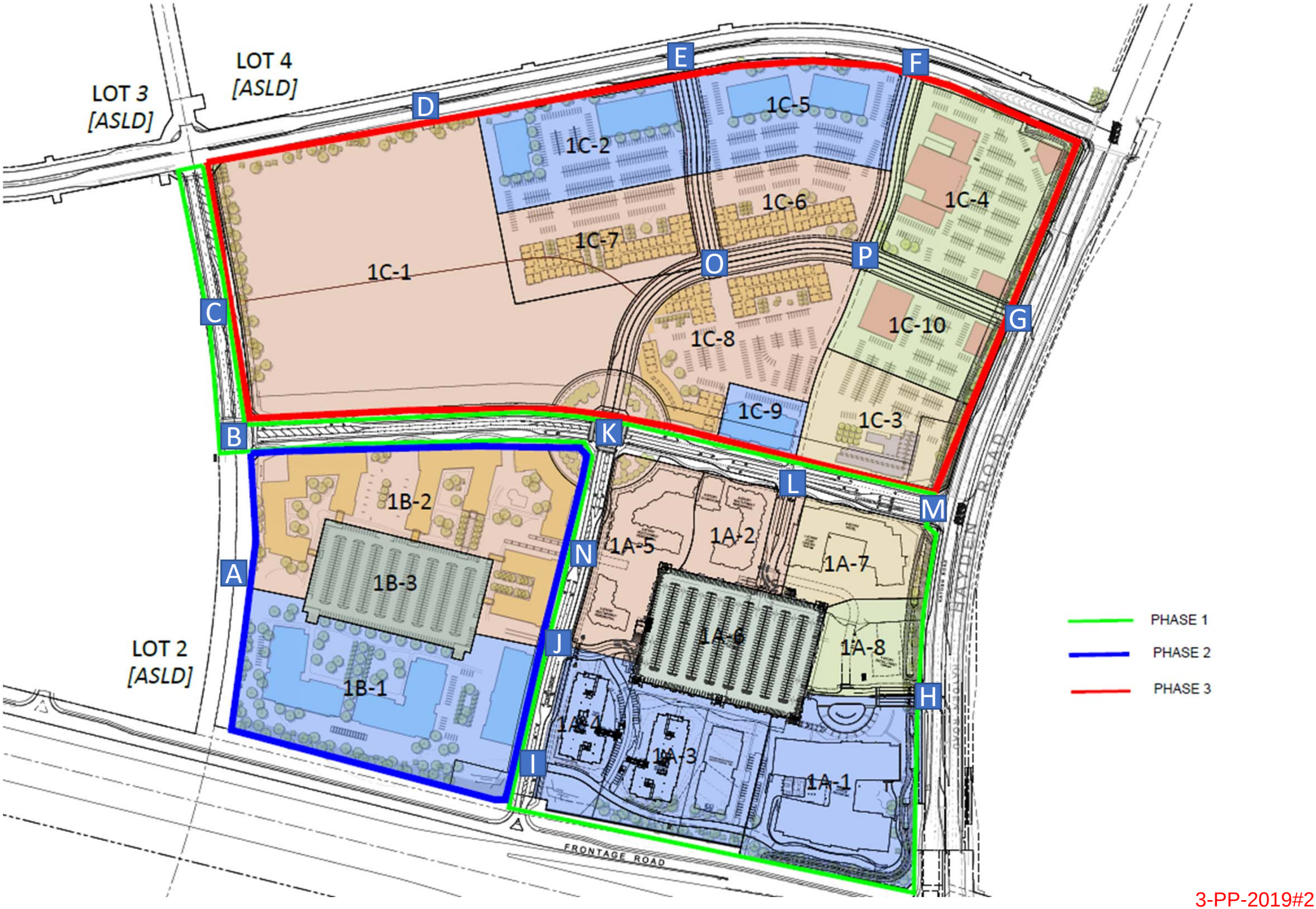
Sincerely,

CivTech

Dawn D Cartier, P.E., PTOE
Project Manager/President

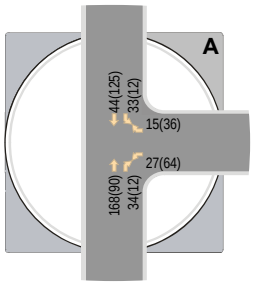
Attachments:

A. Site Plan
B. Original and New Trip Generations
C. New site generated trips and total trips
D. Queue Storage Analysis

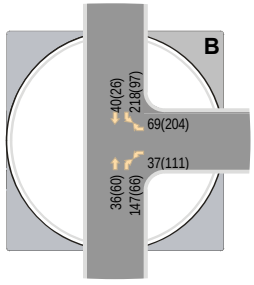


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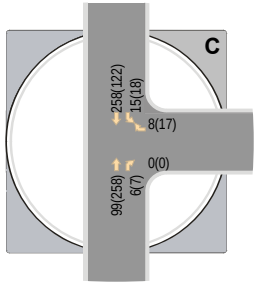
Site Access Volumes



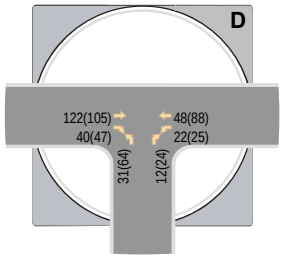
Miller Rd & Access A



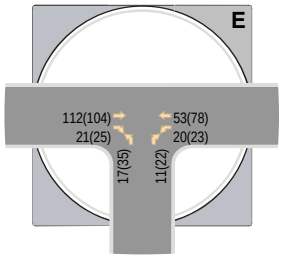
Miller Rd & Access B



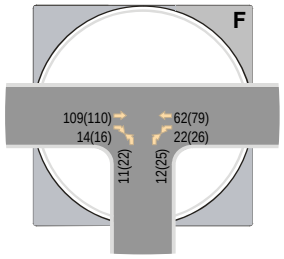
Miller Rd & Access C



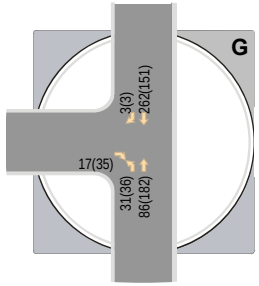
Access D & Legacy Blvd



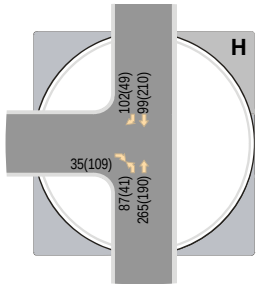
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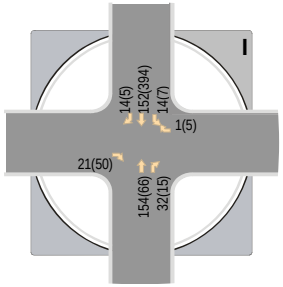
Access F & Legacy Blvd



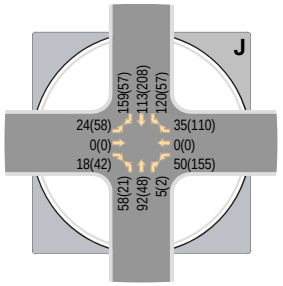
Hayden Rd & Access G



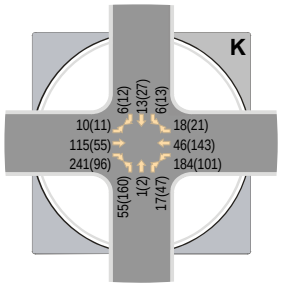
Hayden Rd & Access H



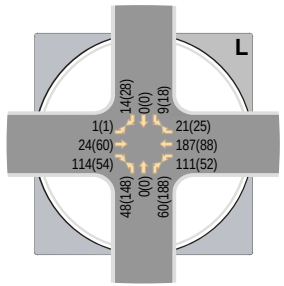
Claret Dr & Access I



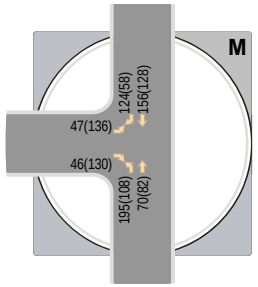
Claret Dr & Access J



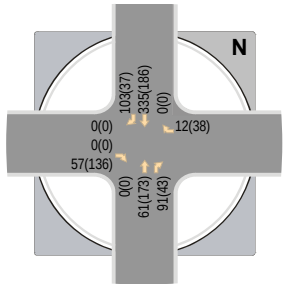
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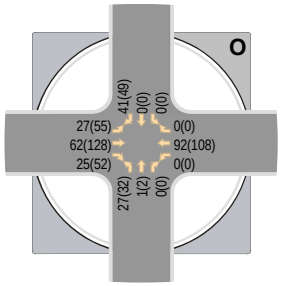
Access L & Cavasson Blvd



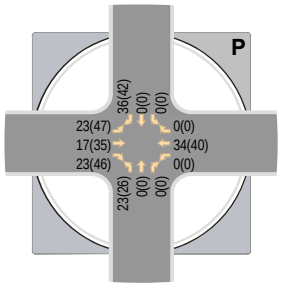
Hayden Rd & Cavasson Blvd



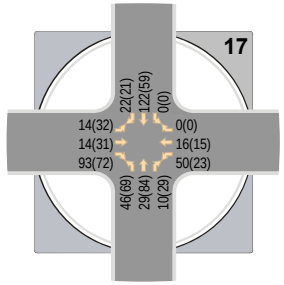
Claret Dr. & Access N



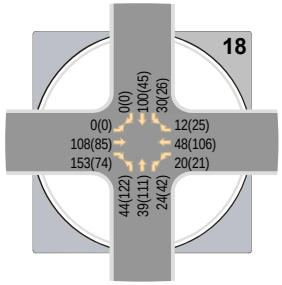
Access O



Access P



Hayden Rd. & Legacy Blvd.



Miller Rd. & Legacy Blvd.

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10/23/20

Banner Scottsdale
Transportation Impact & Mitigation Study
City of Scottsdale

Project No.: 1121151

Date: July 2022

ACCEPTED
WITH COMMENT

Study was submitted without certification of seal of a registered professional engineer. (DSPM 5-1.1003)

DIBBLE

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5-ZN-2022
9/20/2022

I. Introduction and Summary

A. Purpose of report & study objectives

The purpose of this traffic study is to determine the traffic impacts of a proposed Banner Health medical campus project within the City of Scottsdale. The proposed Banner Health medical campus is proposed to be developed on an approximately 45-acre parcel of State Trust Land located on the east side of Hayden Road between Loop 101 and the Cavasson Boulevard extension (the "Banner Property"). The Banner Property is located on a portion of a parcel referred to as Planning Unit 9 of the Crossroads East Planned Community District. The remaining portion of Planning Unit 9, also approximately 45 acres, is located north of the Cavasson Boulevard extension and east of Hayden Road and is referred to as Parcel B1 within this traffic study.

This report also compares the difference between the previously anticipated land use trip generation for the Banner Property and the proposed land use for the Banner medical campus. The report further includes analysis that assumes the development of Parcel B1 and evaluates potential future traffic impacts.

B. Executive summary

1. Site Locations & Study Area

The Banner Property is located within the City of Scottsdale, east of Hayden Road between Loop 101 and Cavasson Boulevard. **Figure 1** shows the Banner Property location. This study includes the analysis of the following intersections:

- Loop 101 EB Ramp & Hayden Road
- Loop 101 WB Ramp & Hayden Road
- Main Entrance & Hayden Road
- Cavasson Boulevard & Hayden Road
- Legacy Boulevard & Hayden Road
- Cavasson Boulevard & Driveway 1
- Cavasson Boulevard & Driveway 2

2. Development Description

The Banner Health medical campus project will be developed in three phases ("Banner Project"). The first phase includes two buildings (Phase 1-A and 1-B). Phase 1-A will be a 340,000 SF hospital building with 108 beds in a 4-story hospital building and a 2-story Diagnostic & Treatment building block to house emergency, surgery, laboratory, Pharmacy and associated support services. Phase 1-B will include a 3-story, 120,000 SF Medical Office Building that will be separate from the hospital. The estimated completion date for Phases 1-A and 1-B is 2025. Phase 2 of the Banner Project is anticipated to include a 3-story, 90,000 SF Cancer Center along with a 4-level parking structure. For the purposes of this report, Phase 2 is assumed to be completed in 2032. The final Phase 3 is planned to expand on the Phase 1-A hospital building and will add an additional 162 to 192 beds for a total bed capacity of 270-300 beds at full build out of the hospital. For the purposes of this report, Phase 3 is assumed to be completed in 2045.

3. Principal Findings

Through capacity and improvement analysis, it was found that providing right turn lanes at all site driveways into the Banner Property is beneficial. It was also determined that for the two site driveways along Cavasson Boulevard, it is beneficial to provide separate egress left and right turn lanes to reduce vehicle queues within the parking lot.

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Through the capacity analysis, it was found that the background traffic growth has impacts to the intersection of Cavasson Boulevard & Hayden Road by 2032 (Phase 2 timeframe) without the addition of Banner traffic or Parcel B1. During the morning peak hour, the delay is 64.6 seconds with a LOS E by 2032. The northbound left begins to fail for the background traffic with the addition of Parcel B1 by 2025 (Phase 1 timeframe). The delay with the addition of Parcel B1 is 83.6 second (LOS F) during the morning peak hour and 77.2 seconds (LOS E) during the afternoon peak hour. The addition of the site traffic also has some impacts to the northbound left turn lane at Cavasson Boulevard & Hayden Road due to the addition of the east leg of the intersection as well as overall increased traffic to the intersection. Without the addition of Parcel B1, the northbound left turn has a delay of 79.3 seconds (LOS E) for the morning peak and 91.9 seconds (LOS F) for the afternoon peak hour by Phase 1 opening day 2025. With the addition of both Banner Phase 1 and Parcel B1, the morning peak hour delay is 67.7 seconds (LOS E) and the afternoon peak hour delay is 82.5 seconds (LOS F). The turning movement delay was found to decrease to an acceptable delay for the background traffic only scenarios as well as with the addition of the Banner traffic scenarios when the northbound and southbound left turns are made a protected/permissive. The queue length was also significantly reduced so as not to exceed the storage length of the northbound left turn lane. The LOS becomes a D with 45.5 second delay in the morning peak hour and C with a 34.5 second delay in the afternoon peak hour for the northbound left background traffic scenario by 2025 with the improvement and remaining an acceptable level of service for by 2032 and 2042. Once Parcel B1 is added to the background traffic and the improvement is made to the intersection, the delay is decreased to 18 seconds (LOS B) for the morning peak and 31 seconds (LOS C) for the afternoon peak hour by 2025. Note the signal timing was also optimized in all scenarios. The LOS and delay remain at an acceptable level of service by 2032 and 2042. Once the Banner traffic is added at the protected/permissive improvements are added, the delay is decreased to 19.6 seconds (LOS B) and 30.2 (LOS C) for the morning and afternoon peak hour without Parcel B1 by Phase 1 opening day (2025). The turn remains at an acceptable level of service by Phases 2 & 3 opening days.

The westbound left turns at Cavasson Boulevard and Hayden Road will exceed 300 vehicles per hour during the afternoon peak hour with the Banner Project. Per the City's guidelines, dual left turn lanes should be considered. Through capacity analysis, it was determined that dual left turn lanes would provide the most efficiency for the westbound left turning vehicles and create more space for left turning vehicles to queue.

The northbound left turn lane for the Loop 101 interchange for the westbound ramps is currently at a LOS D with a 41.7 second delay during the afternoon peak hour and a queue that exceeds the capacity of the turn lane. Once background traffic is increased to accommodate more development in the area and Parcel B1 traffic is added, the northboubd left turn increases to a 79.7 second delay (LOS E) by 2025. Pavement already exists at the the Loop 101 and Hayden interchange that could accommodate an additional through lane in the northbound and southbound directions. Reconfiguring pavement markings to incorporate this currently unused pavement to add an additional through lane in the north and south direction would benefit traffic as well as making the northbound left turn a protected/permissive left turn instead of a protected left turn. This would allow for more throughput traffic capacity in the northbound and southbound directions and thus allow for more of the signal cycle length to be dedicated to the northbound left turning movement. Making the left turn a protected/permissive left also allows additional vehicles to make a left when there are gaps in the throughput traffic. It is also important to note that based on the traffic counts collected in the field, the northbound left does already exceeds the 300 vehicles per hour threshold in the afternoon peak hour. Per the City guidelines, the intersection meets the threshold today for investigating a dual northbound left turn lane.

4. Conclusions

The Banner Project includes three phases that are anticipated to be completed over the next 20 years. Phase 1 of the Banner Project is anticipated to generate 7,485 weekday trips, 601 morning peak hour trips and 633 afternoon peak hour trips. Phase 2 of the Banner Project is anticipated to generate 2,867 weekday trips, 241

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morning peak hour trips and 256 afternoon peak hour trips. Phase 3 of the Banner Project is anticipated to generate 3,183 weekday trips, 242 morning peak hour trips and 254 afternoon peak hour trips. The three phases combined are anticipated to generate 13,535 weekday trips, 1,084 morning peak hour trips and 1,143 afternoon peak hour trips total for the Banner Project.

A significant portion of the Banner Project traffic is anticipated to use the intersection of Hayden Road & Cavasson Boulevard. Providing dual left turns for the eastbound and westbound approaches significantly benefits the delay and level of service for all turning movements at the intersection. The eastbound approach already has dual left turn lanes and it is recommended for the dual lefts to remain. The westbound approach is recommended to have dual left turn lanes based on the City's guidelines. The dual westbound lefts also significantly reduce delay and queues for westbound left turning vehicles

The future development of Parcel B1 and the associated north/south connector road between Cavasson Blvd. and Hualapai Drive will help to lower the traffic demand at the intersection of Hayden Road & Cavasson Boulevard by providing alternative routes for site traffic to access Pima Road and the Loop 101.

5. Recommendations

The following list includes the recommendations for site access to the Banner Property:

- Provide northbound right turn lane with a minimum 100-foot storage length at the main entrance along Hayden Road.
- Provide eastbound right turn lane with a minimum 100-foot storage length at the west site driveway along Cavasson Boulevard for Phase 1.
- The east driveway onto the Banner site is not anticipated to have a lot of use until Phases 2 and 3 are constructed. It is therefore recommended to plan for a future eastbound right turn lane with 100-foot storage and further investigate when the right turn lane will be needed with the future phases and as Cavasson Boulevard continues to develop.
- Provide dedicated northbound left turn lanes at two site driveways along Cavasson Boulevard for egress traffic as well as a dedicated northbound right turn lane.

The following list includes all recommendations of off-site improvements for Base traffic that will also improve traffic once Banner traffic is added:

- Reconfigure pavement markings to make the additional unused pavement a shared through/right southbound lane if not already planned at Hayden Road & the Loop 101 westbound interchange.
- Change the northbound left turn lane at Hayden Road and Cavasson Boulevard to a protected/permissive left turn lane by phase 1 opening day (2025) to reduce delay and queues for the turning movement.

The following list includes all recommendations of off-site improvements to accommodate Banner Project site traffic:

- Cavasson Boulevard along the north boundary of the Banner Property is recommended to be a two-lane roadway section to be widened at the intersection of Hayden Road.
- Provide dual westbound left turn lanes with at least 300-foot storage length at Hayden Road & Cavasson Boulevard and a westbound shared through/right turn lane.
- Reconfigure pavement markings for the 1st eastbound right turn lane to be a through lane at Hayden Road & Cavasson Boulevard while maintaining the eastbound dual left turn lane and outer dedicated right turn lane.
- When updating the signal at Hayden Road & Cavasson to accommodate the new east leg of Cavasson, provide protected/permissive southbound left turn indications. The dual eastbound left

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turn lanes will need to be updated to protected left indications. The dual westbound left turn lanes will also require protected left turn indications.

- Provide a southbound left turn lane at the main entrance on Hayden Road with a storage length that fits within the constraints of available space within the existing median.

II. Proposed Development

A. Off-Site Development

The proposed development of the Banner Project will include the design and construction of the currently non-existent east leg of the Hayden Road & Cavasson Boulevard intersection. Cavasson Boulevard, as collector road, will be constructed along the length of Banner Property and terminate with a temporary turn-around at the east end of the Banner Property. The construction of the east leg of Cavasson Boulevard will include the addition of a southbound left turn lane at the intersection as well as restriping the west leg to accommodate a through lane at the intersection. Additionally, the main entrance to the Banner Project will be located along Hayden Road to align with the Hayden Road entrance for the new Nationwide/Cavasson development on the west side of Hayden Road. Due to the proximity of the Loop 101, the main entrance will have limited access to include left-in, right-in and right-out. Left-out will be restricted at this access location.

B. Description of On-Site Development

1. Lane Use & Intensity

The Banner Project will have 3 main access locations. As previously mentioned, one main entrance driveway with ¾ access along Hayden Road as well as two driveways along Cavasson Boulevard will be constructed.

2. Location

The Banner Project site is located within the City of Scottsdale, east of Hayden Road between Loop 101 and Cavasson Boulevard. **Figure 1** shows the project location.

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Figure 1 – Site Location

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IV. Projected Traffic

A. Site Traffic

1. Trip Generation

The trip generation for each phase of the Banner Project were calculated using the ITE Trip Generation Manual, 11th Edition. The calculations are summarized in **Table 3**.

Table 3 – Trip Generation

Phase	Land Use	Land Use Code	Quant	Units	Weekday			Morning Peak			Afternoon Peak		
					Total	Ingress	Egress	Total	Ingress	Egress	Total	Ingress	Egress
1	Hospital	610	340	1000 SF	3662	1831	1831	279	187	92	292	102	190
	Medical Dental Office	720	120	1000 SF	3823	1912	1911	322	261	61	341	85	256
	Phase 1 Total				**7485**	**3743**	**3742**	**601**	**448**	**153**	**633**	**187**	**446**
2	Medical Dental Office	720	90	1000 SF	2867	1434	1433	241	195	46	256	64	192
	Phase 2 Total				**2867**	**1434**	**1433**	**241**	**195**	**46**	**256**	**64**	**192**
3	Hospital	610	295.5	1000 SF	3183	1592	1591	242	162	80	254	89	165
	Phase 3 Total				**3183**	**1592**	**1591**	**242**	**162**	**80**	**254**	**89**	**165**
Total for All Phases					**13535**	**6769**	**6766**	**1084**	**805**	**279**	**1143**	**340**	**803**

2. Trip Distribution

The trip distribution was determined based on anticipated patient origins as well as employees. Most traffic is anticipated to arrive from the east and west on the Loop 101. Some traffic is anticipated to arrive from the north of the Banner Property along Scottsdale Road, Hayden Road and Pima Road. Some traffic is also anticipated to arrive from the south from Scottsdale Road and Hayden Road.

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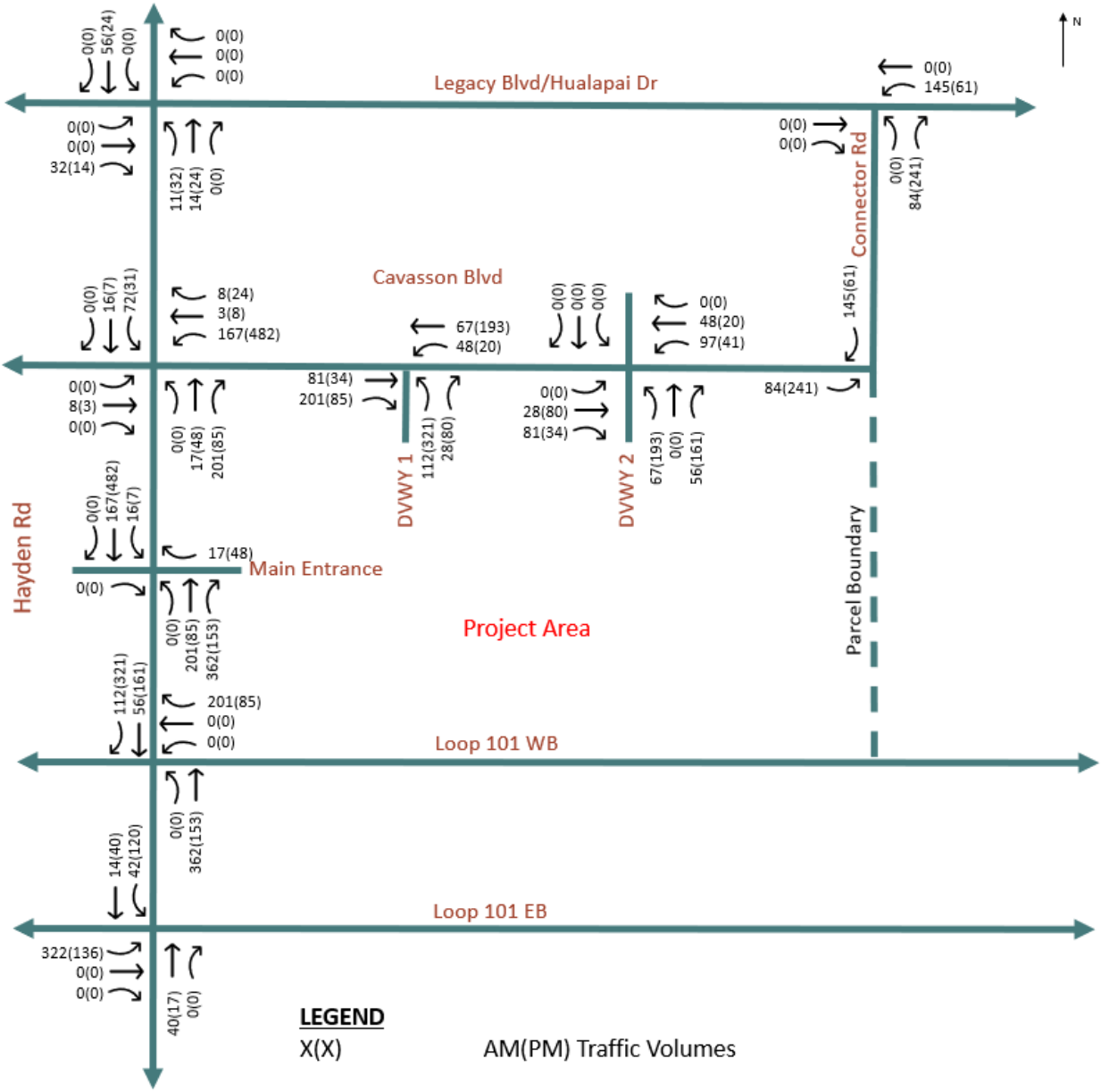


Figure 11 – Trip Assignment All Phases Combined w/Parcel B1

B. Through Traffic

1. Method of Projection

The background traffic for this study was determined using a few different resources. The first source of data came from traffic data that was collected by Field Data Services (FDS) of Arizona as previously mentioned.

The existing traffic was increased by a growth rate of 1% per year for each horizon year. This growth rate was determined based on the remaining empty land within the vicinity of the project. The increased traffic for each horizon year are summarized in the following tables.

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CivTech



September 10, 2020

Charles Huellmantel
Huellmantell & Affiliates
605 South Ash Avenue
Tempe, Arizona 85281
Telephone: (480) 921-2800
Email: charles@huellmantel.com

RE: ENHANCED TRAFFIC STATEMENT FOR THE AXON CAMPUS – SCOTTSDALE, ARIZONA

Dear Mr. Huellmantel:

CivTech is pleased to present this enhanced traffic statement for the proposed Axon Campus (`project site') located in on the south and west side of Loop 101, north of the Mayo Boulevard/Union Hills alignment and east of Hayden Road in Scottsdale, Arizona. The proposed project would develop one (1) parcel on approximately 70 acres that was previously proposed as a part of the Crossroads East PCD (Parcel 13). The previous assumptions for this parcel included industrial, manufacturing and warehousing uses totaling approximately 1.5 million square feet. The Axon Campus is an allowable use for Parcel 13 with the PCD. The proposed trip generation assumptions utilized during the Crossroads East TIA prepared for the PCD zoning process with the Arizona State Land Department (ASLD) were similar in scale. The proposed site plan can be found in **Attachment A**.

PURPOSE AND SCOPE

The purpose of this traffic statement is to determine if the relocated Mayo Boulevard, which is now proposed in a different location than originally shown within the Crossroads East TIA, can utilize roundabouts to help realign the roadway and provide more developable land for the Axon Campus. The location and potential size of roundabouts used in the relocation will be reviewed to determine if adequate spacing is provided from the arterial street network to avoid queueing through the roundabout. The typical section required for Mayo Boulevard east of Hayden Road with the Axon Campus is also being reviewed as part of this statement.

The Crossroads east TIA was approved by the City of Scottsdale on September 23, 2011 with a stipulation that the developer provide an additional lane in the northbound direction on Hayden Road fronting the project. This lane has been considered within the analysis. A trip generation comparison will be conducted as well as a capacity analysis to determine if there are additional changes to the surrounding roadway network that are needed due to the development of this parcel.

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Table 1 - Trip Generation Summary

Land Use	ITE Code	Land Use Name	Quantity Units+	AM Distribution		PM Distribution	
				In	Out	In	Out
Previous Assumption (Crossroads East)							
Industrial Park	130	Industrial Park	490.766 KSF	82%	18%	21%	79%
Manufacturing	140	Manufacturing	490.766 KSF	78%	22%	36%	64%
Warehousing	150	Warehousing	490.766 KSF	79%	21%	25%	75%
Proposed							
General Office Building	710	General Office building	780.000 KSF	86%	14%	16%	84%
Warehousing	150	Warehousing	130.000 KSF	77%	23%	27%	73%

Land Use	ADT		AM Peak Hour				PM Peak Hour			
	Avg. Rate*	Total	Avg. Rate*	In	Out	Total	Avg. Rate*	In	Out	Total
Previous Assumption (Crossroads East)										
Industrial Park	5.25	2,576	0.49	196	43	239	0.79	81	305	386
Manufacturing	3.87	1,900	0.82	313	88	402	0.77	137	243	380
Warehousing	3.13	1,534	0.19	74	20	94	0.18	23	68	91
Total		**6,010**		**583**	**151**	**732**		**241**	**616**	**857**
Proposed										
General Office Building	9.98	7,782	0.97	654	106	760	1.03	128	673	801
Warehousing	1.93	250	0.31	32	9	41	0.33	12	31	43
Total		**8,032**		**686**	**115**	**801**		**140**	**704**	**844**
Difference (Proposed-Previous Assumption)		**1,797**		**103**	**-36**	**66**		**-101**	**88**	**-13**
Difference (%)		**30%**		**18%**	**-24%**	**9%**		**42%**	**14%**	**-2%**

Notes: *All average rates were calculated by dividing total trips generated using regression equation by the number of dwelling units. (See below.)
+ KSF = 1,000 square feet

CALCULATIONS (Equations shown only where applicable)			
Land Use [Units]	*Daily*	*AM Peak Hour*	*PM Peak Hour*
General Office Building [X = 780 SF]	FC: LN(T)=0.97*LN(X)+2.5 [9.98]	FC: T=0.94*X+26.49 [0.97]	FC: LN(T)=0.95*LN(X)+0.36 [1.03]
Warehousing [X = 130 SF]	FC: T=1.58*X+45.54 [1.93]	FC: T=0.12*X+25.32 [0.31]	FC: T=0.12*X+27.82 [0.33]

The proposed Axon Campus development could generate up to 8,032 weekday daily trips with 801 trips occurring during the AM peak hour (686 in/115 out) and 844 trips occurring during the PM peak hour (140 in/704 out)

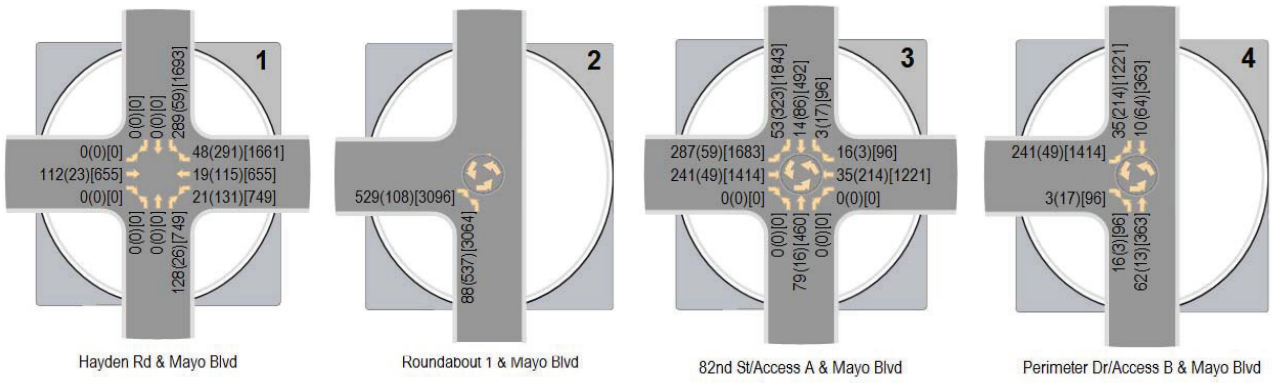
The Axon Campus is expected to generate 1,797 additional external daily trips as compared to the original Crossroads East TIA, with 66 additional trips generated during the AM peak hour (103 trips in/-36 trips out) and 13 fewer trips generated during the PM peak hour (-101 trips in/88 trips out).

TRIP DISTRIBUTION AND ASSIGNMENT

A single trip distribution pattern was taken from the previously approved Crossroads East TIA. It is expected that the development will generate trips based on future population within a 10-mile radius of the site. Future total population within a 10-mile radius of the site, as predicted by the 2030 socio-economic data compiled by the Maricopa Association of Governments (MAG), was used in that study as a basis to estimate trip distribution for the development.

Based on this information and the local street network, distribution percentages were assigned to the study roadway network. The resulting trip distribution percentages were applied to the generated trips to determine the AM and PM peak hour site traffic at the intersections within the study area and are illustrated in **Figure 1**.

Figure 1 – Site Trip Distribution



BACKGROUND TRAFFIC GROWTH PROJECTIONS

Background traffic along Hayden Road was determined by growing the existing 2020 traffic volumes by 2.1% per year to the opening year 2035. This gives a growth factor of 1.366 applied to the existing Hayden Road volumes.

CivTech recently conducted a traffic study for the Cavasson development, located on the southwest corner of Hayden Road and Legacy Boulevard. This development is anticipated to produce additional traffic on Hayden Road by the horizon year 2035. This anticipated additional traffic was added to the grown existing volumes to represent future traffic on the surrounding roadway network.

Along with the Cavasson development, Mayo Boulevard is currently being constructed so that it connects west to Scottsdale Road. The original Crossroads East TIA projected volumes for this portion of Mayo Boulevard between Hayden Road and Scottsdale Road. In order to have a more conservative estimate of approach traffic volumes, the eastbound and westbound volumes from Crossroads East for this portion of Mayo Boulevard were included in place of the existing volumes since the roadway is not yet completed and existing traffic that was present is likely construction vehicles. The horizon year for Crossroads East TIA was 2030, so the volumes used in the Axon Campus background traffic were grown by 2.1% per year for 5 years in order to represent the 2035 horizon year as projected for the Cavasson development.

Background traffic calculations as well as the Cavasson and Crossroads East volumes referenced above are located within **Attachment C**.

one-and-a half signal cycles, where signalized.[1] The formulas used for the calculations are shown below.

For signalized intersections, the storage length is determined by the following formula:

Storage Length = [1.5 x (veh/hr)/(cycles/hr)] x 25 feet

For unsignalized intersections, the storage length is determined by the following formula:

Storage Length = [(veh/hr)/(30 periods/hr)] x 25 feet

The total projected traffic volumes were utilized for the calculations. From this, the resulting turn lane storage for turn movements using AASHTO guidelines were calculated and are summarized in **Table** . Calculations for the AASHTO queue storage length recommendations and the 50th percentile HCM 2016 queue storage length recommendations are provided in **Appendix E**. The 50th percentile HCM 2016 queue storage lengths are given in vehicles and multiplied by 25 feet per vehicle to determine the storage length.

Table 6 – Queue Storage Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage		
				AASHTO	HCM(2)	Recommended
1	Hayden Road & Mayo Boulevard	Signalized	NB Left	50′	35′	150′
			SB Left	900′	45′	(1)300′
			EB Left	50′	225′	150′
			WB Left	225′	85′	150′
			SB Right	75′	160′	200′
			WB Right	1025′	390′	(3)

(1) A minimum of 150-feet of queue storage is recommended at all signalized intersections.
(2) HCM 50th percentile queue reported in vehicles/lane, assuming 1 vehicle ~ 25 feet.
(3) Westbound right-turn lane is a through trap lane that will provide more then the calculated queue storage.

The recommended storage lengths in **Table 6** is provided for study horizon year 2035 using the total traffic projections.

[1] *The American Association of Highway and Transportation Officials on pages 714-715 of its publication,* Geometric Design of Highways and Streets *("AASHTO Green Book"), indicates that storage length for a turn lane, exclusive of taper, "should usually be based on one and one-half to two times the average number of vehicles that would store per cycle" at a signalized intersection.*

Conclusions

The following conclusions and recommendations have been documented in this statement:

- The proposed Axon Campus development could generate up to 8,032 weekday daily trips with 801 trips occurring during the AM peak hour (686 in/115 out) and 844 trips occurring during the PM peak hour (140 in/704 out).
- The Axon Campus is expected to generate 1,797 additional external daily trips as compared to the original Crossroads East TIA, with 66 additional trips generated during the AM peak hour (103 trips in/-36 trips out) and 13 fewer trips generated during the PM peak hour (-101 trips in/88 trips out).
- All proposed intersections are anticipated to operate at acceptable levels of service.
- All intersections are anticipated to operate at acceptable levels of service with the proposed intersection lane configuration and the following roadway typical sections:
    - Mayo Boulevard should be constructed with a four-lane section, two lanes in each direction of travel between Hayden Road and 82nd Street. This will require the construction of a two-lane roundabout approximately 400 feet east of the Hayden Road alignment.
    - Mayo Boulevard could be reduced to provide a two-lane section, one lane in each direction of travel from 82nd Street to Perimeter Drive.
- Queue storage recommendations and proposed lane configuration recommendation have been provided in **Attachment E**.

Thank you for allowing CivTech to assist you on this project. We wish you the best as you proceed with the development. Please call me if you have any questions about this statement and/or if we can be of further assistance.

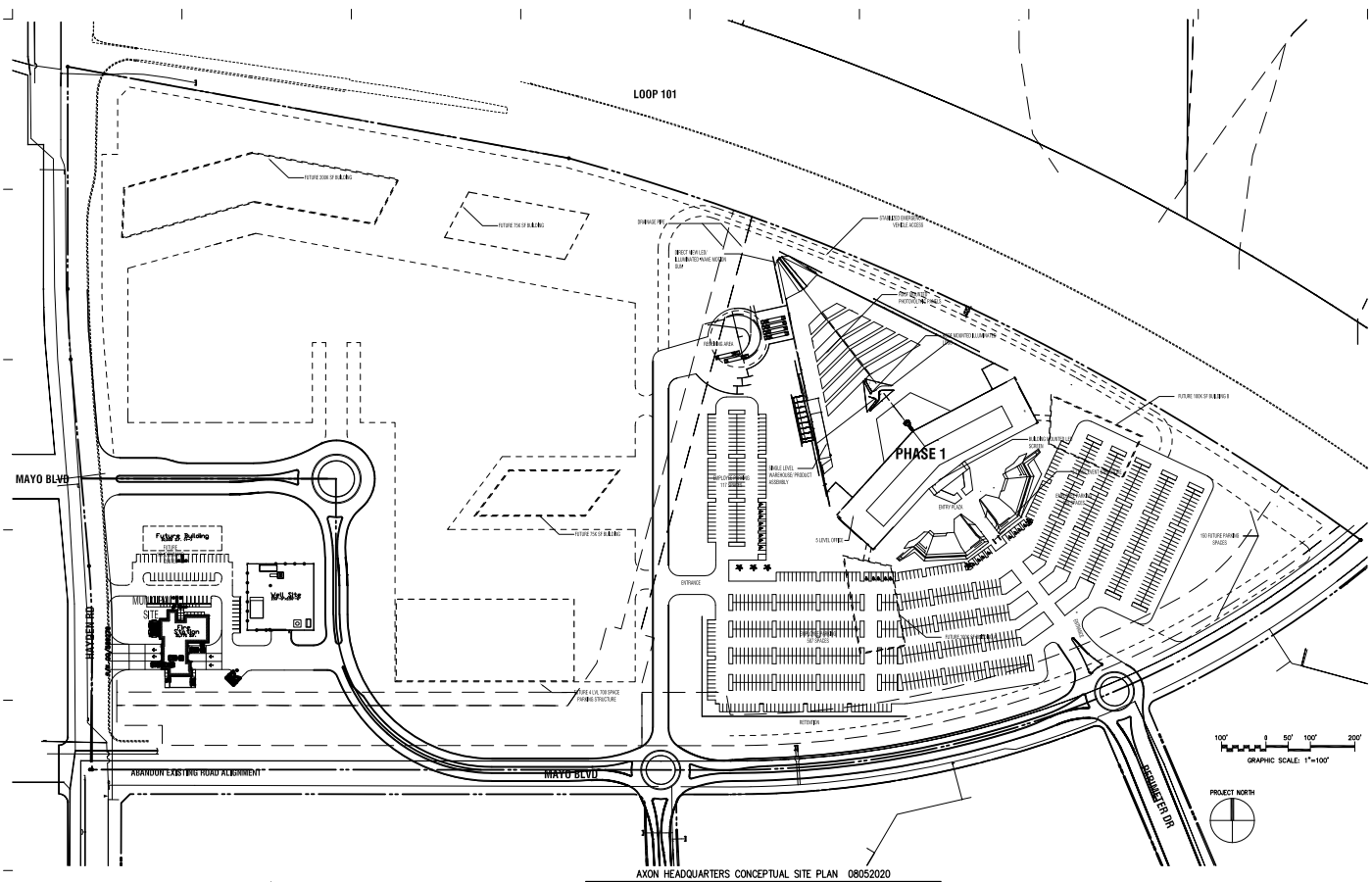
Sincerely,

CivTech

Dawn D Cartier, P.E., PTOE
Project Manager/President

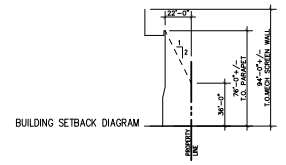
Attachments:

A. Site Plan
B. Existing Conditions Analysis
C. Background Growth Calculations
D. 2035 Analysis Worksheets
E. Queue Storage Analysis



AXON HEADQUARTERS CONCEPTUAL SITE PLAN 08052020

1"=100'



BUILDING SETBACK DIAGRAM

AXON CORPORATE HEADQUARTERS	FUTURE BLDG A PROPOSED		
BLDG HEIGHT		75'-0" +/- TO PARAPET	
ZONING		PCD	
OFFICE (B OCC)	275,000SF +/- @1/300	825 Spaces	
PARKING REQUIRED		2077 Spaces	
ADA REQUIRED 4%		109 Spaces	

AXON CORPORATE HEADQUARTERS	FUTURE BLDG		
BLDG HEIGHT		75'-0" +/- TO PARAPET	
ZONING		PCD	
OFFICE (B OCC)	75,000SF +/- @1/300	225 Spaces	
PARKING REQUIRED		1682 Spaces	
ADA REQUIRED 4%		76 Spaces	

AXON CORPORATE HEADQUARTERS	BLDG B PROPOSED		
BLDG HEIGHT		75'-0" +/- TO PARAPET	
ZONING		PCD	
OFFICE (B OCC)	100,000SF +/- @1/300	308 Spaces	
PARKING REQUIRED		1627 Spaces	
ADA REQUIRED 4%		66 Spaces	

AXON CORPORATE HEADQUARTERS	BLDG A PROPOSED		
BLDG HEIGHT		75'-0" +/- TO PARAPET	
ZONING		PCD	
OFFICE (B OCC)	100,000SF +/- @1/300	300 Spaces	
PARKING REQUIRED		1327 Spaces	
ADA REQUIRED 4%		54 Spaces	

AXON CORPORATE HEADQUARTERS	PHASE 1		
BLDG HEIGHT		75'-0" +/- TO PARAPET	
ZONING		PCD	
OFFICE (B OCC)	250,000SF +/- @1/300	767 Spaces	
ASSEMBLY/ WAREHOUSE (F-1)	130,000SF +/- @1/200	260 Spaces	
PARKING REQUIRED		1027 Spaces	
ADA REQUIRED 4%		42 Spaces	
PARKING PROVIDED		1027 Spaces	
ADA PROVIDED		21 Spaces*	

*Reduction to 2% (26 spaces) will be requested per Sec. 5.7.10.C.3.a of City Scottsdale Zoning code for Phase 1.

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www.smithgroup.com

AXON

NOT FOR CONSTRUCTION

ISSUED FOR	YR	DATE

01/13/2020

ASP05

13-ZN-2020
9/11/2020

PLOT DATE:7/20/2022 7:07:37 PM

DESIGN FILE:\2020\205133.02\DWG\IMP\5133T00.DGN

COS staff is revising this yellow lane line to be a northbound left-turn bay

Revise plans to show third NB through lane beginning at Axon Way instead of here.

61+00 62+00 63+00 64+00 65+00 66+00 67+00 68+00

Sta 61+90
Begin NB Edge Line Removal
Begin NB Skip Stripe Removal
Match Existing

HAYDEN RD

MATCH LINE STA 63+50
SEE BELOW LEFT

MATCH LINE STA 63+50
SEE ABOVE RIGHT

MATCH LINE STA 68+00
SEE SHEET SM2

Exist Stripe To Remain

22'
13'
Varies
4'

11'
11'
11'
11'
11'
12'
12'
5.5'
5'
4'

N0°00'14"E

49.0' Lt Sta 62+50 Exist R8-3 To Remain
Existing R/W
49.0' Lt Sta 63+00 Exist R2-1 (40) To Remain
SPEED LIMIT 40
66.0' Rt Sta 63+15 Exist R8-3 To Remain
66.0' Rt Sta 62+63 Exist R3-5R
ONLY
+90.0, 26.5' Rt Begin Skip Stripe Taper
+90.0, 41.0' Rt Begin Edge Line Taper
Match Existing
57.0' Rt Sta 61+40 Exist R4-4 Relocate to 64.5' Rt Sta 67+68
BEGIN RIGHT TURN LANE YIELD TO BIKES
59.0' Lt Sta 66+60 Exist R3-5R To Remain
2.0' Lt Sta 64+32 Exist W2-2(R) Exist D1-1 (Mayo Blvd)
Mayo
8.5' Lt Sta 64+00 Exist R4-7 Exist OM1-2 To Remain
Existing R/W
Yellow
66.0' Rt Sta 64+11 Exist R3-5R Exist D1-1 (Mayo Blvd) Relocate to 73.0' Rt Sta 70+69
+20.0, 25.0 Rt End Skip Stripe Lane Taper
+20.0, 36.0' Rt Begin Skip Stripe Lane Line
+20.0, 47.0' Rt End Solid Edge Line Taper
bike symbol
12.0' Rt Sta 65+70 Exist OM1-2 Exist R4-7 Relocate to 11.0' Rt Sta 65+62
64.0' Rt Sta 66+20 Exist R2-1(40) Relocated Sign
New R/W
Existing R/W
11.0' Rt Sta 67+84 Exist R3-5(L)
64.5' Rt Sta 67+68 Exist R4-4 Relocated Sign
+70.0, 47.0' Rt
+70.0, 51.0' Rt
End & Begin

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REMOVAL & RELOCATION NOTES

	DESCRIPTION	UNIT	QUAN
1	Remove Existing 4" Skip Stripe with Raised Pavement Markers	LF	459
2	Remove Existing 4" Solid Stripe	LF	334
4	Remove Existing 4" Dbl Yellow Solid Stripe	LF	105
5	Remove Existing 8" Stripe	LF	50
6	Remove Existing 12" Stripe	LF	407
7	Remove Existing Pvmt Marking Arrow or Legend	EA	2
8	Remove Sign, Post, & Post Base	EA	4
9	Remove & Relocate Existing Sign Remove Post & Post Base	EA	3

CONSTRUCTION NOTES

	DESCRIPTION	UNIT	QUAN
1	4" White Skip Stripe with Type G Markers per COS Std Dtl 2132	LF	990
3	8" Solid White Line	LF	580
9	8" White Skip Stripe 2' Stripe with 6' Gap	LF	60
13	New Bicycle Pvmt Symbol & Arrow per Detail TA	EA	1
17	New Median Nose Signing, Type A per COS Std Dtl 2133-1	EA	1
19	New Median Nose Paint & Markers per COS Std Dtl 2226 or Dtl TE	LF	80
23	Relocated Existing Sign New Sign Post and Foundation per COS Std Dtl 2131	EA	2

GENERAL NOTES

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DATE	REVISION	BY

ENGINEER
Registered Professional Engineer
CERTIFICATE NO. 41977
KAREN C. HOBBS
Date Signed 07/20/2022
ARIZONA, U.S.A.
Expires 3/31/23

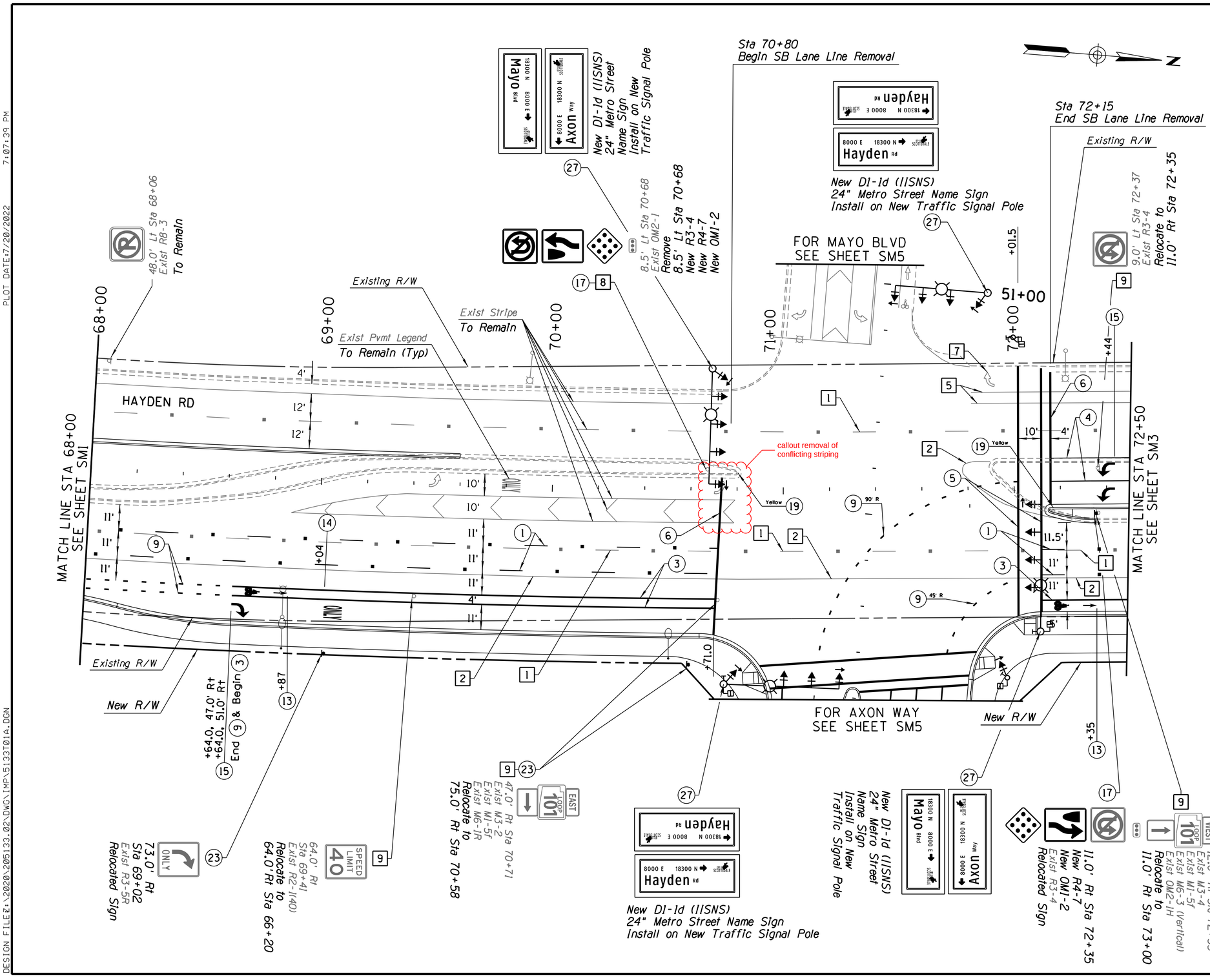
CITY OF SCOTTSDALE
ARIZONA

PUBLIC WORKS
CAPITAL PROJECT MANAGEMENT
7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE
SIGNING AND PAVEMENT MARKING

PROJECT TITLE
AXON WAY
HAYDEN RD TO PERIMETER DR

SCALE	DESIGNED	DATE	BID NO.	SHT.
HORIZ. 1"=20'	DK/KH	07/2022		SM1
VERT. N/A	DRAWN TML	AS-BUILT	PROJECT NO. 4474-21-6	68 OF 148



PLOT DATE: 7/20/2022 7:07:39 PM

DESIGN FILE: C:\2020\5133\02\DWG\IMP\5133T01A.DGN

REMOVAL & RELOCATION NOTES

	DESCRIPTION	UNIT	QUAN
1	Remove Existing 4" Skip Stripe with Raised Pavement Markers	LF	585
2	Remove Existing 4" Solid Stripe	LF	513
5	Remove Existing 8" Stripe	LF	140
7	Remove Existing Pvmt Marking Legend	EA	1
8	Remove Sign, Post, & Post Base	EA	1
9	Remove & Relocate Existing Sign Remove Post & Post Base	EA	4

CONSTRUCTION NOTES

	DESCRIPTION	UNIT	QUAN
1	4" White Skip Stripe with Type G Markers per COS Std Dtl 2132	LF	622
3	8" Solid White Line	LF	455
4	8" Solid White Line with Type G Markers per COS Std Dtl 2132	LF	70
5	12" Solid White Line	LF	217
6	18" Solid White Line	LF	116
9	8" White Skip Stripe 2' Stripe with 6' Gap	LF	290
13	New Bicycle Pvmt Symbol & Arrow per Detail TA	EA	2
14	New Pavement Legend per ADOT Std M-6, M-7 & M-8	EA	1
15	New Pavement Symbol per ADOT Std M-10	EA	3
17	New Median Nose Signing, Type A per COS Std Dtl 2133-1	EA	2
19	New Median Nose Paint & Markers per COS Std Dtl 2226 or Dtl TE	LF	50
20	New Sign, Post & Foundation per COS Std Dtl 2131	EA	1
23	Relocate Existing Sign New Sign Post and Foundation per COS Std Dtl 2131	EA	2
27	New 24" Internally Illuminated Street Name Sign (IISNS) on New Traffic Signal Pole per COS Std Dtl 2134-4	EA	4

GENERAL NOTES

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DATE	REVISION	BY

ENGINEER
41977 KAREN C. HOBBS
Registered Professional Engineer (Civil)
Date Signed 07/20/22
Expires 9/30/23

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7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE
SIGNING AND PAVEMENT MARKING

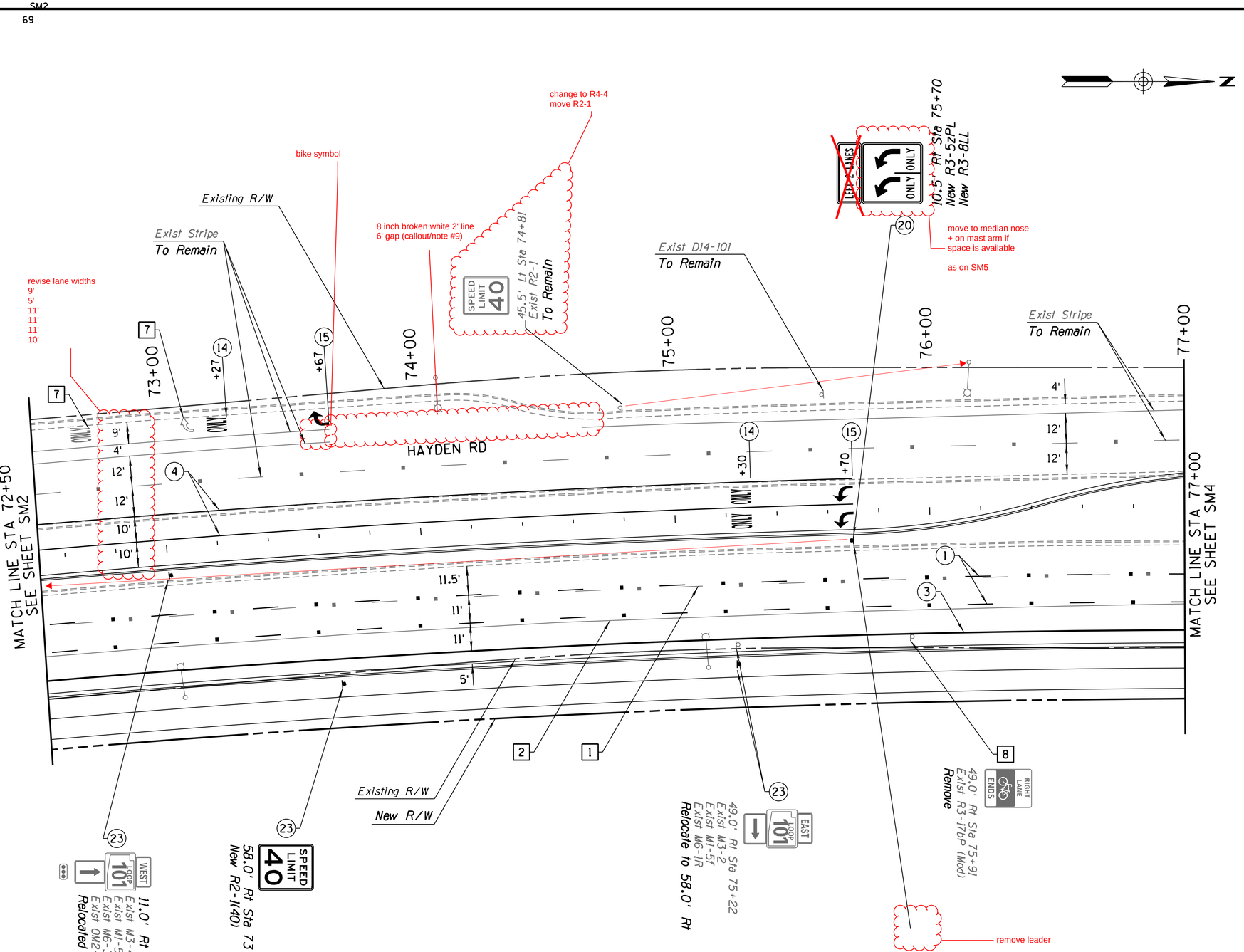
PROJECT TITLE
AXON WAY
HAYDEN RD TO PERIMETER DR

SCALE	DESIGNED	DATE	BID NO.	SHT.
HORIZ. 1"=20'	DK/KH	07/2022		SM2
VERT. N/A	DRAWN TML	AS-BUILT	PROJECT NO. 4474-21-6	69 OF 148

SM2
69

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REMOVAL & RELOCATION NOTES

	DESCRIPTION	UNIT	QUAN
1	Remove Existing 4" Skip Stripe with Raised Pavement Markers	LF	450
2	Remove Existing 4" Solid Stripe	LF	450
7	Remove Existing Pvmt Marking Legend	EA	2
8	Remove Sign, Post, & Post Base	EA	1

CONSTRUCTION NOTES

	DESCRIPTION	UNIT	QUAN
1	4" White Skip Stripe with Type G Markers per COS Std Dtl 2132	LF	900
3	8" Solid White Line	LF	450
4	8" Solid White Line with Type G Markers per COS Std Dtl 2132	LF	640
14	New Pavement Legend per ADOT Std M-6, M-7 & M-8	EA	3
15	New Pavement Symbol per ADOT Std M-10	EA	3
20	New Sign, Post & Foundation per COS Std Dtl 2131	EA	1
23	Relocate Existing Sign New Sign Post and Foundation per COS Std Dtl 2131	EA	3

GENERAL NOTES

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DATE	REVISION	BY

ENGINEER
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CERTIFICATE NO.
41977
KAREN C. HOBBS
Date Signed 07/20/2022
ARIZONA, U.S.A.
Expires 3/31/23

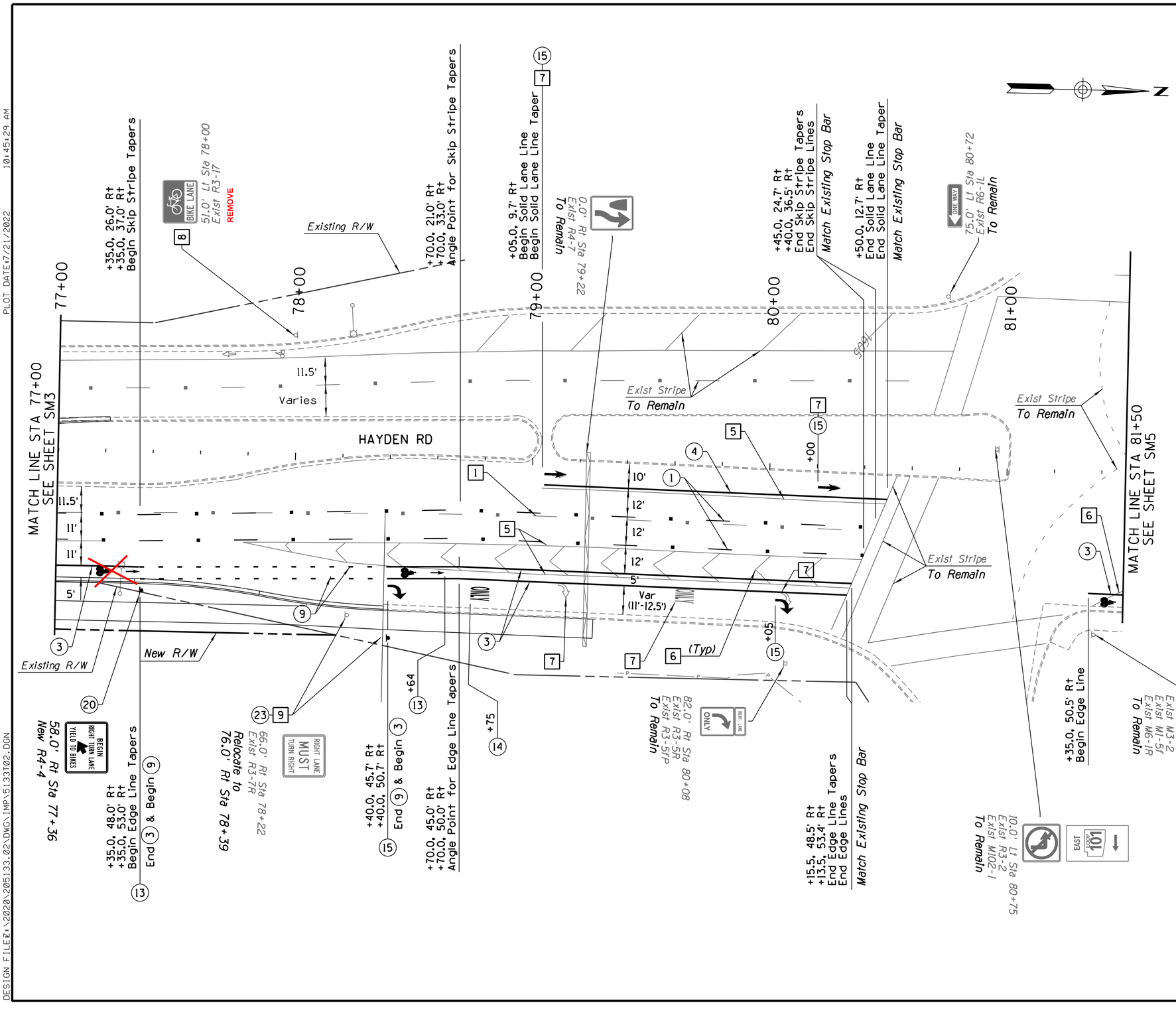
CITY OF SCOTTSDALE
ARIZONA

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7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE
SIGNING AND PAVEMENT MARKING

PROJECT TITLE
AXON WAY
HAYDEN RD TO PERIMETER DR

SCALE	DESIGNED	DATE	BID NO.	SHT.
HORIZ. 1"=20'	DK/KH	07/2022		SM3
VERT. N/A	DRAWN TML	AS-BUILT	PROJECT NO. 4474-21-6	70 OF 148



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REMOVAL & RELOCATION NOTES

	DESCRIPTION	UNIT	QUAN
1	Remove Existing 4" Skip Stripe with Raised Pavement Markers	LF	343
5	Remove Existing 8" Stripe	LF	595
6	Remove Existing 12" Stripe	LF	185
7	Remove Existing Pvmt Marking Arrow or Legend	EA	5
8	Remove Sign, Post, & Post Base	EA	1
9	Remove & Relocate Existing Sign Remove Post & Post Base	EA	1

CONSTRUCTION NOTES

	DESCRIPTION	UNIT	QUAN
1	4" White Skip Stripe with Type G Markers per COS Std Dtl 2132	LF	690
3	8" Solid White Line	LF	450
4	8" Solid White Line with Type G Markers per COS Std Dtl 2132	LF	145
9	8" White Skip Stripe 2' Stripe with 6' Gap	LF	210
13	New Bicycle Pvmt Symbol & Arrow per Detail TA	EA	2
14	New Pavement Legend per ADOT Std M-6, M-7 & M-8	EA	1
15	New Pavement Symbol per ADOT Std M-10	EA	4
20	New Sign, Post & Foundation per COS Std Dtl 2131	EA	1
23	Relocate Existing Sign New Sign Post and Foundation per COS Std Dtl 2131	EA	1

GENERAL NOTES

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ENGINEER
Registered Professional Engineer
41977
KAREN C. HOBBS
Date Signed 07/21/2022
Expires 9/30/23
ARIZONA, U.S.A.

CITY OF SCOTTSDALE
ARIZONA

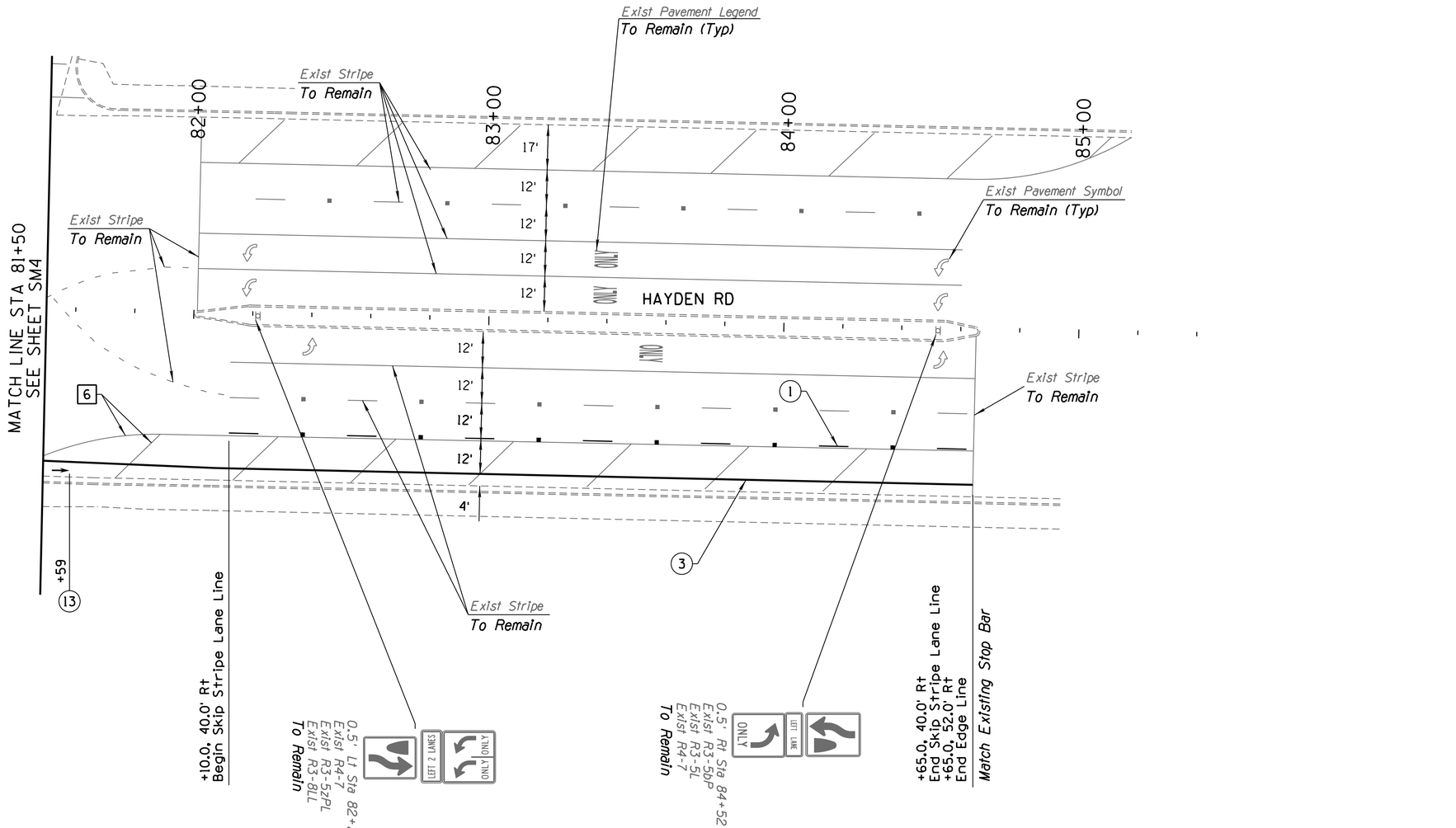
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SHEET TITLE
SIGNING AND PAVEMENT MARKING

PROJECT TITLE
AXON WAY
HAYDEN RD TO PERIMETER DR

SCALE	DESIGNED	DATE	BID NO.	SHT.
HORIZ. 1"=20'	DK/KH	07/2022		SM4
VERT. N/A	DRAWN TML	AS-BUILT	PROJECT NO. 4474-21-6	71 OF 148

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REMOVAL & RELOCATION NOTES

	DESCRIPTION	UNIT	QUAN
6	Remove Existing 12" Stripe	LF	465

CONSTRUCTION NOTES

	DESCRIPTION	UNIT	QUAN
1	4" White Skip Stripe with Type G Markers per COS Std Dtl 2132	LF	255
3	8" Solid White Line	LF	315
13	New Bicycle Pvmt Symbol & Arrow per Detail TA	EA	1

GENERAL NOTES

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ENGINEER
Registered Professional Engineer
41977
KAREN C. HOBBS
Date Signed 07/20/2022
ARIZONA, U.S.A.
Expires 9/30/23

CITY OF SCOTTSDALE
ARIZONA

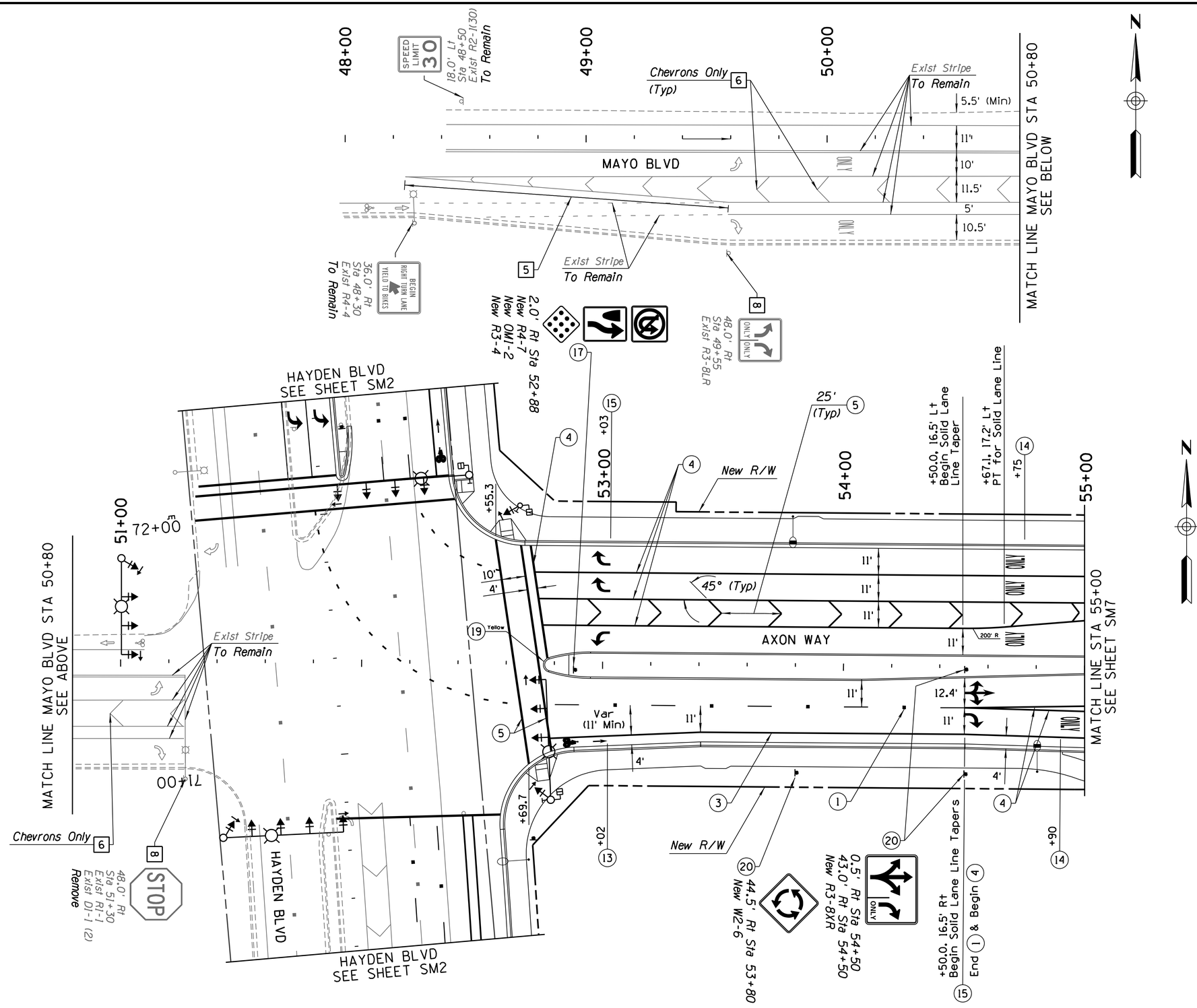
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7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE
SIGNING AND PAVEMENT MARKING

PROJECT TITLE
AXON WAY
HAYDEN RD TO PERIMETER DR

SCALE	DESIGNED	DATE	BID NO.	SHT.
HORIZ. 1"=20'	DK/KH	07/2022		SM5
VERT. N/A	DRAWN TML	AS-BUILT	PROJECT NO. 4474-21-6	72 OF 148

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REMOVAL & RELOCATION NOTES

	DESCRIPTION		QUAN
5	Remove Existing 8" Stripe	LF	152
6	Remove Existing 12" Stripe	LF	1
8	Remove Sign, Post, & Post Base	EA	1

CONSTRUCTION NOTES

	DESCRIPTION	UNIT	QUAN
1	4" White Skip Stripe with Type G Markers per COS Std Dtl 2132	LF	175
3	8" Solid White Line	LF	222
4	8" Solid White Line with Type G Markers per COS Std Dtl 2132	LF	780
5	12" Solid White Line	LF	123
6	18" Solid White Line	LF	48
13	New Bicycle Pvmt Symbol & Arrow per Detail TA	EA	1
14	New Pavement Legend per ADOT Std M-6, M-7 & M-8	EA	4
15	New Pavement Symbol per ADOT Std M-10	EA	5
17	New Median Nose Signing, Type A per COS Std Dtl 2133-1	EA	1
19	New Median Nose Paint & Markers per COS Std Dtl 2226 or Dtl TE	LF	33
20	New Sign, Post & Foundation per COS Std Dtl 2131	EA	2

GENERAL NOTES

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DATE	REVISION	BY

ENGINEER
Registered Professional Engineer, ARIZONA, U.S.A. 41977 KAREN C. HOBBS Date Signed 07/20/2022 Expires 3/31/23

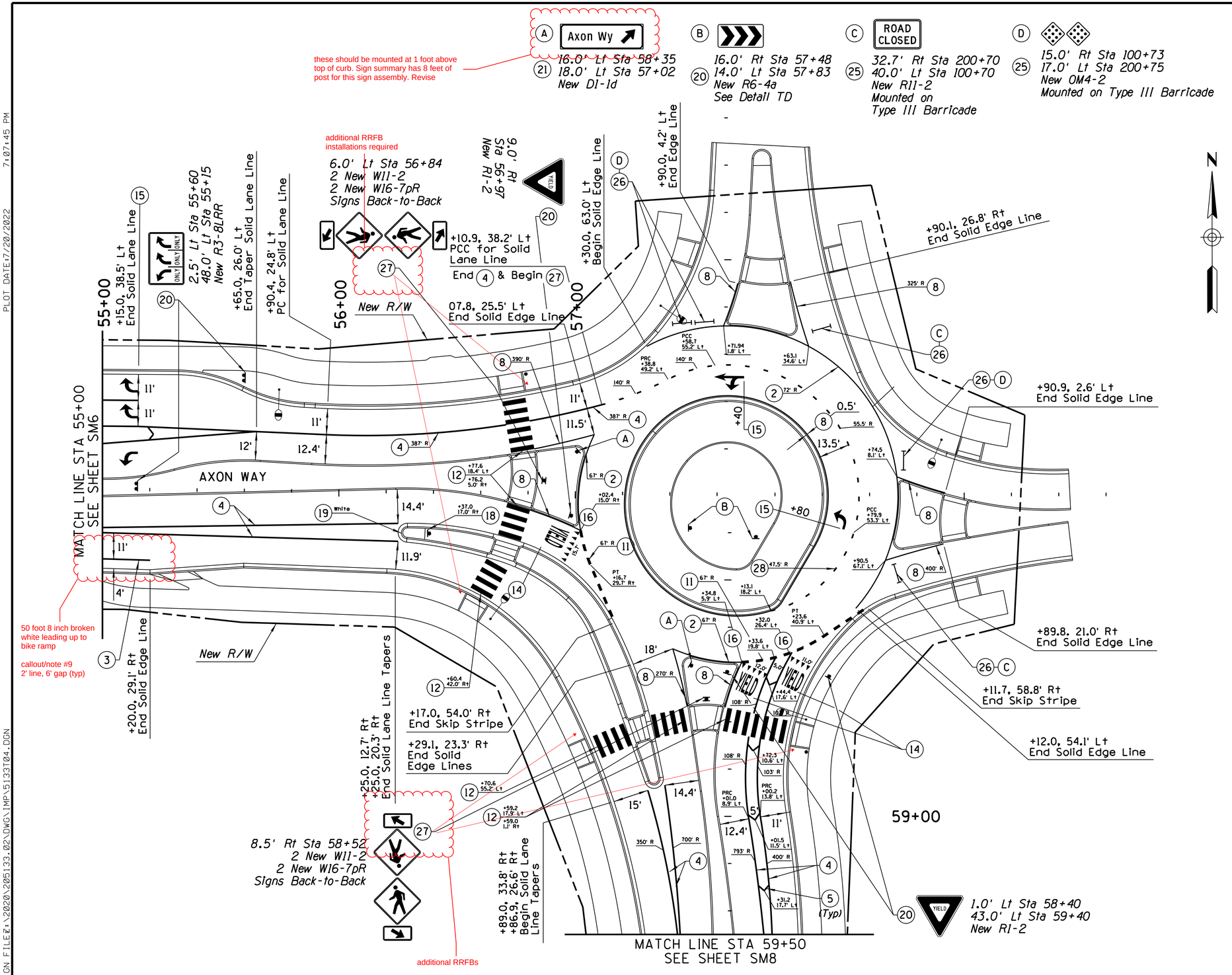
CITY OF SCOTTSDALE ARIZONA

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7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE
SIGNING AND PAVEMENT MARKING

PROJECT TITLE
AXON WAY
HAYDEN RD TO PERIMETER DR

SCALE	DESIGNED	DATE	BID NO.	SHT.
HORIZ. 1"=20' VERT. 1"=2'	DK/KH	07/2022		SM6
	DRAWN TML	AS-BUILT	PROJECT NO. 4474-21-6	73 OF 148



PLOT DATE: 7/20/2022 7:07:45 PM

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CONSTRUCTION NOTES

	DESCRIPTION	UNIT	QUAN
2	4" Solid White Line	LF	279
3	8" Solid White Line	LF	20
4	8" Solid White Line with Type G Markers per COS Std Dtl 2132	LF	604
5	12" Solid White Line	LF	15
8	4" Solid Yellow Line	LF	467
11	24" White Skip Stripe 2' Stripe with 1' Gap	LF	104
12	High Resolution Crosswalk 10' x 24" Transverse Lines per Detail TB	EA	29
14	New Pavement Legend per ADOT Std M-6, M-7 & M-8	EA	3
15	New Pavement Symbol per ADOT Std M-10	EA	5
16	New Yield Line per Detail TC	EA	3
18	New Median Nose Signing, Type B per COS Std Dtl 2133-1	EA	1
19	New Median Nose Paint & Markers per COS Std Dtl 2226 or Dtl TE	LF	38
20	New Sign, Post & Foundation per COS Std Dtl 2131	EA	7
21	New Directional Street Name Sign, Post and Foundation per COS Std Dtl 2134-5	EA	2
25	New Sign Panel on New Barricade	EA	6
26	New Type III Barricade	EA	5
27	New Sign Panel on RRFB Assembly per Detail TG	LS	1
28	8" White Skip Stripe 6' Stripe with 3' Gap	LF	210

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Date Signed 07/20/2022
ARIZONA, U.S.A.
Expires 9/30/23

CITY OF SCOTTSDALE ARIZONA

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AXON WAY
HAYDEN RD TO PERIMETER DR

SCALE	DESIGNED	DATE	BID NO.	SHT.
HORIZ. 1"=20'	DK/KH	07/2022		SM7
VERT. N/A	DRAWN TML	AS-BUILT	PROJECT NO. 4474-21-6	74 OF 148

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Optima McDowell Mountain Village

Traffic Impact and Mitigation Analysis

South of Loop 101 Pima Freeway
and East of Scottsdale Road
in Scottsdale, Arizona

August 2022
Project No. 21-1830

ACCEPTED WITH COMMENTS

Figure 14 in study shows incorrect future lane configuration at the intersections of Scottsdale Rd/Mayo Blvd (no 4th eastbound through lane) and the Loop 101 Ramps/Hayden Road intersections (additional northbound and southbound through lanes expected, currently hatched out).

Prepared For:
DCH Development
7157 East Rancho Vista Dr., Suite 109
Scottsdale, Arizona 85251

For Submittal to:
City of Scottsdale

Prepared By:

CivTech

10605 North Hayden Road Suite 140
Scottsdale, Arizona 85260
480-659-4250

INTRODUCTION

The Optima McDowell Mountain Village is a proposed mixed-use development located north of Mayo Boulevard and east of Scottsdale Road in the City of Scottsdale, Arizona. The development plans to consist of up to 1,390 dwelling units of luxury multi-family residences in six individual buildings with some retail on the ground floor and a lower courtyard area. The development will also provide an underground parking lot for residences that can be accessed from Mayo Boulevard. Alternatively, a right in only access will be provided along Scottsdale Road to assist with the inflow of traffic to the development. The vicinity of the site is provided in **Figure 1**.

CivTech, Inc. has been retained by DCH Development, Inc. to prepare the Traffic Impact and Mitigation Analysis Report (TIMA) for the proposed development. The purpose of this TIMA is to address the traffic and transportation impacts of the proposed development on the surrounding streets and intersections.

STUDY REQUIREMENTS

This TIMA analyzes the traffic impact due to the proposed development on the surrounding street network. The TIMA has been prepared in conformance with the *City of Scottsdale Design Standards and Policy Manual* Section 5-1 *Transportation Impact Study* dated 2018. The specific objectives of the TIMA are:

- To determine whether the planned street system in the vicinity of the site is adequate to accommodate the increased traffic that results from the proposed development.
- To recommend additional street improvements or traffic control devices, where necessary, to mitigate the additional site-generated traffic.

STUDY AREA

The Study Area has been defined as including the following Study Intersections:

1. Scottsdale Rd & Thompson Peak Pkwy
2. Scottsdale Rd & Legacy Blvd
3. Scottsdale Rd & Loop 101 WB Ramps
4. Scottsdale Rd & Loop 101 EB Ramps
5. 68th St & Mayo Blvd
6. Allied Way & Mayo Blvd
7. Scottsdale Rd & Mayo Blvd
8. Lexus Drwy & Mayo Blvd
9. Hayden Rd & Loop 101 WB Ramps
10. Hayden Rd & Loop 101 EB Ramps
11. Scottsdale Rd & Chauncey Ln
12. 73rd Pl & Chauncey Ln
13. Hayden Rd & Mayo Blvd
14. Scottsdale Rd & Princess Dr

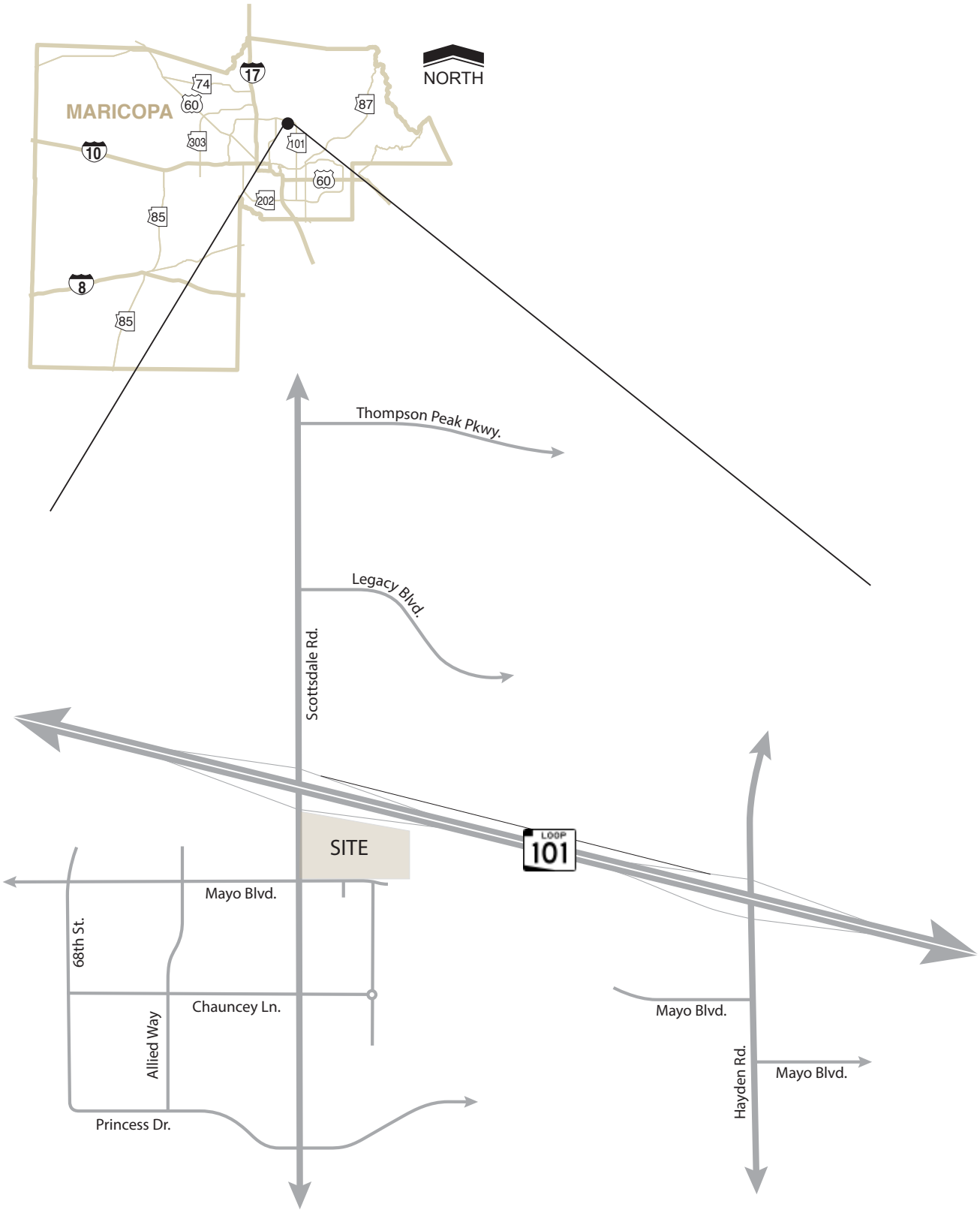


Figure 1: Vicinity Map

TRIP GENERATION

The potential trip generation for the proposed development was estimated utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* and *Trip Generation Handbook, 3rd Edition*. The ITE *Trip Generation Manual* contains data collected by various transportation professionals for a wide range of different land uses. The data are summarized in the report and average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The report provides information for daily and Peak Hour trips.

The project site will consist of 6 buildings in total with some retail on the ground floor. Three of the buildings will contain 9 stories of residential dwelling units, which is considered a mid-rise building (LUC 221); the other three buildings will be 10-story buildings which are considered high rise (LUC 222). Additionally, around 36,000 square feet of retail will be provided on-site at the ground level of a few of the buildings. Since less than 40,000 sf of retail will be provided the ITE LUC 822 for a strip retail plaza may be used. The retail component of the site is aimed more towards resident use; however, non-residents are also permitted to use this retail so an internal capture reduction has been applied to account for the internal use of the retail. A 30% reduction has been applied, although this internal capture will likely be much higher due to the nature of the site, 30% has been used in order to be conservative.

The anticipated trip generation is summarized in **Table 4**. Detailed trip generation calculations are provided in **Appendix E**.

Table 4 – Trip Generation

				Weekday Trips						
				Daily	AM Peak Hour			PM Peak Hour		
Proposed Use	ITE LUC	Size	Units	Total	In	Out	Total	In	Out	Total
Building 1	222	278	DU	1,262	26	49	75	50	39	89
Building 2	222	238	DU	1,080	22	42	64	43	33	76
Building 3	221	209	DU	948	18	59	77	50	32	82
Building 4	221	211	DU	958	18	60	78	50	32	82
Building 5	221	209	DU	948	18	59	77	50	32	82
Building 6	222	245	DU	1,112	22	44	66	44	34	78
Retail Plaza	822	36,000	SF	1,748	40	27	67	97	96	193
Subtotals				**8,056**	**164**	**340**	**504**	**384**	**298**	**682**
Internal Capture Reduction (Retail)				*(524)*	*(10)*	*(10)*	*(20)*	*(29)*	*(29)*	*(58)*
Total External Trips				**7,532**	**154**	**330**	**484**	**355**	**269**	**624**

The proposed development it anticipated to generate up to 7,532 external weekday daily trips with 484 trips occurring during the AM Peak Hour (154 in/330 out) and 624 trips occurring during the PM Peak Hour (355 in/269 out).

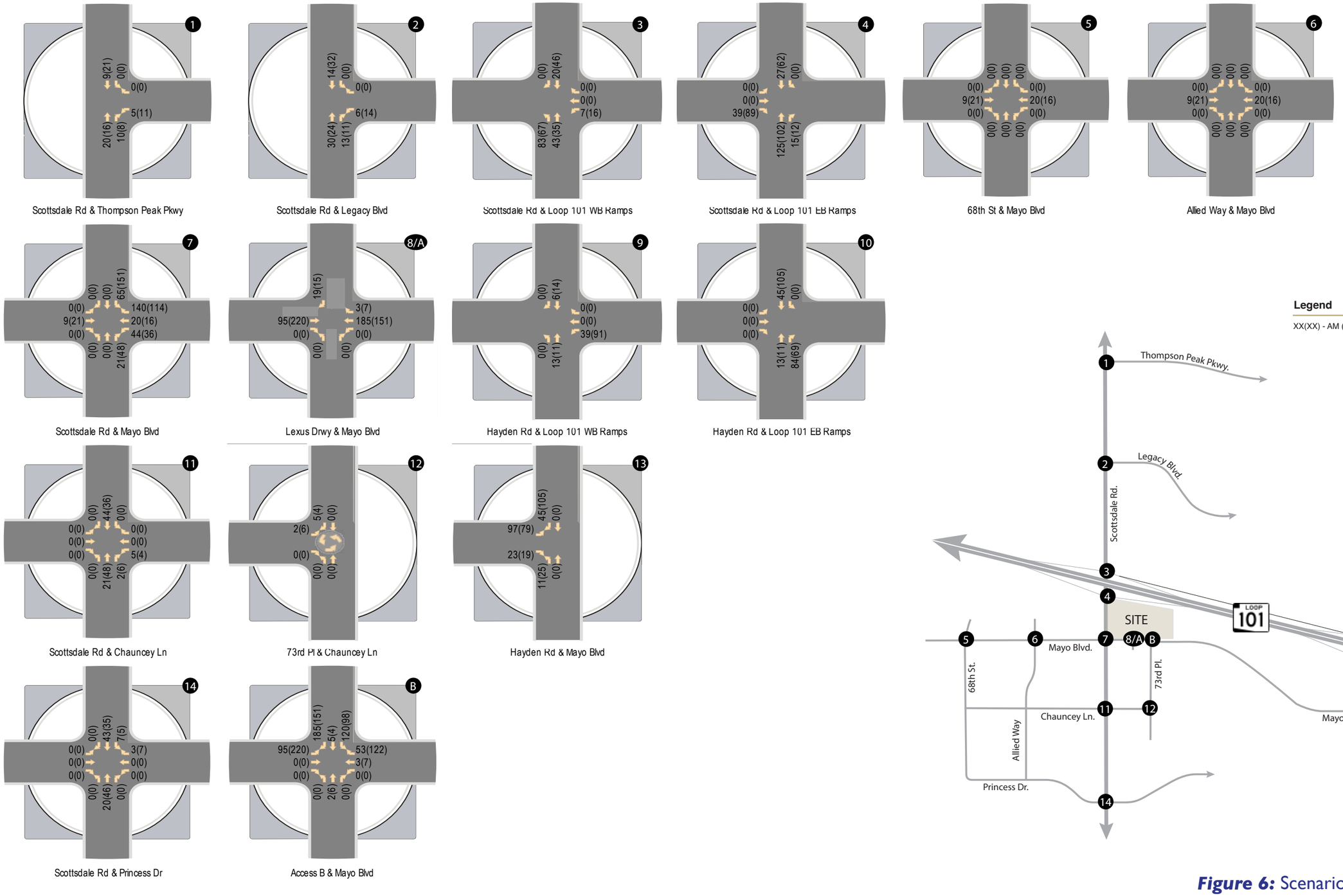


Figure 6: Scenario 1 Site Traffic Volumes

Table 7 – Queue Storage Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing[1]	AASHTO	HCM[2]	Recommended
1	Scottsdale Rd & Thompson Peak Pkwy	Signal	NB Left	-	125’	<25’	[4] 150’
			SB Left	200’	250’	135’	No Change
			EB Left	-	0’	<25’	[4] 2@320’
			WB Left	2@135’	975’	345’	[6] 2@175’
			NB Right	520’	650’	225’	No Change
			SB Right	-	0’	<25’	[4] 150’
			EB Right	-	75’	<25’	[4] 150’
			WB Right	225’	300’	40’	No Change
2	Scottsdale Rd & Legacy Blvd	Signal	NB Left	-	75’	<25’	[4] 150’
			SB Left	195’	175’	60’	No Change
			EB Left	-	0’	<25’	[4] 2@185’
			WB Left	2@225’	550’	175’	No Change
			NB Right	145’	475’	<25’	No Change
			SB Right	-	0’	<25’	[4] 150’
			EB Right	-	0’	<25’	[4] 150’
			WB Right	330’	225’	45’	No Change
3	Scottsdale Rd & Loop 101 WB Ramps	Signal	NB Left	2@245’	1,025’	435’	No Change
			WB Left	2@315’	1,525’	725’	No Change
			SB Right	400’	1,125’	620’	[6][7] No Change
			WB Right	2x315’	1,575’	200’	No Change
4	Scottsdale Rd & Loop 101 EB Ramps	Signal	SB Left	2@265’	1,650’	615’	[6][7] No Change
			EB Left	2@205’	975’	525’	[6][7] No Change
			NB Right	605’	1,500’	485’	No Change
			EB Right	2@215’	1,250’	105’	No Change
5	68th St & Mayo Blvd	Signal	NB Left	140’	800’	450’	[3][6] 350’
			SB Left	160’	175’	45’	No Change
			EB Left	240’	150’	60’	No Change
			WB Left	255’	150’	50’	No Change
			NB Right	140’	150’	40’	No Change
			EB Right	105’	600’	60’	No Change
			WB Right	170’	75’	<25’	No Change
6	Allied Way & Mayo Blvd	Signal	NB Left	190’	375’	200’	No Change
			SB Left	145’	225’	450’	[6][7] No Change
			EB Left	150’	225’	65’	No Change
			WB Left	185’	250’	50’	No Change
			NB Right	195’	375’	40’	No Change
			EB Right	170’	250’	30’	No Change
			WB Right	200’	500’	55’	No Change
7	Scottsdale Rd & Mayo Blvd	Signal	NB Left	2@240’	750’	315’	No Change
			SB Left	2@165’	425’	95’	No Change
			EB Left	2@325’	1,225’	435’	No Change
			WB Left	2@165’	125’	35’	No Change
			NB Right	160’	125’	<25’	No Change
			SB Right	240’	1,600’	175’	No Change
			EB Right	335’	650’	95’	No Change

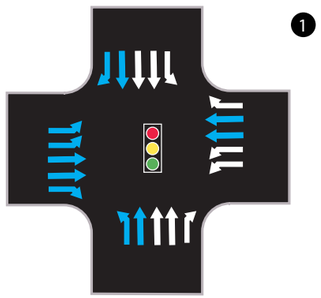
ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing[1]	AASHTO	HCM[2]	Recommended
8/A	Lexus Drwy/Access A & Mayo Blvd	2-way stop (NB/SB)	NB Left	-	50’	<25’	[3] 100’
			SB Left	-	50’	<25’	[3] 100’
			EB Left	95’	25’	<25’	No Change
			WB Left	75’	25’	<25’	No Change
			EB Right	75’	50’	<25’	No Change
9	Hayden Rd & Loop 101 WB Ramps	Signal	NB Left	240’	1,350’	1,085’	[6][7] No Change
			WB Left	2@485’	475’	120’	No Change
			SB Right	235’	825’	175’	No Change
			WB Right	2@500’	1,300’	105’	No Change
10	Hayden Rd & Loop 101 EB Ramps	Signal	SB Left	2@250’	1,300’	440’	No Change
			EB Left	2@425’	1,425’	770’	No Change
			NB Right	255’	475’	200’	No Change
			EB Right	2@430’	1,250’	185’	No Change
11	Scottsdale Rd & Chauncey Ln	Signal	NB Left	195’	225’	190’	No Change
			SB Left	175’	150’	65’	No Change
			EB Left	165’	300’	205’	[6][7] No Change
			WB Left	170’	225’	150’	No Change
			NB Right	130’	125’	<25’	No Change
			SB Right	165’	250’	35’	No Change
			EB Right	110’	250’	145’	[6][7] No Change
			WB Right	180’	150’	80’	No Change
13	Hayden Rd & Mayo Blvd	Signal	NB Left	-	100’	40’	[5] 250’
			SB Left	370’	500’	145’	[5] 2@370’
			EB Left	-	275’	90’	[5] 2@265’
			WB Left	-	250’	175’	[5] 295’
			NB Right	-	250’	<25’	[5] 150’
			SB Right	185’	325’	<25’	No Change
			EB Right	165’	125’	<25’	No Change
			WB Right	-	525’	260’	[5] 200’
14	Scottsdale Rd & Princess Dr	Signal	NB Left	255’	550’	175’	2@255’
			SB Left	240’	375’	110’	2@240’
			EB Left	210’-	125’	80’	No Change
			WB Left	175’	350’	270’	[6]270’
			NB Right	250’	400’	85’	No Change
			SB Right	255’	175’	45’	No Change
			WB Right	85’	300’	70’	No Change
B	Access B & Mayo Blvd	2-way stop (NB/SB)	NB Left	105’	25’	<25’	No Change
			SB Left	-	25’	<25’	[3] 100’
			EB Left	285’	25’	<25’	No Change
			WB Left	-	0’	<25’	[3] 100’
			EB Right	190’	25’	<25’	No Change
			WB Right	-	75’	<25’	[3] 100’
C	Scottsdale Rd & Access C	Free	NB Right	115’	25’	<25’	No Change

(1) Measured from beginning of stop bar
(2) HCM 95th percentile queue reported in vehicles/lane, assuming 1 vehicle ~ 25 feet.
(3) Per City of Scottsdale DS&PM, a minimum turn lane length of 150 feet is recommended for all new turn lanes with a minimum recommendation of 100 feet. Maximum recommended turn lane length is 350 feet.
(4) Turn lane recommendation from Cavasson TIMA.
(5) Turn lane recommendation from AXON TIA.
(6) Optima site contributes little or no traffic to this movement.
(7) Existing ROW restrictions prevent extension of turn lane.

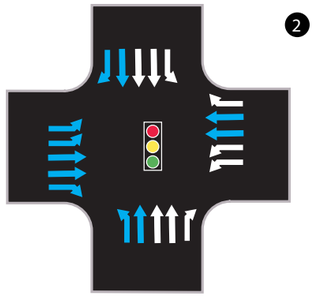
Many of the recommendations for this Study Area are based on the HCM 95th percentile queue lengths. Synchro 11 software takes into account peak hour factors, number of approach lanes, signal timing etc. in order to calculate 95th percentile queue lengths. Since more data is taken into consideration when completing these calculations, they provide a better idea of what storage lengths will actually be needed once the development is constructed and the extra vehicles are added to the roadway network. The values presented in the "recommended" column of Table 7 are based on the HCM 95th percentile calculations instead of the AASHTO calculations.

For dual left turn lanes, the values presented in the AASHTO and HCM columns represent the total recommended length of both lanes; divide value by 2 to achieve a per-lane length. Both the Cavasson TIMA and the Axon TIA provide recommended storage lengths for the new lanes provided by each of the respective developers. These recommendations have been included here as well and noted in the table.

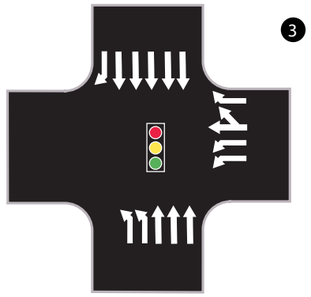
The recommended storage lengths in **Table 7** are provided for Study Horizon Year 2030 using the Total Traffic volumes. Proposed lane configurations are shown in **Figure 14**.



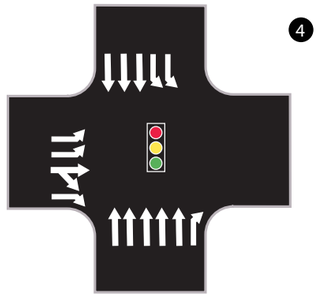
Scottsdale Rd & Thompson Peak Pkwy



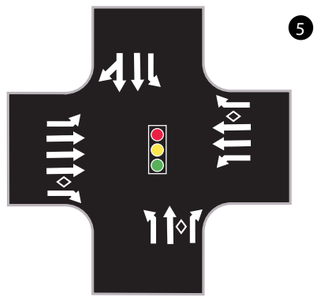
Scottsdale Rd & Legacy Blvd



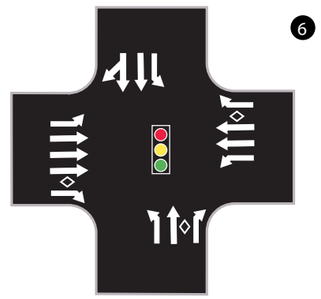
Scottsdale Rd & Loop 101 WB Ramps



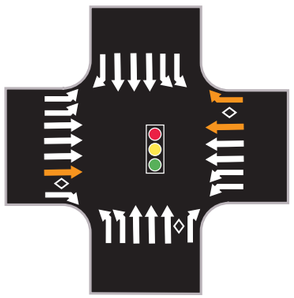
Scottsdale Rd & Loop 101 EB Ramps



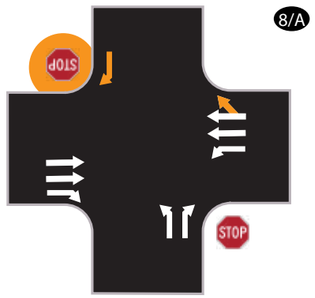
68th St & Mayo Blvd



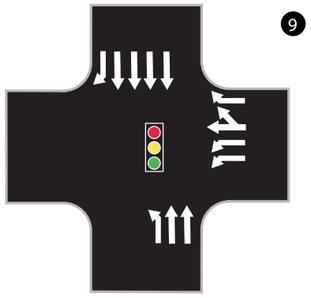
Allied Way & Mayo Blvd



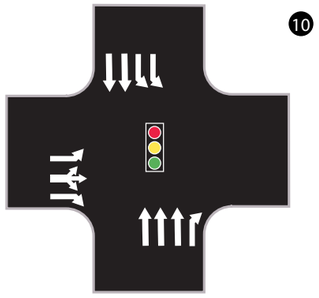
Scottsdale Rd & Mayo Blvd



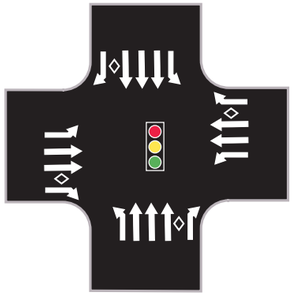
Lexus Drwy & Mayo Blvd



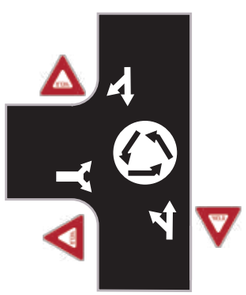
Hayden Rd & Loop 101 WB Ramps



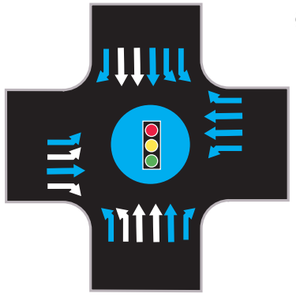
Hayden Rd & Loop 101 EB Ramps



Scottsdale Rd & Chauncey Ln



73rd Pl & Chauncey Ln



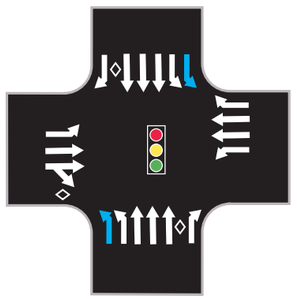
Hayden Rd & Mayo Blvd

LEGEND

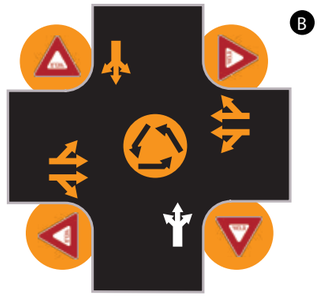
NORTH

- Thru or Turning Movement
- Two-Way Left Turn-Lane
- Raised Median
- Bike Lane
- Traffic Signal
- Stop Sign
- Speed Limit

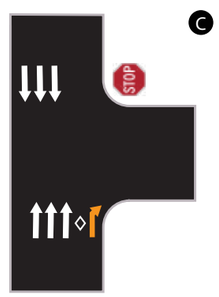
- Recommended Improvements by 2025
- Recommended improvements by 2030



Scottsdale Rd & Princess Dr



Access B & Mayo Blvd



Scottsdale Rd & Access C

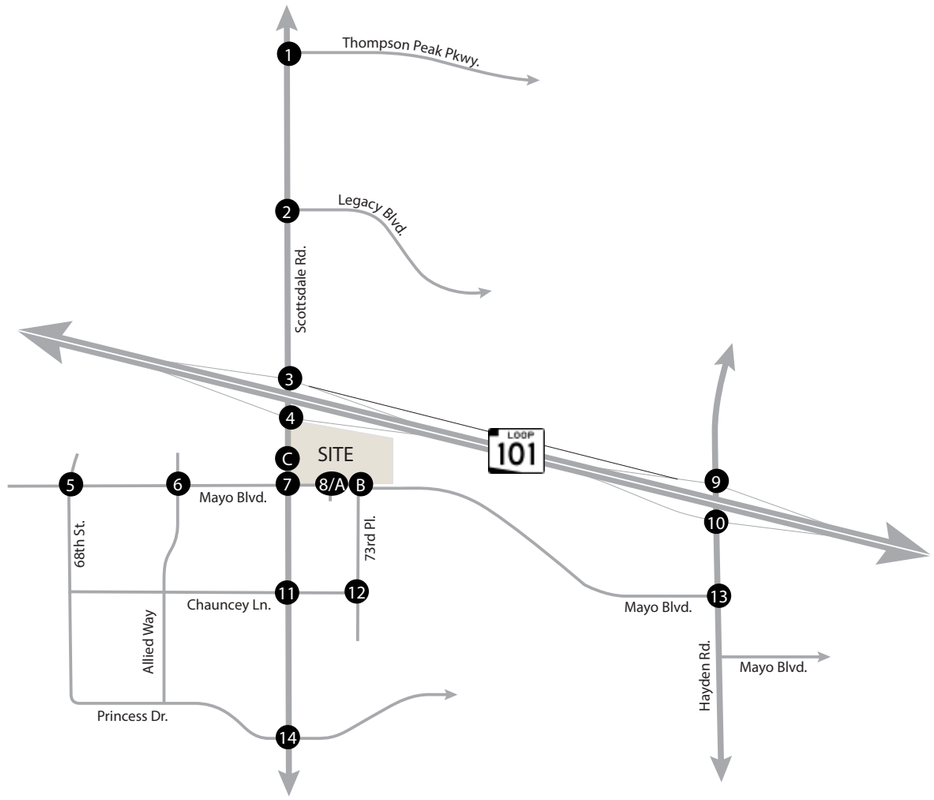


Figure 14: Proposed Lane Configurations and Traffic Controls

CONCLUSIONS

In conclusion, the proposed mixed-use development can be developed with the following recommendations documented in this TIMA.

GENERAL

- Of all of the crashes listed that have been recorded within the Study Area, none have involved fatalities or pedestrians. A majority of the crashes within the Study Area have been rear end crashes, which cannot be mitigated, which is basically driver inattention and speed. The next highest incident being left turn crashes and angle crashes.
- The project site will consist of 6 buildings in total with some retail on the ground floor. Three of the buildings will contain 9 stories of residential dwelling units, which is considered a mid-rise building (LUC 221); the other three buildings will be 10-story buildings which are considered high rise (LUC 222). Additionally, around 36,000 square feet of retail will be provided on-site at the ground level of a few of the buildings.
- The proposed development it anticipated to generate up to 7,532 external weekday daily trips with 484 trips occurring during the AM Peak Hour (154 in/330 out) and 624 trips occurring during the PM Peak Hour (355 in/269 out).
- No new streets and thoroughfares are proposed as part of this development. The existing streets are suitable and adequate to serve the proposed development and the anticipated traffic it will generate.
- The site is ideally located for higher density development given it is located adjacent to the 101 freeway which will allow the residents to conveniently transit to local and regional destinations without impacting the Scottsdale Road network.
- A new bus bay and bus stop will be constructed on Scottsdale Road just north of the Mayo Boulevard intersection to allow convenient access to mass transportation. Bus Route 72 has one of the highest frequencies and has the highest ridership of all the north-south routes in the City of Scottsdale. This helps support its use in an area that really has not been transit minded.

RESULTS – EXISTING CONDITIONS

- The results of the 2021 existing conditions analysis indicate that most Study Intersections operate with acceptable Levels of Service (LOS D or better), with the exception of the following intersections. The poor Levels of Service are a direct result of the existing development within the Study Area of this TIMA.
    - The signalized intersection of **Scottsdale Road and Legacy Boulevard** currently operates at LOS E for the WB approach during the AM Peak Hour. The current delay is 55 seconds per vehicle (sec/veh) which is the minimum threshold value for LOS E.
    - The signalized intersection of **Scottsdale Road and Loop 101 WB Ramps** currently operates at LOS F for the WB approach during both the AM and PM Peak Hours. This delay is due to the high volume of vehicles utilizing this approach during both Peak

Hours, 1,200 vehicles in the AM peak and 1,127 vehicles in the PM peak. The existing delays are 463.7 sec/veh in the AM and 221.8 sec/veh in the PM.

- The signalized intersection of **Scottsdale Road and Loop 101 EB Ramps** currently operates at LOS E/F for the SB approach during the AM and PM Peak Hours respectively. This delay is due to the high volume of SB approach vehicles during both Peak Hours, 1,902 SB through vehicles in the AM and 735 SB left turning vehicles in the PM. The existing delays are 73.3 sec/veh in the AM and 107.6 sec/veh in the PM.
- The signalized intersection of **68th Street and Mayo Boulevard** currently operates at LOS E for the NB approach during the PM Peak Hour only. This delay is due to the high volume of NB left turning vehicles and only a single left turn lane, 370 vehicles. The existing delay is 70.9 sec/veh.
- The signalized intersection of **Scottsdale Road and Mayo Boulevard** currently operates at LOS E for the WB approach during the AM Peak Hour and on the SB and EB approaches during the PM Peak Hour. The AM Peak Hour delay is caused by the split phasing of the EB/WB approaches and very few vehicles approaching on the WB. During the PM Peak Hour, the volume of SB right turn volume is very high, 738 vehicles, with only a single turn lane and no overlap phasing and the EB left turn volume is also very high, 574 vehicles, with split phasing. The existing delays during the AM are 55.9 sec/veh on the WB, during the PM there is 72.0 sec/veh on the SB during and 62.6 sec/veh on the EB.
- The signalized intersection of **Hayden Road and Loop 101 WB Ramps** currently operates with LOS E on the NB approach during the PM Peak Hour only. The delay is caused by the high volume of NB left turning vehicles, 491 vehicles, and only a single left turn lane. The existing delay is 73.7 sec/veh.
- The signalized intersection of **Hayden Road and Loop 101 EB Ramps** currently operates with LOS E on the EB approach during the AM and on the SB approach during the PM. The AM delay is due to the high volume of vehicles exiting the Loop 101 on the EB Ramps, 1,035 vehicles, and not enough green time allocated to the approach. During the PM peak, the delay is caused by the SB left turn approach not having enough green time allocated. The existing delay during the AM is 55.9 sec/veh on the EB and during the PM it is 74.6 sec/veh on the SB approach.
- The unsignalized intersection of **Hayden Road and Mayo Boulevard** currently operates with LOS E on the EB left turn approach during the PM Peak Hour. This delay is due to the high volume of NB and SB through traffic on Hayden Road and the intersection being unsignalized. This intersection will be signalized in the future and should reduce the existing delays. The delay is currently 37.5 sec/veh on the EB left turn approach.
- The signalized intersection of **Scottsdale Road and Princess Drive** currently operates with LOS E on the EB approach during the AM peak and on the EB and WB approaches during the PM peak. The AM peak delay is due to the high volume of EB right turns, 229 vehicles, and no dedicated right turn lane on the approach. During the

PM peak, the EB approach delay is caused by the high volume of right turns, 230 vehicles, and no dedicated right turn lane/not enough green time allocated to the approach and the WB approach delay is also due to not enough green time being allocated to the approach. During the AM, the existing delay is 77.2 sec/veh; during the PM, the existing EB delay is 381.1 sec/veh and the WB delay is 68.0 sec/veh.

RESULTS – STUDY HORIZON YEAR 2025 – OPENING YEAR

- The signalized intersection of **Scottsdale Road and Legacy Boulevard** is expected to operate with 55.4 sec/veh and 95.5 sec/veh of delay during the AM and PM Peak Hours, respectively. The AM Peak Hour delay in the EB and WB approaches cannot be mitigated at this time since it is due to not enough vehicles approaching the EB and WB approaches during the AM Peak Hour and the signal being actuated. An actuated signal prioritizes the movement along the primary corridor and in this case the priority is given to Scottsdale Road. If there is a period of a few seconds after the minimum allotted green time where no vehicle passes through the intersection in the NB and SB directions, then the signal could cut the green phase short and allow the next phase to proceed earlier. If there are not enough vehicles on the EB and WB approaches in this initial green phase, higher delays can occur, which is likely what is happening at this intersection during the 2025 opening year of the site.
    - During the PM Peak Hour, it is recommended that the WB green phase be extended from 14 seconds to 31 seconds to reduce the delay from 96.6 sec/veh to 55.4 sec/veh.
- The signalized intersection of **Scottsdale Road and Loop 101 Interchange** is expected to operate with delay on most of the approaches by the 2025 opening year due to the high volume of vehicles utilizing the interchange. There are existing delays at this interchange already, so little can be done in terms of mitigation to improve the delays. Green times were adjusted to try and minimize the delays, however, without providing alternate routes or adding lanes to the intersection, the overall intersection delays can only be reduced slightly.
    - WB Ramps from 200.7 sec/veh to 89.4 sec/veh in the AM Peak Hour and 120.4 sec/veh to 116.0 sec/veh in the PM Peak Hour
    - EB Ramps from 103.1 sec/veh to 82.3 sec/veh in the AM Peak Hour and 134.4 sec/veh to 77.2 sec/veh in the PM Peak Hour
- The signalized intersection of **68th Street and Mayo Boulevard** is expected to operate with 97.1 sec/veh of delay during the PM Peak Hour on the NB approach. This delay is due to the high volume of NB left turning vehicles during the Peak Hour and only one NB left turn lane. The current right-of-way at this intersection is not sufficient to provide dual NB left turn lanes, so instead it is recommended that the NB phasing be changed from permissive-only phasing to protected-permissive phasing to allow more green time for the NB left turning movement, and therefore, more time for vehicles to clear the intersection. This mitigation is anticipated to reduce the NB approach delay from 97.1 sec/veh to 46.8 sec/veh.
- The signalized intersection of **Scottsdale Road and Mayo Boulevard** is expected to operate with 57.2 sec/veh of delay on the SB approach and 85.9sec/veh of delay on the EB approach

TRAFFIC MASTER PLAN

Crossroads East
Planning Unit VII
Scottsdale, Arizona

Kimley»Horn

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

This report documents a traffic master plan analysis performed for Arizona State Land Department (ASLD) Crossroads East Planning Unit VII located near the northwest corner of Hayden Road and the Princess Boulevard alignment in Scottsdale, Arizona. Planning Unit VII is anticipated to include residential, office, and retail land uses.

1.2 SITE LOCATION

Planning Unit VII encompasses approximately 111 acres in north Scottsdale, near the northwest corner of Hayden Road and the Princess Boulevard alignment. More specifically, Planning Unit VII is bounded by the future Mayo Boulevard alignment and vacant undeveloped parcels to the north, Hayden Road to the east, Princess Boulevard and existing multi-family and hotel developments to the south, and the future Miller Road alignment and vacant undeveloped parcels to the west. The planning unit location is depicted in the Proposed Planning Units exhibit and Land Use Map, which are included in the **Appendix**.

Approximately 47 acres of Planning Unit VII (hereinafter known as the Sale Parcel) were purchased from ASLD by Princess-Hayden LLC at public auction on February 13, 2018. The Sale Parcel is located in a portion of the Northeast Quarter of Section 35, Township 4 North, Range 4 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. The Sale Parcel is bounded by the future Mayo Boulevard alignment and vacant undeveloped parcels to the north, Hayden Road to the east, Princess Boulevard and existing multi-family and hotel developments to the south, and vacant undeveloped parcels to the west. The Land Use Map is included in the **Appendix**.

Approximately 64 acres of Planning Unit VII (hereinafter known as the Remainder Parcel) currently remains with the ASLD.

1.3 REPORT PURPOSE AND OBJECTIVES

The Traffic Master Plan for Crossroads East Planning Unit VII is intended to satisfy the City of Scottsdale traffic master plan requirement of the Development Agreement recorded against the property (19-ZN-2002#2) for Planning Unit VII. It provides a description of the transportation requirements, access locations, street cross-sections and intersection control at buildout of study area roadways for Planning Unit VII.

2.0 LAND USE AND ACCESSIBILITY

2.1 LAND USE

Planning Unit VII is anticipated to include residential, office, and retail land uses. **Table 1** illustrates the land use, size, and anticipated development density of Planning Unit VII.

Table 1. Land Use

Parcel	General Description	ITE Land Use	Area (Acres)	Assumed Density	No. of Units	Building Area	Independent Variable
Sale	Multifamily Housing	220	37	23 DU / Acre	851	-	DU
Sale	Senior Living	252	10	23 DU / Acre	230	-	DU
Remainder	Multifamily Housing	220	8.6	23 DU / Acre	198	-	DU
Remainder	Office Park	750	39.4	0.35 FAR	-	600	1,000 SF
Remainder	Retail	820	16	0.25 FAR	-	174	1,000 SF

DU = Dwelling Units
FAR = Floor Area Ratio
SF = Square Feet

The layout of Planning Unit VII is illustrated in the Land Use Map included in the **Appendix**.

2.2 ACCESSIBILITY

Planning Unit VII is accessed locally via Hayden Road, Princess Boulevard, and the future Miller Road and Mayo Boulevard alignments. Regional access is expected to be provided by SR 101L, a major freeway in the vicinity of the planning unit with traffic interchanges at Hayden Road, Scottsdale Road, Princess Drive, Bell Road, and Frank Lloyd Wright Boulevard. Regional access is also expected to be provided by the other arterial streets in the vicinity such as Scottsdale Road and Frank Lloyd Wright Boulevard.

2.3 SITE CIRCULATION

Planning Unit VII's potential access points and the surrounding street system are illustrated in the Traffic Master Plan exhibit, which is included in the **Appendix**. The access points identified are generally compliant with the City of Scottsdale Design Standards and Policy Manual (DSPM).

The future Miller Road alignment serves as the west boundary of the planning unit, and the future Mayo Boulevard alignment is the north boundary of the planning unit. The future 78th Street alignment, located midway between the future Miller Road alignment and Hayden Road, connects Princess Boulevard to the future Mayo Boulevard alignment.

3.0 STUDY AREA ANALYSIS

3.1 STREET CLASSIFICATIONS

The Miller Road and Mayo Boulevard alignments are classified as a major collector with urban character in the City of Scottsdale's Transportation Master Plan, which was adopted by City Council on July 5, 2016. Princess Boulevard is also classified as a major collector with urban character, west of 78th Street. 78th Street is classified as a minor collector with urban character. Princess Boulevard, between 78th Street and Hayden Road, is proposed to have a modified local collector cross-section.

3.2 TYPICAL STREET SECTIONS

The typical sections for Miller Road, Mayo Boulevard, Princess Boulevard, and 78th Street are shown in the Roadway Sections exhibit in the **Appendix**.

3.3 ADJACENT LAND USE

Access to the existing developments south of the Princess Boulevard alignment should be maintained when the Princess Boulevard connection is made between Miller Road and Hayden Road. Modification of the existing access is recommended for the Scottsdale Villa Mirage Resort Condominiums access to Princess Boulevard and the Scottsdale Pinnacle Condominiums access to Hayden Road when the Princess Boulevard connection is made.

The Scottsdale Villa Mirage Resort Condominiums has an existing site access driveway at the northwest corner of the parcel. Modification of the existing driveway is recommended to provide full access to Princess Boulevard. The recommended full access location is shown in the Traffic Master Plan exhibit in the **Appendix**. If the property owner does not want to modify existing access, right turns out of the development should be restricted due the geometric constraint of the existing Princess Boulevard connection.

The existing Scottsdale Pinnacle condominium driveway access on Hayden Road, south of the Princess Boulevard right in/right out access, does not satisfy spacing requirements when the Princess Boulevard connection is constructed. Additionally, turning movement counts were collected at the Scottsdale Pinnacle Condominium driveway on Hayden Road on Thursday, March 15, 2018. The counts were performed between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM. During the AM peak hour there were four southbound right turns into the development and one eastbound right turn out of the development. During the PM peak hour there were three southbound right turns into the development and six eastbound right turns out of the development. A copy of the counts is attached in the **Appendix**. The counts show that the existing driveway is not used by a large percentage of traffic to the condominiums. The existing Scottsdale Pinnacle Condominium driveway access on Hayden Road could be relocated to a new full access driveway on Princess Boulevard, west of Hayden Road. The alternative access is illustrated in the Traffic Master Plan exhibit, which is included in the **Appendix**.

4.0 PROJECTED TRAFFIC

4.1 TRAFFIC FORECASTS

4.1.1 TRIP GENERATION

The Institute of Transportation Engineers' (ITE) *Trip Generation, 10th Edition,* was used to obtain daily and peak-hour trip generation rates and inbound-outbound percentages, which were then used to estimate the number of daily and peak hour trips that can be attributed to Planning Unit VII. The trip generation characteristics are summarized in **Table 2**.

Table 2. Planning Unit VII Trip Generation

Land Use	ITE Code	Quantity	Units	Daily Total	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)	220	1,049	DUs	7,680	111	372	483	370	217	587
Senior Adult Housing-Attached	252	230	DUs	852	16	30	46	33	27	60
Office Park	750	600,000	SF	6,650	797	98	895	120	679	799
Shopping Center	820	174,000	SF	6,578	102	62	164	319	345	664
Total Trips				21,760	1,026	562	1,588	842	1,268	2,110

Planning Unit VII is expected to generate 21,760 daily trips, with 1,588 trips occurring in the AM peak hour and 2,110 trips occurring in the PM peak hour. Owing to the mix of uses, trip reductions are anticipated and justified below.

4.1.2 TRIP REDUCTIONS

It is reasonable to expect that trip interaction will result considering the mix of residential, office, and retail land uses. To account for this interaction, the methodology for estimating internally captured trips in the *ITE Trip Generation Handbook, 10th Edition* was used. The worksheet calculating internal capture using the ITE method and the resulting internal trip generation is located in the **Appendix**.

As documented in the ITE publication, *Trip Generation*, 10*th Edition*, shopping centers do not typically generate all new traffic on a roadway system. The total traffic generation is a combination of pass-by trips, or traffic drawn directly from the passing traffic flow on the adjacent streets, and primary trips, which represent new traffic drawn to the facility. In order to assess the pass-by trips, the data published in the ITE *Trip Generation Handbook* was used to estimate the pass-by percentages for the commercial parcels. It should be noted that pass-by trip reductions do not reduce driveway traffic volumes. Pass-by reductions are shown in the **Appendix**.

Taking into consideration internal capture and pass-by trips, Planning Unit VII is expected to add 18,434 new daily trips, 1,468 new AM peak hour trips, and 1,579 new PM peak hour trips to the roadway network.

4.2 PROJECTED TRAFFIC VOLUME INFORMATION

The City of Scottsdale provided 2035 traffic volume projections based on traffic analysis zone (TAZ) information. The average daily traffic (ADT) volume projections are shown in the Traffic Master Plan exhibit in the **Appendix**. Princess Boulevard west of Hayden is expected to carry less than 5,000 vehicles per day. The projected volumes are consistent with the average daily traffic ranges for the various street classifications.

4.2.1 TRAFFIC ANALYSIS ZONE INFORMATION

The TAZ information, provided by the City of Scottsdale, is included in the **Appendix**. Planning Unit VII includes TAZ 3208 and a portion of TAZ 3207. All boundaries between TAZ 3207 and TAZ 3208 with

Planning Unit VII are consistent, with the exception of the western boundary of TAZ 3207 and Planning Unit VII. TAZ 3207 is bounded by the future Miller Road alignment to the west. The future Miller Road alignment was revised to connect to the northern extension of Princess Drive at the north leg of the existing roundabout. This alignment revision created a difference in the western boundary of TAZ 3207 and Planning Unit VII. For this reason, TAZ 3207 is split between Planning Unit VII and Planning Unit III. The TAZ 3207 variation with the current Planning Unit VII boundary is not expected to significantly impact the 2035 traffic volume projections that were provided by the City of Scottsdale.

TAZ 3207 is approximately 70 acres. Approximately 44 acres of TAZ 3207 is within Planning Unit VII and approximately 26 acres is within Planning Unit III. TAZ 3208 is approximately 90 acres.

Key socioeconomic data for TAZ 3207 and TAZ 3208 is summarized in **Table 3** and **Table 4**, respectively. The full socioeconomic TAZ data spreadsheet, provided by the City of Scottsdale, is included in the **Appendix**. The TAZ data is based on 2035 socioeconomic projections.

Table 3. TAZ 3207 Socioeconomic Data

Portion of TAZ 3207	Retail Employees	Office Employees	Industrial Employees	Multifamily Households
Full (70 Acres)	378	135	0	189
Planning Unit III (26 Acres)	140	50	0	70
Planning Unit VII (44 Acres)	238	85	0	119

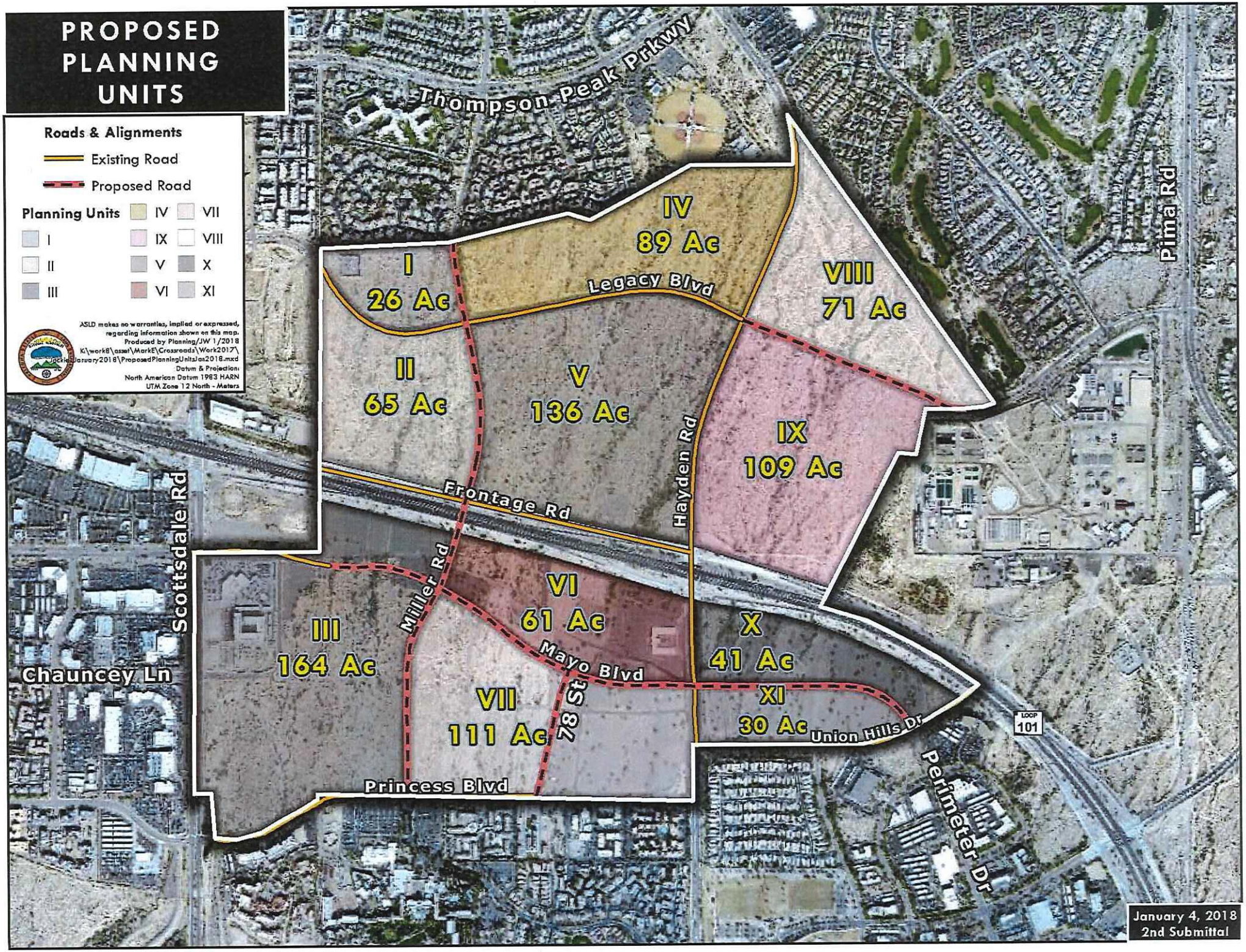
Table 4. TAZ 3208 Socioeconomic Data

Total Area	Retail Employees	Office Employees	Industrial Employees	Multifamily Households
90 Acres (All in Planning Unit VII)	346	106	101	244

Based on the TAZ data, Planning Unit VII is expected to have 584 retail employees, 191 office employees, 101 industrial employees, and 363 multifamily households in 2035.

5.0 CONCLUSIONS

While the specific number of Planning Unit VII employees and residential units may not precisely match the socioeconomic data from the 2035 TAZ projections, the proposed land uses are consistent. The proposed street sections have capacities in excess of the 2035 projected volumes.


PROPOSED PLANNING UNITS
Roads & Alignments
Existing Road
Proposed Road
Planning Units
I
II
III
IV
V
VI
VII
IX
VIII
X
XI
ASLD makes no warranties, implied or expressed, regarding information shown on this map.
Produced by Planning/JW 1/2018
K:\work8\asset\MarkE\Crossroads\Work2017\January2018\ProposedPlanningUnitsJan2018.mxd
Datum & Projection:
North American Datum 1983 HARN
UTM Zone 12 North - Meters
Thompson Peak Prkwy
Pima Rd
IV
89 Ac
I
26 Ac
Legacy Blvd
VIII
71 Ac
II
65 Ac
V
136 Ac
IX
109 Ac
Hayden Rd
Frontage Rd
Scottsdale Rd
Miller Rd
VI
61 Ac
III
164 Ac
Mayo Blvd
X
41 Ac
Chauncey Ln
VII
111 Ac
78 St
XI
30 Ac
Union Hills Dr
LOOP 101
Perimeter Dr
Princess Blvd
January 4, 2018
2nd Submittal

LOOP 101 FREEWAY

FUTURE MILLER ROAD ALIGNMENT

FUTURE MAYO BOULEVARD ALIGNMENT

EXTENTS OF PLANNING UNIT VII

PLANNING UNIT VI
61 ACRES

PLANNING UNIT III
164 ACRES

REMAINDER PARCEL
ZONING: I-1
LAND USE: OFFICE PARK
48 ACRES

SALE PARCEL
ZONING: C-2
LAND USE: SENIOR LIVING
10 ACRES

FUTURE MAYO BOULEVARD ALIGNMENT

REMAINDER PARCEL
ZONING: C-2
LAND USE: RETAIL
16 ACRES

MAYO BOULEVARD

HAYDEN ROAD

FUTURE MILLER ROAD ALIGNMENT

8.6 ACRES

SALE PARCEL
ZONING: R-5
LAND USE: MULTI-FAMILY
37 ACRES

PRINCESS BOULEVARD

PRINCESS BOULEVARD

PRINCESS DRIVE

NORTH

GRAPHIC SCALE IN FEET
0 60 120 240

LAND USE MAP

Kimley»Horn

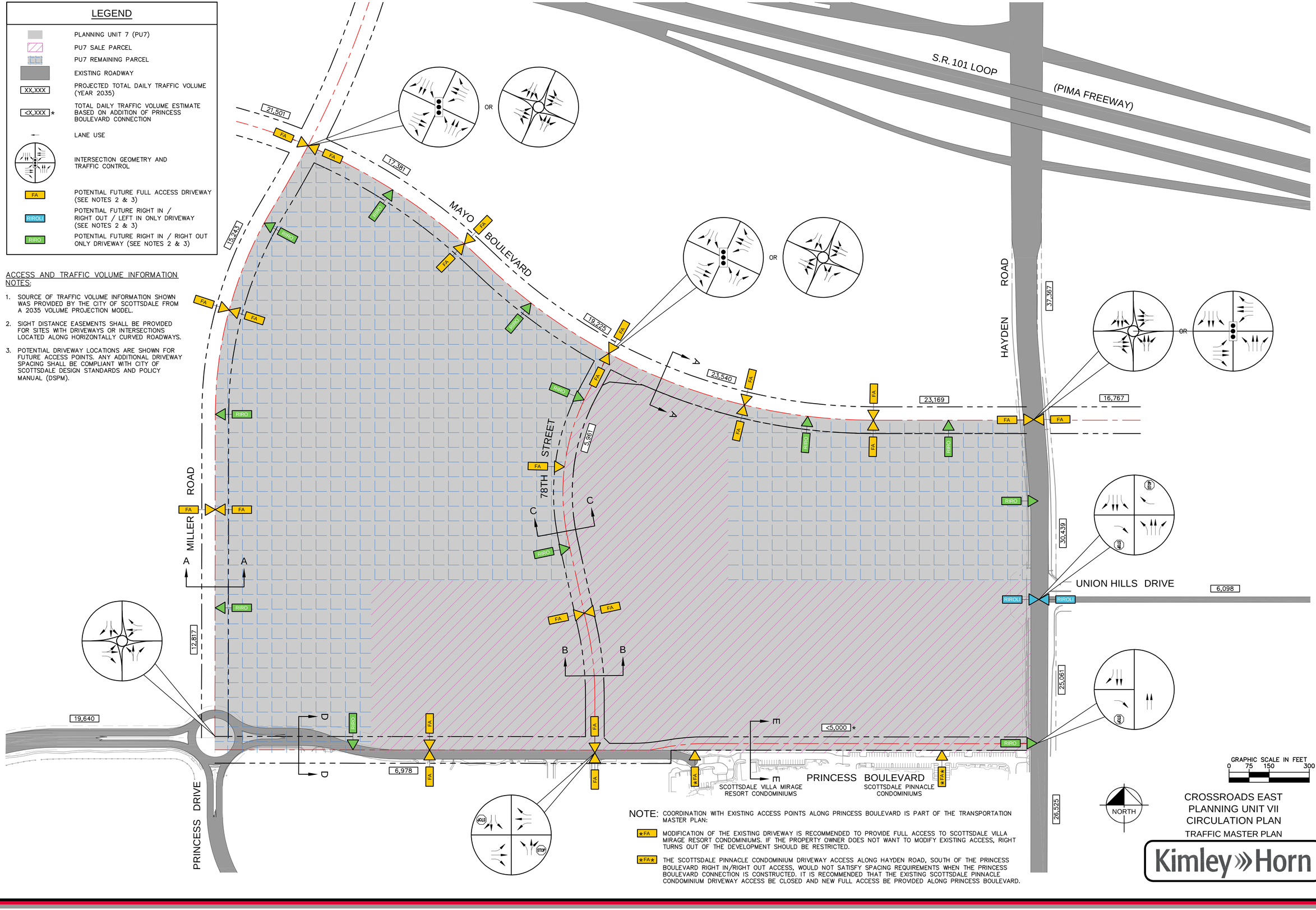
K:\PHX_Civil\191769004 - Hayden 50\CADD\Exhibits\2018-04-24 Land Use Map.dwg May 08, 2018 taylor.swanson

LEGEND

- PLANNING UNIT 7 (PU7)
- PU7 SALE PARCEL
- PU7 REMAINING PARCEL
- EXISTING ROADWAY
- XX,XXX — PROJECTED TOTAL DAILY TRAFFIC VOLUME (YEAR 2035)
- <X,XXX * — TOTAL DAILY TRAFFIC VOLUME ESTIMATE BASED ON ADDITION OF PRprincess BOULEVARD CONNECTION
- LANE USE
- INTERSECTION GEOMETRY AND TRAFFIC CONTROL
- FA — POTENTIAL FUTURE FULL ACCESS DRIVEWAY (SEE NOTES 2 & 3)
- RIROLI — POTENTIAL FUTURE RIGHT IN / RIGHT OUT / LEFT IN ONLY DRIVEWAY (SEE NOTES 2 & 3)
- RIRO — POTENTIAL FUTURE RIGHT IN / RIGHT OUT ONLY DRIVEWAY (SEE NOTES 2 & 3)

ACCESS AND TRAFFIC VOLUME INFORMATION NOTES:

1. SOURCE OF TRAFFIC VOLUME INFORMATION SHOWN WAS PROVIDED BY THE CITY OF SCOTTSDALE FROM A 2035 VOLUME PROJECTION MODEL.
2. SIGHT DISTANCE EASEMENTS SHALL BE PROVIDED FOR SITES WITH DRIVEWAYS OR INTERSECTIONS LOCATED ALONG HORIZONTALLY CURVED ROADWAYS.
3. POTENTIAL DRIVEWAY LOCATIONS ARE SHOWN FOR FUTURE ACCESS POINTS. ANY ADDITIONAL DRIVEWAY SPACING SHALL BE COMPLIANT WITH CITY OF SCOTTSDALE DESIGN STANDARDS AND POLICY MANUAL (DSPM).



NOTE: COORDINATION WITH EXISTING ACCESS POINTS ALONG PRINCESS BOULEVARD IS PART OF THE TRANSPORTATION MASTER PLAN:

- *FA — MODIFICATION OF THE EXISTING DRIVEWAY IS RECOMMENDED TO PROVIDE FULL ACCESS TO SCOTTSDALE VILLA MIRAGE RESORT CONDOMINIUMS. IF THE PROPERTY OWNER DOES NOT WANT TO MODIFY EXISTING ACCESS, RIGHT TURNS OUT OF THE DEVELOPMENT SHOULD BE RESTRICTED.
- *FA* — THE SCOTTSDALE PINNACLE CONDOMINIUM DRIVEWAY ACCESS ALONG HAYDEN ROAD, SOUTH OF THE PRINCESS BOULEVARD RIGHT IN/RIGHT OUT ACCESS, WOULD NOT SATISFY SPACING REQUIREMENTS WHEN THE PRINCESS BOULEVARD CONNECTION IS CONSTRUCTED. IT IS RECOMMENDED THAT THE EXISTING SCOTTSDALE PINNACLE CONDOMINIUM DRIVEWAY ACCESS BE CLOSED AND NEW FULL ACCESS BE PROVIDED ALONG PRINCESS BOULEVARD.

GRAPHIC SCALE IN FEET
0 75 150 300

NORTH

CROSSROADS EAST
PLANNING UNIT VII
CIRCULATION PLAN
TRAFFIC MASTER PLAN

Kimley»Horn

K:\PHX_Civil\191769004 - Hayden 50\CADD\Exhibits\2018-07-17 Traffic Master Plan.dwg Jul 20, 2018 Garrett.Frame


588
3264
3268
589
1745
1615
DR
3224
3202
1743
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1746
3208
3204
1067
1750
2982


3268
1615
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3204
2982
1750

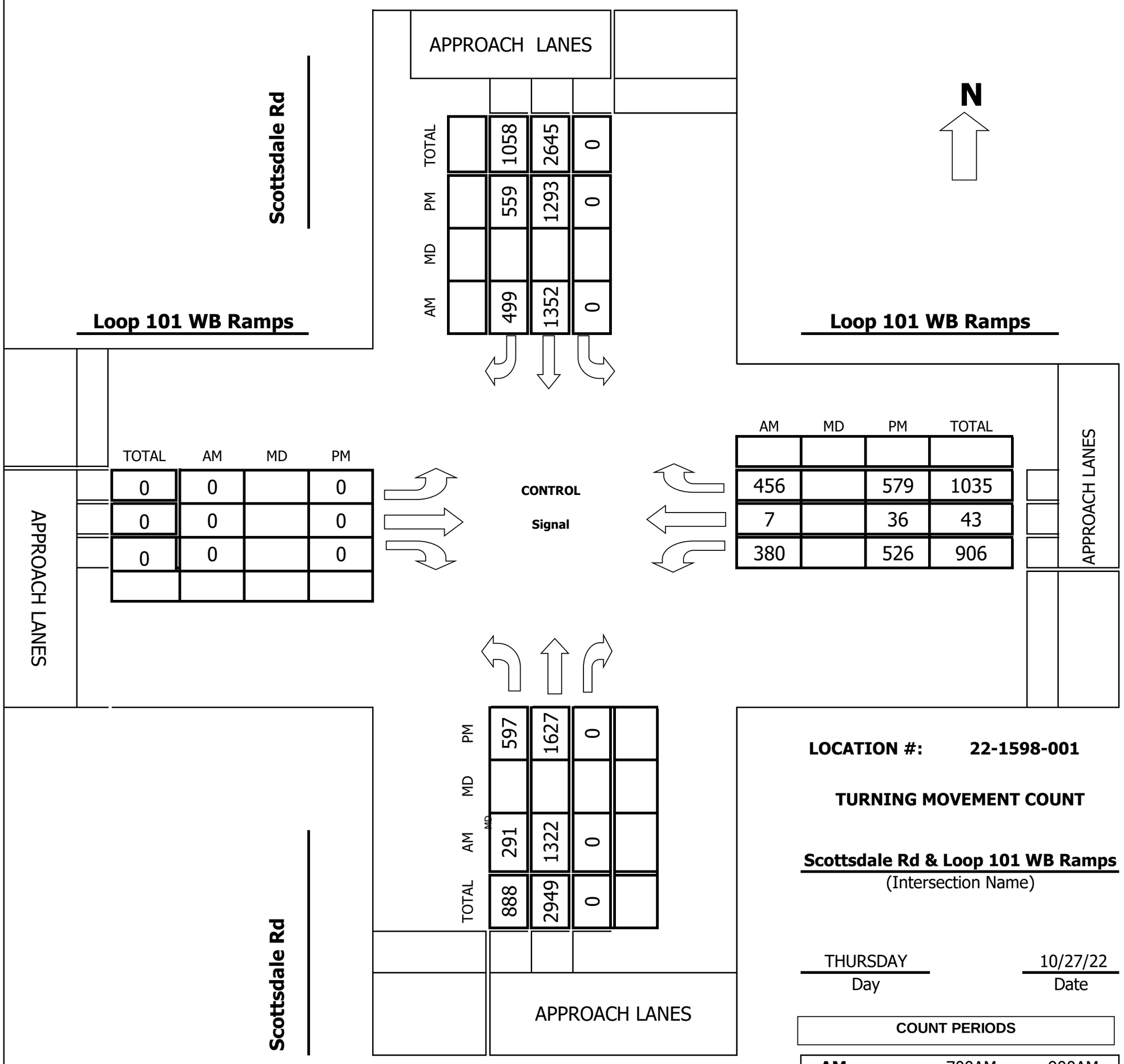
Traffic Counts

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-001

TMC SUMMARY OF Scottsdale Rd & Loop 101 WB Ramps



LOCATION #: 22-1598-001

TURNING MOVEMENT COUNT

Scottsdale Rd & Loop 101 WB Ramps
(Intersection Name)

THURSDAY — Day

10/27/22 — Date

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 WB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	0	5	1	0	0	0	2	0.5	1.5	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	54	255	0	0	243	115	0	0	0	51	1	85	804
7:15 AM	68	304	0	0	340	119	0	0	0	59	0	86	976
7:30 AM	79	321	0	0	385	150	0	0	0	60	1	113	1109
7:45 AM	78	397	0	0	349	114	0	0	0	97	0	119	1154
8:00 AM	83	292	0	0	323	128	0	0	0	89	3	116	1034
8:15 AM	91	315	0	0	305	113	0	0	0	87	0	96	1007
8:30 AM	56	313	0	0	360	117	0	0	0	110	3	121	1080
8:45 AM	61	402	0	0	364	141	0	0	0	94	1	123	1186
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	570	2599	0	0	2669	997	0	0	0	647	9	859	8350
Approach %	17.99	82.01	0.00	0.00	72.80	27.20	####	####	####	42.71	0.59	56.70	
App/Depart	3169	/	3458	3666	/	3316	0	/	0	1515	/	1576	

AM Peak Hr Begins at: 800 AM

PEAK													
Volumes	291	1322	0	0	1352	499	0	0	0	380	7	456	4307
Approach %	18.04	81.96	0.00	0.00	73.04	26.96	####	####	####	45.08	0.83	54.09	

PEAK HR. FACTOR:	0.871	0.916	0.000	0.901	0.908

CONTROL: Signal
COMMENT 1:
GPS: 33.658758, -111.925339

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 WB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	0	5	1	0	0	0	2	0.5	1.5	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	187	353	0	0	303	152	0	0	0	95	9	122	1221
4:15 PM	172	389	0	0	286	151	0	0	0	109	11	119	1237
4:30 PM	149	433	0	0	333	131	0	0	0	119	9	128	1302
4:45 PM	134	381	0	0	294	150	0	0	0	137	9	140	1245
5:00 PM	163	378	0	0	321	153	0	0	0	114	10	140	1279
5:15 PM	151	435	0	0	345	125	0	0	0	156	8	171	1391
5:30 PM	140	439	0	0	312	100	0	0	0	95	6	157	1249
5:45 PM	149	357	0	0	274	110	0	0	0	122	1	112	1125
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	1245	3165	0	0	2468	1072	0	0	0	947	63	1089	10049
Approach %	28.23	71.77	0.00	0.00	69.72	30.28	####	####	####	45.12	3.00	51.88	
App/Depart	4410	/	4254	3540	/	3415	0	/	0	2099	/	2380	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	597	1627	0	0	1293	559	0	0	0	526	36	579	5217
Approach %	26.84	73.16	0.00	0.00	69.82	30.18	####	####	####	46.10	3.16	50.74	
PEAK HR. FACTOR:		0.949			0.977			0.000			0.851		0.938

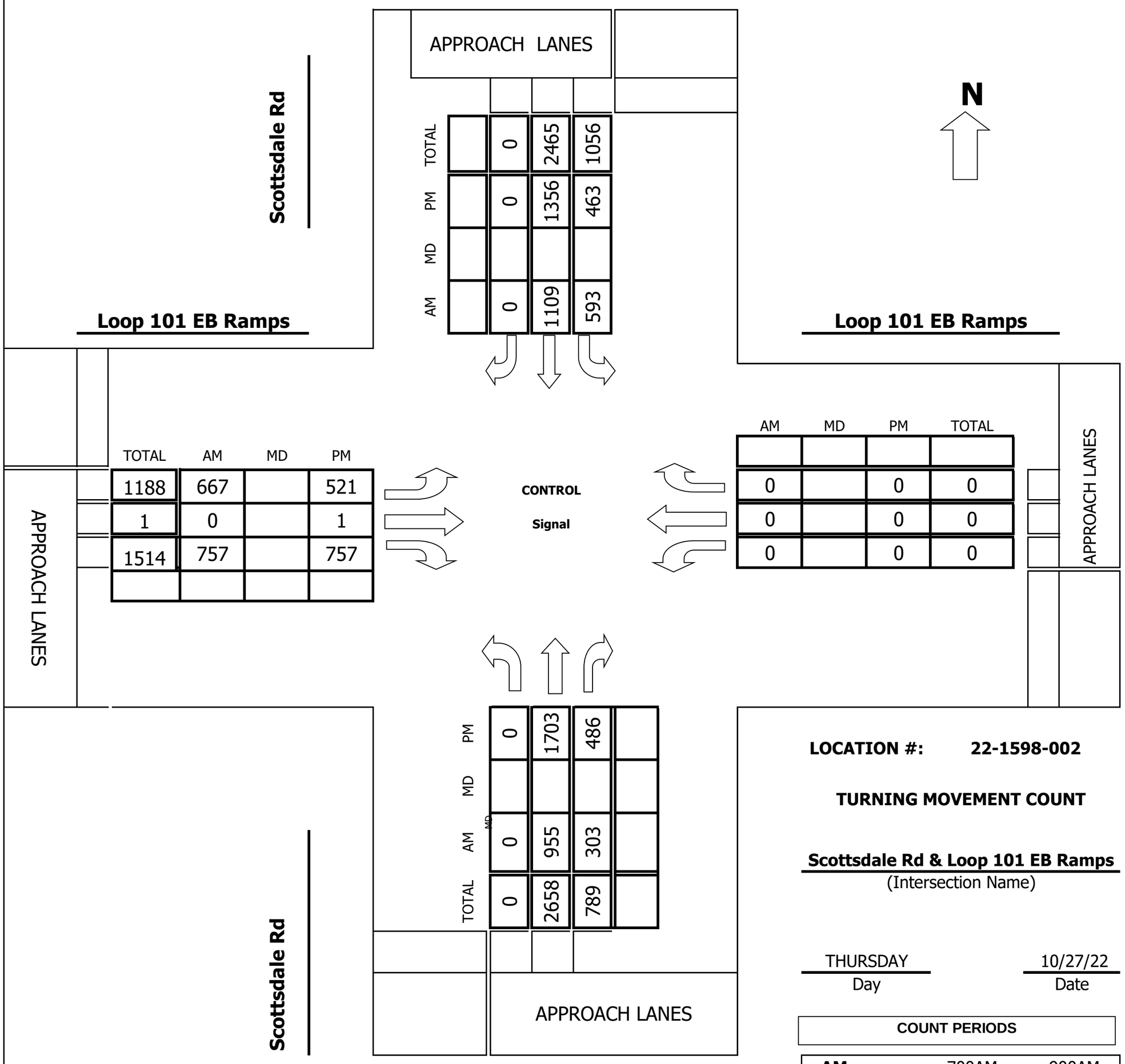
CONTROL:	Signal
COMMENT 1:	0
GPS:	33.658758, -111.925339

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-002

TMC SUMMARY OF Scottsdale Rd & Loop 101 EB Ramps



LOCATION #: 22-1598-002

TURNING MOVEMENT COUNT

Scottsdale Rd & Loop 101 EB Ramps
(Intersection Name)

THURSDAY — Day
10/27/22 — Date

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 EB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	5	1	2	3	0	2	0.5	1.5	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	147	54	148	146	0	162	0	189	0	0	0	846
7:15 AM	0	211	73	144	255	0	161	0	203	0	0	0	1047
7:30 AM	0	207	74	179	266	0	193	0	205	0	0	0	1124
7:45 AM	0	288	70	122	324	0	187	0	207	0	0	0	1198
8:00 AM	0	249	86	148	264	0	126	0	142	0	0	0	1015
8:15 AM	0	312	71	116	276	0	94	0	125	0	0	0	994
8:30 AM	0	194	80	151	319	0	175	0	200	0	0	0	1119
8:45 AM	0	279	74	126	332	0	184	2	251	0	0	0	1248
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	1887	582	1134	2182	0	1282	2	1522	0	0	0	8591
Approach %	0.00	76.43	23.57	34.20	65.80	0.00	45.69	0.07	54.24	####	####	####	
App/Depart	2469	/	3169	3316	/	3704	2806	/	1718	0	/	0	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	0	955	303	593	1109	0	667	0	757	0	0	0	4384
Approach %	0.00	75.91	24.09	34.84	65.16	0.00	46.84	0.00	53.16	####	####	####	

PEAK HR. FACTOR:	0.878	0.954	0.894	0.000	0.915

CONTROL: Signal
COMMENT 1:
GPS: 33.657620, -111.925365

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 EB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	5	1	2	3	0	2	0.5	1.5	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	422	121	118	280	0	118	0	150	0	0	0	1209
4:15 PM	0	441	111	115	280	0	120	2	183	0	0	0	1252
4:30 PM	0	451	118	127	325	0	131	1	206	0	0	0	1359
4:45 PM	0	383	116	108	323	0	132	0	185	0	0	0	1247
5:00 PM	0	426	132	120	315	0	115	0	161	0	0	0	1269
5:15 PM	0	443	120	108	393	0	143	0	205	0	0	0	1412
5:30 PM	0	470	122	108	299	0	109	2	159	0	0	0	1269
5:45 PM	0	391	100	82	314	0	115	0	167	0	0	0	1169
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	3427	940	886	2529	0	983	5	1416	0	0	0	10186
Approach %	0.00	78.47	21.53	25.94	74.06	0.00	40.89	0.21	58.90	####	####	####	
App/Depart	4367	/	4410	3415	/	3945	2404	/	1831	0	/	0	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	0	1703	486	463	1356	0	521	1	757	0	0	0	5287
Approach %	0.00	77.80	22.20	25.45	74.55	0.00	40.73	0.08	59.19	####	####	####	
PEAK HR. FACTOR:		0.962			0.908			0.919			0.000		0.936

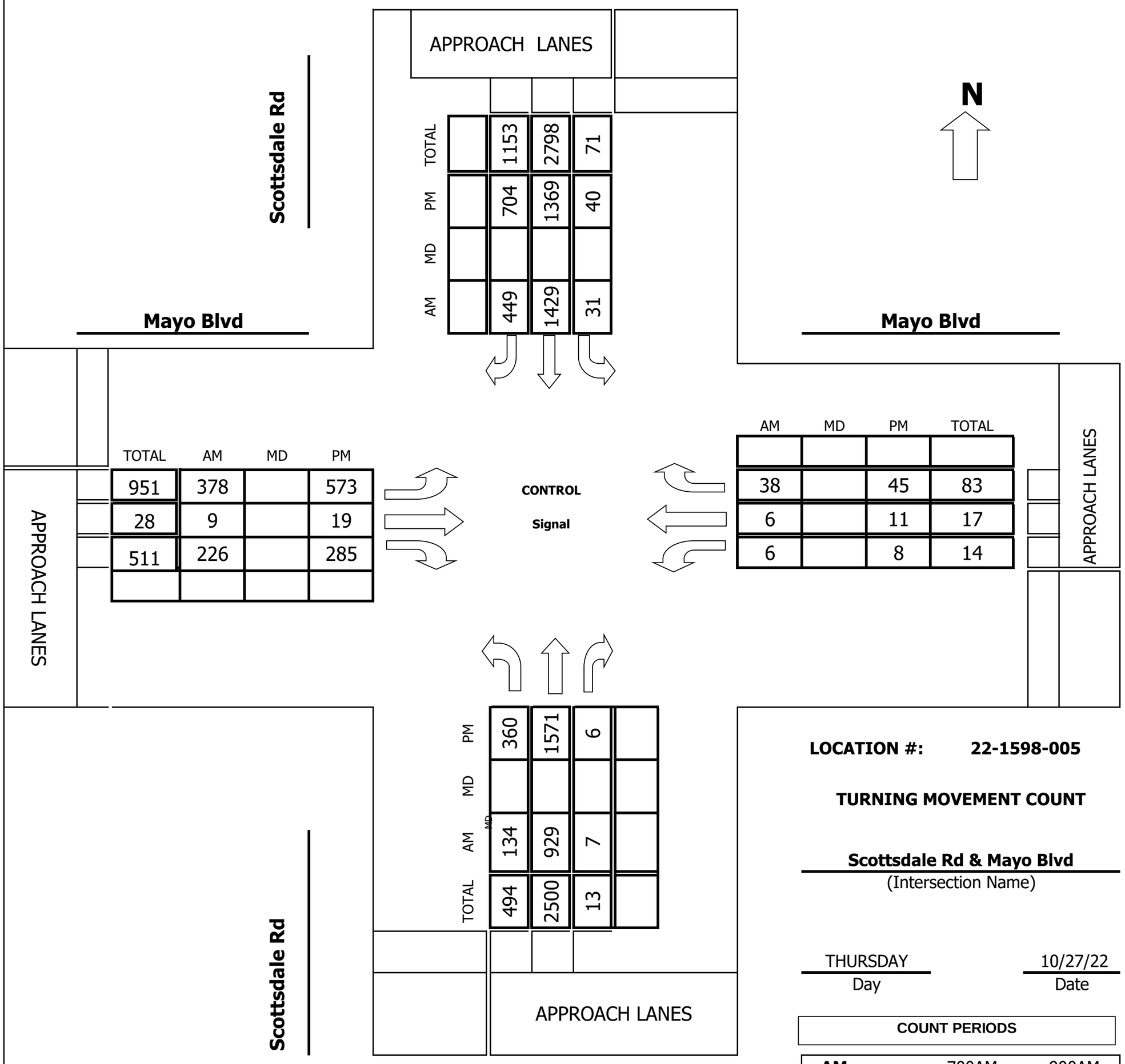
CONTROL:	Signal
COMMENT 1:	0
GPS:	33.657620, -111.925365

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-005

TMC SUMMARY OF Scottsdale Rd & Mayo Blvd



LOCATION #: 22-1598-005

TURNING MOVEMENT COUNT

Scottsdale Rd & Mayo Blvd
(Intersection Name)

THURSDAY — Day
10/27/22 — Date

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Mayo Blvd	DAY:	THURSDAY	PROJECT#	22-1598-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	3	1	2	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	11	137	0	4	257	74	60	1	24	1	2	4	575
7:15 AM	27	195	2	8	368	82	80	2	37	3	2	9	815
7:30 AM	33	185	1	8	395	68	85	4	45	1	2	11	838
7:45 AM	49	283	2	9	421	101	63	7	42	1	2	12	992
8:00 AM	41	228	3	9	287	110	92	0	58	1	3	15	847
8:15 AM	30	273	0	5	289	107	99	2	53	1	0	11	870
8:30 AM	36	165	1	8	402	109	101	5	63	1	2	8	901
8:45 AM	27	263	3	9	451	123	86	2	52	3	1	4	1024
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	254	1729	12	60	2870	774	666	23	374	12	14	74	6862
Approach %	12.73	86.67	0.60	1.62	77.48	20.90	62.65	2.16	35.18	12.00	14.00	74.00	
App/Depart	1995	/	2469	3704	/	3256	1063	/	95	100	/	1042	

AM Peak Hr Begins at: 800 AM

PEAK													
Volumes	134	929	7	31	1429	449	378	9	226	6	6	38	3642
Approach %	12.52	86.82	0.65	1.62	74.86	23.52	61.66	1.47	36.87	12.00	12.00	76.00	
PEAK HR. FACTOR:		0.883			0.819			0.907			0.658		0.889

CONTROL: Signal
COMMENT 1:
GPS: 33.655158, -111.925364

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Mayo Blvd	DAY:	THURSDAY	PROJECT#	22-1598-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	3	1	2	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	65	389	5	12	271	147	135	3	77	8	5	19	1136
4:15 PM	81	386	1	8	288	167	152	2	72	7	3	14	1181
4:30 PM	80	432	3	10	350	171	121	3	70	3	2	16	1261
4:45 PM	86	334	1	11	322	175	155	4	69	1	4	10	1172
5:00 PM	66	392	0	11	299	166	151	6	75	2	1	15	1184
5:15 PM	128	413	2	8	398	192	146	6	71	2	4	4	1374
5:30 PM	64	438	2	5	258	195	148	5	75	0	4	6	1200
5:45 PM	95	325	1	11	287	183	161	6	62	4	3	5	1143
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	665	3109	15	76	2473	1396	1169	35	571	27	26	89	9651
Approach %	17.55	82.05	0.40	1.93	62.69	35.39	65.86	1.97	32.17	19.01	18.31	62.68	
App/Depart	3789	/	4367	3945	/	3071	1775	/	126	142	/	2087	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	360	1571	6	40	1369	704	573	19	285	8	11	45	4991
Approach %	18.59	81.10	0.31	1.89	64.79	33.32	65.34	2.17	32.50	12.50	17.19	70.31	

PEAK HR. FACTOR:	0.892	0.883	0.945	0.762	0.908

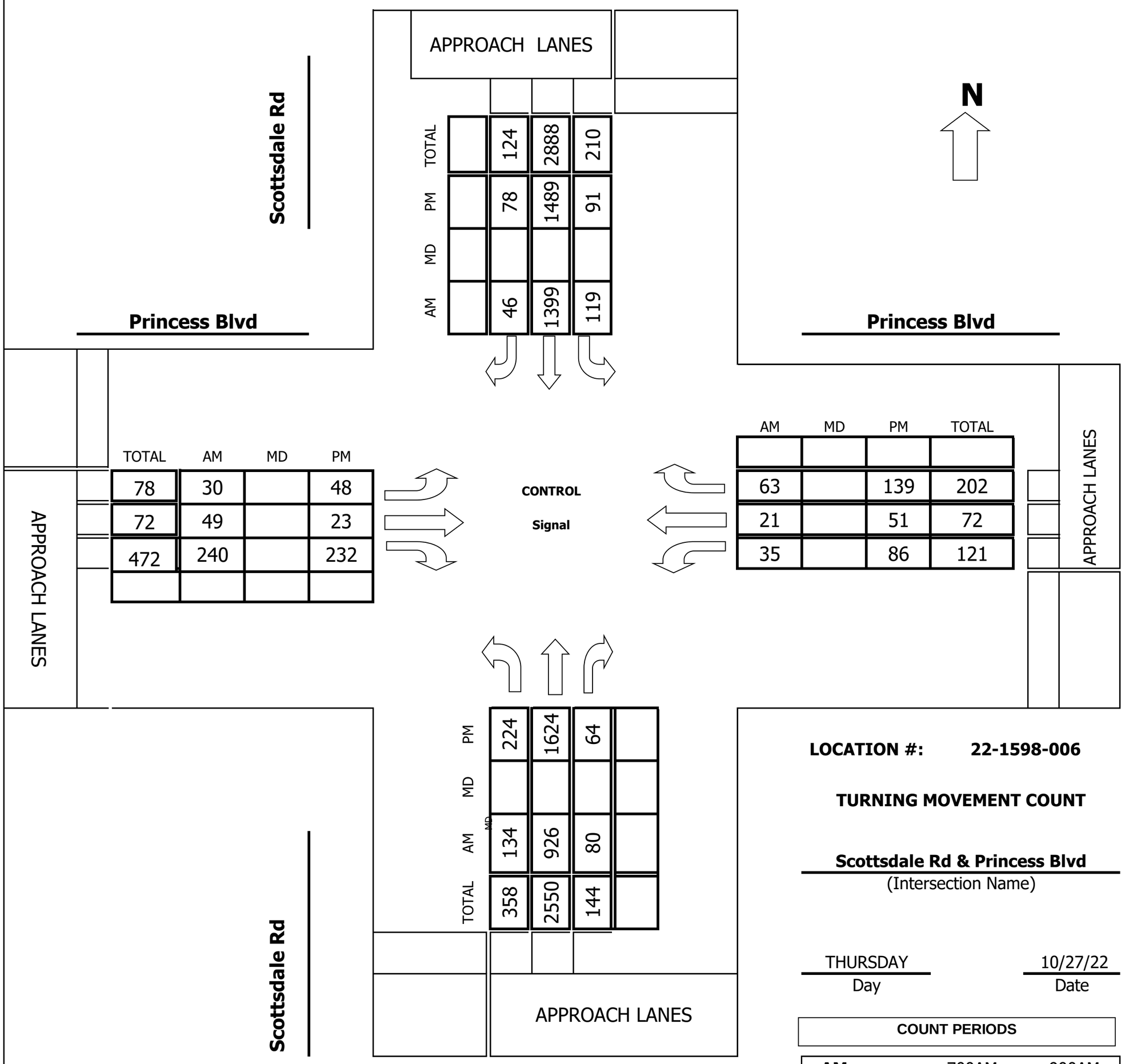
CONTROL: Signal
COMMENT 1: 0
GPS: 33.655158, -111.925364

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-006

TMC SUMMARY OF Scottsdale Rd & Princess Blvd



LOCATION #: 22-1598-006

TURNING MOVEMENT COUNT

Scottsdale Rd & Princess Blvd
(Intersection Name)

THURSDAY (Day) 10/27/22 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	1	3	1	1	2	0	1	2	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	23	136	20	21	250	14	4	4	45	13	4	10	544
7:15 AM	26	162	19	25	354	10	5	5	54	8	3	13	684
7:30 AM	34	211	22	36	365	12	12	11	70	7	8	15	803
7:45 AM	37	268	24	35	411	11	3	15	57	6	4	19	890
8:00 AM	35	220	19	29	315	12	6	9	52	14	3	16	730
8:15 AM	28	227	15	19	308	11	9	14	61	8	6	13	719
8:30 AM	31	204	20	40	371	21	11	9	53	13	3	18	794
8:45 AM	45	260	29	42	391	17	8	10	50	11	5	18	886
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	259	1688	168	247	2765	108	58	77	442	80	36	122	6050
Approach %	12.25	79.81	7.94	7.92	88.62	3.46	10.05	13.34	76.60	33.61	15.13	51.26	
App/Depart	2115	/	1868	3120	/	3287	577	/	492	238	/	403	

AM Peak Hr Begins at: 730 AM

PEAK													
Volumes	134	926	80	119	1399	46	30	49	240	35	21	63	3142
Approach %	11.75	81.23	7.02	7.61	89.45	2.94	9.40	15.36	75.24	29.41	17.65	52.94	
PEAK HR. FACTOR:		0.866			0.856			0.858			0.902		0.883

CONTROL: Signal
COMMENT 1:
GPS: 33.646692, -111.925376

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	1	3	1	1	2	0	1	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	46	410	10	22	343	16	17	8	43	20	7	38	980
4:15 PM	56	440	18	24	352	14	3	5	54	21	11	32	1030
4:30 PM	51	368	19	28	375	19	8	9	54	30	22	28	1011
4:45 PM	51	401	14	19	369	18	9	3	58	13	6	31	992
5:00 PM	54	420	15	24	349	18	17	5	59	25	12	39	1037
5:15 PM	68	435	16	20	396	23	14	6	61	18	11	41	1109
5:30 PM	75	344	16	21	318	10	13	4	62	15	13	44	935
5:45 PM	45	380	20	23	326	8	6	8	59	19	17	29	940
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	446	3198	128	181	2828	126	87	48	450	161	99	282	8034
Approach %	11.82	84.78	3.39	5.77	90.21	4.02	14.87	8.21	76.92	29.70	18.27	52.03	
App/Depart	3772	/	3567	3135	/	3439	585	/	357	542	/	671	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	224	1624	64	91	1489	78	48	23	232	86	51	139	4149
Approach %	11.72	84.94	3.35	5.49	89.81	4.70	15.84	7.59	76.57	31.16	18.48	50.36	
PEAK HR. FACTOR:		0.921			0.944			0.935			0.863		0.935

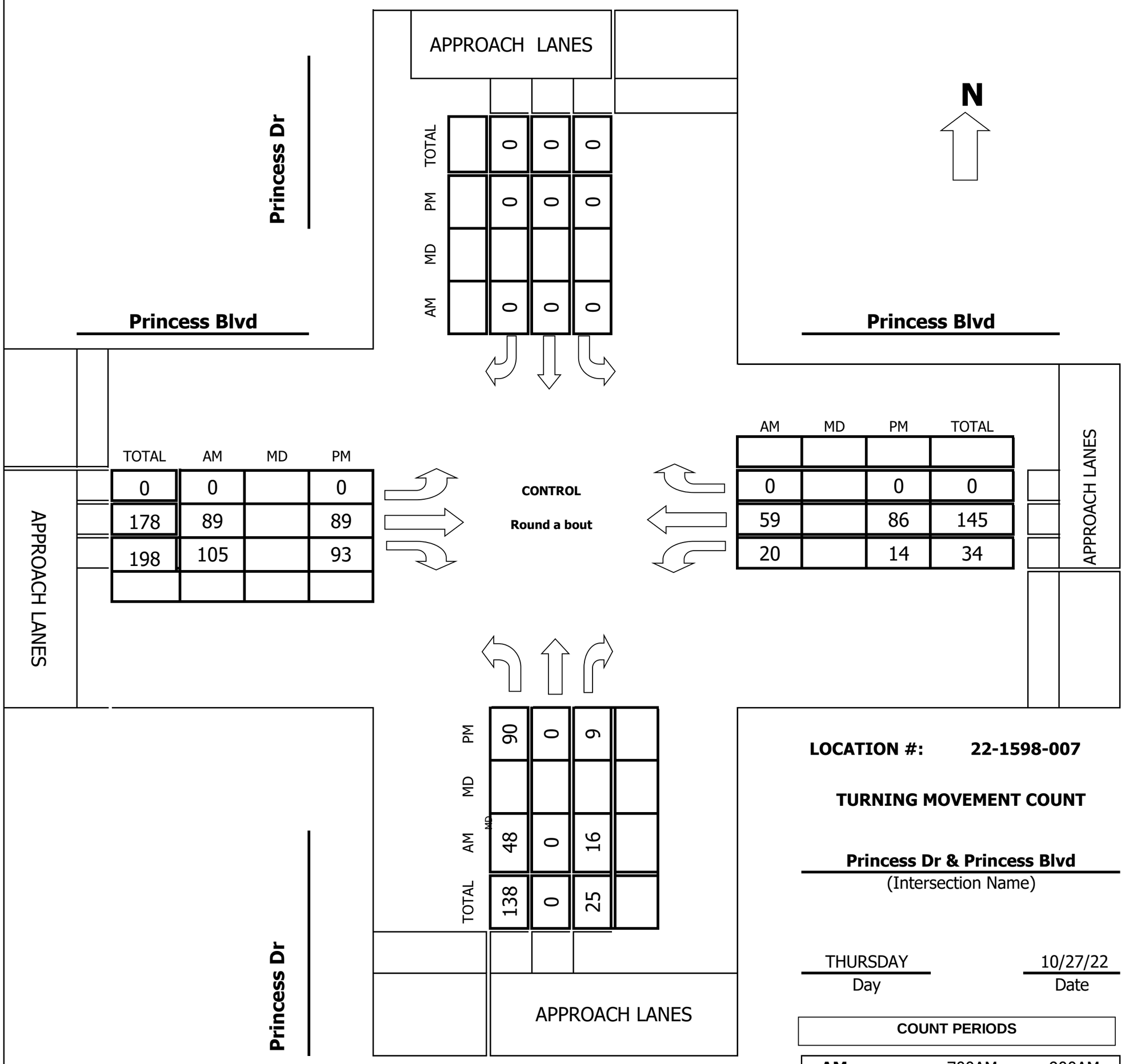
CONTROL:	Signal
COMMENT 1:	0
GPS:	33.646692, -111.925376

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-007

TMC SUMMARY OF Princess Dr & Princess Blvd



LOCATION #: 22-1598-007

TURNING MOVEMENT COUNT

Princess Dr & Princess Blvd
(Intersection Name)

THURSDAY (Day) 10/27/22 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Princess Dr	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	0	0.5	0	0	0	0	1	1	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	10	0	5	0	0	0	0	23	25	8	19	0	90
7:15 AM	14	0	3	0	0	0	0	26	23	7	10	0	83
7:30 AM	13	0	5	0	0	0	0	16	28	4	16	0	82
7:45 AM	11	0	3	0	0	0	0	24	29	1	14	0	82
8:00 AM	7	0	1	0	0	0	0	16	11	2	12	0	49
8:15 AM	14	0	1	0	0	0	0	17	26	2	17	0	77
8:30 AM	16	0	2	0	0	0	0	20	27	5	29	0	99
8:45 AM	11	0	1	0	0	0	0	13	28	3	37	0	93
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	96	0	21	0	0	0	0	155	197	32	154	0	655
Approach %	82.05	0.00	17.95	####	####	####	0.00	44.03	55.97	17.20	82.80	0.00	
App/Depart	117	/	0	0	/	229	352	/	176	186	/	250	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	48	0	16	0	0	0	0	89	105	20	59	0	337
Approach %	75.00	0.00	25.00	####	####	####	0.00	45.88	54.12	25.32	74.68	0.00	
PEAK HR. FACTOR:	0.889			0.000			0.915			0.731			0.936

CONTROL:	Round a bout
COMMENT 1:	
GPS:	33.648033, -111.917939

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Princess Dr 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	0	0.5	0	0	0	0	1	1	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	23	0	5	0	0	0	0	10	22	3	20	0	83
4:15 PM	23	0	3	0	0	0	0	23	32	4	23	0	108
4:30 PM	14	0	2	0	0	0	0	18	25	5	15	0	79
4:45 PM	30	0	1	0	0	0	0	9	28	4	13	0	85
5:00 PM	17	0	5	0	0	0	0	27	19	6	31	0	105
5:15 PM	20	0	0	0	0	0	0	27	18	2	18	0	85
5:30 PM	23	0	3	0	0	0	0	26	28	2	24	0	106
5:45 PM	20	0	3	0	0	0	0	11	19	4	19	0	76
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	170	0	22	0	0	0	0	151	191	30	163	0	727
Approach %	88.54	0.00	11.46	####	####	####	0.00	44.15	55.85	15.54	84.46	0.00	
App/Depart	192	/	0	0	/	221	342	/	173	193	/	333	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	90	0	9	0	0	0	0	89	93	14	86	0	381
Approach %	90.91	0.00	9.09	####	####	####	0.00	48.90	51.10	14.00	86.00	0.00	
PEAK HR. FACTOR:		0.798			0.000			0.843			0.676		0.899

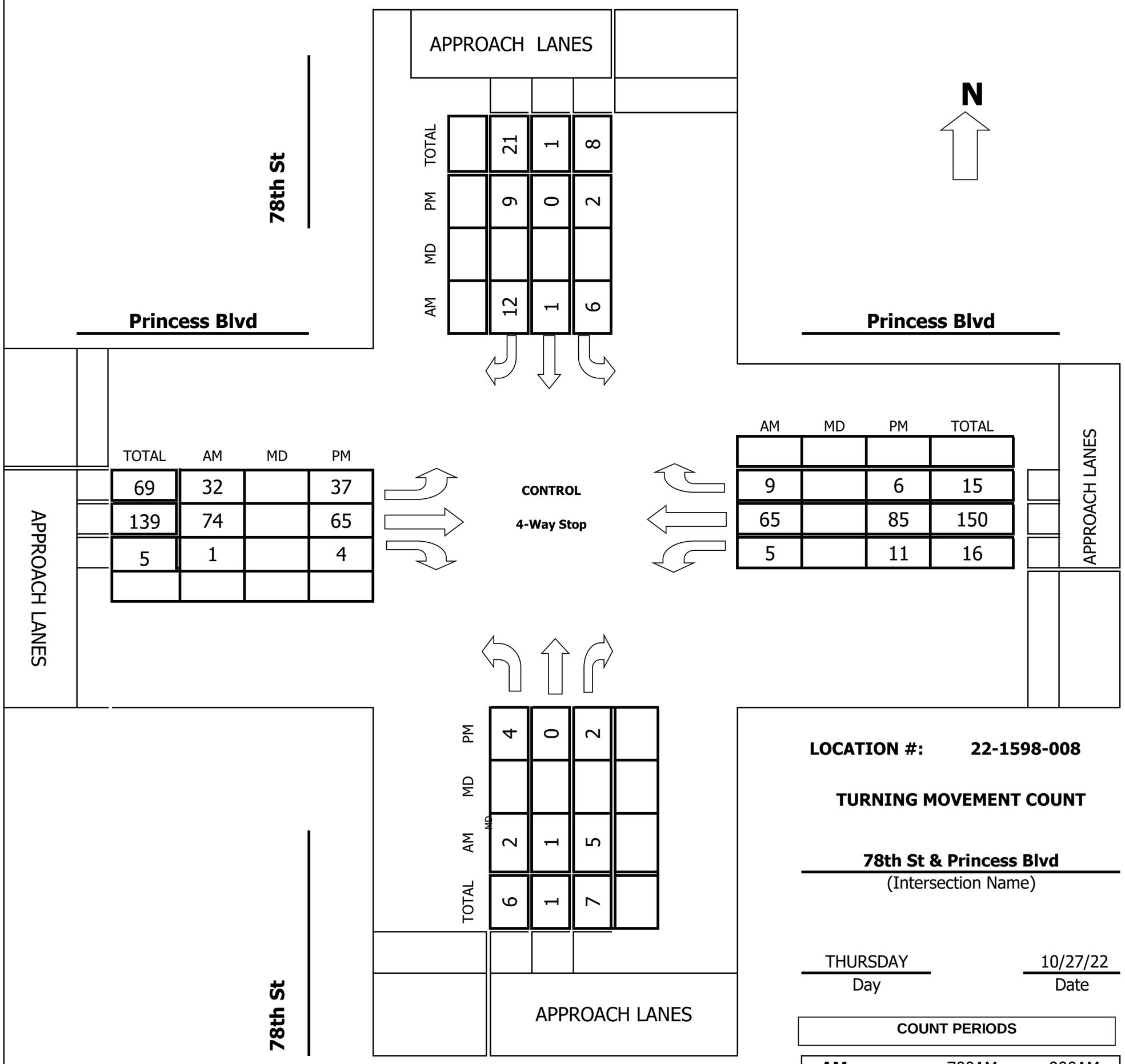
CONTROL:	Round a bout
COMMENT 1:	0
GPS:	33.648033, -111.917939

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-008

TMC SUMMARY OF 78th St & Princess Blvd



LOCATION #: 22-1598-008

TURNING MOVEMENT COUNT

78th St & Princess Blvd
(Intersection Name)

THURSDAY (Day) 10/27/22 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

PM PEAK HOUR 500 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	78th St	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	1	1	0	1	1	0	1	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	2	1	1	0	1	9	6	0	0	13	0	33
7:15 AM	0	1	1	1	0	5	10	18	0	1	19	2	58
7:30 AM	1	0	1	2	1	4	6	21	0	1	15	2	54
7:45 AM	0	0	2	1	0	3	9	12	0	2	17	2	48
8:00 AM	1	0	1	2	0	0	7	23	1	1	14	3	53
8:15 AM	0	3	2	2	1	2	3	15	0	3	11	3	45
8:30 AM	1	1	0	1	1	2	6	12	1	2	20	0	47
8:45 AM	0	1	1	0	0	1	3	18	0	2	34	3	63
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	3	8	9	10	3	18	53	125	2	12	143	15	401
Approach %	15.00	40.00	45.00	32.26	9.68	58.06	29.44	69.44	1.11	7.06	84.12	8.82	
App/Depart	20	/	76	31	/	17	180	/	144	170	/	164	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	2	1	5	6	1	12	32	74	1	5	65	9	213
Approach %	25.00	12.50	62.50	31.58	5.26	63.16	29.91	69.16	0.93	6.33	82.28	11.39	
PEAK HR. FACTOR:		1.000			0.679			0.863			0.898		0.918

CONTROL: 4-Way Stop
COMMENT 1:
GPS: 33.647857, -111.913295

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	78th St 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	1	1	0	1	1	0	1	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	1	0	1	1	0	2	5	20	1	2	19	1	53
4:15 PM	0	0	2	1	0	2	2	13	0	1	17	2	40
4:30 PM	1	0	3	4	0	1	6	15	3	4	26	0	63
4:45 PM	0	2	2	3	0	2	5	13	0	1	15	2	45
5:00 PM	1	0	0	1	0	2	11	11	1	3	18	1	49
5:15 PM	1	0	1	0	0	3	5	20	2	2	27	1	62
5:30 PM	1	0	1	0	0	2	5	15	0	4	20	2	50
5:45 PM	1	0	0	1	0	2	16	19	1	2	20	2	64
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	6	2	10	11	0	16	55	126	8	19	162	11	426
Approach %	33.33	11.11	55.56	40.74	0.00	59.26	29.10	66.67	4.23	9.90	84.38	5.73	
App/Depart	18	/	68	27	/	27	189	/	147	192	/	184	

PM Peak Hr Begins at: 500 PM

PEAK													
Volumes	4	0	2	2	0	9	37	65	4	11	85	6	225
Approach %	66.67	0.00	33.33	18.18	0.00	81.82	34.91	61.32	3.77	10.78	83.33	5.88	
PEAK HR. FACTOR:		0.750			0.917			0.736			0.850		0.879

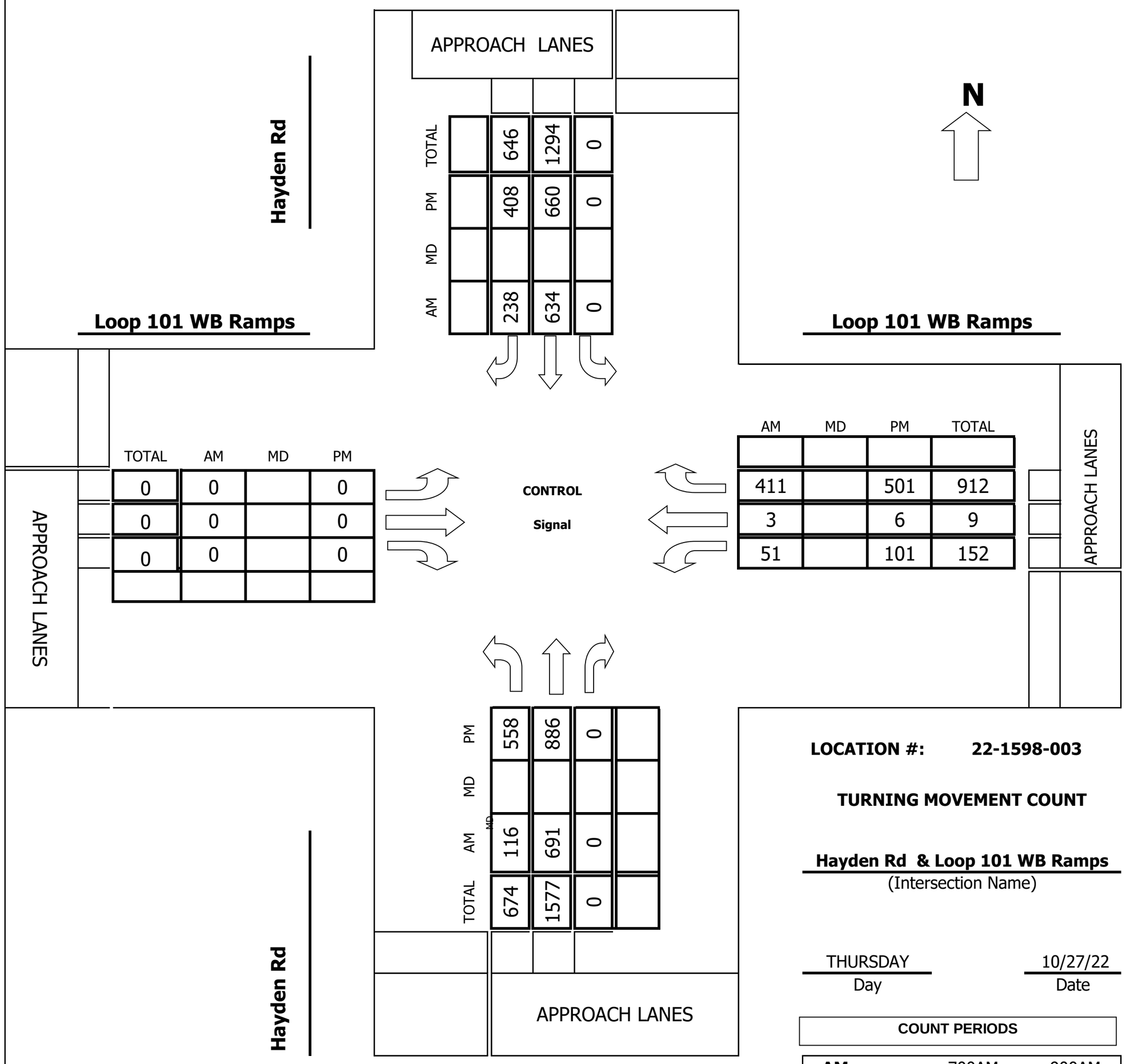
CONTROL: 4-Way Stop
COMMENT 1: 0
GPS: 33.647857, -111.913295

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-003

TMC SUMMARY OF Hayden Rd & Loop 101 WB Ramps



LOCATION #: 22-1598-003

TURNING MOVEMENT COUNT

Hayden Rd & Loop 101 WB Ramps
(Intersection Name)

THURSDAY — Day
10/27/22 — Date

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

PM PEAK HOUR 415 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 WB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	4	1	0	0	0	2	0.5	1.5	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	25	120	0	0	163	58	0	0	0	8	0	63	437
7:15 AM	24	154	0	0	166	74	0	0	0	11	0	99	528
7:30 AM	29	183	0	0	174	54	0	0	0	10	0	103	553
7:45 AM	33	167	0	0	140	52	0	0	0	14	1	101	508
8:00 AM	30	187	0	0	154	58	0	0	0	16	2	108	555
8:15 AM	32	159	0	0	140	65	0	0	0	13	1	85	495
8:30 AM	28	151	0	0	181	60	0	0	0	19	0	89	528
8:45 AM	24	144	0	0	154	66	0	0	0	21	1	99	509
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	225	1265	0	0	1272	487	0	0	0	112	5	747	4113
Approach %	15.10	84.90	0.00	0.00	72.31	27.69	####	####	####	12.96	0.58	86.46	
App/Depart	1490	/	2012	1759	/	1384	0	/	0	864	/	717	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	116	691	0	0	634	238	0	0	0	51	3	411	2144
Approach %	14.37	85.63	0.00	0.00	72.71	27.29	####	####	####	10.97	0.65	88.39	
PEAK HR. FACTOR:		0.930			0.908			0.000			0.923		0.966

CONTROL:	Signal
COMMENT 1:	
GPS:	33.655160, -111.907976

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 WB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	4	1	0	0	0	2	0.5	1.5	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	114	200	0	0	154	103	0	0	0	24	1	110	706
4:15 PM	122	238	0	0	152	111	0	0	0	25	2	124	774
4:30 PM	152	224	0	0	162	104	0	0	0	24	1	125	792
4:45 PM	141	212	0	0	183	108	0	0	0	28	2	141	815
5:00 PM	143	212	0	0	163	85	0	0	0	24	1	111	739
5:15 PM	133	227	0	0	151	103	0	0	0	20	0	133	767
5:30 PM	104	226	0	0	185	101	0	0	0	16	0	136	768
5:45 PM	85	161	0	0	154	105	0	0	0	19	1	111	636
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	994	1700	0	0	1304	820	0	0	0	180	8	991	5997
Approach %	36.90	63.10	0.00	0.00	61.39	38.61	####	####	####	15.27	0.68	84.05	
App/Depart	2694	/	2691	2124	/	1484	0	/	0	1179	/	1822	

PM Peak Hr Begins at: 415 PM

PEAK													
Volumes	558	886	0	0	660	408	0	0	0	101	6	501	3120
Approach %	38.64	61.36	0.00	0.00	61.80	38.20	####	####	####	16.61	0.99	82.40	
PEAK HR. FACTOR:		0.960			0.918			0.000			0.889		0.957

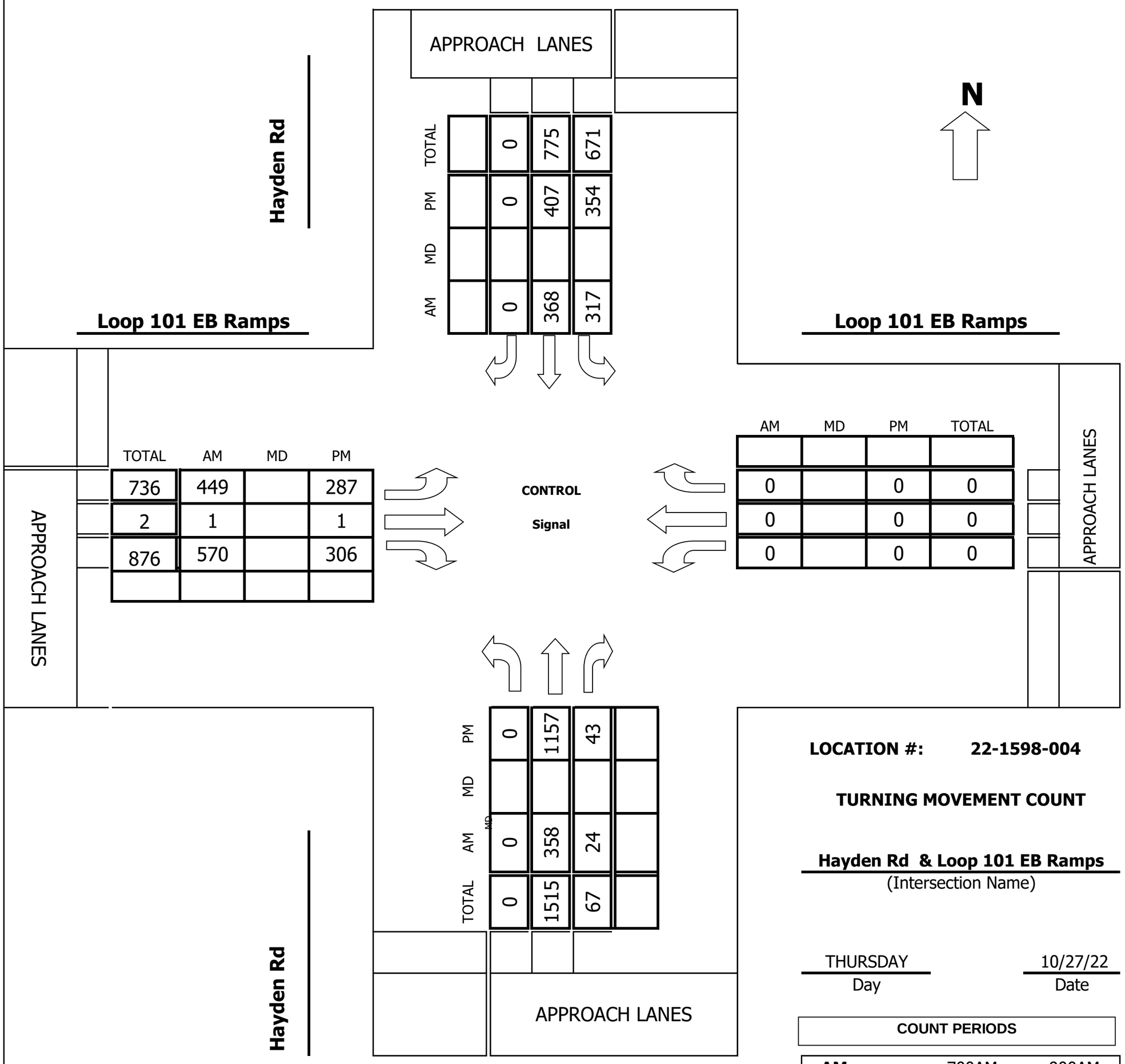
CONTROL:	Signal
COMMENT 1:	0
GPS:	33.655160, -111.907976

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-004

TMC SUMMARY OF Hayden Rd & Loop 101 EB Ramps



LOCATION #: 22-1598-004

TURNING MOVEMENT COUNT

Hayden Rd & Loop 101 EB Ramps
(Intersection Name)

THURSDAY — Day
10/27/22 — Date

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

PM PEAK HOUR 415 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 EB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	2	2	0	1.3	0.3	1.3	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	76	5	85	86	0	69	0	67	0	0	0	388
7:15 AM	0	76	3	74	103	0	102	1	104	0	0	0	463
7:30 AM	0	90	6	78	106	0	122	0	117	0	0	0	519
7:45 AM	0	79	9	80	74	0	121	0	208	0	0	0	571
8:00 AM	0	113	6	85	85	0	104	0	141	0	0	0	534
8:15 AM	0	106	9	89	64	0	85	1	100	0	0	0	454
8:30 AM	0	105	8	99	101	0	74	0	120	0	0	0	507
8:45 AM	0	93	5	90	85	0	75	0	136	0	0	0	484
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	738	51	680	704	0	752	2	993	0	0	0	3920
Approach %	0.00	93.54	6.46	49.13	50.87	0.00	43.05	0.11	56.84	####	####	####	
App/Depart	789	/	1490	1384	/	1697	1747	/	733	0	/	0	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	0	358	24	317	368	0	449	1	570	0	0	0	2087
Approach %	0.00	93.72	6.28	46.28	53.72	0.00	44.02	0.10	55.88	####	####	####	

PEAK HR. FACTOR:	0.803	0.931	0.775	0.000	0.914

CONTROL: Signal
COMMENT 1:
GPS: 33.653965, -111.908026

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Loop 101 EB Ramps	DAY:	THURSDAY	PROJECT#	22-1598-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	2	2	0	1.3	0.3	1.3	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	248	14	78	100	0	66	0	41	0	0	0	547
4:15 PM	0	300	10	80	97	0	60	0	75	0	0	0	622
4:30 PM	0	302	11	86	100	0	74	0	85	0	0	0	658
4:45 PM	0	278	8	89	122	0	75	1	86	0	0	0	659
5:00 PM	0	277	14	99	88	0	78	0	60	0	0	0	616
5:15 PM	0	280	10	90	81	0	80	1	54	0	0	0	596
5:30 PM	0	245	11	98	103	0	85	0	41	0	0	0	583
5:45 PM	0	172	8	87	86	0	74	0	43	0	0	0	470
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	2102	86	707	777	0	592	2	485	0	0	0	4751
Approach %	0.00	96.07	3.93	47.64	52.36	0.00	54.87	0.19	44.95	####	####	####	
App/Depart	2188	/	2694	1484	/	1262	1079	/	795	0	/	0	

PM Peak Hr Begins at: 415 PM

PEAK													
Volumes	0	1157	43	354	407	0	287	1	306	0	0	0	2555
Approach %	0.00	96.42	3.58	46.52	53.48	0.00	48.32	0.17	51.52	####	####	####	

PEAK HR. FACTOR:	0.958	0.902	0.917	0.000	0.969

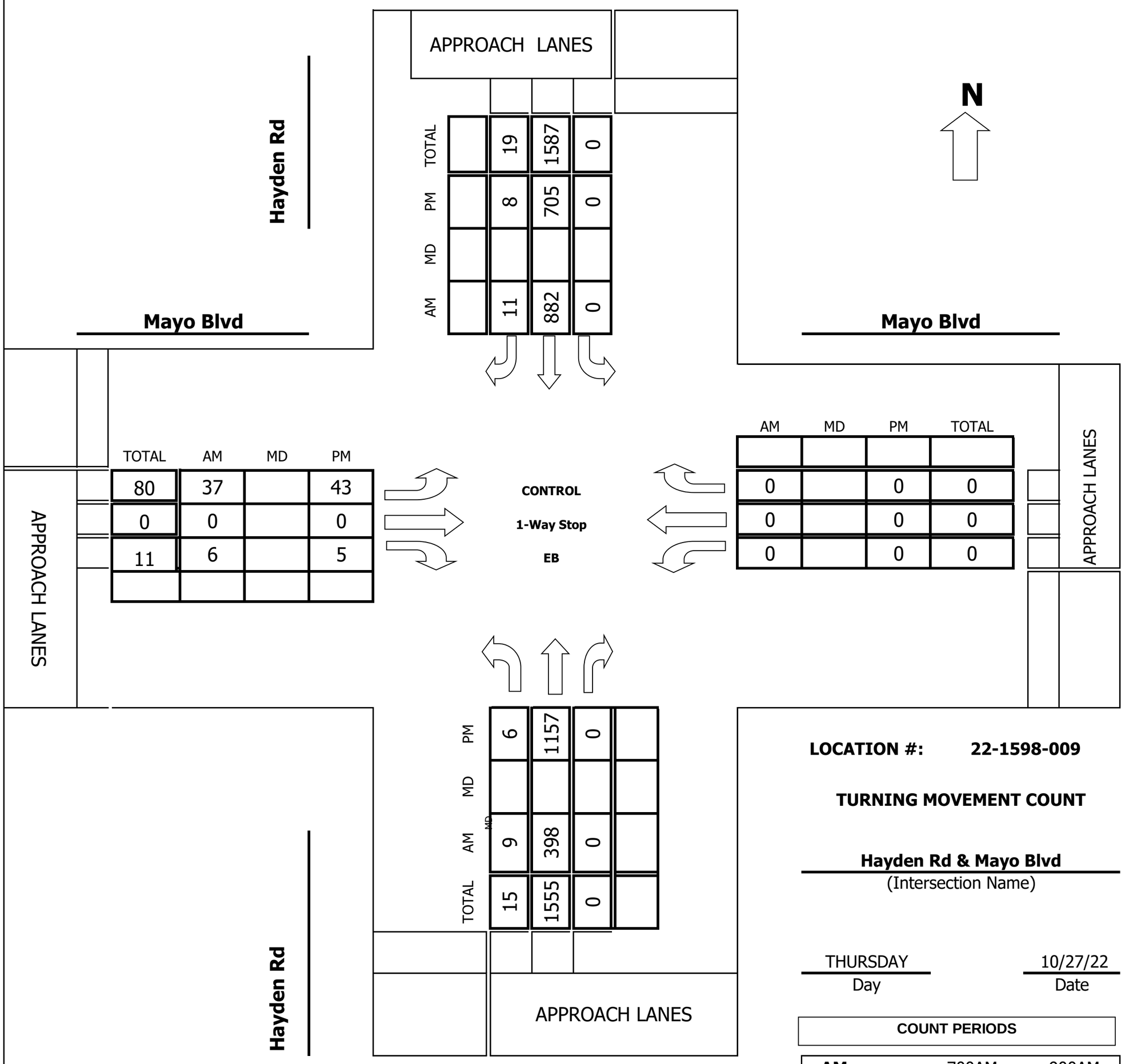
CONTROL:	Signal
COMMENT 1:	0
GPS:	33.653965, -111.908026

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-009

TMC SUMMARY OF Hayden Rd & Mayo Blvd



LOCATION #: 22-1598-009

TURNING MOVEMENT COUNT

Hayden Rd & Mayo Blvd
(Intersection Name)

THURSDAY — Day
10/27/22 — Date

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 745 AM

NOON PEAK HOUR

PM PEAK HOUR 415 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Mayo Blvd	DAY:	THURSDAY	PROJECT#	22-1598-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	2	1	1	0	1	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	72	0	0	138	15	9	0	1	0	0	0	236
7:15 AM	3	70	0	0	202	5	9	0	3	0	0	0	292
7:30 AM	3	89	0	0	220	3	7	0	2	0	0	0	324
7:45 AM	1	80	0	0	280	2	8	0	2	0	0	0	373
8:00 AM	1	109	0	0	224	2	10	0	0	0	0	0	346
8:15 AM	5	106	0	0	160	4	9	0	1	0	0	0	285
8:30 AM	2	103	0	0	218	3	10	0	3	0	0	0	339
8:45 AM	3	89	0	0	215	6	9	0	1	0	0	0	323
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	19	718	0	0	1657	40	71	0	13	0	0	0	2518
Approach %	2.58	97.42	0.00	0.00	97.64	2.36	84.52	0.00	15.48	####	####	####	
App/Depart	737	/	789	1697	/	1670	84	/	0	0	/	59	

AM Peak Hr Begins at: 745 AM

PEAK													
Volumes	9	398	0	0	882	11	37	0	6	0	0	0	1343
Approach %	2.21	97.79	0.00	0.00	98.77	1.23	86.05	0.00	13.95	####	####	####	
PEAK HR. FACTOR:	0.917			0.792			0.827			0.000			0.900

CONTROL:	1-Way Stop (EB)
COMMENT 1:	
GPS:	33.651278, -111.907900

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Mayo Blvd	DAY:	THURSDAY	PROJECT#	22-1598-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	2	1	1	0	1	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	255	0	0	141	0	7	0	1	0	0	0	407
4:15 PM	2	302	0	0	170	2	8	0	1	0	0	0	485
4:30 PM	1	307	0	0	182	3	6	0	0	0	0	0	499
4:45 PM	1	265	0	0	207	1	21	0	2	0	0	0	497
5:00 PM	2	283	0	0	146	2	8	0	2	0	0	0	443
5:15 PM	1	286	0	0	135	0	4	0	2	0	0	0	428
5:30 PM	2	250	0	0	144	0	6	0	4	0	0	0	406
5:45 PM	1	166	0	0	125	4	14	0	5	0	0	0	315
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	13	2114	0	0	1250	12	74	0	17	0	0	0	3480
Approach %	0.61	99.39	0.00	0.00	99.05	0.95	81.32	0.00	18.68	####	####	####	
App/Depart	2127	/	2188	1262	/	1267	91	/	0	0	/	25	

PM Peak Hr Begins at: 415 PM

PEAK													
Volumes	6	1157	0	0	705	8	43	0	5	0	0	0	1924
Approach %	0.52	99.48	0.00	0.00	98.88	1.12	89.58	0.00	10.42	####	####	####	
PEAK HR. FACTOR:		0.944			0.857			0.522			0.000		0.964

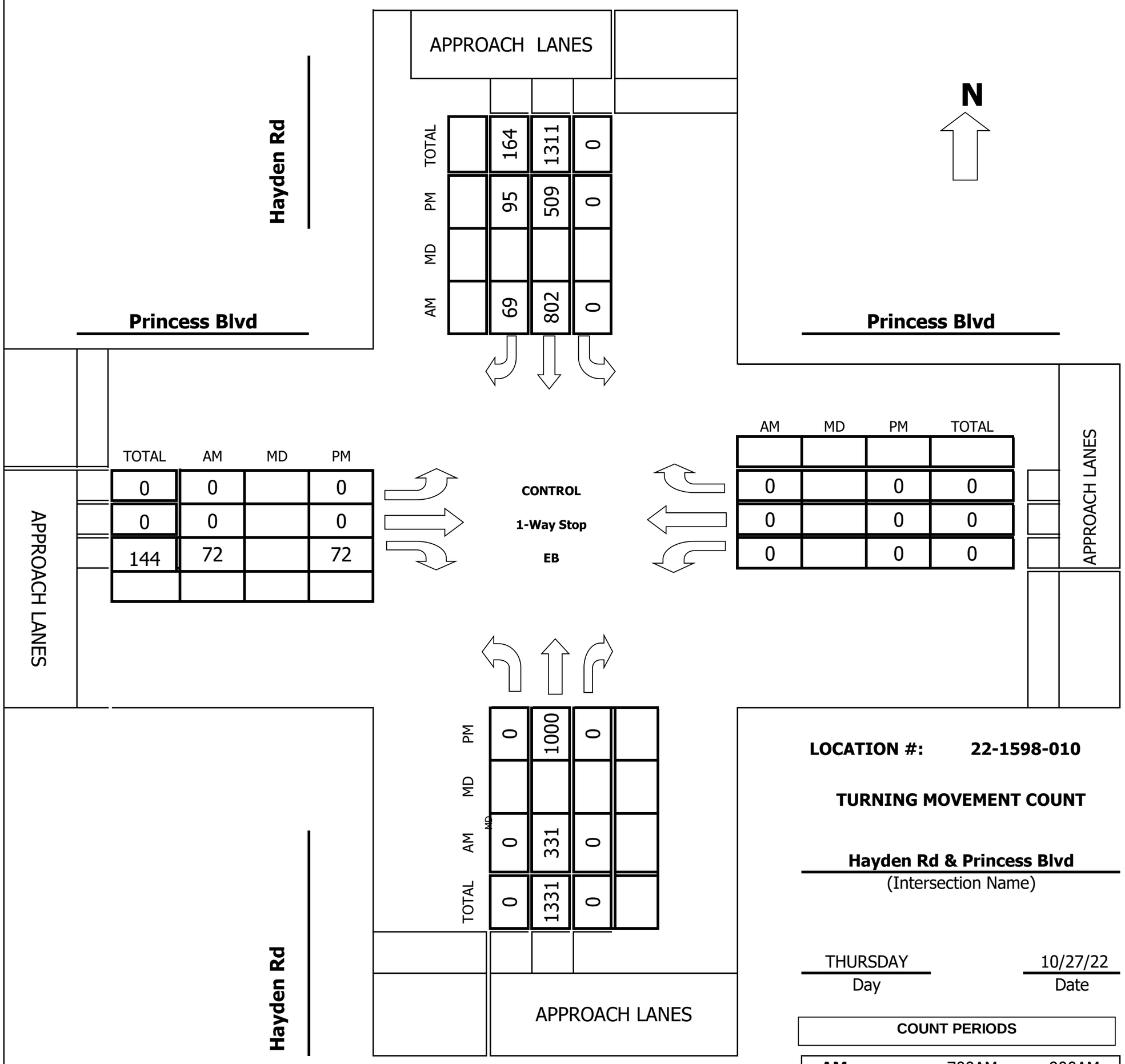
CONTROL:	1-Way Stop (EB)
COMMENT 1:	0
GPS:	33.651278, -111.907900

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1598-010

TMC SUMMARY OF Hayden Rd & Princess Blvd



LOCATION #: 22-1598-010

TURNING MOVEMENT COUNT

Hayden Rd & Princess Blvd
(Intersection Name)

THURSDAY (Day) 10/27/22 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

PM PEAK HOUR 415 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	1	0	0	1	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	72	0	0	113	16	0	0	12	0	0	0	213
7:15 AM	0	58	0	0	175	15	0	0	14	0	0	0	262
7:30 AM	0	92	0	0	212	27	0	0	19	0	0	0	350
7:45 AM	0	71	0	0	244	13	0	0	18	0	0	0	346
8:00 AM	0	110	0	0	171	14	0	0	21	0	0	0	316
8:15 AM	0	81	0	0	127	14	0	0	16	0	0	0	238
8:30 AM	0	102	0	0	181	29	0	0	17	0	0	0	329
8:45 AM	0	72	0	0	202	33	0	0	14	0	0	0	321
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	658	0	0	1425	161	0	0	131	0	0	0	2375
Approach %	0.00	100.00	0.00	0.00	89.85	10.15	0.00	0.00	100.00	####	####	####	
App/Depart	658	/	658	1586	/	1556	131	/	0	0	/	161	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	0	331	0	0	802	69	0	0	72	0	0	0	1274
Approach %	0.00	100.00	0.00	0.00	92.08	7.92	0.00	0.00	100.00	####	####	####	

PEAK HR. FACTOR:	0.752	0.847	0.857	0.000	0.910

CONTROL: 1-Way Stop (EB)
COMMENT 1:
GPS: 33.647968, -111.907826

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Hayden Rd 0	DATE:	10/27/22	LOCATION:	Scottsdale
E-W STREET:	Princess Blvd	DAY:	THURSDAY	PROJECT#	22-1598-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	1	0	0	1	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	248	0	0	128	26	0	0	20	0	0	0	422
4:15 PM	0	253	0	0	124	21	0	0	19	0	0	0	417
4:30 PM	0	236	0	0	111	24	0	0	21	0	0	0	392
4:45 PM	0	221	0	0	146	22	0	0	16	0	0	0	405
5:00 PM	0	290	0	0	128	28	0	0	16	0	0	0	462
5:15 PM	0	244	0	0	108	22	0	0	19	0	0	0	393
5:30 PM	0	213	0	0	127	23	0	0	19	0	0	0	382
5:45 PM	0	161	0	0	112	19	0	0	21	0	0	0	313
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	1866	0	0	984	185	0	0	151	0	0	0	3186
Approach %	0.00	100.00	0.00	0.00	84.17	15.83	0.00	0.00	100.00	####	####	####	
App/Depart	1866	/	1866	1169	/	1135	151	/	0	0	/	185	

PM Peak Hr Begins at: 415 PM

PEAK													
Volumes	0	1000	0	0	509	95	0	0	72	0	0	0	1676
Approach %	0.00	100.00	0.00	0.00	84.27	15.73	0.00	0.00	100.00	####	####	####	
PEAK HR. FACTOR:		0.862			0.899			0.857			0.000		0.907

CONTROL:	1-Way Stop (EB)
COMMENT 1:	0
GPS:	33.647968, -111.907826

Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745

Volumes for: Thursday, October 27, 2022 City: Scottsdale Project #: 22-1598-011

Location: Scottsdale Rd north of Mayo Blvd

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	19		16					12:00	459		518				
00:15	29		21					12:15	456		552				
00:30	26		9					12:30	451		490				
00:45	26	100	15	61			161	12:45	492	1858	534	2094			3952
01:00	26		25					13:00	465		502				
01:15	6		11					13:15	505		466				
01:30	12		9					13:30	483		416				
01:45	10	54	15	60			114	13:45	437	1890	479	1863			3753
02:00	18		7					14:00	580		439				
02:15	10		7					14:15	559		414				
02:30	8		3					14:30	535		472				
02:45	6	42	9	26			68	14:45	500	2174	427	1752			3926
03:00	3		9					15:00	496		392				
03:15	10		14					15:15	557		428				
03:30	7		23					15:30	572		479				
03:45	13	33	33	79			112	15:45	518	2143	476	1775			3918
04:00	20		37					16:00	543		430				
04:15	18		26					16:15	552		463				
04:30	20		68					16:30	569		531				
04:45	20	78	100	231			309	16:45	499	2163	508	1932			4095
05:00	41		88					17:00	558		476				
05:15	47		123					17:15	563		598				
05:30	47		158					17:30	592		458				
05:45	62	197	217	586			783	17:45	491	2204	481	2013			4217
06:00	69		215					18:00	511		385				
06:15	129		236					18:15	424		381				
06:30	161		287					18:30	349		363				
06:45	164	523	375	1113			1636	18:45	377	1661	346	1475			3136
07:00	201		335					19:00	457		255				
07:15	284		458					19:15	340		196				
07:30	281		471					19:30	308		224				
07:45	358	1124	531	1795			2919	19:45	297	1402	170	845			2247
08:00	335		406					20:00	275		153				
08:15	383		401					20:15	249		148				
08:30	274		519					20:30	222		121				
08:45	353	1345	583	1909			3254	20:45	256	1002	123	545			1547
09:00	279		565					21:00	211		129				
09:15	294		442					21:15	190		104				
09:30	312		472					21:30	163		98				
09:45	327	1212	510	1989			3201	21:45	145	709	83	414			1123
10:00	338		508					22:00	158		77				
10:15	346		452					22:15	113		70				
10:30	376		504					22:30	103		63				
10:45	380	1440	519	1983			3423	22:45	82	456	43	253			709
11:00	343		462					23:00	83		46				
11:15	391		487					23:15	68		36				
11:30	389		561					23:30	50		30				
11:45	447	1570	574	2084			3654	23:45	35	236	28	140			376
Total Vol.	7718		11916				**19634**		17898		15101				**32999**

GPS Coordinates: 33.656283, -111.925388

Daily Totals

NB	SB	EB	WB	**Combined**
25616	27017			**52633**

	AM			**PM**		
Split %	39.3%	60.7%	**37.3%**	54.2%	45.8%	**62.7%**
Peak Hour	11:45	11:30	**11:30**	16:45	16:30	**16:30**
Volume	1813	2205	**3956**	2212	2113	**4302**
P.H.F.	0.99	0.96	**0.97**	0.93	0.88	**0.93**

Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745

Volumes for: Thursday, October 27, 2022 City: Scottsdale Project #: 22-1598-012

Location: Hayden Rd north of Mayo Blvd

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	5		14					12:00	122		152				
00:15	7		11					12:15	131		141				
00:30	10		8					12:30	124		143				
00:45	11	33	9	42			75	12:45	145	522	139	575			1097
01:00	3		9					13:00	185		166				
01:15	6		8					13:15	189		161				
01:30	9		5					13:30	196		154				
01:45	5	23	7	29			52	13:45	199	769	174	655			1424
02:00	8		5					14:00	204		175				
02:15	4		8					14:15	245		185				
02:30	7		6					14:30	258		181				
02:45	5	24	9	28			52	14:45	252	959	187	728			1687
03:00	8		13					15:00	286		174				
03:15	6		16					15:15	296		176				
03:30	9		16					15:30	301		163				
03:45	13	36	14	59			95	15:45	325	1208	155	668			1876
04:00	16		21					16:00	262		141				
04:15	18		42					16:15	310		172				
04:30	14		41					16:30	313		185				
04:45	14	62	54	158			220	16:45	286	1171	208	706			1877
05:00	21		65					17:00	291		148				
05:15	42		60					17:15	290		135				
05:30	41		76					17:30	256		144				
05:45	54	158	74	275			433	17:45	180	1017	129	556			1573
06:00	65		85					18:00	174		110				
06:15	60		104					18:15	145		107				
06:30	76		122					18:30	128		108				
06:45	74	275	128	439			714	18:45	133	580	85	410			990
07:00	81		153					19:00	130		86				
07:15	79		207					19:15	128		103				
07:30	96		223					19:30	124		96				
07:45	88	344	282	865			1209	19:45	141	523	99	384			907
08:00	119		226					20:00	111		90				
08:15	115		164					20:15	104		85				
08:30	113		221					20:30	85		76				
08:45	98	445	221	832			1277	20:45	76	376	60	311			687
09:00	99		204					21:00	60		65				
09:15	90		214					21:15	65		52				
09:30	87		196					21:30	54		55				
09:45	74	350	199	813			1163	21:45	41	220	50	222			442
10:00	78		161					22:00	42		54				
10:15	80		154					22:15	28		41				
10:30	85		174					22:30	24		47				
10:45	74	317	175	664			981	22:45	21	115	45	187			302
11:00	78		185					23:00	14		50				
11:15	80		189					23:15	16		43				
11:30	96		196					23:30	13		30				
11:45	103	357	144	714			1071	23:45	9	52	21	144			196
Total Vol.		2424		4918			**7342**			7512		5546			**13058**

GPS Coordinates: 33.652388, -111.907992

Daily Totals

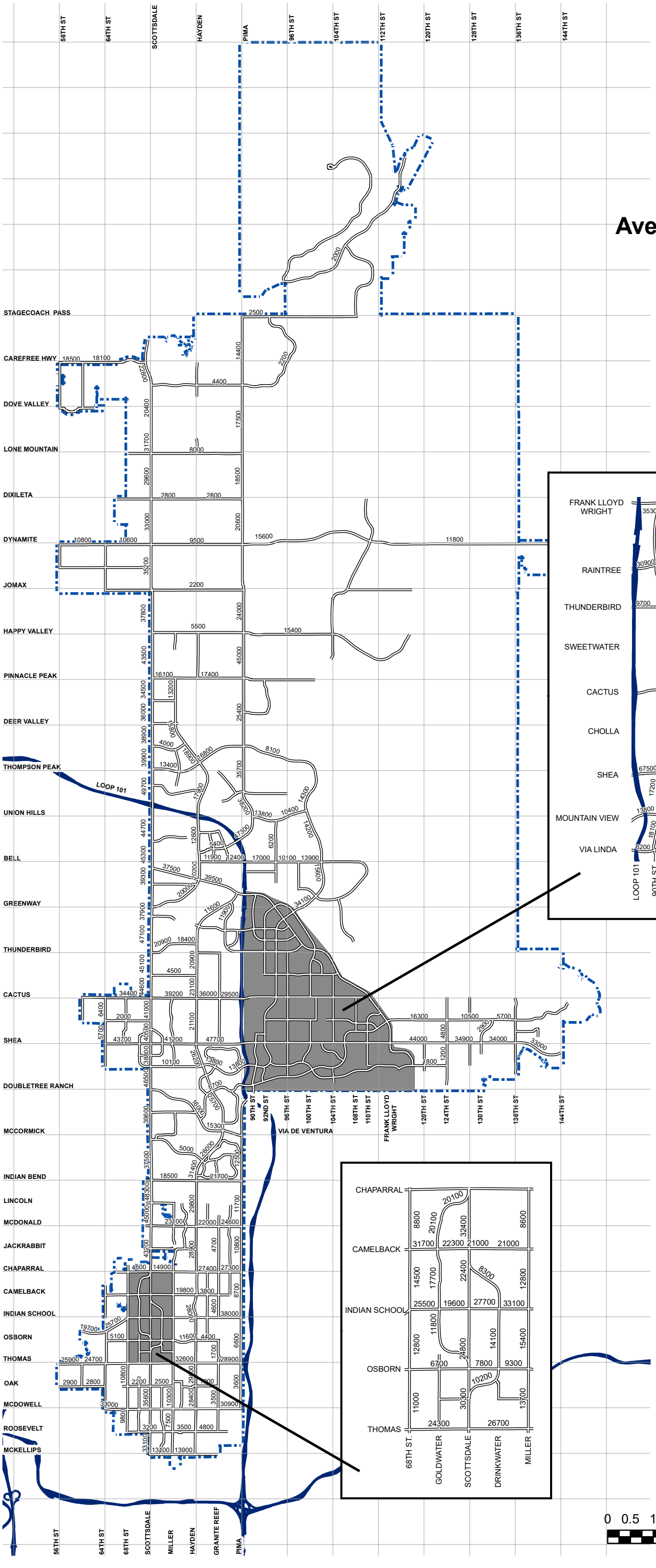
NB	SB	EB	WB	**Combined**
9936	10464			**20400**

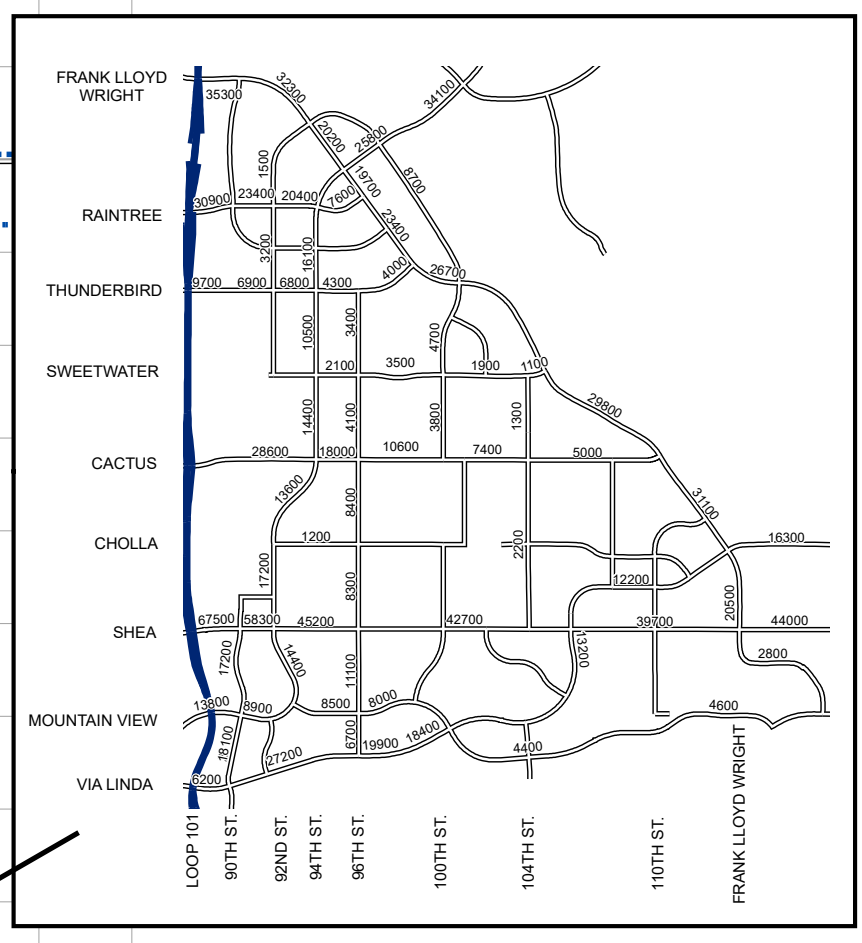
	AM			**PM**		
Split %	33.0%	67.0%	**36.0%**	57.5%	42.5%	**64.0%**
Peak Hour	11:45	07:15	**07:45**	15:45	14:00	**16:15**
Volume	480	938	**1328**	1210	728	**1913**
P.H.F.	0.92	0.83	**0.90**	0.93	0.97	**0.96**

City of Scottsdale
Average Daily Segment Volume Maps

CITY OF SCOTTSDALE

2018
Average Daily Traffic Volumes
SEGMENT





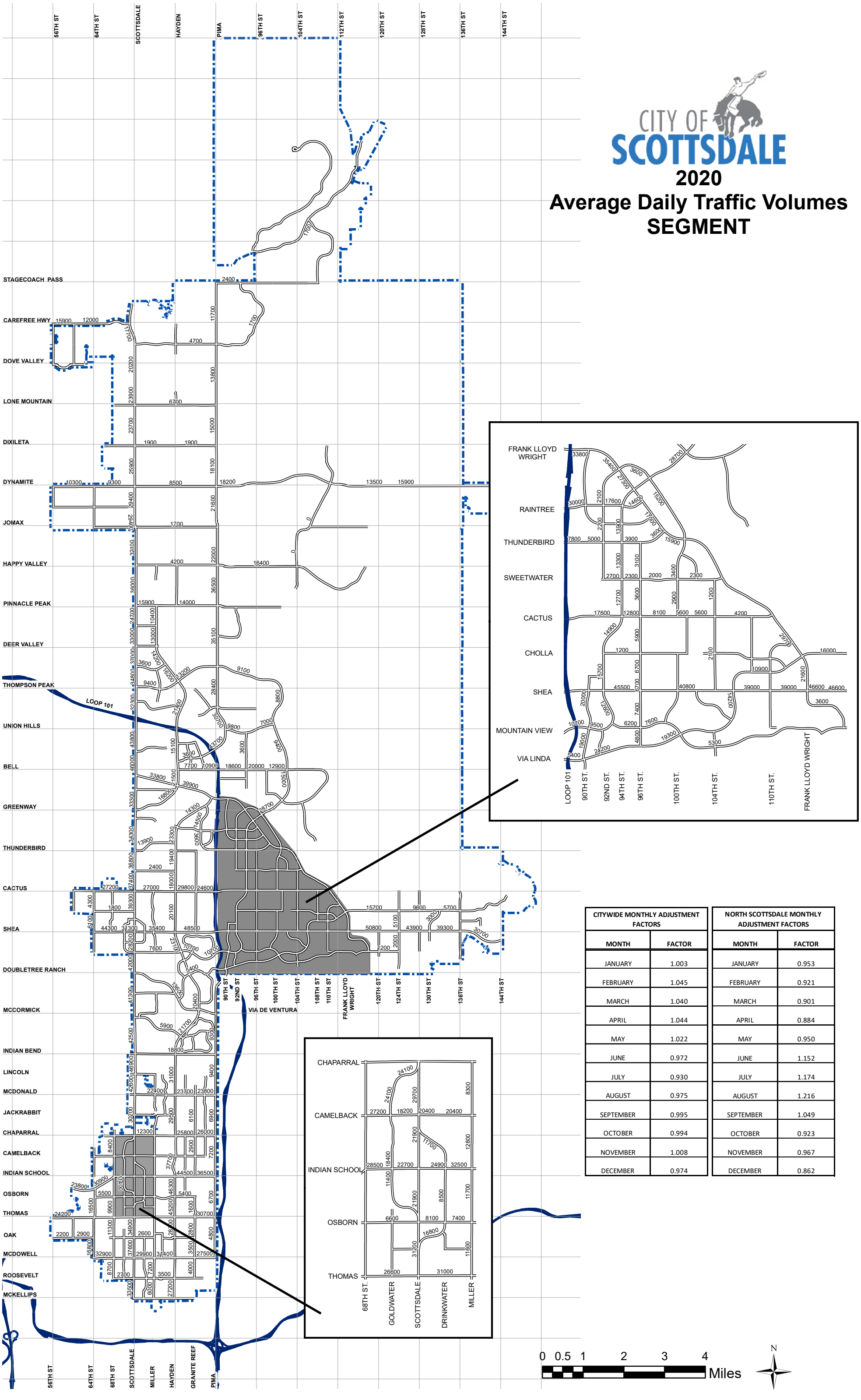
CITYWIDE MONTHLY ADJUSTMENT FACTORS	
MONTH	**FACTOR**
JANUARY	1.00
FEBRUARY	0.95
MARCH	0.93
APRIL	0.96
MAY	1.01
JUNE	1.03
JULY	1.05
AUGUST	1.05
SEPTEMBER	1.02
OCTOBER	1.00
NOVEMBER	1.00
DECEMBER	0.99

0 0.5 1 2 3 4 Miles

N

CITY OF SCOTTSDALE

2020
Average Daily Traffic Volumes
SEGMENT



CITYWIDE MONTHLY ADJUSTMENT FACTORS	
MONTH	FACTOR
JANUARY	1.003
FEBRUARY	1.045
MARCH	1.040
APRIL	1.044
MAY	1.022
JUNE	0.972
JULY	0.930
AUGUST	0.975
SEPTEMBER	0.995
OCTOBER	0.994
NOVEMBER	1.008
DECEMBER	0.974

NORTH SCOTTSDALE MONTHLY ADJUSTMENT FACTORS	
MONTH	FACTOR
JANUARY	0.953
FEBRUARY	0.921
MARCH	0.901
APRIL	0.884
MAY	0.950
JUNE	1.152
JULY	1.174
AUGUST	1.216
SEPTEMBER	1.049
OCTOBER	0.923
NOVEMBER	0.967
DECEMBER	0.862

City of Scottsdale Signal Timing Data

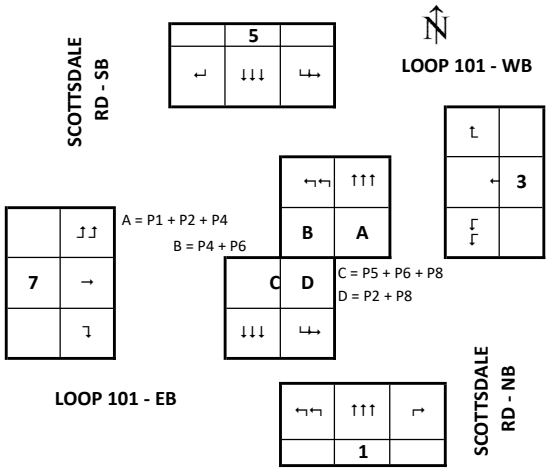
SCOTTSDALE RD & LOOP 101

System # 254

BASIC TIMING PLAN

Section #	I.P. Address	Date Designed
	MM1-5-1	
	172.27.12.54	6/18/2020

	Phase	1	2	3	4	5	6	7	8
	Movement	NBT		WBT		SBT		EBT	
	NOTES								
TIMING PLAN - MM-2-1	MIN GRN	10	5	7	2	10	5	7	2
	BK MGRN								
	CS MGRN								
	DLY GRN								
	WALK	4		4		4		4	
	WALK2								
	WLK MAX								
	PED CLR/FDW	18		46		20		44	
	PD CLR2								
	PC MAX								
	PED CO								
	VEH EXT	2	2	2	2	2	2	2	2
	VH EXT2								
	MAX 1	50	30	40	12	50	30	40	4
	MAX 2	70	50	60	35	70	50	60	4
	MAX 3								
	DYM MAX	70	50	60	35	70	50	60	4
	DYM STP	5	5	5	5	5	5	5	5
	YELLOW	4.7	4.0	4.7	4	4.7	4	4.7	4
	RED CLR	1	2.0	2	2.0	1	2.0	2	2.0
	RED MAX								
	RED RVT	2	2	2	2	2	2	2	2
	ACT B4								
	SEC/ACT								
	MAX INT								
	TIME B4								
	CARS WT								
	STPTDUC								
	TTREDUC								
	MIN GAP								
RECALLS - MM-2-8	LOCK DET								
	VEH RECALL	X				X			
	PED RECALL								
	MAX RECALL				X				X
	SOFT RECALL								
	NO REST								
	ADD INIT CAL								



PHASING SEQUENCES

TOD: MORNING

R1	1	2	3	4	
R2	6	5	8	7	
		B		B	

Use Timing plan:

TOD: MIDDAY

R1	1	2	3	4	
R2	6	5	8	7	
		B		B	

Use Timing plan:

TOD: EVENING

R1	1	2	3	4	
R2	6	5	8	7	
		B		B	

Use Timing plan:

TOD: NIGHT

R1	1	2	3	4	
R2	6	5	8	7	
		B		B	

Use Timing plan:

FREE

R1	1	2	3	4	
R2	6	5	8	7	
		B		B	

Use Timing plan: 254

NOTES

OVLP A = Ph1 + Ph2 + Ph4;
OVLP B = Ph4 + Ph6;
OVLP C = Ph5 + Ph6 + Ph8;
OVLP D = Ph2 + Ph8;

Approved By
Effective Date

SCOTTSDALE RD & LOOP 101

System #	254

COORDINATOR	Section #	Date Updated
	0	6/18/2020

PHASE	1	2	3	4	5	6	7	8
FDW	18		46	0	20		44	
YELLOW	4.7	4	4.7	4	4.7	4	4.7	4
ALL RED	1	2	2	2	1	2	2	2
WALK				0				

PLAN 1 AM PLAN OPERATIVE TIMES **6:00**

										COORD PATTERN	OFFSET
R1	1	↰	2	→	3	↰	4	↓			
R2	6	←	5	↳	8	↑	7	↳		Balanced	85
	RING 1				RING 2						
PHASE	1	2	3	4	5	6	7	8			
SPLIT	38	42	30	10	48	32	36	4		Target Cycle Length	
COORD	X				X					120	
RECALLS	V				V					Actual Cycle Length	
GREEN	32.3	36.0	23.3	4.0	###	26.0	29.3	-2.0		120	

PLAN 2 MIDDAY PLAN OPERATIVE TIMES **9:00**

										COORD PATTERN	OFFSET
R1	1	↰	2	→	3	↰	4	↓			
R2	6	←	5	↳	8	↑	7	↳		Balanced	14
	RING 1				RING 2						
PHASE	1	2	3	4	5	6	7	8			
SPLIT	40	29	29	10	32	37	35	4		Target Cycle Length	
COORD	X				X					108	
RECALLS	V				V					Actual Cycle Length	
GREEN	34.3	23.0	22.3	4.0	###	31.0	28.3	-2.0		108	

PLAN 3 PM PLAN OPERATIVE TIMES **15:00**

										COORD PATTERN	OFFSET
R1	1	↰	2	→	3	↰	4	↓			
R2	6	←	5	↳	8	↑	7	↳		Balanced	9
	RING 1				RING 2						
PHASE	1	2	3	4	5	6	7	8			
SPLIT	48	30	32	10	35	43	38	4		Target Cycle Length	
COORD	X				X					120	
RECALLS	V				V					Actual Cycle Length	
GREEN	42.3	24.0	25.3	4.0	###	37.0	31.3	-2.0		120	

PLAN 4 MIDNIGHT PLAN OPERATIVE TIMES

										COORD PATTERN	OFFSET
R1	1	↰	2	→	3	↰	4	↓			
R2	6	←	5	↳	8	↑	7	↳		Balanced	83
	RING 1				RING 2						
PHASE	1	2	3	4	5	6	7	8			
SPLIT	33	25	22	10	33	25	30	2		Target Cycle Length	
COORD	X				X					90	
RECALLS	V				V					Actual Cycle Length	
GREEN	27.3	19.0	15.3	4.0	###	19.0	23.3	-4.0		90	

PLAN 254 **FREE** PLAN OPERATIVE TIMES **22:00**

										COORD PATTERN	OFFSET
R1	1	↰	2	→	3	↰	4	↓			
R2	6	←	5	↳	8	↑	7	↳		Balanced	
	RING 1				RING 2						
PHASE	1	2	3	4	5	6	7	8			
SPLIT										Target Cycle Length	
COORD										XXX	
RECALLS										Actual Cycle Length	
GREEN	-5.7	-6.0	-6.7	-6.0	-5.7	-6.0	-6.7	-6.0		0	

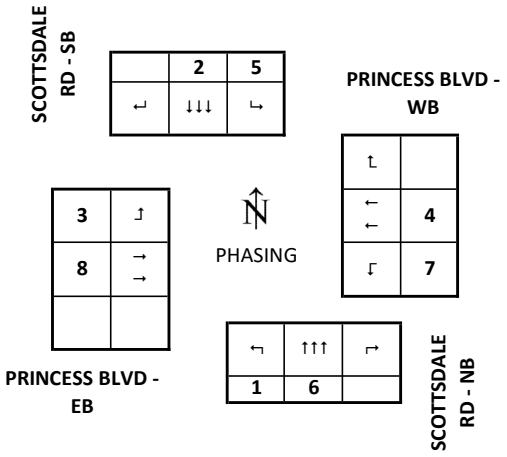
SCOTTSDALE RD & PRINCESS BLVD

System # 163

BASIC TIMING PLAN

Section #	I.P. Address	Date Designed
	MM1-5-1	
	172.27.11.63	1/15/2021

	Phase	1	2	3	4	5	6	7	8
TIMING PLAN - MM-2-1	Movement	NBL	SBT	EBL	WBT	SBL	NBT	WBL	EBT
	NOTES	p&P	COORD	p&P		p&P	COORD	p&P	
	MIN GRN	5	10	5	7	5	10	5	7
	BK MGRN								
	CS MGRN								
	DLY GRN								
	WALK		7		9		7		9
	WALK2								
	WLK MAX								
	PED CLR/FDW		19		31		19		31
	PD CLR2								
	PC MAX								
	PED CO								
	VEH EXT	2	1	2	2	2	1	2	2
	VH EXT2								
	MAX 1	20	65	15	50	20	65	15	50
	MAX 2	35	80	35	60	35	80	35	60
	MAX 3								
	DYM MAX								
	DYM STP								
	YELLOW	4	4.7	3.3	4	4	4.7	3.3	4
	RED CLR	2	1.2	2	2.1	2	1.2	2	2.1
	RED MAX								
	RED RVT	2	2	2	2	2	2	2	2
	ACT B4								
	SEC/ACT								
	MAX INT								
	TIME B4								
	CARS WT								
	STPTDUC								
	TTREDUC								
	MIN GAP								
RECALLS - MM-2-8	LOCK DET								
	VEH RECALL		X				X		
	PED RECALL								
	MAX RECALL								
	SOFT RECALL								
	NO REST								
	ADD INIT CAL								



PHASING SEQUENCES

TOD: MORNING

R1	2	1	4	3
R2	6	5	8	7
	B	B	B	B

Use Timing plan:

TOD: MIDDAY

R1	2	1	4	3
R2	6	5	8	7
	B	B	B	B

Use Timing plan:

TOD: EVENING

R1	2	1	4	3
R2	6	5	8	7
	B	B	B	B

Use Timing plan:

TOD: NIGHT

R1	2	1	4	3
R2	6	5	8	7
	B	B	B	B

Use Timing plan:

FREE

R1	2	1	4	3
R2	6	5	8	7
	B	B	B	B

Use Timing plan: 254

NOTES

Approved By

Effective Date

SCOTTSDALE RD & PRINCESS BLVD

System #	163

COORDINATOR	Section #	Date Updated
	0	1/15/2021

	PHASE	1	2	3	4	5	6	7	8	
	FDW		19		31		19		31	
	YELLOW	4	4.7	3.3	4	4	4.7	3.3	4	
	ALL RED	2	1.2	2	2.1	2	1.2	2	2.1	
	WALK		19		31		19		31	

										COORD PATTERN	OFFSET
PLAN 1 AM PLAN OPERATIVE TIMES 6:00	R1	2	↓	1	↰	4	←	3	↥		
	R2	6	↑	5	↳	8	→	7	↧	Balanced	65
		RING 1				RING 2					
	PHASE	1	2	3	4	5	6	7	8		
	SPLIT	12	71	11	26	12	71	11	26	Target Cycle Length	
	COORD		X				X			120	
	RECALLS		V				V			Actual Cycle Length	
	GREEN	6.0	65.1	5.7	19.9	6.0	65.1	5.7	19.9	120	

										COORD PATTERN	OFFSET
PLAN 2 MIDDAY PLAN OPERATIVE TIMES 9:00	R1	2	↓	1	↰	4	←	3	↥		
	R2	6	↑	5	↳	8	→	7	↧	Balanced	87
		RING 1				RING 2					
	PHASE	1	2	3	4	5	6	7	8		
	SPLIT	12	68	12	16	12	68	12	16	Target Cycle Length	
	COORD		X				X			108	
	RECALLS		V				V			Actual Cycle Length	
	GREEN	6.0	62.1	6.7	9.9	6.0	62.1	6.7	9.9	108	

										COORD PATTERN	OFFSET
PLAN 3 PM PLAN OPERATIVE TIMES 15:00	R1	2	↓	1	↰	4	←	3	↥		
	R2	6	↑	5	↳	8	→	7	↧	Balanced	67
		RING 1				RING 2					
	PHASE	1	2	3	4	5	6	7	8		
	SPLIT	19	74	11	16	19	74	11	16	Target Cycle Length	
	COORD		X				X			120	
	RECALLS		V				V			Actual Cycle Length	
	GREEN	13.0	68.1	5.7	9.9	###	68.1	5.7	9.9	120	

										COORD PATTERN	OFFSET
PLAN 4 MIDNIGHT PLAN OPERATIVE TIMES 22:00	R1	2	↓	1	↰	4	←	3	↥		
	R2	6	↑	5	↳	8	→	7	↧	Balanced	49
		RING 1				RING 2					
	PHASE	1	2	3	4	5	6	7	8		
	SPLIT	13	41	11	25	13	41	11	25	Target Cycle Length	
	COORD		X				X			90	
	RECALLS		P				P			Actual Cycle Length	
	GREEN	7.0	35.2	5.7	18.9	7.0	35.2	5.7	18.9	90	

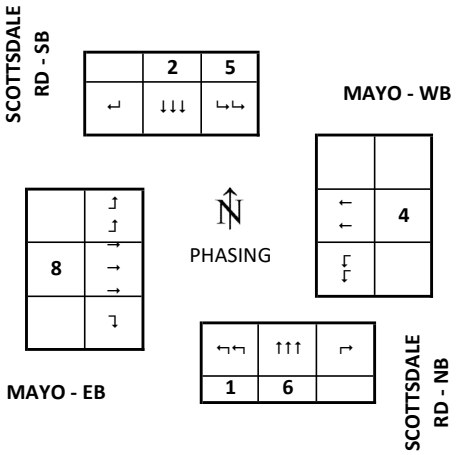
SCOTTSDALE RD & MAYO

System # 215

BASIC TIMING PLAN

Section #	I.P. Address	Date Designed
	MM1-5-1	1/15/2021
	172.27.12.15	

	Phase	1	2		4	5	6		8
	Movement	NBL	SBT		WBT	SBL	NBT		EBT
	NOTES	PROT	COORD		SPLIT	L-P	COORD		SPLIT
TIMING PLAN - MM-2-1	MIN GRN	5	10		7	5	10		7
	BK MGRN								
	CS MGRN								
	DLY GRN								
	WALK		4		4		4		4
	WALK2								
	WLK MAX								
	PED CLR/FDW		35		31		28		33
	PD CLR2								
	PC MAX								
	PED CO								
	VEH EXT	2	1		2	2	1		3
	VH EXT2								
	MAX 1	25	60		50	25	60		25
	MAX 2	35	70		60	35	70		60
	MAX 3								
	DYM MAX								
	DYM STP								
	YELLOW	4.7	4.7		3.4	4	4.7		4
	RED CLR	1.5	1.7		2.6	2	1.7		2.6
	RED MAX								
	RED RVT	2	2		2	2	2		2
	ACT B4								
	SEC/ACT								
	MAX INT								
	TIME B4								
	CARS WT								
	STPTDUC								
	TTREDUC								
	MIN GAP								
RECALLS - MM-2-8	LOCK DET								
	VEH RECALL		X				X		
	PED RECALL								
	MAX RECALL								
	SOFT RECALL								
	NO REST								
	ADD INIT CAL								



PHASING SEQUENCES

TOD: MORNING
R1: 2 1 8 4
R2: 5 6
B B
Use Timing plan:

TOD: MIDDAY
R1: 2 1 8 4
R2: 5 6
B B
Use Timing plan:

TOD: EVENING
R1: 2 1 8 4
R2: 5 6
B B
Use Timing plan:

TOD: NIGHT
R1: 2 1 8 4
R2: 5 6
B B
Use Timing plan:

FREE
R1: 2 1 8 4
R2: 5 6
B B
Use Timing plan: 254

NOTES

Approved By
Effective Date

SCOTTSDALE RD & MAYO

System #	215

COORDINATOR

Section #	Date Updated
0	1/15/2021

	PHASE	1	2	3	4	5	6	7	8	
	FDW		35		31		28		33	
	YELLOW	4.7	4.7		3.4	4	4.7		4	
	ALL RED	1.5	1.7		2.6	2	1.7		2.6	
	WALK		35		31		28		33	
PLAN 1 AM PLAN OPERATIVE TIMES 6:30	R1	2	↓	1	↰	8	→	4	←	COORD PATTERN: OFFSET
	R2	5	↳	6	↑					Balanced: 33
		RING 1				RING 2				
	PHASE	1	2		4	5	6		8	
	SPLIT	17	54		13	25	46		36	Target Cycle Length
	COORD		X				X			120
	RECALLS		V				V			Actual Cycle Length
	GREEN	10.8	47.6		7.0	19.0	39.6		29.4	120
PLAN 2 MIDDAY PLAN OPERATIVE TIMES 9:00	R1	2	↓	1	↰	8	→	4	←	COORD PATTERN: OFFSET
	R2	5	↳	6	↑					Balanced: 65
		RING 1				RING 2				
	PHASE	1	2		4	5	6		8	
	SPLIT	20	42		14	15	47		32	Target Cycle Length
	COORD		X				X			108
	RECALLS		V				V			Actual Cycle Length
	GREEN	13.8	35.6		8.0	9.0	40.6		25.4	108
PLAN 3 PM PLAN OPERATIVE TIMES 15:00	R1	2	↓	1	↰	8	→	4	←	COORD PATTERN: OFFSET
	R2	5	↳	6	↑					Balanced: 43
		RING 1				RING 2				
	PHASE	1	2		4	5	6		8	
	SPLIT	25	43		22	12	56		30	Target Cycle Length
	COORD		X				X			120
	RECALLS		V				V			Actual Cycle Length
	GREEN	18.8	36.6		16.0	6.0	49.6		23.4	120
PLAN 4 MIDNIGHT PLAN OPERATIVE TIMES 22:00	R1	2	↓	1	↰	8	→	4	←	COORD PATTERN: OFFSET
	R2	5	↳	6	↑					Balanced: 41
		RING 1				RING 2				
	PHASE	1	2		4	5	6		8	
	SPLIT	15	39		12	11	43		24	Target Cycle Length
	COORD		X				X			90
	RECALLS		V				V			Actual Cycle Length
	GREEN	8.8	32.6		6.0	5.0	36.6		17.4	90

HAYDEN & LOOP 101

System # 255

BASIC TIMING PLAN

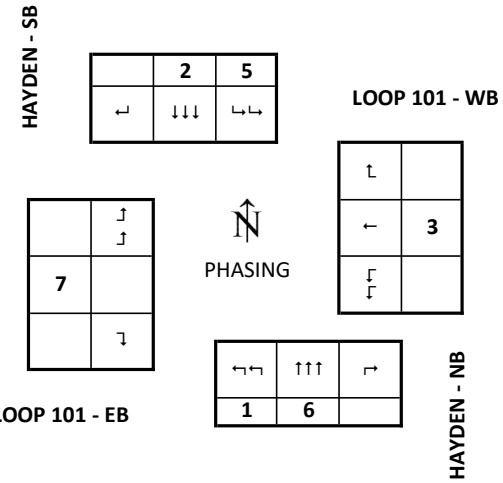
Section #	I.P. Address	Date Designed
	MM1-5-1	
	172.27.12.55	4/8/2019

TIMING PLAN - MM-2-1

Phase	1	2	3		5	6	7	
Movement	NBL	SBT	WBT		SBL	NBT	EBT	
NOTES	PROT		PERM		PROT		PERM	
MIN GRN	12	16	7		12	5	7	
BK MGRN								
CS MGRN								
DLY GRN								
WALK	5		7			5	7	
WALK2								
WLK MAX								
PED CLR/FDW	20	45	33		30	35	33	
PD CLR2								
PC MAX								
PED CO								
VEH EXT	5	2	2		2	5	2	
VH EXT2								
MAX 1	45	35	30		45	35	45	
MAX 2	60	55	55		60	55	55	
MAX 3								
DYM MAX	1	2	55		5	6	55	
DYM STP	20	36			5	5	5	
YELLOW	4.4	4.4	4.3		4.4	4.4	4.3	
RED CLR	1.6	1.6	2.7		1.6	1.6	2.7	
RED MAX								
RED RVT	2		2		2		2	
ACT B4								
SEC/ACT								
MAX INT								
TIME B4								
CARS WT								
STPTDUC								
TTREDUC								
MIN GAP		V				V		

RECALLS - MM-2-8

LOCK DET								
VEH RECALL		X				X		
PED RECALL								
MAX RECALL								
SOFT RECALL								
NO REST								
ADD INIT CAL								



PHASING SEQUENCES				
TOD: MORNING				
R1	1	2	3	7
R2	6	5		
		B		B
Use Timing plan:				
TOD: MIDDAY				
R1	1	2	3	7
R2	6	5		
		B	7	B
Use Timing plan:				
TOD: EVENING				
R1	1	2	3	7
R2	6	5		
		B		B
Use Timing plan:				
TOD: WEEKEND				
R1	1	2	3	7
R2	6	5		
		B		B
Use Timing plan:				
FREE				
R1	1	2	3	7
R2	6	5		
		B		B
Use Timing plan: 254				

NOTES

PHS 3&7 EXCL, OVERLAPS: OL-A=1+5+6+7, OL-B=6+7,OL-C=1+2+3+5, OL-D=2+3
REASSIGN SP: SP-2=4(D), O SP-4=1(A), O SP-6=2(B), O SP-8=3(C), O

EXPIRES XX/XX/XXXX

HAYDEN & LOOP 101

System # 255

COORDINATOR

Section #	Date Updated
0	4/8/2019

PHASE	1	2	3	4	5	6	7	8
FDW	20	45	33	0	30	35	33	0
YELLOW	4.4	4.4	4.3	0	4.4	4.4	4.3	0
ALL RED	1.6	1.6	2.7	0	1.6	1.6	2.7	0
WALK	12	16		0	12	5		0

PLAN 1 — 6:00 AM PLAN OPERATIVE TIMES

									COORD PATTERN	OFFSET
R1	1	↰	2	↓	3	↰	7	↳		
R2	6	↑	5	↳	0	↑↑	0	↑↑	Balanced	98
	RING 1				RING 2					
PHASE	1	2	3		5	6	7			
SPLIT	20	45	25		30	35	30		Target Cycle Length	
COORD		X				X			120	
RECALLS		V				V			Actual Cycle Length	
GREEN	14.0	39.0	18.0	0.0	24.0	29.0	23.0	0.0	120	

PLAN 2 — 9:00 AM MIDDAY PLAN OPERATIVE TIMES

									COORD PATTERN	OFFSET
R1	1	↰	2	↓	3	↰	7	↳		
R2	45	↰↑	30	↑↑	45	↰↑	0	↑↑	Balanced	25
	RING 1				RING 2					
PHASE	1	2	3		5	6	7			
SPLIT	20	36	26		23	33	26		Target Cycle Length	
COORD		X				X			108	
RECALLS		V				V			Actual Cycle Length	
GREEN	14.0	30.0	19.0	0.0	17.0	27.0	19.0	0.0	108	

PLAN 3 — 15:00PM PLAN OPERATIVE TIMES

									COORD PATTERN	OFFSET
R1	1	↰	2	↓	3	↰	7	↳		
R2	6	↑	5	↳	0	↑↑	0	↑↑	Balanced	26
	RING 1				RING 2					
PHASE	1	2	3		5	6	7			
SPLIT	32	33	35		18	47	20		Target Cycle Length	
COORD		X				X			120	
RECALLS		V				V			Actual Cycle Length	
GREEN	26.0	27.0	28.0	0.0	12.0	41.0	13.0	0.0	120	

PLAN 4 — 22:00 MIDNIGHT PLAN OPERATIVE TIMES

									COORD PATTERN	OFFSET
R1	1	↰	2	↓	3	↰	7	↳		
R2	6	↑	5	↳	0	↑↑	0	↑↑	Balanced	83
	RING 1				RING 2					
PHASE	1	2	3		5	6	7			
SPLIT	18	34	22		18	34	16		Target Cycle Length	
COORD		X				X			90	
RECALLS		V				V			Actual Cycle Length	
GREEN	12.0	28.0	15.0	0.0	12.0	28.0	9.0	0.0	90	

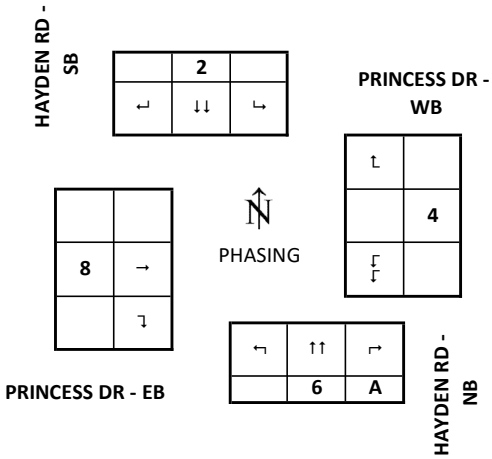
HAYDEN RD & PRINCESS DR

System # 265

BASIC TIMING PLAN

Section #	I.P. Address	Date Designed
	MM1-5-1	
	172.27.12.65	8/31/2020

	Phase		2		4		6		8
	Movement		SBT		WBT		NBT		EBT
	NOTES		COORD		SPLIT		COORD		SPLIT
TIMING PLAN - MM-2-1	MIN GRN		10		7		10		7
	BK MGRN								
	CS MGRN								
	DLY GRN								
	WALK		4		4		4		4
	WALK2								
	WLK MAX								
	PED CLR/FDW		25		17		25		22
	PD CLR2								
	PC MAX								
	PED CO								
	VEH EXT		1		2		1		2
	VH EXT2								
	MAX 1		65		35		65		25
	MAX 2		90		40		90		30
	MAX 3								
	DYM MAX		90		40		90		30
	DYM STP		5		5		5		5
	YELLOW		4.0		4.4		4		4.4
	RED CLR		2.0		1.0		2.0		1.0
	RED MAX								
	RED RVT		2		2		2		2
	ACT B4								
	SEC/ACT								
	MAX INT								
	TIME B4								
	CARS WT								
	STPTDUC								
	TTREDUC								
	MIN GAP								
RECALLS - MM-2-8	LOCK DET								
	VEH RECALL								
	PED RECALL								
	MAX RECALL		X				X		
	SOFT RECALL								
	NO REST								
	ADD INIT CAL								



PHASING SEQUENCES

TOD: MORNING
R1 2 4 8
R2 6
B B
Use Timing plan:

TOD: MIDDAY
R1 2 4 8
R2 6
B B
Use Timing plan:

TOD: EVENING
R1 2 4 8
R2 6
B B
Use Timing plan:

TOD: NIGHT
R1 2 4 8
R2 6
B B
Use Timing plan:

FREE
R1 2 4 8
R2 6
B B
Use Timing plan: 254

NOTES

Approved By
Effective Date

HAYDEN RD & PRINCESS DR

System #	265

COORDINATOR	Section #	Date Updated
	0	8/31/2020

PHASE	1	2	3	4	5	6	7	8
FDW		25		17		25		22
YELLOW		4		4.4		4		4.4
ALL RED		2		1		2		1
WALK		25		17		25		22

PLAN 1
6:00 AM PLAN
OPERATIVE
TIMES
6:00

									COORD PATTERN	OFFSET
R1	2	↓			4	←	8	→		
R2	6	↑							Balanced	7
	RING 1				RING 2					
PHASE		2		4		6		8		
SPLIT		75		27		75		18	Target Cycle Length	
COORD		X				X			120	
RECALLS		M				M			Actual Cycle Length	
GREEN		69.0		21.6		69.0		12.6	120	

PLAN 2
9:00 MIDDAY
PLAN
OPERATIVE
TIMES
9:00

									COORD PATTERN	OFFSET
R1	2	↓			4	←	8	→		
R2	6	↑							Balanced	68
	RING 1				RING 2					
PHASE		2		4		6		8		
SPLIT		55		28		55		25	Target Cycle Length	
COORD		X				X			108	
RECALLS		M				M			Actual Cycle Length	
GREEN		49.0		22.6		49.0		19.6	108	

PLAN 3
15:00 PM PLAN
OPERATIVE
TIMES
15:00

									COORD PATTERN	OFFSET
R1	2	↓			4	←	8	→		
R2	6	↑							Balanced	57
	RING 1				RING 2					
PHASE		2		4		6		8		
SPLIT		75		25		75		20	Target Cycle Length	
COORD		X				X			120	
RECALLS		M				M			Actual Cycle Length	
GREEN		69.0		19.6		69.0		14.6	120	

PLAN 4
22:00
MIDNIGHT
PLAN
OPERATIVE
TIMES

									COORD PATTERN	OFFSET
R1	2	↓			4	←	8	→		
R2	6	⇧				⇧			Balanced	7
	RING 1				RING 2					
PHASE		2		4		6		8		
SPLIT		50		22		50		18	Target Cycle Length	
COORD		X				X			90	
RECALLS		M				M			Actual Cycle Length	
GREEN		44.0		16.6		44.0		12.6	90	

Appendix F MOB+ TIMA Report

BANNER HEALTH CENTER PLUS SCOTTSDALE

Traffic Impact and Mitigation Analysis

Prepared For: Banner Health

Seth Chalmers, PE

Project No.: 1121151

June 19, 2024



DIBBLE

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I. EXECUTIVE SUMMARY AND INTRODUCTION

A. Purpose of Report

The purpose of this Traffic Impact and Mitigation Analysis ("Report") is to evaluate the traffic impacts of a proposed joint Banner Health and NexCore Medical Office Building, Banner Health Center Plus ("MOB+") proposed on approximately 14.8 acres located just west of the northwest corner of Mayo Boulevard and Hayden Road (the "MOB+ Site"). The MOB+ Site constitutes a portion of a larger scale development planned for approximately 73.2 acres located at the northwest corner of Mayo Boulevard & Hayden Road in Scottsdale, Arizona ("Overall Site"). The MOB+ is designated as a critical care facility and is allowed by right within the existing Crossroads East C-2 PAD zoning. The opening year was assumed to be 2026 for the purposes of this Report. The City of Scottsdale has requested a Category II Traffic Impact and Mitigation Analysis for the MOB+ development to determine the offsite infrastructure needs for the MOB+ Site and to determine if and when traffic signals will be warranted for the MOB+ Site and during the development of the larger medical campus planned but not yet approved for the Overall Site. A Traffic Impact & Mitigation Analysis for the Overall Site was prepared by Kimley Horn & Associates and accepted by the City on June 14, 2023, and is included in **Appendix E** of this Report ("Kimley-Horn TIMA"). In the Kimley-Horn study, approximately 48 acres of the Overall Site were assumed to be developed for medical uses. The 14.2 acre MOB+ facility is a portion of the larger planned medical uses. Although this Report focuses on the MOB+, the future plans for the Overall Site are accounted for in the background traffic for a future horizon year (2040). This was done to evaluate the full buildout offsite transportation infrastructure needs, which will allow the improvements to efficiently be built with the construction of Mayo Boulevard and Miller Road along the frontage of the Overall Site.

B. Executive Summary

Site Location and Study Area

The MOB+ Site is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This Report includes the analysis of the following intersections:

- Mayo Boulevard & 78th Street
- Hayden Road & Mayo Boulevard
- Mayo Boulevard & Miller Road
- Five access points to the medical campus

Development Description

The proposed 119,500 SF MOB+ will be developed in one phase. There is potential for a larger medical campus in the future as a part of development planned for the Overall Site. The planning level numbers from the Kimley Horn TIMA were used for the Overall Site and included as a part of the background traffic for the purposes of this Report.

Principal Findings

At full buildout of the MOB+, it is anticipated that multiple off-site improvements will be completed by the master developer of the Overall Site, including installing a traffic signal at Mayo Boulevard & Hayden Road, and at Mayo Boulevard & Miller Road. The signal at Mayo Boulevard & Hayden Road may not be installed prior to the completion of the MOB+ or, potentially, the remainder of the Overall Site. The peak hour (warrant 3) signal warrant was therefore analyzed for two scenarios.

- Scenario 1: Full buildout of the MOB+ only by 2026
- Scenario 2: Full buildout of the Overall Site by 2040 **without** the Axon development (as discussed further below)

The results of the signal warrant analysis are summarized in **Table 1**.

Table 1 –Signal Warrant Results

Intersection	Scenario	
	MOB+ Only 2026	NWC Development 2040 w/o Axon
Mayo Blvd & Miller Rd	No	Yes (Both Peaks)
Mayo Blvd & 78th St	No	Yes (Both Peaks)
Mayo Blvd & Hayden Road	Yes (PM Peak)	Yes (Both Peaks)

Development of the MOB+ Site is not anticipated to create excessive delays at the surrounding intersections. With the current site plan and recommended site access, the adjacent intersections and site driveways are anticipated to operate acceptably for the opening day of the MOB+ as well as the full buildout of the Overall Site with full access provided at driveways B, C and D as well as 78th Street and Mayo.

Recommendations

Based on the analysis of this Report there are several recommendations for the Overall Site driveways and adjacent intersections by opening day of the MOB+ that also take into consideration the additional future development surrounding the Overall Site. The recommendations are in alignment with the approved Kimley Horn TIMA.

Overall, it is recommended to provide a right turn lane for driveways A, B, C, D, E, and at 78th Street into the Overall Site. Per City of Scottsdale Design Standards & Policies Manual, the standard storage length for a right-turn lane is 150 feet as indicated in **Table 13**.

Additional recommendations for specific driveways and adjacent intersections are as follows:

Hayden Road & Driveway E

With a dedicated southbound right turn lane at Hayden Road & Driveway E, the queue length is not anticipated to extend beyond the boundary of the right turn lane. Therefore, the queue is not anticipated to have a negative impact on the operation of the Loop 101 and Hayden interchange.

Mayo Boulevard & 78th Street

A signal is not warranted from both a vehicle capacity and delay perspective for opening day of the MOB+. A signal is warranted in the future as the Overall Site is developed. It is recommended to install signal pull boxes on all four corners of Mayo Boulevard and 78th Street as well as signal conduit connections between the pull boxes for a future traffic signal for opening day of the MOB+. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Mayo Boulevard & Hayden Road

Provide a southbound right turn lane at the intersection, which is already planned. Additionally, if the Axon development is delayed and the signal is not installed by the completion of the MOB+, a signal will be warranted at the intersection by opening day of the MOB+.

Mayo Boulevard & Miller Road

A signal is not warranted at this intersection from both a vehicle capacity and delay perspective for opening day of the MOB+. A roundabout is planned for this intersection with future development as the right-of-

way becomes available. If a round-about is ruled out in the future, a signal will be warranted in the future scenarios with the further development of the Overall Site. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Recommended turn lane storage lengths for all new intersections and turn lanes are given in **Table 13** – **Table 14**.

II. PROPOSED DEVELOPMENT

A. Off-Site Development

In addition to the development planned for the Overall Site, there are several other off-site developments planned in the area. The Kimley Horn TIMA for the Overall Site includes planning level traffic assumptions for the Overall Site that included a planned medical campus as well as other proposed land uses such as office, retail and hotels. The Kimley Horn TIMA can be found in **Appendix E**. The Kimley-Horn TIMA also incorporates additional planned developments within the area such as Cavasson, HonorHealth Medical Campus, Axon Campus and Optima McDowell Mountain Village into the background traffic. The independent traffic studies for each of those developments was used to generate the background traffic numbers. Those same assumptions were utilized in this Report. At the time of this Report, it is unknown if or when the Axon development will be constructed. A traffic signal at Mayo Boulevard and Hayden Road was planned as a part of the Axon development. If the Axon development is delayed or is no longer built on the east side of the intersection of Mayo Boulevard and Hayden Road, the traffic signal will still be needed for the MOB+, the Overall Site and other developments in the area. This Report therefore, evaluates the need for a traffic signal at this intersection with the completion of the MOB+. Kimley Horn also provided Dibble with their total 2040 traffic numbers for the surrounding intersections that excluded the Banner Health traffic. The traffic numbers also included all the previously mentioned proposed developments in the area. These traffic numbers can be found in **Appendix D**.

B. Description of on-site Development

Land Use and Intensity

This MOB+ Site is planned to be developed with a medical office building comprised of 119,500 SF of building space. For the purposes of this Report, a future (not currently planned) 48,700 SF expansion of the MOB+ was assumed for a total of 168,200 SF on the MOB+ Site.

Location

The proposed MOB+ development is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This location is shown in **Figure 1**.

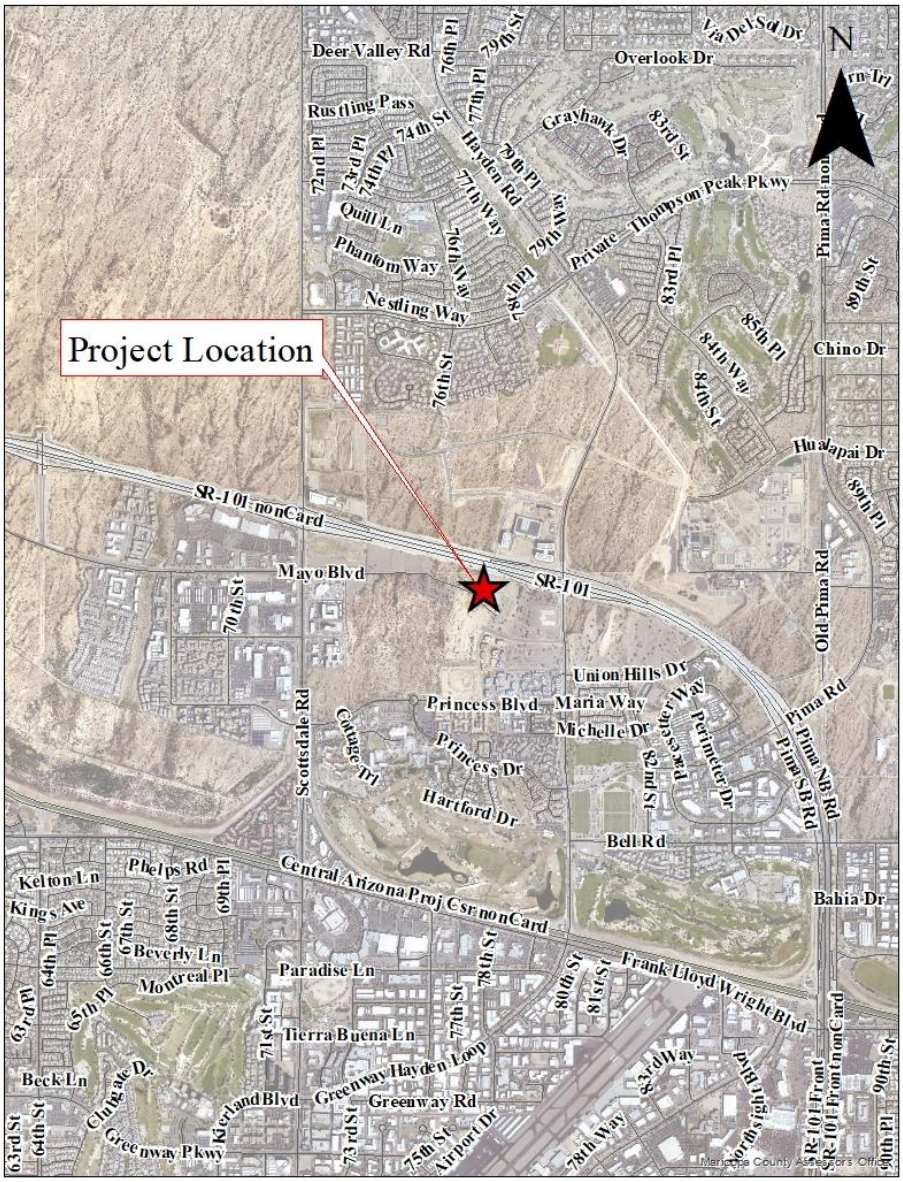


Figure 1 – Vicinity Map

Site Plan

The Overall Site is planned to have seven driveways to access the Overall Site. One driveway is planned to provide full access on Miller Road (Driveway A). Four access points are initially modeled to provide full access on Mayo Boulevard (Driveways B-D and 78th Street). The sixth proposed access point (Driveway E) is on Hayden Road to provide more direct access from the freeway. Driveway E will be a right-in only access point due to the proximity to the Loop 101 ramps as well as the Mayo Boulevard and Hayden Road intersection to prevent unsafe weaving traffic exiting the site. The proposed driveways are shown in **Figure 2** followed by the current site plan in **Figure 3**.

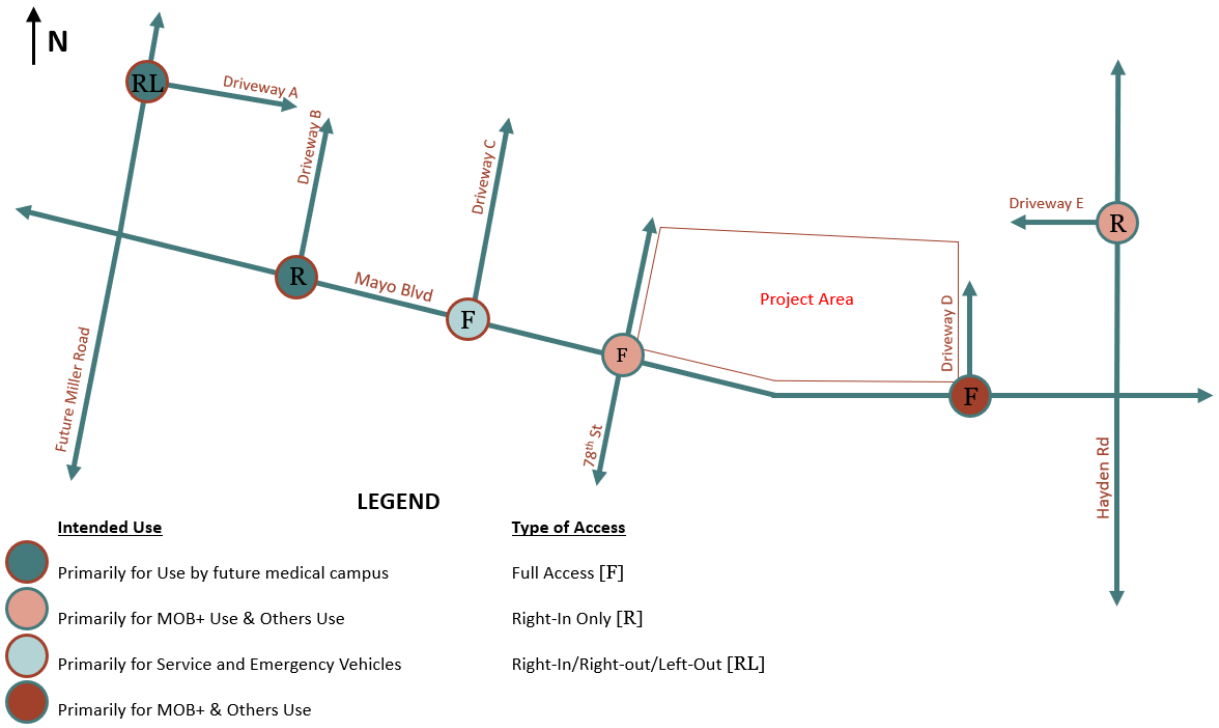


Figure 2 – Overall Site Access



Figure 3 – MOB+ Site Plan

Phasing and Timing

The MOB+ will be developed in one phase. The remainder of the medical campus development on the Overall Site will be developed at a later date. Conservative planning level numbers from the Kimley Horn TIMA are used for the future medical campus development and included as a part of the background traffic for the purposes of this Report.

III. AREA CONDITIONS

A. Study Area

Area of Influence

The MOB+ Site is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This MOB+ Site and the larger medical campus planned for a portion of the Overall Site are anticipated to serve the surrounding population. There are several smaller clinics as well as other hospitals within a 5-mile radius of this site. This was considered for the trip distribution for the MOB+ Site as well as the medical services provided at other locations.

Area of Significant Traffic Impact

The area with the most traffic impact due to the addition of the MOB+ and the larger medical campus planned for a portion of the Overall Site will occur along Loop 101, Hayden Road, Scottsdale Road, and Mayo Boulevard roadways. These are the major travel routes that vehicles will likely take to reach and leave the site.

This study focuses on the capacity analysis for the Overall Site driveways and the following surrounding intersections:

- Mayo Boulevard & 78th Street
- Hayden Road & Mayo Boulevard
- Mayo Boulevard & Miller Road
- Five additional access points to the Overall Site

B. Study Area Land Use

Existing Land Uses and Zoning

The MOB+ Site is currently zoned as Planned Community District-Central Business District (P-C C-2).

Anticipated Future Development

As previously mentioned, the Kimley Horn TIMA included development plans for a larger medical campus on the Overall Site. The planned developments analyzed in Kimley Horn TIMA include retail, senior living, office, hotel, and restaurant land uses. The trips generated by these developments in the Kimley Horn TIMA were used in this Report as background traffic. Surrounding offsite developments include the Axon development and the Optima McDowell Mountain development. The background traffic provided from the Kimley Horn TIMA can be found in **Appendix D**. It should be noted that the Axon development may be delayed or it may not be built. At the request of the City,his Report therefore reflects scenarios that include this development and as exclude this development.

C. Site Accessibility

Existing Roadway System

Roadway Segments

Hayden Road is currently a divided, four-lane, north-south minor arterial roadway. There are two northbound and two southbound lanes with a 40-mph posted speed limit in each direction and a raised median down the middle. There is curb and gutter on both sides of the road. There is a sidewalk with large gaps and a bike lane on the west side of the road with little sidewalk and no bike lane on the east side of the road. The east side of the road has a 5-foot-wide shoulder that tapers out as it nears the intersection with Loop 101.

Miller Road is not currently built but is anticipated to be a major collector. The future Miller Road alignment is expected to connect as the north leg of the Princess Boulevard & Princess Drive intersection then extend north under Loop 101 providing a grade separation. Miller Road is anticipated to be constructed as a 4-lane roadway with a two-way left-turn lane down the middle and a bike lane in each direction. It is assumed Miller Road will have a posted speed limit of 40 mph.

78th Street is currently a 2-lane divided road with a two-way left-turn lane down the middle classified by the City of Scottsdale as a minor collector. The road is built between Princess Boulevard and Mayo Boulevard. There is curb, gutter, and sidewalk on both sides of the road. There is also a bike lane and a posted speed limit of 30 mph in each direction.

Mayo Boulevard is currently a 2-lane divided road with a two-way left-turn lane down the middle classified by the City of Scottsdale as a major collector. The road is built between Hayden Road & 78th Street. There is currently curb and gutter on the south side of the road and bike lanes on both sides of the road. This road is expected to be extended to the west to connect with the Mayo Boulevard & Scottsdale Road intersection. There is a posted speed limit of 30 mph east of Scottsdale Road.

Intersections

Mayo Boulevard & 78th Street is currently a 2-way free-flowing intersection. This results in a curved roadway with a name transition between the two directions. This intersection is anticipated to be built out with the west leg being an extension of Mayo Boulevard and the south leg being stop-controlled.

Hayden Road & Mayo Boulevard is a 3-leg stop-controlled intersection with the west leg being stop controlled and the north and south legs being free-flow. There is one dedicated left turn lane (300' storage length) and one dedicated right turn lane (170' storage length) on the eastbound approach. There is one dedicated left turn lane (150' storage length) and two through lanes on the northbound approach. There are two through lanes on the southbound approach with a dedicated right turn lane (185' storage length).

Future Roadway System

There are a few improvements already planned for this area. It is anticipated that a third southbound through lane will extend south of the Loop 101 to the Mayo Boulevard intersection where the third through lane is anticipated to transition to a right-turn only lane. Mayo Boulevard is anticipated to be constructed with two travel lanes, a bike lane in each direction and a center two-way left turn lane between 73rd Place and Hayden Road. Miller Road is anticipated to be constructed with two travel lanes and a bike lane in each direction with a two-way left-turn lane.

There are also multiple proposed developments planned in the surrounding area that are anticipated to make improvements to the surrounding roadway network. The anticipated developments and the associated improvements with each one are listed below.

General Recommendations made in the Kimley Horn TIMA: The northbound approach at Hayden Road & Mayo Boulevard is to be remarked to provide dual northbound left lanes when this intersection becomes signalized. At Miller Road & Mayo Boulevard, the eastbound approach is to have dual left turn lanes with 400 feet of storage. The Miller Road & Mayo Boulevard intersection is recommended to have dedicated right and turn lanes with 250 feet for all approaches.

Axon Development: At Hayden Road & Mayo Boulevard, there should be a third northbound through lane that is expected to continue north to the Loop 101 WB Ramp & Scottsdale Road intersection. There should also be dual westbound right turn lanes at this intersection. Additionally, this development is anticipated to construct Mayo Boulevard east of Hayden Road with two travel lanes in each direction. It is also anticipated this development will construct a traffic signal at Mayo Boulevard and Hayden Road. If this development is delayed or it is not constructed, the traffic signal will still likely be warranted due to the other developments planned in the area.

Optima McDowell Mountain: A dedicated westbound right turn lane is anticipated to be built at Scottsdale Road & Mayo Boulevard. A third westbound lane along Mayo Boulevard is anticipated to be built along Optima McDowell Mountain's frontage. This will become a dedicated westbound right turn lane at Scottsdale Road & Mayo Boulevard.

It is assumed these roadway improvements are constructed and open for public use by 2040 since the City of Scottsdale Transportation Master Plan, 2016 mentions a few of these improvements are anticipated to be completed by 2030. This includes widening Hayden to a six-lane road in this area and constructing Mayo

Boulevard as a four-lane road in this area. For the purposes of this Report, the driveways are assumed to have a speed limit of 25 mph with two-lane roads at the driveway entrances.

Traffic Volumes and Conditions

The anticipated 2040 traffic volumes for this area were obtained and adjusted by Kimley Horn from the 2035 MAG model as described in the Kimley Horn TIMA (see **Appendix E**). These volumes were combined with the trips generated by the surrounding developments and were provided to Dibble. The combined volumes are used as the background traffic in this Report.

Transit Service

There are existing bus services along Mayo Boulevard to the west of this site, along Scottsdale Road, and along Bell Road south of this site. The closest bus stop is located at Scottsdale Road & Mayo Boulevard about 2/3 of a mile away from this site. There are no plans at this time to extend the bus route along Mayo Boulevard according to the City of Scottsdale Transportation Master Plan, 2008.

IV. PROJECTED TRAFFIC

A. Site Traffic

Trip Generation

The trip generation for this project was calculated using the ITE Trip Generation Manual, 11th edition. These values are for the typical peak hour times of the adjacent street (between 7:00 and 9:00 for the morning peak hour and between 4:00 and 6:00 for the afternoon peak hour). The medical-dental office building land use code was used for the trip generation calculations since it seems to best align with the proposed development. This corresponds with land use 720.

The trips generated by the MOB+ development is shown in **Table 2**. The total trips generated are slightly less than the trips generated in the Kimley Horn TIMA. Kimley Horn used planning level numbers prior to having a developed site plan for the development to calculate the trip generation numbers.

Table 2 –Trip Generation

General Suburban - Fitted Curve												
				Weekday			AM Peak			PM Peak		
LUC	Description	Units	Quant	Total	Ingress	Egress	Total	Ingress	Egress	Total	Ingress	Egress
720	Medical-Dental Office Building	1000 Sq. Ft. GFA	168.2	7120	3560	3560	521	412	109	681	204	477

Trip Distribution

The trip distribution was assessed based on the surrounding population within a 5-10 mile radius. It is assumed that most people will attempt to exit the same way they had entered with minor changes due to limited access driveways. When reviewing the surrounding street network, the main freeway used to access the study area is the Loop 101 with the closest exit ramps located both east and west of the site at Hayden Road and Scottsdale Road. The main arterials and collectors are Scottsdale Road, Hayden Road, and Mayo Boulevard. To access the site, the traffic will either enter from Miller Road, Mayo Boulevard, or Hayden Road. The trip distribution is summarized in **Figure 4**.

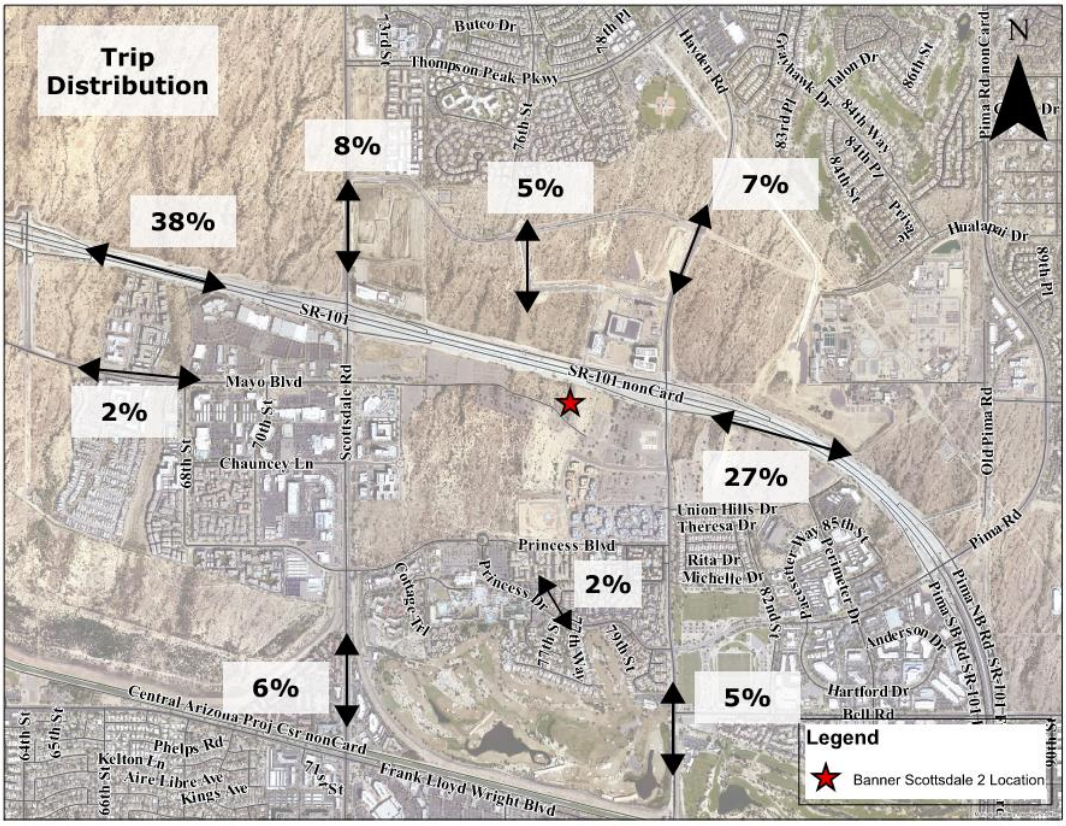


Figure 4 – Trip Distribution

Modal Split

Most traffic will likely travel to and from the site via passenger car since the surrounding area does not have heavy residential areas. If a bus route is added or extended to provide a stop near the hospital, some trips may arrive via public transportation. It is assumed in this report that all trips will be made via passenger vehicle in order to analyze the worst-case scenario.

Trip Assignment

The trip assignment is shown in **Figure 5**. The MOB+ trips will likely primarily use the 78th Street & Mayo Boulevard entrance as well as Driveway D to access the site due to the proximity of the building and it's parking lot to the two access points. It is also likely that some vehicles will use Driveway E to access the site to the MOB+ parking lot.

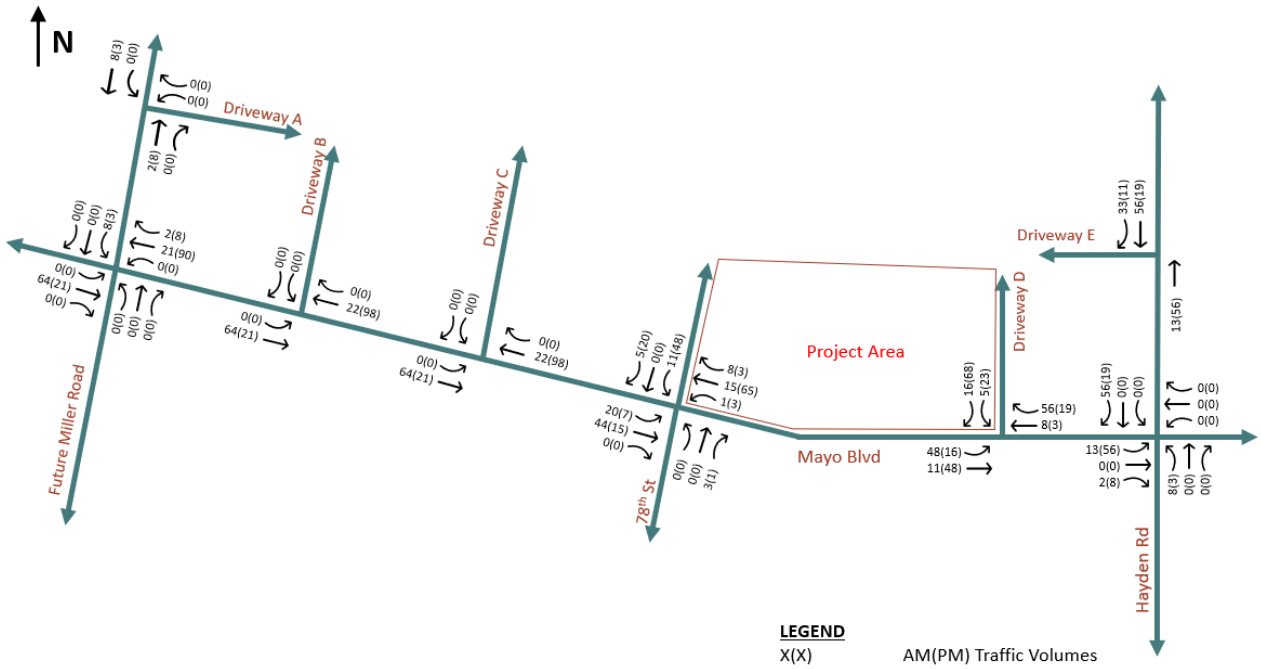


Figure 5 – Trip Assignment

B. Background Traffic

Method of Projections

There are two horizon years projected for the purposes of this Report. The first is the anticipated opening year of 2026 for the MOB+. The traffic studies for the surrounding developments from the Kimley Horn TIMA indicate that the surrounding developments are anticipated to be completed after the 2026 opening year. To account for other potential growth in the area, a 0.5% growth rate was applied to the 2022 collected counts for 4 years to determine the background traffic for 2026.

The second horizon year is for 2040 with the full build out of the Overall Site. The anticipated 2040 traffic volumes for this area were obtained and adjusted by Kimley Horn from the 2035 MAG model as described in Kimley Horn TIMA. These volumes were combined with the trips generated by the surrounding developments. These combined volumes are used as the background traffic in this Report. Note that the trips generated by the parcels to the east of this site along Hayden Road were assigned to use two of the driveways studied in this Report as well as a driveway not studied in this Report.

Estimated Volumes

Figure 6, **Figure 7** and **Figure 8** show the calculated background traffic volumes used for the anticipated Opening Day and for the Future (2040) analysis with and without the Axon development. This is when all four phases of the Overall Site are anticipated to be completed.

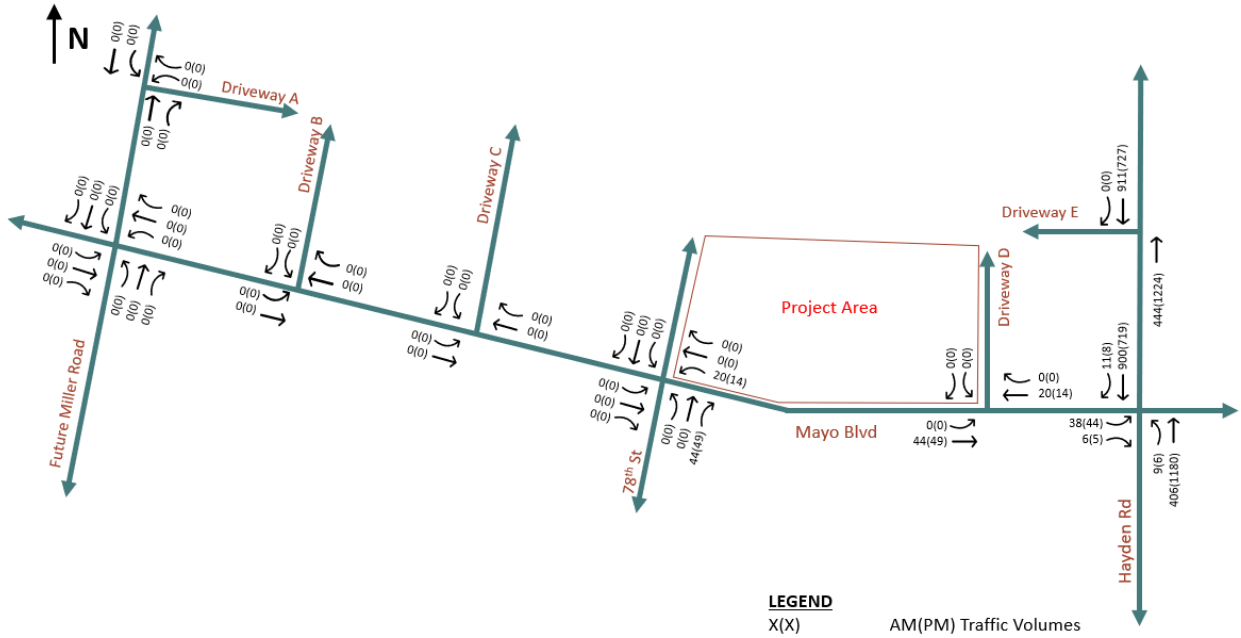


Figure 6 – Opening Day Background Traffic (2026)

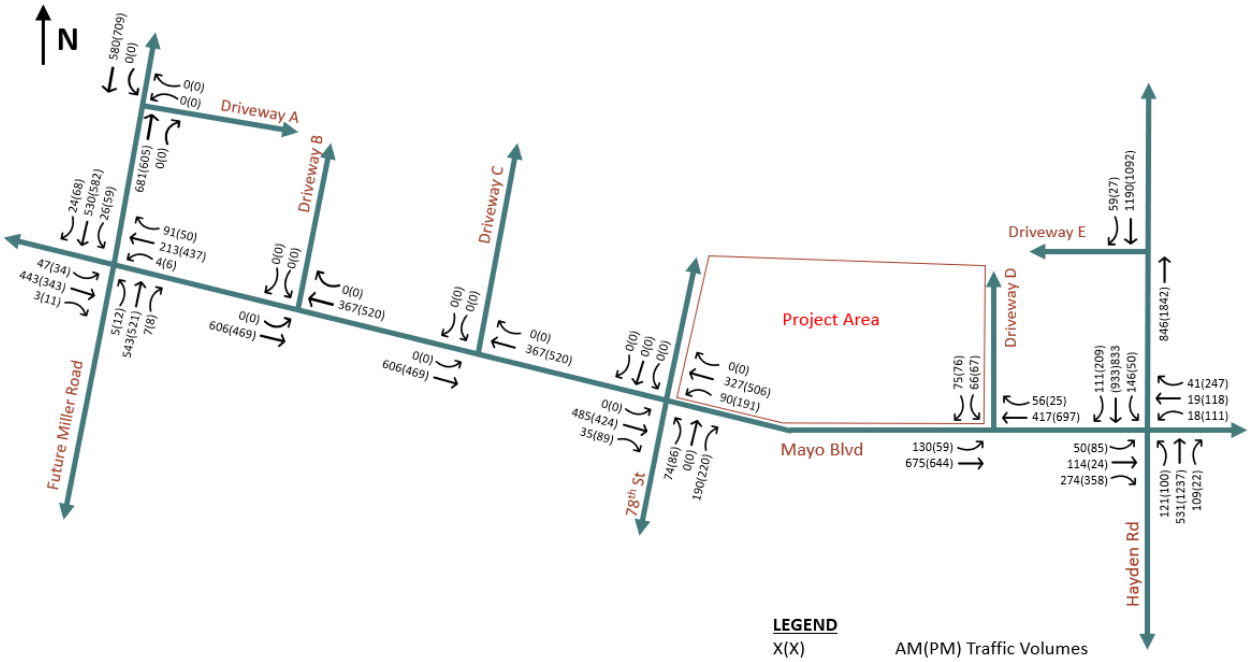


Figure 7 – Future Background Traffic w/Axon (2040)

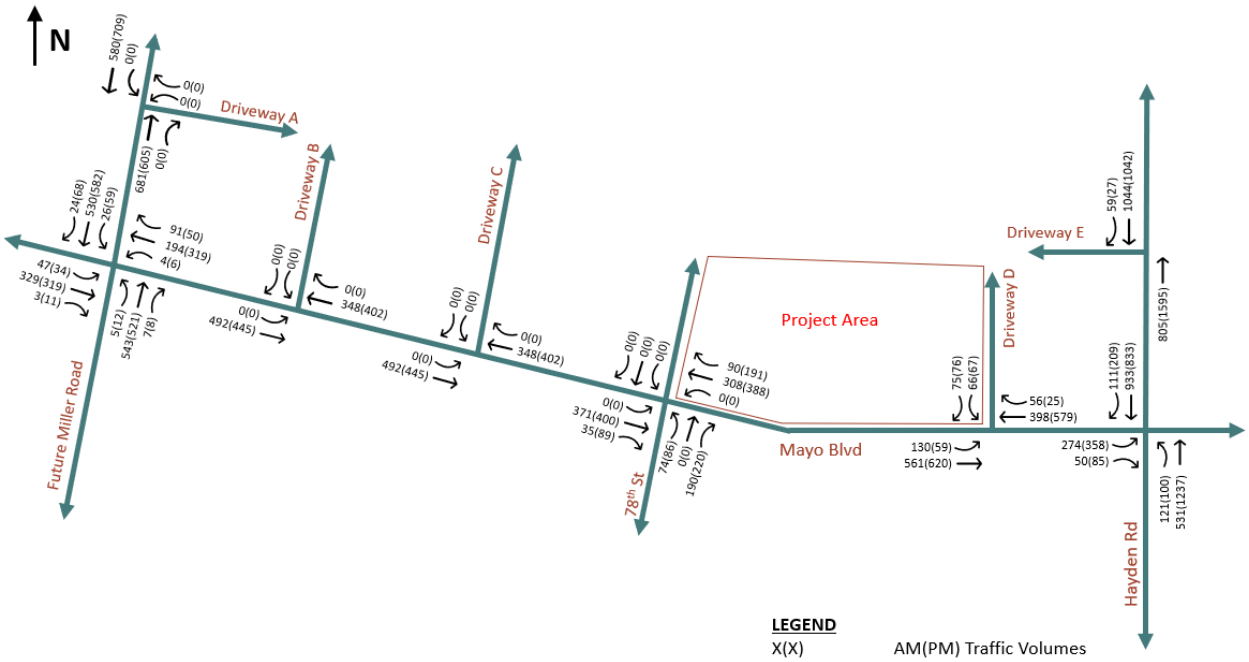


Figure 8 – Future Background Traffic w/o Axon (2040)

C. Total Traffic

The background traffic and anticipated site traffic were combined to calculate the total anticipated traffic for both horizon years. **Figure 9** and **Figure 10** show the anticipated total traffic for the two horizon years.

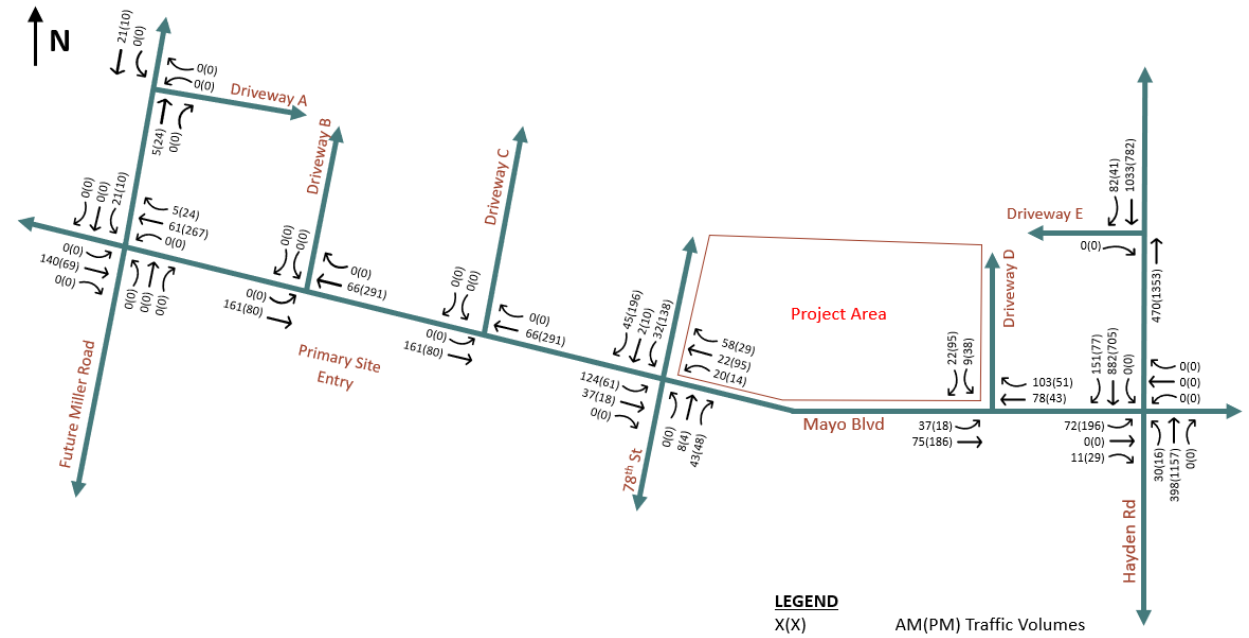


Figure 9 – Opening Day Total Traffic (2026)

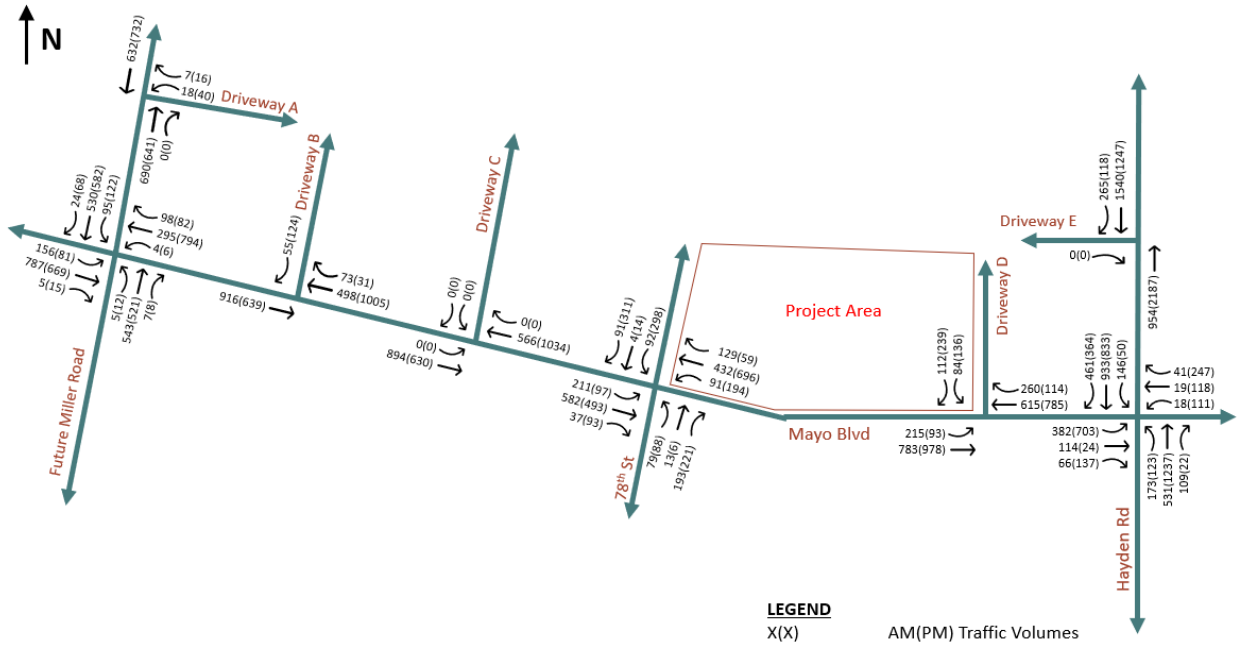


Figure 10 – Future Total Traffic (2040)

An additional 2040 scenario was also analyzed that excluded the Axon development. The total traffic anticipated for that scenario is shown in **Figure 11**.

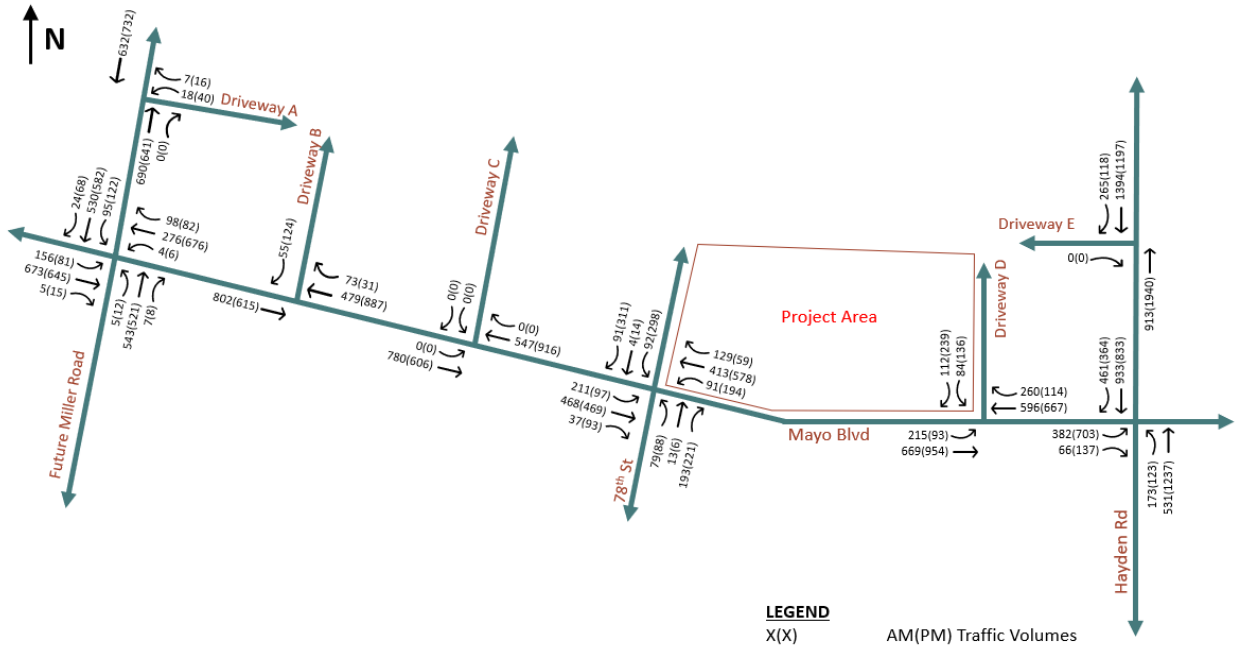


Figure 11 – Future Total Traffic w/o Axon (2040)

V. TRAFFIC ANALYSIS

A. Site Access

The Overall Site is planned to have six access points for the portion of the development bound by Miller Road, Hayden Road, Loop 101, and Mayo Boulevard. One of these is planned to provide full access from Miller Road (Driveway A). Four of these access points are planned to provide direct access from Mayo Boulevard (Driveway B, C, D and 78th Street). The Mayo Boulevard and 78th Street access is expected to primarily provide access to patients entering or exiting the site for the MOB+ in addition to Driveway D and Driveway E. Mayo Boulevard & Driveway D is a proposed full access driveway and will be shared with the future retail, office and hotel uses directly adjacent to Hayden Road. Driveway E will provide the most direct access to the future planned emergency room for hospital patients. The close proximity to the Loop 101 interchange is vital in providing quick access to the planned hospital when needed. **Figure 12** provides a schematic layout of the proposed site driveways.

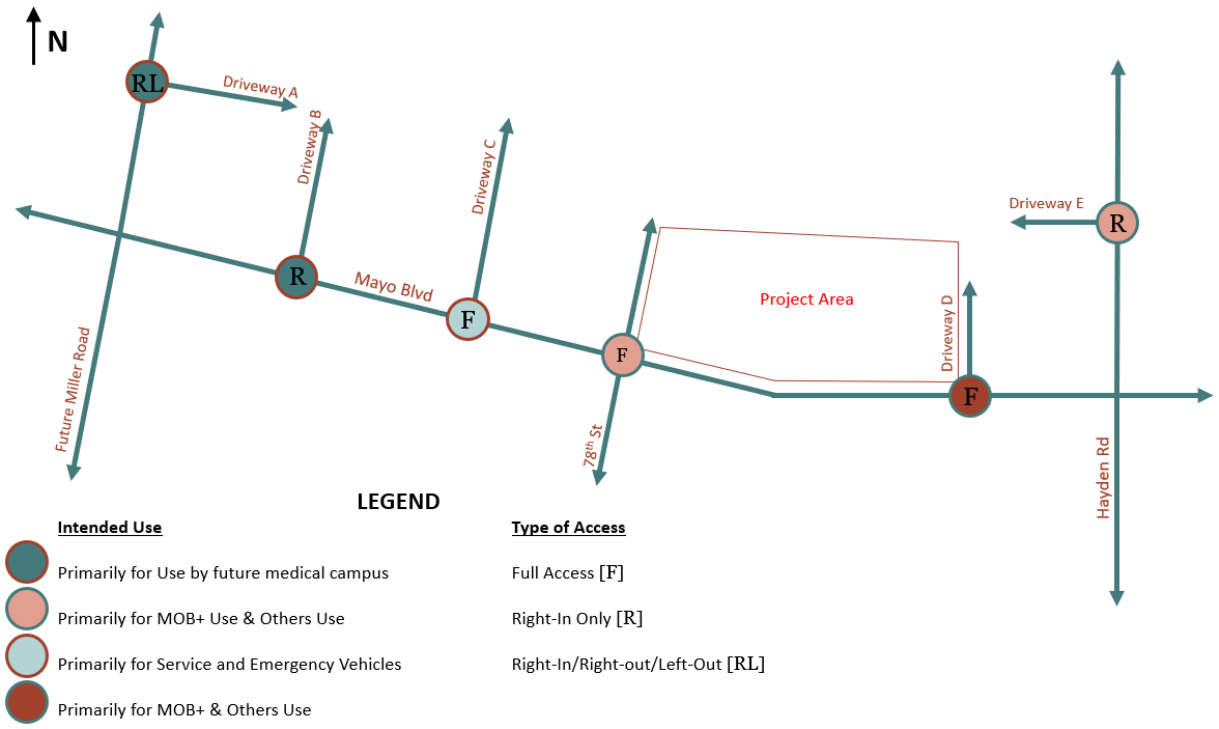


Figure 12 – Site Access

B. Turn Lane Warrants

The following turn lane warrants were completed in accordance with the City of Scottsdale 2018 Design Standards and Policies Manual Chapter 5 Section 3. The manual states that dedicated right turn lanes are required at all street intersections on major arterials while dedicated left turn lanes are required at all street intersections on major collectors and arterials. The results are summarized in **Table 3** for right turn lanes and in **Table 4** for left turn lanes. Turning movements that have an existing dedicated turn lane are not included in these tables. Dedicated turn lanes planned or warranted in the following tables were assumed to be built in the capacity analysis included in this Report. Additionally, the Kimley Horn TIMA was approved by the City of Scottsdale with comments and stipulations. One of the comments requires right turn lanes at all driveways along Mayo Boulevard and Miller Road.

Table 3 –Right Turn Lane Warrants

Intersection	Access	Turning Movement	Lane Warranted Due to City Prescriptive Requirements?
Miller Rd & Driveway A	Full	NBR	No
		SBR	No
Mayo Blvd & Driveway B	Full	EBR	No
		WBR	No
Mayo Blvd & 78th St	Full	EBR	No
		WBR	No
		NBR	No
		SBR	No
Mayo Blvd & Driveway C	Full	EBR	No
		WBR	No
Mayo Blvd & Driveway D	Full	EBR	No
		WBR	No
Hayden Rd & Driveway E	RI	EBR	No
		SBR	No
Hayden Rd & Mayo Blvd	Full	WBR	Planned*
		NBR	No
Mayo Blvd & Miller Rd	Full	EBR	Planned
		WBR	Planned
		NBR	Planned
		SBR	Planned

City Prescriptive Requirements includes a right turn lane on all major arterials and a left turn lane on all major collectors or arterials in accordance with the City of Scottsdale Design Standards and Policies Manual, 2018 Chapter 5

RI = Right-In Only

Planned = already planned by other developments, does not yet exist

**Planned to be a dual*

Table 4 –Left Turn Lane Warrants

Intersection	Access	Turning Movement	Lane Warranted Due to City Prescriptive Requirements?
Miller Rd & Driveway A	Full	NBL	Yes
		SBL	Yes
Mayo Blvd & Driveway B	Full	EBL	Yes
		WBL	Yes
Mayo Blvd & 78th St	Full	EBL	Yes
		WBL	Yes
		NBL	Yes
		SBL	Yes
Mayo Blvd & Driveway C	Full	EBL	Yes
		WBL	Yes
Mayo Blvd & Driveway D	Full	EBL	Yes
		WBL	Yes
Hayden Rd & Mayo Blvd	Full	EBL	Exists*
		WBL	Yes
		NBL	Exists*
		SBL	Planned*
Mayo Blvd & Miller Rd	Full	EBL	Planned
		WBL	Planned
		NBL	Planned
		SBL	Planned

City Prescriptive Requirements includes a left turn lane on all major arterials and a left turn lane on all major collectors or arterials in accordance with the City of Scottsdale Design Standards and Policies Manual, 2018 Chapter 5

Planned = already planned by other developments, does not yet exist

**Planned to be a dual*

Although the driveways along Mayo Boulevard and Miller Road do not warrant right turn lanes based on City guidelines, Banner Health would still like to provide right turn lanes at the heavily used driveways and the driveway closest to the Mayo Boulevard and Hayden intersection to improve traffic operations and help reduce the rear end crash potential. **Table 5** provides a summary of the driveways where right turn lanes are planned and an explanation of why providing these right turn lanes is desirable.

Table 5 – Traffic Operations Issues & Considerations

Intersection	Turning Movement	Issues & Consideration
Mayo Blvd & Driveway B	WBR	Warranted due to the high volume anticipated to be using this intersection. This dedicated right turn lane will allow space for right-turning vehicles to slow down outside of the main travel way. This will reduce the chance of a queue forming behind a right-turning vehicle. It also reduces the risk of rear-end crashes at this intersection.
Mayo Blvd & Driveway C	WBR	Warranted due to the types of vehicles anticipated to use this intersection. This dedicated right turn would allow a place for emergency vehicles to slow down in order to turn the corner gently outside of the main travel way. Additionally, large delivery trucks that are anticipated to use this driveway require more room to slow down. This would also decrease the risk of rear-end crashes at this intersection.
Mayo Blvd & Driveway D	WBR	Warranted due to the close proximity to the Hayden Road & Mayo Boulevard intersection. This dedicated right turn lane will allow space for right-turning vehicles to slow down outside of the main travel way. This will reduce the chance of a queue forming behind a right-turning vehicle which would have the potential to back up to the Hayden Road & Mayo Boulevard intersection. It also reduces the risk of rear-end crashes at this intersection.
Mayo Blvd & Driveway E	SBR	Warranted due to the close proximity to the Hayden Road & Loop 101 interchange. This dedicated right turn lane will allow space for right-turning vehicles to slow down outside of the main travel way. This will reduce the chance of a queue forming behind a right-turning vehicle which would have the potential to back up near the interchange. It also reduces the risk of rear-end crashes at this intersection.

A. Traffic Signals

It is already planned for Hayden Road & Mayo Boulevard to be signalized in the near future. It is also already anticipated that Mayo Boulevard & Miller Road will be a roundabout or signalized intersection for future developments. Based on City of Scottsdale comments for the approved Master Plan TIMA, a roundabout is to be built at the intersection once the right-of-way is available unless it is ruled out, in which case, a traffic signal would be considered.

All other intersections studied in this Report are anticipated to operate acceptably given the conditions and mitigations mentioned in this report. As previously mentioned, the Axon development may be delayed or the project may not be built. The Axon development is currently responsible for the signal at Mayo Boulevard and Hayden Road, however if the MOB+ and/or the remainder of the Overall Site is built before Axon, the signal would not exist. A signal warrant analysis was therefore conducted to determine if the MOB+ development warrants the signal at the intersection as well as the remainder of the Overall Site without the Axon development per the peak hour warrant from the Manual on Uniform Traffic Control Devices. The analysis was also conducted for both scenarios for the Miller Road and 78th Street intersections with Mayo Boulevard. The results are summarized in **Table 6**. The warrant analysis is also included in **Appendix F.**

Table 6 –Signal Warrant Results

Intersection	Scenario	
	MOB+ Only 2026	NWC Development 2040 w/o Axon
Mayo Blvd & Miller Rd	No	Yes (Both Peaks)
Mayo Blvd & 78th St	No	Yes (Both Peaks)
Mayo Blvd & Hayden Road	Yes (PM Peak)	Yes (Both Peaks)

Per City of Scottsdale's direction during a comment resolution meeting on May 22, 2024 and as outlined in the comment response form in **Appendix H**, the intersection at Mayo Boulevard and Miller Road will operate as an all-way stop control intersection until the right-of-way is obtained to construct a roundabout at the intersection.

B. Capacity and Level of Service

The capacity analysis was conducted using Synchro 11 software. **Table 7, Table 8, Table 9,** and **Table 10** summarize the level of service (LOS) results for the analyzed turning movements for opening day in 2040 both without site traffic (background traffic) and with site traffic (total traffic), respectively. Note that a level of service "E" or "F" is typically considered a "failing" level of service during peak traffic times and will sometimes require some sort of mitigation to bring the level of service back to a "D" or better, if possible. However, sometimes it is not feasible nor warranted to mitigate due to a number of considerations including the current traffic demand. Additionally, sometimes it is simply not feasible to invest in a lot of additional capacity improvements to support one or both peak hour traffic times at one or two locations. Especially, when it is put into the context of all the other capacity or capacity utilization improvements that will be provided for this proposed development.

As stated in the previous section, the intersection of Mayo Boulevard and Miller Road is to operate as an stop controlled intersection until such time that the right-of-way is obtained to construct a roundabout at the intersection or a traffic signal if the roundabout is ruled out in the future. **Table 9,** and **Table 10** assume the intersection will still be stop controlled to show how that scenario is anticipated to operate by 2040. A roundabout should be constructed by 2040, however, or a signal should be installed if the roundabout is ruled out in the future. **Table 11** and **Table 12** summarize the LOS and Delay results for both a roundabout and a signal for 2040 (with and without the Axon development).

The southbound left turning movement at Driveway D experiences what would be considered an undesirable level of service for the 2040 horizon year both with and without the Axon development. It is important to note that this delay is experienced on site and the vehicle queues do not exceed more than 2-5 vehicles (roughly 40-100 feet) depending on the peak hours.

Additionally, the

Table 7 –Opening Day Background (2040) LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Mayo Blvd & 78th St	AM	6.5	A	0.0	A	7.0	A	7.0	A	9.0	A	6.3	A	0.0	A	9.9	A	0.0	A	3.2	A	0.0	A	0.0	A	0.0	A
	PM	7.4	A	0.0	A	6.3	A	6.3	A	14.5	B	7.0	A	0.0	A	13.5	B	0.0	A	2.5	A	0.0	A	0.0	A	0.0	A
Mayo Blvd & Driveway D	AM	-	-	9.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	20.1	C	-	-	10.2	B
	PM	-	-	9.7	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	22.2	C	-	-	11.7	B
Hayden Rd & Mayo Blvd	AM	17.5	B	30.5	C	16.5	B	2.5	A	26.6	C	25.6	C	0.4	A	31.1	C	12.5	B	12.5	B	28.6	C	16.8	B	2.3	A
	PM	23.9	C	33.9	C	12.9	B	3.6	A	39.3	D	29.2	C	5.9	A	42.4	D	23.7	C	23.7	C	38.8	D	26.3	C	4.7	A
Mayo Blvd & Miller Rd	AM	8.8	A	9.1	A	9.6	A	0.0	A	8.2	A	8.4	A	3.4	A	7.4	A	9.2	A	0.6	A	8.2	A	9.1	A	3.1	A
	PM	8.9	A	9.6	A	9.3	A	1.5	A	8.3	A	9.9	A	3.8	A	7.8	A	8.9	A	0.9	A	9.6	A	9.3	A	3.2	A

Table 8 –Opening Day (2026) Total Traffic LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	-	-	-	-	0.0	A	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	-	-	-	-	0.0	A	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	0.0	A
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	-	-	7.6	A	0.0	A	0.0	A	7.3	A	0.0	A	0.0	A	0.0	A	-	-	9.4	A	13.3	B	-	-	8.9	A
	PM	-	-	7.6	A	0.0	A	0.0	A	7.3	A	0.0	A	0.0	A	0.0	A	-	-	8.8	A	13.4	B	-	-	10.0	A
Mayo Blvd & Driveway D	AM	-	-	7.7	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	9.9	A	-	-	8.6	A
	PM	-	-	7.5	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	10.0	A	-	-	8.8	A
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	6.2	A	43.2	D	-	-	0.3	A	-	-	-	-	-	-	42.6	D	1.6	A	-	-	-	-	4.9	A	1.1	A
	PM	7.1	A	38.1	D	-	-	0.4	A	-	-	-	-	-	-	37.9	D	3.4	A	-	-	-	-	4.6	A	1.2	A
Mayo Blvd & Miller Rd	AM	-	-	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	9.6	A	0.0	A	0.0	A
	PM	-	-	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	11.2	B	0.0	A	0.0	A

Table 9 – Future (2040) Total Traffic LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	16.7	C	-	-	10.9	B	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	17.4	C	-	-	10.7	B	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	10.4	B
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	15.3	C
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	7.8	A	12.0	B	7.0	A	7.0	A	8.6	A	6.4	A	1.9	A	16.4	B	5.7	A	5.7	A	17.8	B	5.7	A	5.7	A
	PM	18.9	B	24.5	C	15.8	B	15.8	B	36.3	D	17.3	B	4.4	A	21.5	C	4.1	A	4.1	A	35.2	D	13.5	B	13.5	B
Mayo Blvd & Driveway D	AM	-	-	12.4	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	42.1	E	-	-	11.7	B
	PM	-	-	11.0	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	56.7	F	-	-	16.3	C
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	23.7	C	47.4	D	27.8	C	7.3	A	52.9	D	47.1	D	1.1	A	50.0	D	14.9	B	14.9	B	51.2	D	21.4	C	3.4	A
	PM	33.7	C	40.0	D	13.2	B	2.8	A	56.0	E	40.1	D	7.6	A	48.5	D	35.2	D	35.2	D	48.9	D	43.6	D	8.4	A
Mayo Blvd & Miller Rd	AM	168.9	F	31.4	D	424.8	F	75.7	F	16.7	C	47.7	E	44.3	E	16.6	C	214.2	F	41.6	E	24.0	C	191.9	F	191.9	F
	PM	256.6	F	24.5	C	381.1	F	79.0	F	16.9	C	513.8	F	204.4	F	17.2	C	225.4	F	43.8	E	33.2	D	281.2	F	281.2	F

Table 10 – Future (2040) Total Traffic w/o Axon LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	16.7	C	-	-	10.9	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	17.4	C	-	-	10.7	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	10.3	B
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	14.1	B
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	7.7	A	12.3	B	6.7	A	6.7	A	8.0	A	6.5	A	2.0	A	15.2	B	5.5	A	5.5	A	16.6	B	5.4	A	5.4	A
	PM	17.6	B	20.7	C	15.4	B	15.4	B	34.7	C	16.2	B	4.3	A	20.8	C	4.1	A	4.1	A	33.5	C	9.6	A	9.6	A
Mayo Blvd & Driveway D	AM	-	-	12.2	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	37.9	E	-	-	11.5	B
	PM	-	-	10.3	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	42.8	E	-	-	14.6	B
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	15.5	B	40.0	D	-	-	0.8	A	-	-	-	-	-	-	41.6	D	4.3	A	4.3	A	-	-	14.3	B	2.6	A
	PM	17.7	B	35.2	D	-	-	5.6	A	-	-	-	-	-	-	42.5	D	10.0	A	10.0	A	-	-	19.1	B	3.3	A
Mayo Blvd & Miller Rd	AM	133.0	F	30.7	D	299.9	F	49.7	E	16.5	C	41.3	E	40.7	E	16.2	C	203.3	F	39.5	E	23.0	C	179.7	F	179.7	F
	PM	215.7	F	24.0	C	352.5	F	71.2	F	16.9	C	378.4	F	145.7	F	17.3	C	224.5	F	43.9	E	31.5	D	276.4	F	276.4	F

Table 11 – Future (2040) Total Traffic Miller & Mayo Roundabout LOS

Intersection	Peak Hour	Intersection		EBL/EBT		EBT/EBR		WBL/WBT		WBT/WBR		NBL/NBT		NBT/NBR		SBL/SBT		SBT/SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
With Axon																			
Mayo Blvd & Miller Rd	AM	18.1	C	23.0	27	27.1	D	10.3	B	10.4	B	21.9	C	22.8	C	8.7	A	9.3	A
	PM	20.9	C	18.8	C	20.7	C	19.4	C	22.2	C	16.2	C	16.7	C	23.5	C	26.2	D
Without Axon																			
Mayo Blvd & Miller Rd	AM	14.9	B	18.3	B	20.5	C	10.0	A	10.2	B	18.0	B	18.8	B	8.5	A	9.1	A
	PM	17.8	B	18.0	B	19.6	B	15.8	B	17.2	B	15.7	B	16.1	B	18.5	B	20.4	C

Table 12 – Future (2040) Total Traffic Miller & Mayo Signal LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Roundabout																											
Mayo Blvd & Miller Rd	AM	29.6	C	52.2	D	53.7	D	17.8	B	25.2	C	29.3	C	5.1	A	12.8	B	13.1	B	4.3	A	15.0	B	13.1	B	4.9	A
	PM	23.9	C	53.1	D	27.0	C	8.4	A	23.8	C	37.8	D	5.1	A	13.8	B	13.7	B	5.1	A	16.8	B	14.1	B	3.5	A
Signal																											
Mayo Blvd & Miller Rd	AM	25.8	C	50.2	D	47.2	D	15.6	B	28.0	C	32.8	C	5.9	A	10.6	B	10.8	B	3.6	A	12.3	B	10.7	B	4.1	A
	PM	23.3	C	54.5	D	28.3	C	9.1	A	28.8	C	41.8	D	6.1	A	10.8	B	10.7	B	4.0	A	13.0	B	11.0	B	2.8	A

C. Site Circulation and Parking

The traffic accessing the MOB+ will generally be split between 78th Street and Driveway D to access the site with a small amount of the traffic anticipated to access the site using Driveway E from Hayden Road. The remaining driveways will provide access to the potential future expansion of the medical campus and for other commercial uses on the Overall Site. See **Appendix G** for the conceptual Future Development Circulation Plan.

VI. IMPROVEMENT ANALYSIS

A. Queueing Analysis

The following queueing analysis is completed with the assumption that the recommendations made throughout this Report are completed. This analysis is also completed using the City of Scottsdale's minimum storage length requirements as outlined in the City of Scottsdale's 2018 Design Standards and Policies Manual Section Chapter 5 Section 3. The 95th percentile from Synchro 11 was used to obtain each anticipated queue length. **Table 13** provides the recommended right turn lane storage lengths and **Table 14** provides the recommended left turn lane storage lengths based on the total traffic anticipated by 2040. The intent of focusing on the 2040 vehicle queues is to determine what storage lengths will be needed for all access points to the Overall Site in the future to avoid adding additional storage at a later date after the roadways and driveways are already constructed.

Table 13 –Right Turn Lane Queues

Intersection	Turning Movement	Current Length (ft)	2040 Queue Length (ft)	City of Scottsdale Preferred Length (ft)	City of Scottsdale Minimum Length (ft)	Recommended 2040 Storage Length (ft)
Miller Road & Driveway A	NBR	-	0	150	100	150
Mayo Blvd & Driveway B	WBR	-	0	150	100	150
Mayo Blvd & Driveway C	WBR	-	0	150	100	150
Mayo Blvd & Driveway D	WBR	-	0	150	100	150
Hayden Road & Driveway E	WBR	-	0	150	100	150
Mayo Blvd & 78th St	WBR	-	23	150	100	150
Hayden Rd & Mayo Blvd	EBR	170	32	150	100	170
	WBR	-	41	150	100	150
	SBR	185	110	150	100	185
Mayo Blvd & Miller Rd	EBR	-	5	150	100	150
	WBR	-	20	150	100	150
	NBR	-	2	150	100	150
	SBR	-	17	150	100	150

Table 14 –Left Turn Lane Queues

Intersection	Turning Movement	Current Length (ft)	2040 95th Percentile Queue Length (ft)	City of Scottsdale Minimum Length (ft)	Minimum Recommended 2040 Storage Length (ft)
Mayo Blvd & Driveway B	EBL	-	20	100	100
Mayo Blvd & 78th St	EBL	-	20	100	100
	WBL	-	20	100	100
Mayo Blvd & Driveway C	EBL	-	20	100	100
Mayo Blvd & Driveway D	EBL	-	40	100	100
Mayo Blvd & Driveway E	EBL	-	20	100	100
Hayden Rd & Mayo Blvd	EBL	300	316	100	380
	WBL	-	146	100	150
	NBL	150	103	100	150
	SBL	-	91	100	100
Mayo Blvd & Miller Rd*	EBL	-	181	100	200
	WBL	-	13	100	100
	NBL	-	16	100	100
	SBL	-	111	100	150

**Queues and Recommendations if signalized*

VII. FINDINGS

A. Site Accessibility

The proposed site accesses are anticipated to operate acceptably with the given conditions and the construction of the turn lanes and traffic signals, and roundabout mentioned in the Report.

B. Traffic Impacts

The addition of this MOB+ Site is anticipated to have a minimal impact along Mayo Boulevard and Hayden Road.

C. Need for Improvements

Mayo Boulevard & 78th Street

This intersection operates with an acceptable level of service as a two-way stop-controlled intersection with Mayo Boulevard traffic free flowing for opening day of the MOB+, however, a signal will eventually be warranted as the Overall Site is developed. This intersection should maintain two egress southbound lanes for a dedicated left turn lane and a dedicated right turn lane to minimize the vehicle queue. A westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Miller Road

This intersection operates with an acceptable level of service as a two-way stop controlled intersection for opening day of the MOB+, however, a roundabout will eventually be needed to mitigate traffic delays as the Overall Site is developed. If a roundabout is ruled out in the future, a signal would be warranted in its place.

Miller Road & Driveway A

This driveway operates with an acceptable level of service as a right-in/right-out and left-in only driveway. A preliminary assessment was conducted for sight visibility for a left-out at the driveway. Based on the preliminary design plans for Miller Road under Loop 101, there will be adequate visibility for a driver to

turn left from Driveway A onto Miller Road. A southbound left from Miller Road to Driveway A, is not likely to be feasible with the available width for the roadway passing under Loop 101.

In general, it is recommended to provide a dedicated right turn lane for driveways along Mayo Boulevard and Miller Road. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Driveway B

This driveway operates with an acceptable level of service as a right-in/right-out only driveway. In general, it is recommended to provide a dedicated right turn lane for driveways along Mayo Boulevard and Miller Road. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Driveway D

This driveway should also maintain two egress southbound lanes for a dedicated left turn lane and a dedicated right turn lane to minimize the vehicle queue. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Hayden Road & Driveway E

This driveway shall include a southbound right turn lane to account for any potential queue for the southbound right turn lane and to avoid conflicts with the Loop 101 egress ramp traffic.

D. Compliance with Applicable City Codes

The City of Scottsdale Design Standards and Policies Manual, 2018 was referenced throughout this analysis as mentioned throughout this Report.

VIII. RECOMMENDATIONS

A. Roadway Improvements

Based on the analysis of this Report there are several recommendations for the Overall Site driveways and adjacent intersections by opening day of the MOB+ that also take into consideration the additional future development surrounding the Overall Site. The recommendations are in alignment with the approved Kimley Horn TIMA.

Overall, it is recommended to provide a right turn lane for driveways A, B, C, D, E, and at 78th Street into the Overall Site. Per City of Scottsdale Design Standards & Policies Manual, the standard storage length for a right-turn lane is 150 feet as indicated in **Table 13**.

Additional recommendations for specific driveways and adjacent intersections are as follows:

Hayden Road & Driveway E

With a dedicated southbound right turn lane at Hayden Road & Driveway E, the queue length is not anticipated to extend beyond the boundary of the right turn lane. Therefore, the queue is not anticipated to have a negative impact on the operation of the Loop 101 and Hayden interchange.

Mayo Boulevard & 78th Street

A signal is not warranted from both a vehicle capacity and delay perspective for opening day of the MOB+. A signal is warranted in the future as the Overall Site is developed. It is recommended to install signal pull

boxes on all four corners of Mayo Boulevard and 78th Street as well as signal conduit connections between the pull boxes for a future traffic signal for opening day of the MOB+. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Mayo Boulevard & Hayden Road
Provide a southbound right turn lane at the intersection, which is already planned. Additionally, if the Axon development is delayed and the signal is not installed by the completion of the MOB+, a signal will be warranted at the intersection by opening day of the MOB+.

Mayo Boulevard & Miller Road
A signal is not warranted at this intersection from both a vehicle capacity and delay perspective for opening day of the MOB+. A roundabout is planned for this intersection with future development as the right-of-way becomes available. If a round-about is ruled out in the future, a signal will be warranted in the future scenarios with the further development of the Overall Site. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Recommended turn lane storage lengths for all new intersections and turn lanes are given in **Table 13** – **Table 14**.

Appendix G Signal Warrant Analysis

2030 Background Mayo & 78th w/o Axon

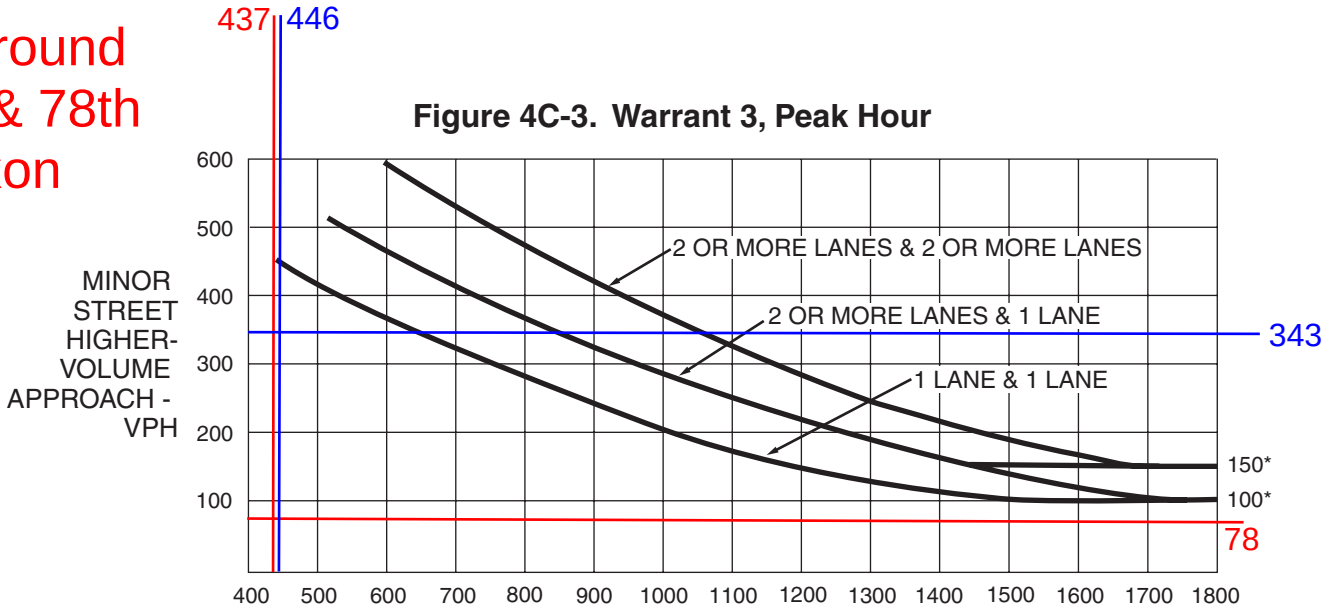


Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

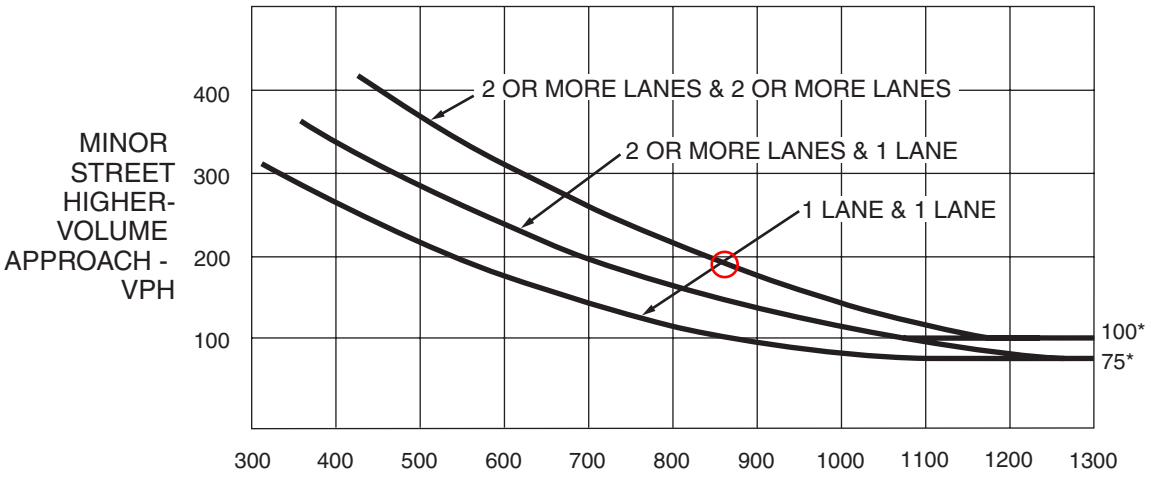


Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

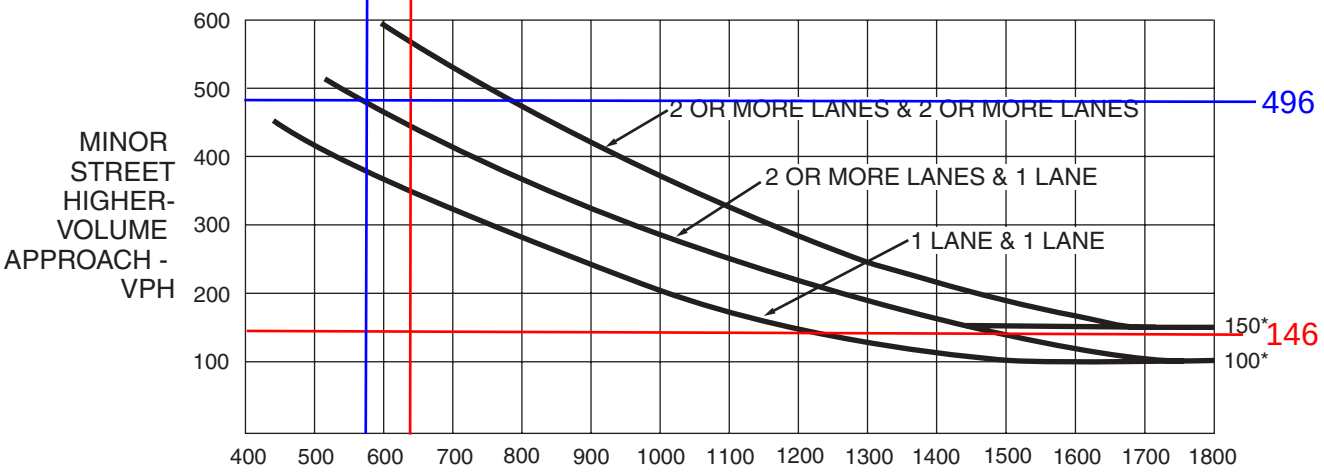
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

2030 Total
Mayo & 78th
w/o Axon

581 635

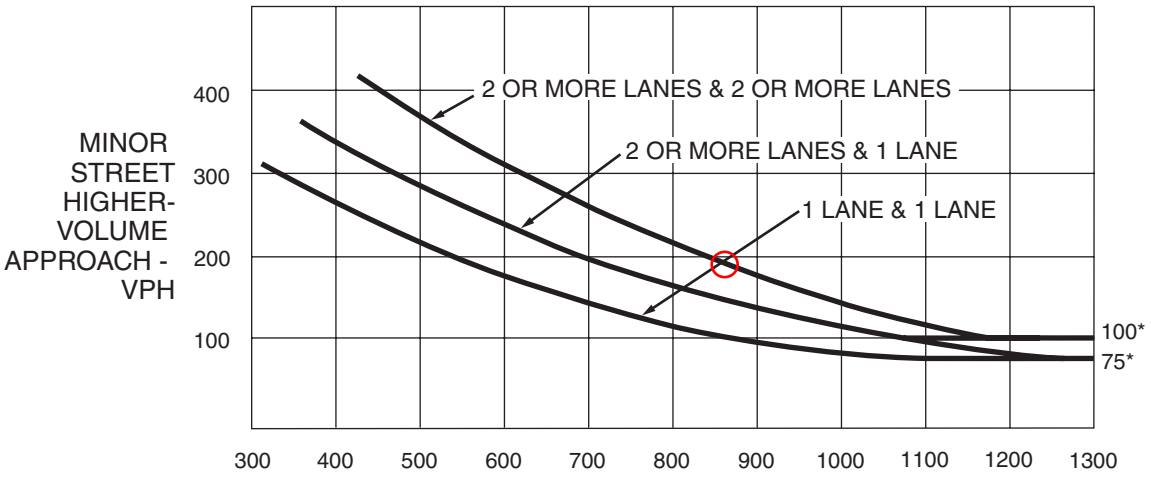
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

2030 Background Mayo & Miller w/o Axon

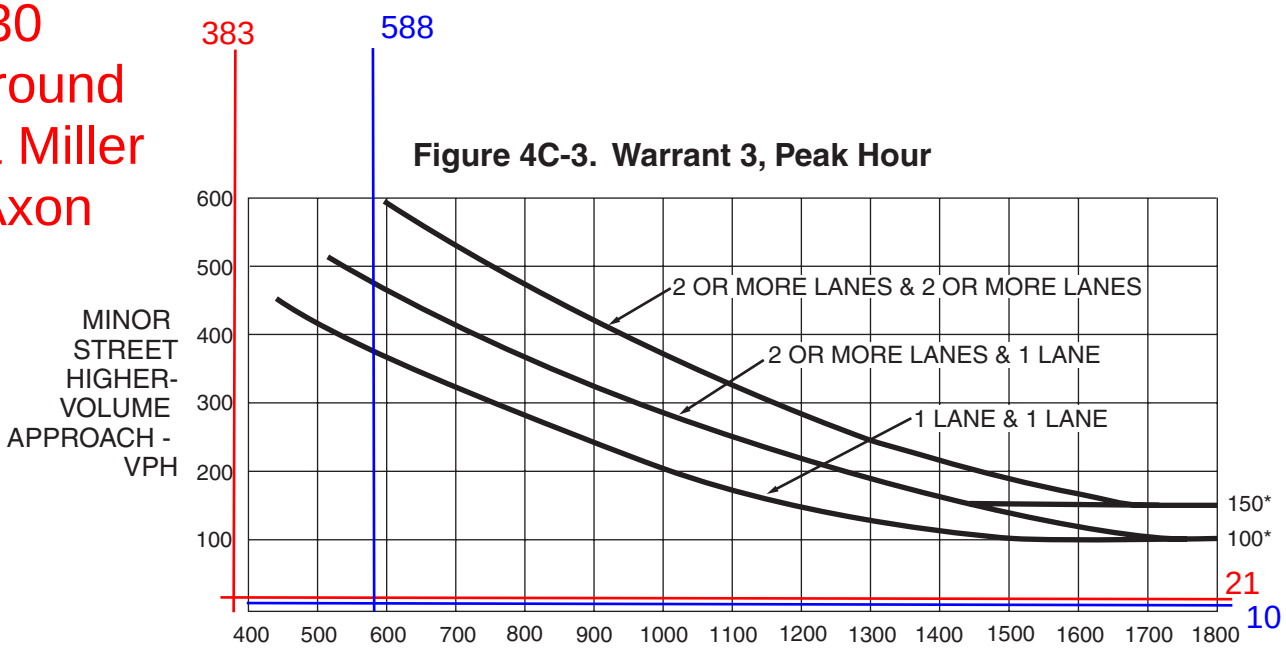


Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

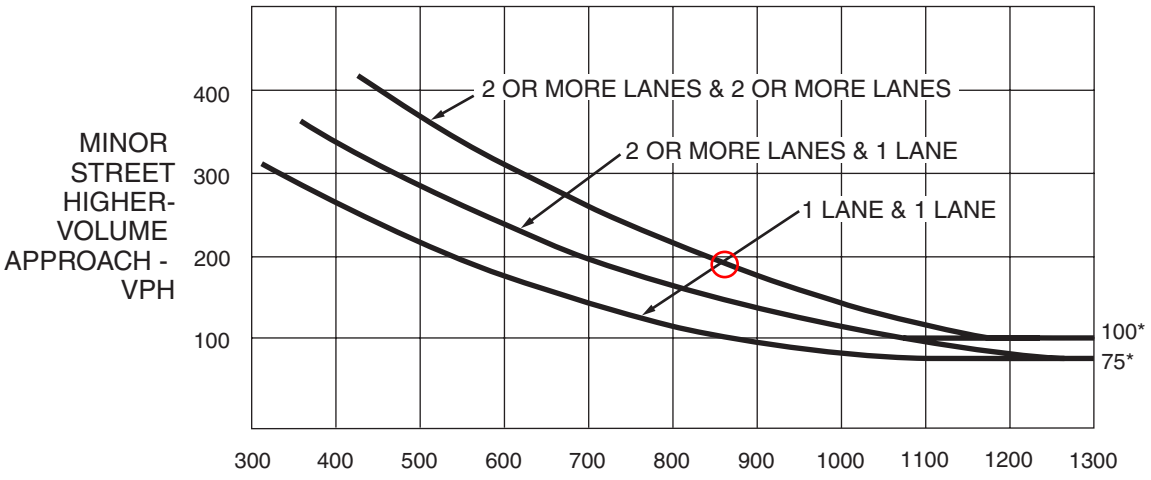


Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

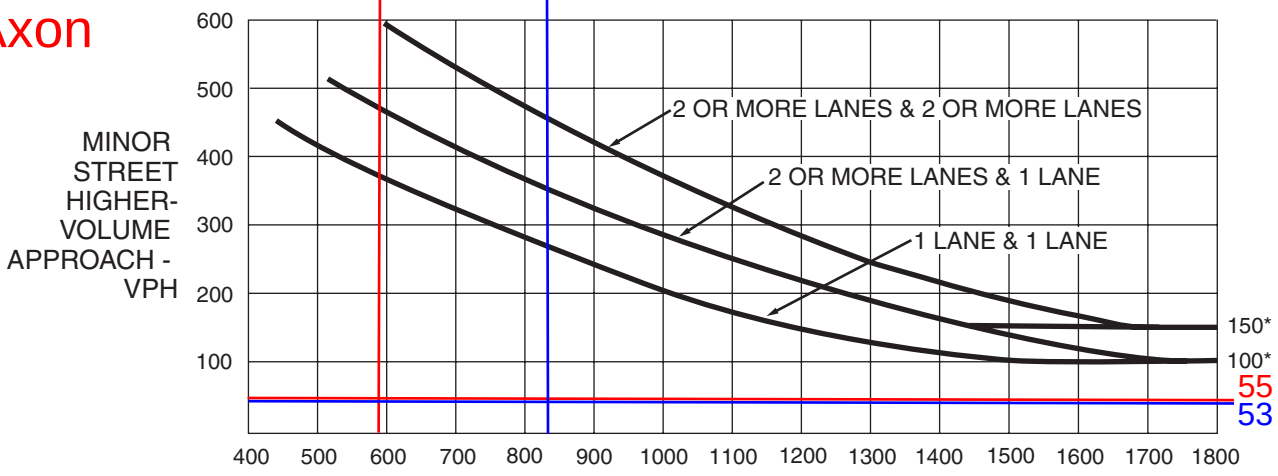
*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

2030 Total Mayo & Miller w/o Axon

597

832

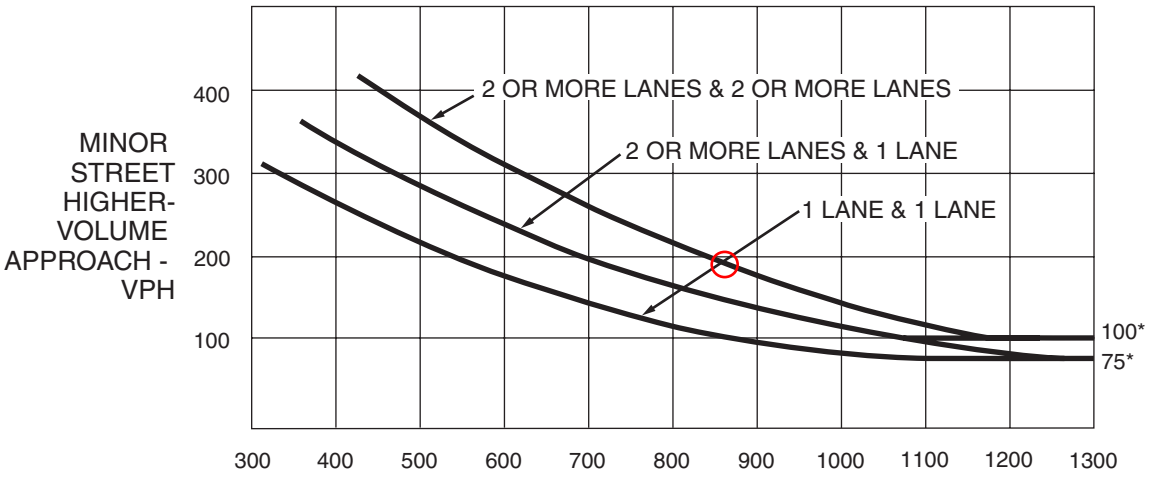
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

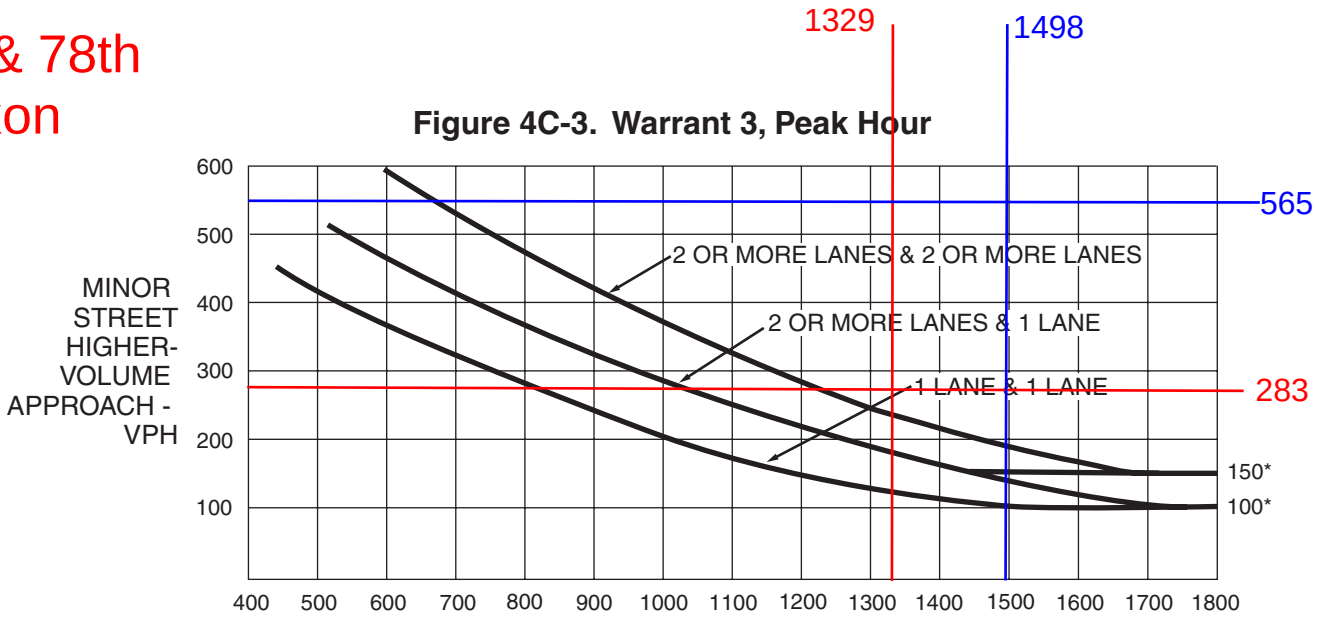
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

2040
Mayo & 78th
w/o Axon

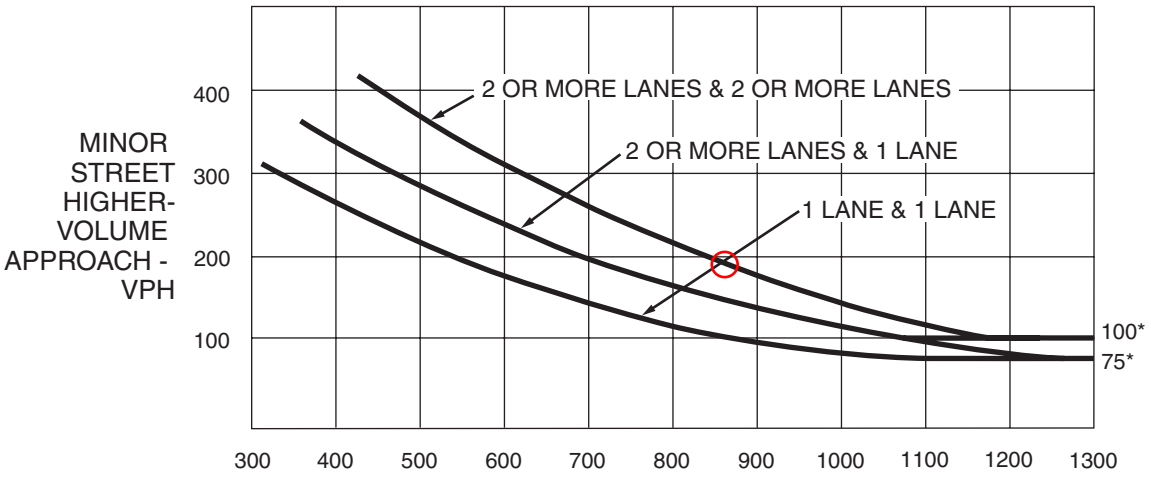
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

2040
Mayo & Miller
w/o Axon

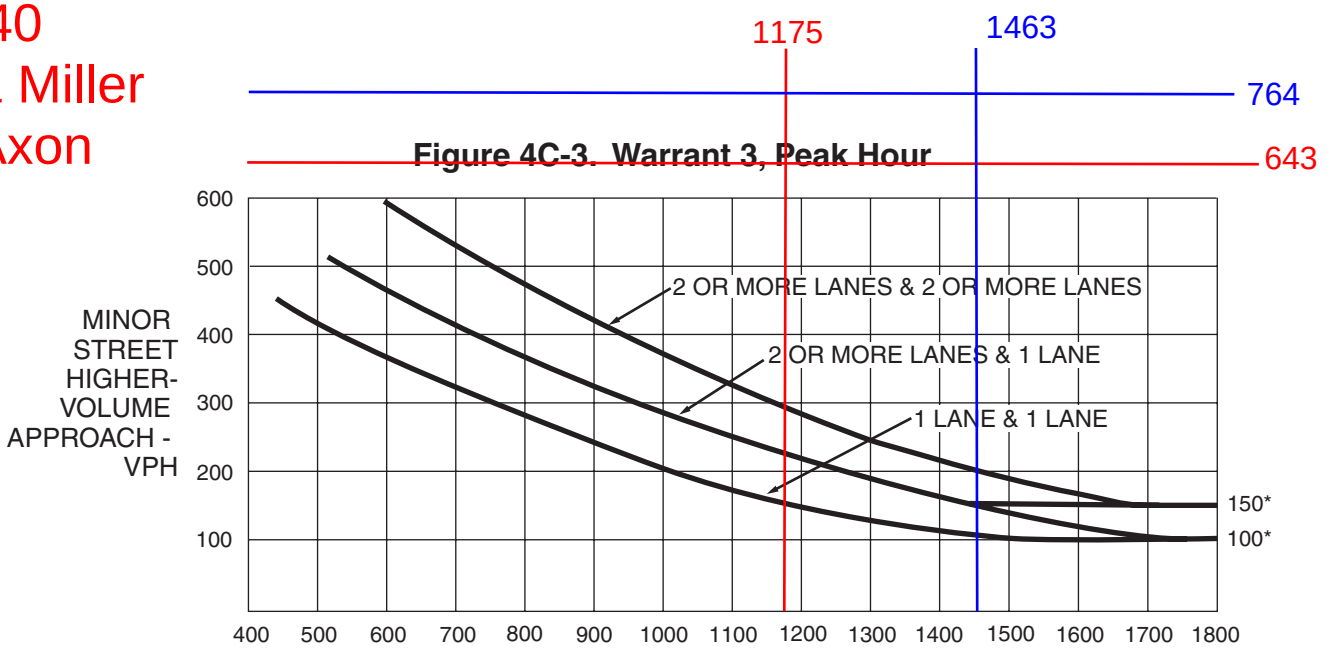


Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

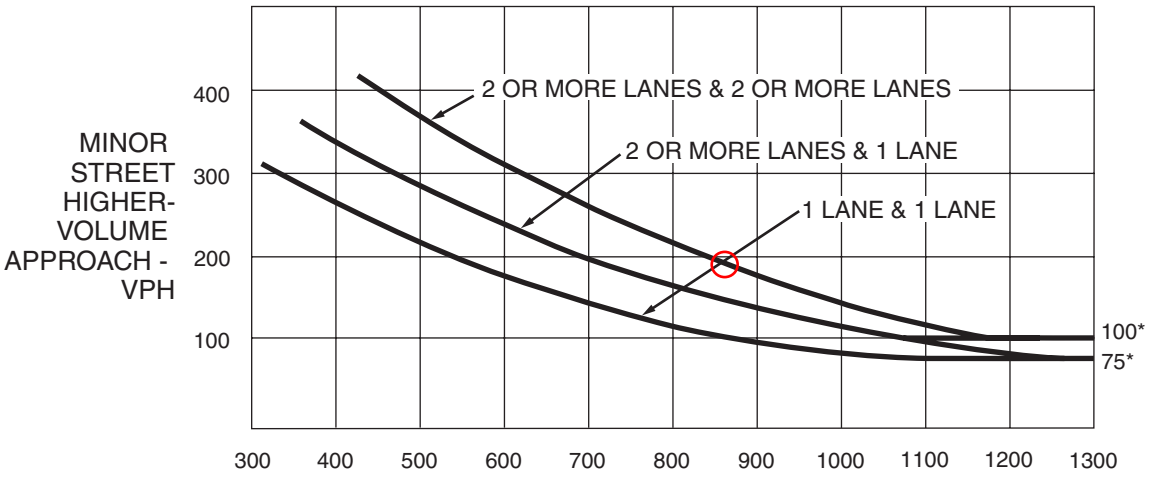
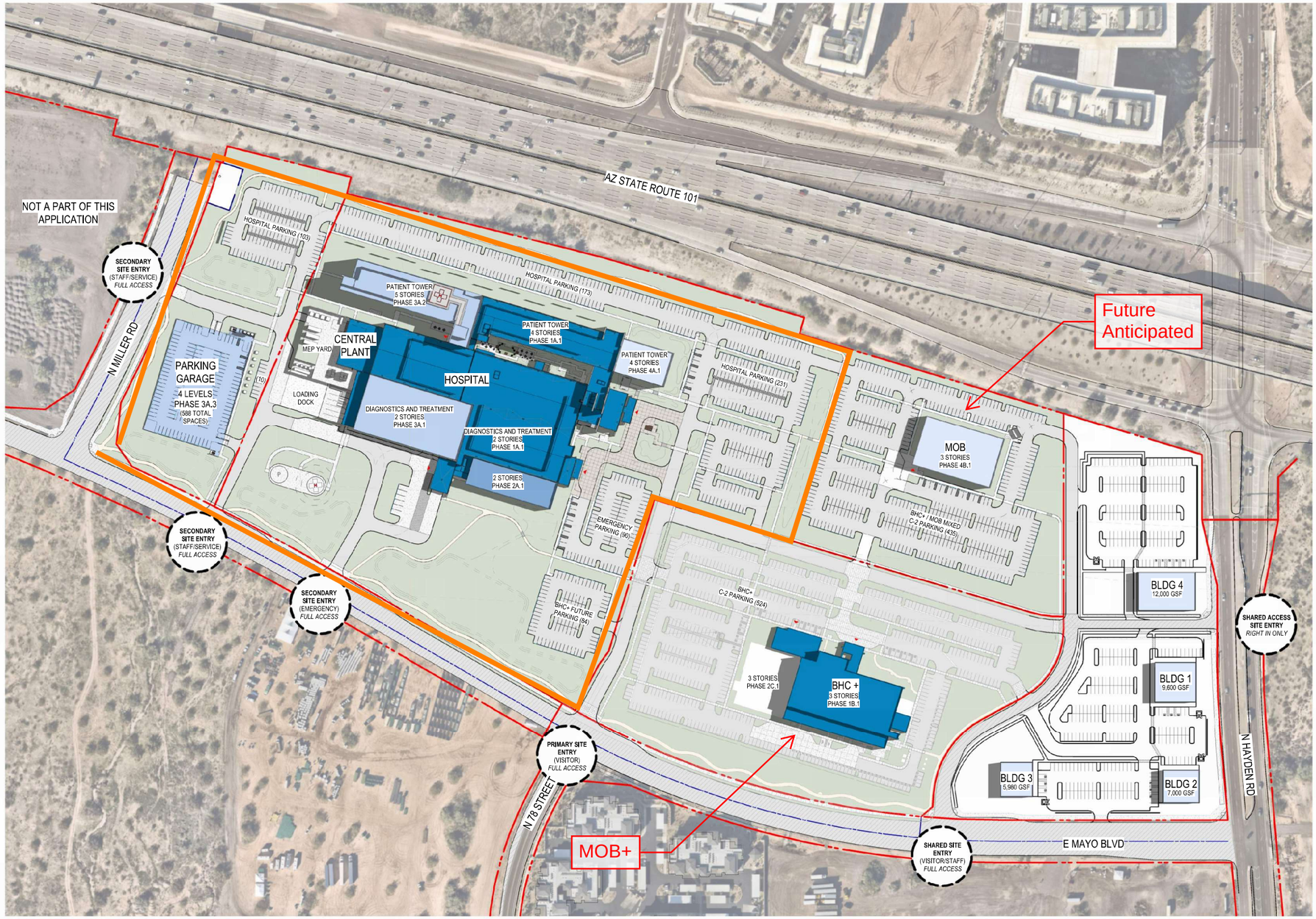


Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix H Conceptual Future Development Circulation Plan



OVERALL DEVELOPMENT SITE PLAN

SCALE: 1" = 120'-0"

NORTH

0 120' 240' 360'

GRAPHIC SCALE: 1" = 120' - 0"

Plot Date: 8/26/2024 10:30:07 AM Author

SITE DATA

PARKING DATA

Banner Scottsdale Medical Center

SCOTTSDALE CAMPUS HOSPITAL

NW Corner of Hayden Rd. and Mayo Blvd.
Scottsdale, Arizona 85255

SMITHGROUP

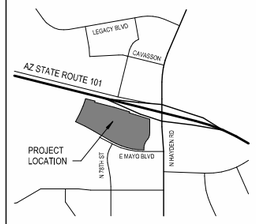
455 NORTH THIRD STREET
SUITE 250
PHOENIX, AZ 85004
602.265.2200
smithgroup.com

ISSUED FOR	REV	DATE
ENTITLEMENT REVIEW		09MAY23

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

VICINITY MAP



SHEET TITLE

OVERALL DEVELOPMENT SITE PLAN

PROJECT NUMBER

CUP_A1.1.1

SHEET NUMBER