256

13335521
07/21/2020 02:05 PM $0.00
Book - 10983 Pg - 4638-4893
RASHELLE HOBBS
RECORDER, SALT LAKE COUNTY, UTAH
SL CO MAYORS OFFICE
SUITE S2-100
ATTN RYAN PERRY
BY: DSA, DEPUTY - WI 256 P.

WHEN RECORDED, RETURN TO:
Salt Lake County
Attn: Ryan Perry
2001 S. State St #S2-100
Salt Lake City, UT 84114

(Space above for Recorder's use only.)

MASTER DEVELOPMENT AGREEMENT

FOR

OLYMPIA HILLS

A MASTER PLANNED COMMUNITY

THIS MASTER DEVELOPMENT AGREEMENT is made and entered into effective as of the 26 day of March, 2020, by and between SALT LAKE COUNTY, a political subdivision of the State of Utah, by and through its County Council, GREATER SALT LAKE MUNICIPAL SERVICES DISTRICT, a political subdivision of the State of Utah, THE LAST HOLDOUT, L.L.C., a Utah limited liability company, JORDAN SCHOOL DISTRICT, a Utah school district, and OLYMPIA LAND, LLC, a Utah limited liability company.

RECITALS

A. The County has zoned the Property as a Planned Community as more fully specified in the P-C Zone Plan approved by the County Council on March 3, 2020.

B. A copy of the P-C Zone Plan is available at the Planning and Development Services Division of Salt Lake County.

C. Owner is the current owner of the Property, and Master Developer has an option to acquire and develop the Property over a period of years.

D. Special Owner is the current owner of the School District Property.

E. The MSD is the entity that will provide many of the municipal-type services to the Community.

F. The Parties desire that the Property be developed as a Planned Community in a unified and consistent fashion pursuant to the P-C Zone Plan and this MDA.

G. The P-C Zone Plan sets forth those land use classifications, residential and commercial densities, and development locations as are permitted under this MDA for the Planned Community.

H. This MDA identifies the standards and procedures that will be applied to the required administrative approvals contemplated in connection with the future development of the Planned

Community, as well as the construction of certain improvements of benefit to the Planned Community and to address requirements for certain community benefits.

I. The County has established the Planned Community under the provisions of the County's Vested Laws for the purpose of implementing development standards and processes that are consistent therewith. In doing so, the County found that the Planned Community is vested to proceed under the County's Vested Laws, subject to the limitations outlined in Sections 2 through 6.

J. The County has adopted a General Plan for the area including the Property, and this MDA and the Planned Community comply with the General Plan

K. The County and the Master Developer agree that each shall comply with the standards and procedures contemplated by the Planned Community as described in this Agreement and its accompanying Exhibits, and the County's Vested Laws with respect to all required development approvals.

L. In connection with entering into this MDA, the County desires to receive certain public and community benefits and amenities and the Master Developer is willing to provide these benefits and amenities in consideration of the agreement of the County for the densities and intensity of uses within the Planned Community pursuant to the terms of this MDA.

M. The County, acting pursuant to its authority under the Act and the County's Vested Laws, has made certain determinations with respect to the proposed Planned Community, as a master planned community, and in the exercise of its legislative discretion has elected to approve the use, density, and general configuration of the Planned Community set forth in the P-C Zone Plan through the negotiation, consideration and approval of this MDA after all necessary public hearings.

FINDINGS

The County Council of Salt Lake County, Utah, acting in its legislative capacity, has made the following determinations with respect to the Planned Community, including all findings of fact and conclusions of law as are necessary to make each of the following determinations:

1. The County has provided proper notice for and conducted the following public meetings and hearings in conjunction with this Owner and Master Developer's Application to Amend the General Plan, to rezone the Property to the Planned Community Zone, and to approve the P-C Zone Plan and this MDA: The County Council held public meetings on January 7, 2020 and public hearings on January 14 and 28, 2020.

2. The County Council has reviewed this MDA and determined that it is consistent with the Act, the General Plan, the Zoning Ordinance and the Zoning of the Property, and that the MDA will enable the County or its successor to control the development of the area and will serve the best interests of the County or its successor.

3. The Parties acknowledge that development of the Property pursuant to this MDA will result in significant planning and economic benefits to the MSD, the County and its residents by, among other things, requiring orderly development of the Property as a master planned community and increasing sales tax and other revenues to the County and the MSD based on improvements to be constructed on the Property by the Master Developer.

4. Development of the Property pursuant to this MDA will also result in significant benefits to Owner and Master Developer by providing assurances to Owner and Master Developer that Master Developer will have the ability to develop the Property in accordance with this MDA.

5. The Parties have cooperated in the preparation of this MDA.

6. The Parties understand and intend that this MDA is a "development agreement" within the meaning of, and is entered into pursuant to, the terms of Utah Code Ann., §17-27a-102 (2019).

7. This MDA complies with the P-C Zone and the General Plan.

8. The Parties understand and agree that the Property may ultimately either be annexed into or incorporated as a municipality as considered herein.

9. The County's rights and obligations under this MDA will thereafter become those of the annexing or incorporating municipality.

10. This MDA implements the Planned Community zoning for the Property.

11. This MDA shall govern the development and improvement of the Planned Community from and after its Effective Date.

AGREEMENT

NOW, THEREFORE in consideration of agreements and obligations set forth below, and in reliance upon the findings and recitals set forth above, which are incorporated as part of this Agreement, the County, MSD, Owner and the Master Developer hereby agree as follows:

SECTION 1
Definitions

1. **Definitions.** As used in this MDA, the words and phrases specified below shall have the following meanings:

1.1 **Act** means the County Land Use, Development, and Management Act, Utah Code Ann., §§17-27a-101, *et seq.* (2019).

1.2 **Administrator** means that person appointed by the County Mayor at his or her pleasure, with the advice and consent of the County Council pursuant to Salt Lake County Ordinance Section 2.06A.040.

1.3 **Affordable Housing** means that portion of the Maximum Residential Units that are considered to be affordable as specified in Exhibit "H".

1.4 **Affordable Unit** means an RDU that qualifies as being "affordable" as specified in Section 1.5 of Exhibit "H".

1.5 **Applicant** means a person or entity making a Development Application for a portion of the Planned Community.

1.6 **Building Permit** means a permit issued by the County or its municipal successor to allow construction, erection or structural alteration of any building, structure, or private, public, or Project Infrastructure on any portion of the Planned Community, or to construct any off-site infrastructure within County's jurisdiction consistent with the International Building Code, International Fire Code and/or the County's Vested Laws.

1.7 **Commercial Site Plan** means the plan submitted to the County for the approval of the development of a portion of the Planned Community which may include multiple buildings that are not intended to be on individual subdivision lots and includes apartments, office buildings, hotels, shopping centers or other similar multi-building developments or plans for other developments on the Planned Community which are allowed by the Zoning Ordinance as a permitted or conditional use.

1.8 **CSP** means a Community Structure Plan approved pursuant to Salt Lake County Ordinance Section 19.69.080 of the County's Vested Laws.

1.9 **Council** means the elected County Council of the County.

1.10 **County** means Salt Lake County, a political subdivision of the State of Utah.

1.11 **County's Future Laws** means the ordinances, policies, rules, regulations, standards, procedures and processing fee schedules of the County or its municipal successor which may be in effect as of a particular time in the future when a Development Application is submitted for a part of the Planned Community and which may or may not be applicable to the Development Application depending upon the provisions of this MDA.

1.12 **County's Vested Laws** means the following County ordinances that were in effect as of the Effective Date (subject to the exceptions outlined in Subsection 3.4): Title 14 entitled "Highways, Sidewalks and Public Places," Chapter 15.28 entitled "Highway Dedication," Title 17 entitled "Flood Control and Water Quality," Title 18 entitled "Subdivisions," and Title 19 entitled "Zoning" together with the Salt Lake County 2015 Parks & Recreation Facilities Master Plan. The County's Vested Laws are attached in a secured digital form which is Exhibit "G", a copy of which is maintained with the County Recorder and identical secured copies are maintained with Owner and Master Developer

1.13 **Default** means a material breach of this MDA as more fully specified in Section 7.17, below.

1.14 **Design Standards** means the general standards for design of the building for the Intended Uses and Project Infrastructure as more fully specified in Exhibits "C - F", and to the extent not established therein, those standards established consistent with Salt Lake County Ordinance Chapter 19.69, the general policies outlined herein, the approved P-C Zone Plan, Community Structure Plan(s), Project Plans, or any development agreements associated with these approved Plans.

1.15 **Detached Single Family Dwelling Unit** means a building arranged or designed to be occupied by one family, the structure having only one dwelling unit and not attached to another dwelling unit.

1.16 **Development Application** means an application to the County for development of a portion of the Planned Community including a Project Plan, a Final Plat, a Commercial Site Plan, Building Permit, or any other permit, certificate or other authorization from the County, the MSD, or the County's municipal successor required for development of the Planned Community.

1.17 **Effective Date** means March ___, 2020.

1.18 **Final Plat** means the recordable map or other graphical representation of land prepared in accordance with Utah Code Ann., § 17-27a-603 (2019), and approved by the County or the MSD effectuating a Subdivision of any portion of the Property.

1.19 **General Plan** means the General Plan for the area including the Property adopted by the County on March 3, 2020.

1.20 **Impact Fees** means those fees, assessments, or payments of money which may be imposed by the County, the MSD, or a municipality (when the Property is included in a municipality) or any local or special service district as specified in the Utah Impact Fees Act, Utah Code Ann., §§ 11-36a-101, *et seq.*, (2019).

1.21 **Individually Platted Dwelling Unit** means an RDU whose boundaries are drawn on a subdivision or condominium plat, such as Detached Single Family Dwelling Units, town homes, and condominiums, but not including an apartment dwelling unit.

1.22 **Intended Uses** means the use of all or portions of the Planned Community for single-family and multi-family residential units, hotels, restaurants, public facilities, businesses, commercial areas, professional and other offices, services, parks, trails and other uses as more fully specified in the Zoning Ordinance and the Land Use Plan, and this MDA.

1.23 **Land Use Plan** means the layout and table set forth in **Exhibit B**, which provides for the use, density and general locations of the Intended Uses in the development of the Planned Community.

1.24 **Master Developer** means Olympia Land, LLC, a Utah limited liability company and its related entities, assignees or transferees as permitted by this MDA.

1.25 **Maximum Residential Units** means the development on the Property of six thousand three hundred and thirty (6,330) Residential Dwelling Units.

1.26 **MDA** means this Master Development Agreement including all of its Exhibits.

1.27 **MSD** means the Greater Salt Lake Municipal Services District.

1.28 **Notice** means any notice to or from any party to this MDA that is either required or permitted to be given to another party.

1.29 **Owner** means The Last Holdout, L.L.C., a Utah limited liability company.

1.30 **P-C Zone Plan** means the Land Use Plan and those items that are required by Salt Lake County Ordinance Section 19.69.070.

1.31 **Parcel** means an area within the Property that has been conveyed by or is proposed to be conveyed by metes and bounds prior to recordation of a plat of subdivision, which conveyance has occurred or is proposed to occur with the approval of the County pursuant to the provisions of Utah Code Ann. §17-27a-103(69)(c)(vi)(2019).

1.32 **Party or Parties** means, collectively, the County, MSD, Owner and Master Developer. Unless specifically referenced the Special Owner is not a Party.

1.33 **Phase** means the development of a given portion of the Planned Community pursuant to a Project Plan within the Planned Community at a point in a logical sequence as determined by Master Developer and agreed to by the County via the Project Plan process.

1.34 **Planned Community** means the development to be constructed on the Property pursuant to this MDA including all of the Intended Uses and the Project Infrastructure.

1.35 **Planning Commission** means the County's Planning Commission established by the Zoning Ordinance.

1.36 **Project Infrastructure** means those items of public or private infrastructure within the Property which are necessary for development of the Planned Community including all roads (including traffic signage, striping, and traffic control improvements), utilities, lighting, curbs/gutters/sidewalks, parks, trails, rough and final grading, trees, sod, seeding, and other landscaping, storm water detention and retention facilities, water mains, storm sewers, sanitary sewers, and all other improvements required pursuant to this MDA, the Community Structure Plan, applicable Project Plans and Final Plats, County's Vested Laws, and/or County's Future Laws, as applicable.

1.37 **Project** means a discrete portion of the Planned Community approved pursuant to a Project Plan, within which there may be multiple Phases.

1.38 **Project Plan** means the plan that is outlined in Salt Lake County Ordinance Section 19.69.090.

1.39 **Property** means that approximately nine hundred and thirty-three (933) acres described in **Exhibits A and A-1**.

1.40 **Recommended Improvements** means those improvements recommended by a Traffic Impact Study (TIS) accompanying the MDA and each CSP, and approved by the County and MSD as part of the MDA and CSP, to mitigate a proportionate share of the traffic impacts that are attributable to the development of the Planned Community on the transportation system outside the Planned Community.

1.41 **Residential Dwelling Unit ("RDU")** means a unit intended to be occupied for residential living purposes; one Residential Dwelling Unit equals each unit within a multi-family dwelling, apartment building, time share, etc., and each condominium unit and single-family residential dwelling. Accessory apartments, casitas, and other similar uses that are ancillary to a primary residential use shall not be counted as a Residential Dwelling Unit for purposes of the Maximum Residential Units.

1.42 **School District Property** means that approximately forty (40) acres described on **Exhibit A-1**.

1.43 **Shortfall Period** means that time, if any, where the Development of the Planned Community does not bring in sufficient revenues to the MSD to offset the MSD's costs in administering the development of and providing services to the Planned Community as more fully specified in Section 5.2, below.

1.44 **Site Plan** means a plan or plans submitted to the County in accordance with Salt Lake County Ordinance Section 19.69.100.

1.45 **Special Owner** means the Jordan School District.

1.46 **Subdeveloper** means an entity or person not "related" (as defined by Internal Revenue Service regulations) to Master Developer which purchases a Parcel for development and pursuant to an assignment approved by the County and the MSD pursuant to Subsection 6.1 hereof, is assigned the

rights and assumes the responsibilities of this MDA applicable to such Parcel as more specifically set forth in the approved assignment and assumption agreement.

1.47 **Subdivision** means the division of any portion of the Property into a subdivision pursuant to state law and/or the Zoning Ordinance.

1.48 **Traffic Impact Study (TIS)** means the study to estimate site-generated traffic volumes and assess their impact on the transportation system. The TIS identifies off-site improvements that might be needed as a result of the Planned Community and is more fully specified in Exhibit "D".

1.49 **Workforce Unit** means an RDU that is considered to be for workforce housing as specified in Exhibit "H".

1.50 **Zoning Ordinance** means the County's "land use ordinances" adopted pursuant to the Act that were in effect as of the Effective Date as a part of the County's Vested Laws.

SECTION 2
The Planned Community

2.1 Compliance with Local Laws and Standards. The County has reviewed the County's Vested Laws and the General Plan and has determined that the Planned Community substantially complies with the provisions thereof and hereby finds that the Planned Community is consistent with the purpose and intent of the relevant provisions of the General Plan and the County's Vested Laws.

2.2 Approved Maximum Residential Units. The Maximum Residential Units in the Planned Community shall be six thousand three hundred and thirty (6,330) Residential Dwelling Units. The RDUs shall be generally located in the areas illustrated in the Land Use Plan as more fully specified in the Design Standards and future approvals as required by future approvals under the PC Zone. Subject to the requirements of subsection 2.2.2, the Design Standards and Land Use Plan provide for certain flexibility in locating various types of RDUs within the areas of the Planned Community and making specified modifications of the numbers of each type of RDU.

2.2.1 **No Guarantee.** Master Developer and Owner acknowledge that the development of the Maximum Residential Units and every other aspect of the Master Plan requires that each Development Application comply with the County's Vested Laws. The County's entry into this MDA does not guarantee that the Master Developer or Owner will be able to construct the Maximum Residential Units or any other aspect of the Planned Community until and unless all the applicable requirements of the County's Vested Laws are complied with.

2.2.2 **Housing Types.** Of the total Maximum Residential Units, 30-60% shall be Detached Single Family Dwelling Units. At least 63% shall be Individually Platted Dwelling Units. The Parties acknowledge that the types of RDUs used in the Traffic Impact Study (TIS), Exhibit D, were included for planning purposes to help determine future impacts of the Planned Community and do not create specific entitlements of exact numbers of housing types to the Master Developer. Each CSP or Project Plan will establish, in accordance with this MDA, the number, location, and compatibility (within and without the Planned Community) of housing types, and will include the County's review of the Traffic Impact Statement (TIS) associated with the CSP pursuant to subsection 2.5.5.

2.3 Land Uses within Planned Community; Configuration. The approved general configuration of and Intended Uses within the Planned Community are those identified in the Land Use

Plan and Design Standards. Except as modified by an approved CSP or a Project Plan, the Land Use Plan reflects the general location and configuration of residential and commercial development and open space within the Planned Community. The County specifically delegates those determinations to the appropriate administrative land use authority as specified in the MDA or County's Vested Laws, subject to the policy guidance in this MDA.

2.4 Master Developers' Discretion. Subject to Subsection 5.3, nothing in this MDA shall obligate the Master Developer to construct the Planned Community or any particular Project or Phase therein, and the Master Developer shall have the discretion to determine whether to construct a particular Project or Phase based on such Master Developer's business judgment. Once construction has begun on a specific Final Plat or Final Site Plan, the relevant Master Developer or Subdeveloper(s) shall have the obligation to complete the improvements associated with such plat or plan, including all associated community benefits as described and scheduled within the applicable Project Plan within the time specified by the County or, if the County doesn't specify a completion deadline, within a reasonable period of time,.

2.5 Community Structure Plan Required.

2.5.1 The PC Zone requires that the Master Developer apply for one or more CSPs for the future development of the Planned Community. In addition to the requirements of Salt Lake County Ordinance Section 19.69.080, any CSP Application shall specify how the Master Developer intends to address the following subjects: roads, stormwater, development and maintenance of parks and trails, water, sewer, environmental cleanup (if any), and public utilities. The CSP shall also include detailed design standards.

2.5.2 The County, the MSD and Master Developer shall negotiate how the CSP administratively implements the comprehensive public policy goals already determined by the County to govern the Planned Community pursuant to this MDA including its exhibits. The CSP shall be submitted to the Planning Commission for its consideration. In making such an administrative approval the Planning Commission may impose conditions it deems appropriate, consistent with the County's Vested Laws and this MDA, to ensure that the CSP implements the comprehensive public policy goals already determined by the County to govern the Planned Community pursuant to this MDA including its exhibits.

2.5.3 Without the prior written consent in an approved CSP neither Master Developer nor Owner nor any of their successors in interest shall make any application for a Building Permit with respect to the development of the Planned Community, nor will any such permits be issued to anyone until the CSP Application has been approved by the County, which review and approval shall be governed by the County's Vested Laws. This section shall not apply to grading permits or building permits for public infrastructure servicing the school site owned by Special Owner noted as Site A on the Land Use Plan.

2.5.4 A CSP will provide many of the details regarding infrastructure and other aspects of the development of the Planned Community. Unless specifically modified by an approved CSP, the following requirements will be applicable upon the rezoning of the Planned Community:

2.5.4.1 Water. The Property is not currently within the service area of the Jordan Valley Water Conservancy District (the "**Conservancy District**"), and must be annexed into the Conservancy District before water can be purchased on either a wholesale or retail basis for use by the Planned Community. The Parties further understand that, but for an annexation of the Property by a municipality or other district that provides retail water service (including the Conservancy District, if it so elects), such water service and connections to the Property will require the Master Developer to create a local water service district or some other legal mechanism that is fully funded and operational. The County will only issue building permits for residential and commercial structures when building lots or commercial

site pads within the Planned Community have rights to receive full retail water service and live culinary water connections and service are stubbed to the applicable building lot or commercial site pad.

2.5.4.2 Stormwater. The CSP shall ensure that historic flows of stormwater runoff will be preserved, which can be accomplished by installation of variable weirs to release waters as necessary to achieve historic flows. Open space protection, riparian preservation, watershed basin models, Best Management Practices (BMPs), and Low Impact Development (LID) practices shall be coordinated between the County, the MSD and Master Developer as a part of a CSP to maintain and monitor long-term watershed quality.

2.5.4.3 Roads. The Traffic Impact Study (TIS) addresses the currently anticipated traffic impacts of the Planned Community.

2.5.4.4 Environmental. The County Health Department and/or State Department of Environmental Quality or other governmental agencies with jurisdiction may review the CSP for compliance with County and State regulations and may provide recommendations to the Planning Commission to ensure compliance with those regulations. To the extent consistent with the requirements of applicable law, the Planning Commission may incorporate those recommendations as conditions of approval of a CSP and any development agreement entered into in connection with the approval of a CSP.

2.5.4.5 Infrastructure Construction Within the Planned Community. Master Developer or the applicable Subdeveloper shall be responsible for funding and constructing all Project Infrastructure within an approved Project. Unless otherwise specifically agreed by the County or the MSD, neither the County nor the MSD shall be responsible for installing, funding, or reimbursing the cost of any of the improvements outlined in the Community Structure Plan, including engineering and design costs. The County shall consider cooperation with the Owner and Master Developer in creating and implementing financing plans for construction of the Project Infrastructure and off-site system improvements serving or benefitting the Planned Community including, but not limited to, the creation of one or more Public Infrastructure Districts subject to the provisions of Section 17B-2A-1201, et seq., Utah Code Ann. (2019).

2.5.4.6 Off-Site System Improvements. The County and Master Developer may create a mechanism for third-party landowners to reimburse the Master Developer for any upsizing or system improvements that service such third-party landowners.

2.5.4.7 Utility Fee. The County or the MSD may assign a utility fee to any utility infrastructure to accurately reflect any actual costs of the County or MSD.

2.5.4.8 Revised Infrastructure Master Plans with CSP. Master Developer shall provide revised water, sewer and stormwater masterplans as part of the CSP submittal, which reflect the revised application, including any revised Maximum Residential Units. Master Developer shall coordinate with local utility providers to ensure necessary systems are funded, designed, and constructed at a pace consistent with the development of the Planned Community and consistent with the revised water, sewer and stormwater masterplans.

2.5.5 Traffic Impact Mitigation. The Master Developer shall submit a Traffic Impact Study (TIS) for each CSP that is prepared by a traffic engineering firm, which shall include the proposed location and mixture of housing types required by subsection 2.2.2 and shall take into account applicable regional impact. The County and its consultants may review the TIS assumptions and methodologies prior to submission of the TIS. Master Developer shall also provide an update of the Recommended Improvements from Exhibit D of this MDA that impact the CSP (including the timing of the Recommended Improvements), together with a calculation of the Master Developer's proportionate share of the cost and

timing of said Recommended Improvements ("cost calculation"), both of which shall be prepared by a traffic engineering firm. Developer shall pay the cost of County or MSD to contract with a consultant to review the TIS and cost calculation, in accordance with the process outlined in subsection 2.9.1 of this MDA. Material differences or disputes between Master Developer's TIS and/or cost calculation and the County or MSD's review thereof shall be resolved pursuant to Section 2.5.5.1 of this MDA. At the time the Recommended Improvements are installed by the applicable jurisdiction, Master Developer shall pay County its proportionate share of the Recommended Improvements per the cost calculation; County shall forward this payment to the applicable jurisdiction installing the Recommended Improvements via interlocal agreement with a requirement that the payment be used for the applicable Recommended Improvements. Master Developer's failure to pay its proportionate share of the Recommended Improvements within 30 days of the County's request for the same shall constitute a Default, and County may pursue all remedies outlined in Section 7.17.6, including but not limited to withholding building permits Master Developer acknowledges that these payments are not impact fees under Utah law, and shall not challenge them as such at any time.

2.5.5.1 Dispute Resolution of Disputes Relating to traffic impact mitigation. If there is a dispute relating to subsection 2.5.5, the County Council and Master Developer shall meet within fourteen (14) calendar days to resolve the dispute. If the County and Master Developer are unable, after meeting and conferring, to resolve the dispute, the Parties shall attempt within seven (7) days to appoint a mutually acceptable expert in traffic impact mitigation or such other discipline as may be appropriate. If the Parties are unable to agree on a single acceptable mediator, each shall, within seven (7) days, appoint its own individual appropriate expert. These two experts shall, between them, choose the single mediator. Master Developer shall pay the fees of the chosen mediator. The chosen mediator shall within fourteen (14) days, review the positions of the parties regarding the mediation issue and promptly attempt to mediate the issue between the parties. If the parties are unable to reach agreement, the mediator shall notify the parties in writing of the resolution that the mediator deems appropriate. The mediator's opinion shall not be binding on the parties.

2.5.6 Commercial Development Plan. A commercial development plan shall be submitted to the Administrator along with each CSP. The commercial development plan shall outline the proposed commercial, retail, or other non-residential development to take place within each geographic area covered by that CSP. Developments that are solely residential do not count towards commercial development, but the non-residential component, if any, of any mixed use development shall be included. The commercial plan for each CSP shall include the estimated square footage of non-residential development, the location of the non-residential development, and the estimated number of jobs to be created and the estimated average salary of those jobs. Each commercial development plan shall include a market study that supports the conclusions in the plan. If the commercial development plan and associated market study is supported by sound market data and methodologies, the Administrator shall approve the commercial development plan. The Administrator shall have 15 calendar days to determine whether the County needs to have a consultant review the study. If the County determines to hire a consultant, the Master Developer shall reimburse the County pursuant to Section 2.91. The County shall have up to 10 business days to obtain the services of a consultant. After the consultant has been retained the Administrator shall make a determination in 30 calendar days. Commercial development within the geographic area covered by the CSP shall take place in accordance with the commercial development plan. Any disputes regarding a commercial development plan, its implementation or modification shall be resolved in the manner specified in Section 4.2.7 and 4.2.8.

2.5.6.1 Modification of the Commercial Development Plan. Master Developer may apply to the Administrator to have the commercial development plan modified. Such application shall follow the same process and requirements outlined in section 2.5.6. If a commercial development modification is proposed due to a shortfall in the actual square footage to be built, the timing thereof, or a

conversion of commercial development to another use, as compared to the existing commercial development plan. Master Developer is required to submit a modified commercial development plan with an associated market study to justify the shortfall, timing modification or change of use.

2.6 Concurrency Management Required. Development Applications shall be required to include reasonable verification of the continued availability and adequacy of sanitary sewer service, storm water service, culinary water service, fire protection (including water fire flow, storage, and other similar requirements), and utilities for the development activity contemplated by each such Development Application. No building permits shall be issued until proof is established that adequate utility rights/contracts and infrastructure is available and can be funded and installed as per requirements of this MDA. Utility and infrastructure systems shall be phased based on the timing of the various Project Plan/Subdivision Plats. All utility and infrastructure systems shall accommodate anticipated build-out and include a plan to reduce long-term costs, optimize efficiencies, and reserve land and corridors needed for future growth provided that there are appropriate provisions for reimbursement to Master Developer for system improvements.

2.6.1. Bonding for public improvements, and any releases of those bonds, shall be governed by Utah State law, with installation of public improvements and release of bonds to take place in accordance with the Design Standards outlined in County's Vested Laws, this MDA, any applicable CSP and/or Project Plans.

2.7 Building Permit Cap Until Planned Community is Annexed or Incorporates., The County will have no obligation to issue building permits for more than one thousand five hundred (1,500) RDUs until (i) a petition to incorporate the entirety of the Property as a separate municipality is properly filed in accordance with State law, or, (ii) a petition to annex the entirety of the Property into an adjoining municipality is properly filed in accordance with State law. Except as provided in subsection 2.7.1, the County will have no obligation to issue building permits for more than two thousand (2,000) RDUs until either the above-referenced incorporation or annexation, as applicable, is completed in accordance with State law, and the incorporated municipality, if applicable, is fully funded and operational meaning that all statutorily required offices of a municipality are funded and staffed, with municipal office space funded and a building lease or other arrangement in place. The foregoing limitations on the issuance of Building Permits by the County or the MSD shall not apply with respect to Building Permits issued for commercial, office, institutional or industrial uses, which uses do not include apartments or other multi-family residential dwellings.

2.7.1 If a petition for incorporation and a petition for annexation into an existing municipality are unsuccessful then Master Developer and Owner shall continue to pursue in good faith new petitions (without waiving the right to require in any such annexation or incorporation the ability to construct the Maximum Residential Dwelling Units and the other Intended Uses authorized by this MDA or any such reduction in those rights that is approved by Master Developer and Owner).

2.8 Municipal Successor to the County. The Parties acknowledge that a municipality may assume some or all the rights and obligations of the County and/or the MSD under this MDA upon the Property becoming included in the municipality through municipal incorporation or annexation. Upon the Property becoming part of a municipality, with the municipality assuming the position of the County or the MSD hereunder, all references to "unincorporated" portions of Salt Lake County, or similar references, shall be construed to refer to areas within the municipality, and other provisions shall be construed and deemed modified as necessary to implement the intent of the Parties to this MDA. Similarly, effective upon the withdrawal of the Property from the MSD, with a municipality assuming the rights, duties and obligations of the MSD hereunder, the MSD shall be released from any and all further obligations and

duties under this MDA, all of which shall then become the rights and responsibilities of the applicable municipality.

2.9 Independent Technical Analysis for Development Applications' Compliance with Design Standards. To ensure a Development Application's compliance with the Design Standards outlined in this MDA, the County may engage a professional design consultant under the processes specified in subsection 2.9.1, with the actual and reasonable costs being the responsibility of Applicant. The County's design consultant shall provide a recommendation to the Planning Commission or any other approval process specified in this MDA.

2.9.1 The County or the MSD consultant undertaking any review by the County or the MSD required by section 2.9 or 2.5.5 shall be selected from a list generated by the County or the MSD for such County or the MSD review. The anticipated cost and timeliness of such review may be a factor in choosing the consultant. The County or the MSD shall promptly estimate the cost for the consultant in good faith consultation with the Master Developer. Upon completion of the consultant(s)' services and the provision by the County or the MSD of an invoice (with such reasonable supporting documentation as may be requested by Master Developer), Master Developer or the Subdeveloper shall, within ten (10) business days pay for the services.

2.10 Acknowledgement of Parcels. The County acknowledges that the precise location and details of the public improvements, lot layout and design and any other similar item regarding the development of a particular Parcel may not be known at the time of the creation of or sale of a Parcel. Master Developer may obtain approval of a Subdivision as is provided in Utah Code Ann., Section 17-27a-103(62)(c)(vi) (2019) that does not create any individually developable lots in the Parcel without being subject to any requirement in the County's Vested Laws to complete or provide security for any Public Infrastructure at the time of such subdivision. The responsibility for completing and providing security for completion of any Public Infrastructure in the Parcel shall be that of the Master Developer or a Subdeveloper upon a subsequent re-Subdivision of the Parcel that creates individually developable lots. However, construction of improvements shall not be allowed until the Master Developer or Subdeveloper complies with the County's Vested Laws.

2.11 Effect of this MDA. Except as otherwise provided in this MDA, this MDA, as the same may be amended or supplemented from time to time, shall be the sole agreement between the Parties for the development of the entirety of the Property. Notwithstanding the foregoing, various other development, infrastructure, and other agreements may be entered into by and among the Parties hereto and others with respect to the development of various Projects, Project Plans and Phases, or specific infrastructure developments over the course of the Planned Community's development. This MDA is intended to implement the approved P-C Zone Plan. In the event of any inconsistency between the terms of this MDA and the provisions of the P-C Zone Plan, the terms and provisions of this MDA shall control. Master Developer and Owner acknowledge and agree that notices have been properly given, and required, meetings and hearings have been held by the County with respect to the approval of this MDA, and agree not to challenge County's or MSD's approval on the grounds of any procedural infirmity or any denial of or failure respecting any procedural right.

2.12 Effect of this MDA on Special Owner. The Parties acknowledge that the School District Property is being included in this MDA, and the Special Owner is executing this MDA for the purpose of acknowledging that School District Property is within the Property. The School District Property may be developed as a school or schools subject to applicable provisions of the County's Vested Laws and the laws of the State of Utah. If, at any time, any portion of the School District Property is convey to Owner or Master Developer then that portion shall be subject to all of the provisions of this MDA.

2.13 Certain Extraction, Processing and Uses Permitted. Master Developer, and/or its agents, successors, assigns, tenants, guests, and invitees shall be permitted to extract and process the natural materials located on the Property such as aggregate (rock, sand or gravel products, but excluding any other underground materials or other minerals which may be discovered, if any) during the course of grading, excavation, and other ordinary and customary development processes for the Property. Such natural materials may be used and processed on-site in the construction of infrastructure, homes, or other buildings or improvements located on the Property or off-site for purposes of constructing system improvements required by this MDA. The zoning for the Property shall not be construed to limit or restrict any such temporary development-related extraction, processing and hauling activities. Master Developer shall obtain a permit from the County for such extraction and/or processing, which the County shall issue if the standards of this section 2.13 are satisfied.

2.14 Preservation of the Public Land Survey System. The Salt Lake County Surveyor has identified the presence of approximately nine government survey monuments or public land survey government corners within the boundary of the Planned Community. Master Developer shall, in consultation with and at the direction of the Salt Lake County Surveyor, comply with the requirements of Salt Lake County Ordinance Chapter 14.17 and Utah Code Sections 17-23-14 and 17-23-15 throughout the process of constructing the Planned Community.

SECTION 3
Vested Rights and Reserved Legislative Powers

3.1 Vested Rights. Subject to Subsection 3.4, during the term of this MDA, the Master Developer and/or Owner (or their respective successors-in-title) with respect to all or any part of the Planned Community shall have the vested right: (i) to have a Community Structure Plan reviewed and, if found to meet the standards and criteria set forth in this MDA and the County's Vested Laws, approved; and (ii) upon approval of the Community Structure Plan, to develop and construct the Planned Community in accordance with the uses, densities, timing and configurations (massing) of development as vested under the terms and conditions of this MDA, including specifically, but without limitation, the Land Use Plan, the Findings, Section 2, and the accompanying Exhibits. Except as otherwise provided in this MDA, it is contemplated that the rights vested in the Planned Community are exempt from the application of the County's Future Laws. Where there is a conflict between this MDA and the County's Vested Laws, the more specific provisions from this MDA shall control.

3.2 Invalidity. Master Developer and Owner covenant and agree not to bring suit to have any of the County's Vested Laws declared to be unlawful, unconstitutional or otherwise unenforceable. If any of the County's Vested Laws are declared to be unlawful, unconstitutional or otherwise unenforceable, Master Developer and Owner will nonetheless comply with the terms of this MDA. Master Developer and Owner shall also, in that event, cooperate with the County in adopting and agreeing to comply with a new enactment by the County which is materially similar to any such stricken provision and which implements the intent of the parties in that regard as manifested by this MDA.

3.3 Reserved Legislative Powers. The Parties acknowledge that the County is restricted in its authority to limit its police power by contract and that the limitations, reservations and exceptions set forth herein are intended to reserve to the County those police powers that cannot be so limited. Notwithstanding the retained power of the County to enact such legislation under the police powers, such legislation shall only be applied to modify the vested rights of the Master Developer under the terms of this MDA based upon the policies, facts and circumstances meeting the compelling, countervailing public interest exception

to the vested rights doctrine in the State of Utah. Any such proposed legislative changes affecting the vested rights of the Master Developer under this MDA shall be of general application to all development activity in the County and, unless the County declares an emergency, Master Developer shall be entitled to prior written notice and an opportunity to be heard with respect to any proposed change and its applicability to the Planned Community under the compelling, countervailing public interest exception to the vested rights doctrine.

3.4 Excepted Laws and Ordinances. The County expressly reserves its authority to impose the County's Future Laws to the Planned Community and the Property in the following circumstances and Master Developer agrees to abide by such laws:

(a) *Compliance with State and Federal Laws.* County's Future Laws which are generally applicable to all similarly situated properties in the County and which are required to comply with State and Federal laws and/or regulations affecting the Planned Community and/or the Property;

(b) *Safety and Health Code Updates.* County's Future Laws that are updates or amendments to existing health regulations, building, plumbing, mechanical, electrical, street lighting, dangerous buildings, drainage, or similar construction or safety related codes, such as the International Building Code, International Fire Code, Salt Lake County Health Department Regulations, the APWA Specifications, American Association of State Highway and Transportation Officials (AAHSTO) Standards, the Manual on Uniform Traffic Control Devices (MUTCD) and similar standards that are generated by a nationally or statewide recognized construction/safety organization, or by the County, a municipality having jurisdiction, State or Federal governments and are required to meet legitimate concerns related to public health, safety or welfare;

(c) *Ordinances and Resolutions Not Inconsistent.* Ordinances and resolutions of the County or the MSD not in conflict with the provisions of this MDA and rights granted to the Master Developer and the Owner hereunder.

(d) *Taxes.* Taxes, and modifications thereto, so long as such taxes are lawfully imposed and charged uniformly by the County or MSD to all properties, applications, persons and entities that are similarly situated.

(e) *Fees.* Changes to the amounts of fees by the County or MSD (but not changes to the timing provided in the County's Vested Laws for the imposition or collection of such fees) for the processing of Development Applications (including inspections) that are in accordance with this MDA or generally applicable to all development within the County (or a portion of the County as specified in the lawfully adopted fee schedule) and which are adopted pursuant to State law.

(f) *Impact Fees.* Impact Fees or modifications thereto which are lawfully adopted, imposed and collected. To the extent that impact fees cover system improvements or other improvements that Master Developer has or will construct and pay for and/or fund, impact fees will not be charged within the Property for such improvements. Otherwise, the Planned Community shall be subject to all impact fees of the County, the MSD, a municipality (when the Property is included in a municipality) or any local or special service district that are: generally applicable to other similarly situated land in unincorporated Salt Lake County, the municipality (if applicable), the service area of the MSD, and/or other local or special service district. If impact fees are properly imposed pursuant to this Subsection 3.4(f), the fees shall be payable in accordance with the particular impact fee ordinance or resolution. Notwithstanding the agreement to subject the

Planned Community to impact fees pursuant to this Subsection 3.4(f), Master Developer and any Subdevelopers or other owner of all or part of the Planned Community may, pursuant to applicable law, challenge the adoption of the impact fee, the reasonableness of the amount of the impact fees and the conformity of the impact fee with the provisions of the Utah Impact Fees Act, Title 11, Chapter 36a of the Utah Code, or other applicable law, and may seek credits against impact fees otherwise assessed in accordance with Section 11-36a-402 of the Utah Impact Fee Act or any other similar provision of Utah law, and nothing in this Section 3.4(f) is intended to waive or shall be deemed to waive any rights under any applicable law to make such challenge or seek such credits.

(g) *Municipal Services Fees.* Fees imposed to pay for municipal-type services and/or infrastructure provided by the MSD and/or any other provider, including but not limited to, stormwater utility, special assessments, and connection or hookup fees.

(h) *Generally Applicable laws not in conflict with this MDA.* County and MSD regulations, ordinances, resolutions, or policies adopted after the date of this MDA that are not in conflict with the terms and conditions for development of the Property established by this MDA, which are generally applicable throughout the unincorporated County (including but not limited to, regulations relating to Accessory Dwelling Units) and which do not materially increase the cost of developing the Planned Community nor diminish the number or types of the Intended Uses.

(i) *Design Standards.* Design Standards, as defined in this Agreement, that are agreed to subsequent to the Effective Date.

3.5 Processing Under County's Vested Laws. Approval processes for Development Applications shall be as provided in the County's Vested Laws, except as otherwise provided in this MDA. Development Applications shall be approved by the County and the MSD if they comply with the County's Vested Laws and this MDA.

SECTION 4

Modification And Administrative Amendment Of This MDA

4.1 Administrative Amendments. The following modifications to this MDA may be considered and approved by the Administrator:

(a) Infrastructure. Modification of the location and/or sizing of the infrastructure for the Planned Community that does not materially change the functionality of the infrastructure.

(b) Design Standards. Modifications of the Design Standards as permitted by the Design Standards. Amendment of certain Design Standards requires approval of the County Council as noted in Exhibit C.

(c) Minor Amendment. Any other modifications deemed to be minor modifications by the Administrator.

4.1.1 Application to Administrator. Applications for Administrative Amendments shall be filed with the Administrator:

4.1.2 Referral by Administrator. If the Administrator determines for any reason that it would be inappropriate for the Administrator to determine any Administrative Amendment, the Administrator may require the Administrative Amendment to be processed as a Modification Application.

4.1.3 Administrator's Review of Administrative Amendment. The Administrator shall promptly consider and decide upon the Administrative Amendment within a reasonable time, after consulting with applicable County and/or District subject-matter experts. If the Administrator approves

the Administrative Amendment, the Administrator shall record notice of such approval against the applicable portion of the Property in the official County records.

4.1.4 Appeal of Administrator's Denial of Administrative Amendment. If the Administrator denies any proposed Administrative Amendment, the Applicant may process the proposed Administrative Amendment as a Modification Application.

4.2 Modification Applications. Except for Administrative Amendments, any future amendments to this MDA shall be considered as Modification Applications subject to the following processes.

4.2.1 Who May Submit Modification Applications. Only the County, the MSD and Master Developer with the consent of the Owner, or an assignee that succeeds to all of the rights and obligations of the Owner and Master Developer under this MDA, (and not including a Subdeveloper) may submit a Modification Application.

4.2.2 Modification Application Contents. Modification Applications shall:

4.2.2.1 Identification of Property. Identify the property or properties affected by the Modification Application.

4.2.2.2 Description of Effect. Describe the effect of the Modification Application on the affected portions of the Planned Community.

4.2.2.3 Identification of Non-County Agencies. Identify any Non-County agencies potentially having jurisdiction over the Modification Application.

4.2.2.4 Map. Provide a map of any affected property and all property within three hundred feet (300') showing the present or Intended Uses and RDUs of all such properties.

4.2.2.5 Fee. Modification Applications shall be accompanied by a fee in an amount reasonably estimated by the County to cover the costs of processing the Modification Application.

4.2.3 County Cooperation in Processing Modification Applications. The County shall cooperate reasonably in promptly and fairly processing Modification Applications.

4.2.4 Planning Commission Review of Modification Applications.

4.2.4.1 Review. All aspects of a Modification Application required by law to be reviewed by the Planning Commission shall be considered by the Planning Commission as soon as reasonably possible in light of the nature and/or complexity of the Modification Application.

4.2.4.2 Recommendation. The Planning Commission's vote on the Modification Application shall be only a recommendation and shall not have any binding or evidentiary effect on the consideration of the Modification Application by the Council.

4.2.5 County Council Review of Modification Application. After the Planning Commission, if required by law, has made or been deemed to have made its recommendation on the Modification Application, the Council shall consider the Modification Application.

4.2.6 County Council's Denial of Modification Applications. If the County Council does not approve the Modification Application, the County Council shall provide a written determination advising the Applicant of the reasons for denial, including specifying the reasons the County believes that the Modification Application is not consistent with the intent of this MDA, the PC Zone Plan and/or the County's Vested Laws (or, only to the extent permissible under this MDA, the County's Future Laws).

4.2.7 Meet and Confer regarding Modification Applications. The County Council and Master Developer shall meet within fourteen (14) calendar days of any objection to resolve the issues presented by the Modification Application and any of the County Council's bases for denial.

4.2.8 Mediation regarding Modification Applications. If the Council and Master Developer are unable to resolve a dispute regarding a Modification Application, the Parties shall attempt within seven (7) days to appoint a mutually acceptable expert in land planning or such other discipline as may be appropriate. If the Parties are unable to agree on a single acceptable mediator, each shall, within seven (7) days, appoint its own individual appropriate expert. These two experts shall, between them, choose the single mediator. Master Developer shall pay the fees of the chosen mediator. The chosen mediator shall within fourteen (14) days, review the positions of the parties regarding the mediation issue and promptly attempt to mediate the issue between the parties. If the parties are unable to reach agreement, the mediator shall notify the parties in writing of the resolution that the mediator deems appropriate. The mediator's opinion shall not be binding on the parties.

SECTION 5
Municipal Government/Services

5.1 Prohibition on Partial Annexation. Without the prior written consent of the County and the MSD, neither Master Developer nor Owner shall, individually or collectively, annex or consent to the annexation of only a portion of the Property by an adjoining municipality.

5.2 Provision of Municipal Services--Shortfall Period. Subject to the terms and conditions set forth in this MDA, the MSD shall provide municipal-type services to the Property consistent with the services provided by the MSD to the unincorporated areas of the County generally. The MSD shall continue to provide such municipal-type services to the Property if the Property is either incorporated as a municipality or annexed into an adjoining municipality unless and until the Property is withdrawn from the MSD pursuant to the requirements of existing law. The Parties acknowledge that there may be a shortfall in the funds generated by the development of the Planned Community from the costs of the MSD providing such services as and when development occurs. Any CSP shall provide for a mechanism to calculate and fund, acceptable to the MSD, any shortfall as such may be incurred during the course of the development. If a mechanism cannot be agreed upon, Master Developer will be in Default. Any CSP shall also include a market-driven analysis of the financial viability of the development proposed by the CSP and the impacts of that development on the goals expressed in this MDA for the Planned Community, including economic, infrastructure, social and sustainability factors.

5.3 Order of Development. To effectuate the most efficient provision of municipal-type services, new residential phases shall, to the extent practical, be reasonably proximate to residential phases that have been constructed or are being constructed within the Planned Community. Notwithstanding the foregoing, Master Developer or an applicable Subdeveloper may, pursuant to an approved Project Plan, develop two or more Projects concurrently that are located in different areas of the Planned Community, so long as the residential phases within the those Projects are reasonably proximate to one another. To limit the duration of any Shortfall Period and so that the MSD can provide an adequate level of municipal-type services to the Planned Community, the Parties further desire to promote development of the Planned Community in a way that allows the MSD's revenues generated from within the Planned Community to meet the MSD's actual expenditures within the Planned Community. Accordingly, Master Developer shall, consistent with market demand, exercise commercially reasonable efforts to develop the Planned Community in a manner and sequence that minimizes the Shortfall Period and amount.

SECTION 6
Successors and Assigns

6.1 Assignability. The rights and responsibilities of Master Developer under this MDA may not be assigned in whole or in part by Master Developer without the prior written consent of the County Administrator and the MSD General Manager, which consent shall not be unreasonably withheld, conditioned or delayed. Any assignee, including all Subdevelopers, shall consent in writing to be bound by the assigned terms and conditions of this MDA as a condition precedent to the effectiveness of the assignment.

6.2 Other Transactions. Master Developer and/or Owner's transfer of all or any part of the Property to any entity "related" to Master Developer and/or Owner (as defined by regulations of the Internal Revenue Service), Master Developer and/or Owner's entry into a joint venture for the development of all or any part of the Property, or Master Developer and/or Owner's pledging of part or all of the Property as security for financing shall also not be deemed to be an "assignment" subject to the above-referenced approval by the County and the MSD unless specifically designated as such an assignment by the Master Developer and/or Owner. Master Developer and/or Owner shall give the County and the MSD Notice of any event specified in this Subsection within ten (10) days after the event has occurred. Such Notice shall include providing the County and the MSD with all necessary contact information for the newly responsible party. Master Developer and/or Owner shall remain responsible for all obligations of this Agreement in such a transfer to a related entity, joint venture, or security for financing.

6.3 Sale of Lots. Owner's and Master Developer's selling or conveying lots in any approved Subdivision or Parcels to builders, users, or Subdevelopers, shall not be deemed to be an "assignment" subject to the above-referenced approval by the County and MSD unless specifically designated as such an assignment by Owner and Master Developer.

6.4 Notice. Owner and Master Developer shall give Notice to the County and MSD of any proposed assignment and provide such information regarding the proposed assignee that the County or MSD may reasonably request in making the evaluation permitted under this Section. Such Notice shall include providing the County and MSD with all necessary contact information for the proposed assignee.

6.5 Time for Objection. Unless the County or MSD objects in writing within twenty (20) business days of notice, the County or MSD as applicable shall be deemed to have approved of and consented to the assignment.

6.6 Partial Assignment. If any proposed assignment is for less than all of Owner's or Master Developer's rights and responsibilities then the assignee shall be responsible for the performance of each of the obligations contained in this MDA to which the assignee succeeds. Upon any such approved partial assignment, Owner and/or Master Developer shall be released from any future obligations as to those obligations which are assigned but shall remain responsible for the performance of any obligations that were not assigned.

6.7 Denial. The County or MSD may only withhold their respective consent if the County or MSD is not reasonably satisfied of the assignee's financial ability to perform the obligations of Owner or Master Developer, as the case may be, proposed to be assigned or there is an existing breach of a development obligation owed to the County or MSD by the assignee or related entity that has not either been cured or in the process of being cured in a manner acceptable to the County or MSD as applicable. Any refusal of the County or MSD to accept an assignment shall be subject to the "Meet and Confer" and "Mediation" processes specified in Sections 7.17.3 and 7.17.4.

6.8 Binding Effect. If Owner sells or conveys Parcels of lands to Subdevelopers or related parties, the lands so sold and conveyed shall bear the same rights, privileges, Intended Uses, configurations,

and Density as applicable to such Parcel and be subject to the same limitations and rights of the County or MSD when owned by Owner and as set forth in this MDA without any required approval, review, or consent by the County or MSD except as otherwise provided herein.

SECTION 7
General Terms and Conditions

7.1 No Addition to Planned Community. No land may be removed from the Planned Community or added to the Planned Community for purposes of this MDA, except by written amendment to the MDA. Adjacent properties added to the Planned Community by reason of any such amendment shall not be required to meet the minimum acreage requirements for the P-C Zone. Except as provided immediately above, this MDA shall not affect any land other than the Property.

7.2 Recordation and Running with the Land. This MDA shall be recorded in the chain of title for the Property. This MDA and the benefits, burdens, rights and obligations herein shall be deemed to run with the land and shall be binding on and shall inure to the benefit of all successors in ownership of the Property, or portion thereof, as applicable, with respect to that portion of the Property owned by such successors in ownership, except as expressly set forth in this MDA. Accordingly, each and every purchaser, assignee, or transferee of an interest in the Property or any portion thereof shall be obligated and bound by the terms and conditions of this MDA, but only with respect to the Property or such portion thereof sold, assigned or transferred to it.

7.3 Construction of MDA. This MDA was jointly drafted and shall be construed so as to effectuate the public purposes of implementing long-range planning objectives, obtaining public benefits, and protecting any compelling, countervailing public interest, while providing reasonable assurances of continued vested private development rights under this MDA.

7.4 Laws of General Applicability. Where this MDA refers to laws of general applicability to the Planned Community and other properties, that language shall be deemed to refer to laws which apply to all other developed and subdivided properties within unincorporated Salt Lake County.

7.5 Term/Renewal/Expiration. The term of this Development Agreement shall commence upon the Effective Date and continue until December 31, 2045. If, as of that date, Owner or Master Developer have not been declared to be in default as provided in Section 7.17, then this MDA shall be automatically extended until December 31, 2055.. At the expiration of this MDA, the undeveloped property shall become subject to the then existing County Future Laws, and all development rights vested under this MDA shall expire except that such termination shall not apply to any CSP or Project Plans that have been approved prior to the termination. Any such uncompleted CSP or Project Plans shall be allowed to be completed by December 31, 2060. This MDA shall also terminate automatically at Buildout.

7.5.1 Notwithstanding anything to the contrary in this MDA or otherwise, should the option agreement between Master Developer and Owner be terminated with respect to all or part of the Property, this MDA shall cease to be operative or effective respecting such portion of the Property unless the Owner expressly assumes all of the obligations of the Master Developer arising under this MDA in a writing approved by both the County and MSD. If Owner expressly assumes all of the obligations of the Master Developer for all or part of the Property, as described above, Owner may designate a Replacement Master Developer reasonably acceptable to the County and the MSD. If the Replacement Master Developer is approved by the County and the MSD, the Replacement Master Developer shall expressly

assume the role and obligations of Master Developer arising under this MDA in a writing approved by both the County and the MSD.

7.6 State and Federal Law. The Parties agree, intend and understand that the obligations imposed by this MDA are only such as are consistent with applicable State and Federal law. The Parties further agree that if any provision of this MDA becomes, in its performance, inconsistent with applicable state or federal law or is declared invalid, this MDA shall be deemed amended to the extent necessary to make it consistent with the State or Federal law, as the case may be, and the balance of this MDA shall remain in full force and effect.

7.7 No Waiver. Failure of a Party to exercise any right hereunder shall not be deemed a waiver of any such right and shall not affect the right of such Party to exercise at some future time said right or any other right it may have hereunder. Unless this MDA is amended or revised in writing as allowed by this MDA and County ordinance, no officer, official or agent of the County has the power to amend, modify or alter this MDA or waive any of its conditions as to bind the County by making any promise or representation not contained herein.

7.8 Entire Agreement. This MDA constitutes the entire agreement between the Parties with respect to the issues addressed herein and supersedes all prior agreements, whether oral or written, covering the same subject matter. This MDA may not be modified or amended except in writing mutually agreed to and accepted by all Parties to this MDA consistent with the provisions hereof and County Ordinance.

7.9 Notices. All notices required or permitted under this MDA shall, in addition to any other means of transmission, be given in writing by email, certified mail or regular mail to the following address:

To the Master Developer:
Olympia Land, LLC
Attn: Doug Young
6150 S. Redwood Road, Suite 150
Taylorsville, Utah 84123
Email: doug@projectutah.com

With a copy to:
Bruce R. Baird
Bruce R. Baird, PLLC
2150 South 1300 East, Suite 500
Salt Lake City, Utah 84106
Email: bbaird@difficultdirt.com

To Owner:
The Last Holdout, L.L.C.
Attn: Emily Markham
c/o Jacob Anderson
233 N. 1250 W., Suite 202
Centerville, Utah 84014
Email: jake@andersonlawpllc.com

With a copy to:
Jacob Anderson

Anderson Law, PLLC
233 N. 1250 W., Suite 202
Centerville, Utah 84014
Email: jake@andersonlawpllc.com

To the County:
Salt Lake County
Attn: Mayor
2001 S. State St., N2-100
Salt Lake City, UT 84114
Email: Mayor@slco.org

With a copy to:
Salt Lake County District Attorney
35 E. 500 S.
Salt Lake City, UT 84111
Email: rchamness@slco.org

To the MSD:

Greater Salt Lake Municipal Services District
Attn: General Manager
2001 S. State St., N3-600
Salt Lake City, UT 84114
Email: bbarker@msd.utah.gov

With a copy to:

Mark Anderson
Rachel S. Anderson
Fabian VanCott
215 State St., Ste. 1200
Salt Lake City, UT 84111
Email: mhanderson@fabianvancott.com
randerson@fabianvancott.com

To JSD:
Jordan School District
Scott Thomas
7905 S. Redwood Rd.
West Jordan, UT 84088-4601
Email: scott.thomas@jordandistrict.org

With a copy to:
Paul VanKomen
102 S. 200 E., Ste. 600
Salt Lake City, UT 84111
Email: pvankomen@burbidgewhite.com

7.10 Effectiveness of Notice. Except as otherwise provided in this MDA, each Notice shall be

effective and shall be deemed delivered on the earlier of:

(a) Electronic Delivery. Its actual receipt if delivered electronically by email provided that a copy of the email is printed out in physical form and mailed as set forth herein on the same day and the sending party has an electronic receipt of the delivery of the Notice.

(b) Mail Delivery. Three calendar days after the Notice is postmarked for mailing, postage prepaid, by First Class or Certified United States Mail and actually deposited in or delivered to the United States Mail. Any party may change its address for Notice under this MDA by giving written Notice to the other party in accordance with the provisions of this Section.

7.11 Applicable Law. This MDA is entered into in Salt Lake County in the State of Utah and shall be construed in accordance with the laws of the State of Utah irrespective of Utah's choice of law rules. Legal actions shall be instituted in the Third Judicial District Court of the County of Salt Lake, State of Utah.

7.12 Execution of Agreement. This MDA may be executed in multiple parts or originals or by facsimile copies of executed originals; provided, however, if executed and evidence of execution is made by facsimile copy, then an original shall be provided to the other Parties within seven (7) days of receipt of said facsimile copy.

7.13 Indemnification. Master Developer and Owner agree to, and do hereby, agree to defend, hold harmless and indemnify the County, MSD, and all County and MSD elected or appointed officials, officers, employees, agents, representatives, engineers, and attorneys from any and all claims that may be asserted at any time against any of them arising out of the negligence or willful misconduct of the Master Developer or Owner (each as applicable with respect to its own negligence or willful misconduct) in connection with the development, construction, maintenance, or use of any portion of the Planned Community, Project Infrastructure, or other improvements that Master Developer constructs. Master Developer and Owner (each as applicable with respect to its own negligence or willful misconduct) do hereby agree to pay all expenses, including without limitation legal fees and administrative expenses, incurred by County and/or MSD in defending itself with regard to any and all such claims. With respect to any other third-party claims challenging this Agreement or any provision herein ("other claims"), the Parties agree to cooperate with each other in good faith to defend said lawsuit, each Party to bear its own legal expenses and costs.

7.14 Nature, Survival, and Transfer of Obligations. All obligations assumed by the Owner and/or Master Developer under this MDA shall be binding on the Owner and Master Developer personally, on any and all of the Owner and Master Developer's heirs, successors, and assigns, and on any and all of the respective successor legal or beneficial owners of all or any portion of the Property.

7.15 5-year Reviews. Every five years after the execution of this MDA, the Parties shall meet and confer to consider any issues that may have arisen regarding the MDA, the development of the Property, the general economy, and other issues. The first meeting shall take place at a time and place mutually agreeable to the Parties between January 15 and February 15 of 2025 and then every five years thereafter. The Parties shall not be required to make any modifications of this MDA as a result of these reviews but may propose amendments for the consideration of the Parties.

7.16 Appointment of Representatives. To further the commitment of the Parties to cooperate in the implementation of this MDA, the County, MSD, Owner and Master Developer each shall designate and appoint a representative to act as a liaison between the County and its various departments, the MSD, and the Master Developer. The initial representative for the County shall be the Mayor of the County. The

initial representative for the MSD shall be its General Manager. The initial representative for Master Developer shall be Doug Young. The initial representative for Owner shall be Jacob Anderson. The Parties may change their designated representatives by Notice. The representatives shall be available at all reasonable times to discuss and review the performance of the Parties to this MDA and the development of the Property.

7.17 Default.

7.17.1 Notice. If any of the Parties fails to perform its respective obligations hereunder or to comply with the terms hereof, a Party believing that a Default has occurred shall provide Notice to the other Parties. If the County or MSD believes that the Default has been committed by a Subdeveloper, then the County or MSD shall also provide a courtesy copy of the Notice to Master Developer and Owner.

7.17.2 Contents of the Notice of Default. The Notice of Default shall:

7.17.2.1 Specific Claim. Specify the claimed event of Default;

7.17.2.2 Applicable Provisions. Identify with particularity the provisions of any applicable law, rule, regulation or provision of this MDA that is claimed to be in Default;

7.17.2.3 Materiality. Identify why the Default is claimed to be material; and

7.17.2.4 Optional Cure. If the County or MSD chooses, in their respective discretion, they may propose a method and time for curing the Default which shall be of no less than sixty (60) days duration.

7.17.3 Meet and Confer regarding Notice of Default. The Parties shall meet within fifteen (15) business days of any Notice of Default to resolve the issues specified in the Notice of Default.

7.17.4 Mediation of Notice of Default.

7.17.4.1 Issues Subject to Mediation. Issues resulting from the Notice of Default that the parties are not able to resolve by "Meet and Confer" shall be mediated.

7.17.4.2 Mediation Process. If the Parties are unable to resolve a disagreement subject to mediation, the parties shall attempt within ten (10) business days to appoint a mutually acceptable mediator with knowledge of the legal issue in dispute. If the parties are unable to agree on a single acceptable mediator they shall each, within ten (10) business days, appoint their own representative. These representatives shall, between them, choose the single mediator. Owner and/or Master Developer shall pay the fees of the chosen mediator. The chosen mediator shall within fifteen (15) business days, review the positions of the parties regarding the mediation issue and promptly attempt to mediate the issue between the parties. If the parties are unable to reach agreement, the mediator shall notify the parties in writing of the resolution that the mediator deems appropriate. The mediator's opinion shall not be binding on the parties.

7.17.5 Cure. The defaulting Party shall have no less than sixty (60) days to cure the default or demonstrate that the said Party is not in Default. If a Default cannot be reasonably cured within sixty (60) days, then such cure period may be extended at the reasonable discretion of the non-defaulting Party so long as the defaulting Party is pursuing a cure with reasonable diligence.

7.17.6 Remedies. The Parties shall have all rights and remedies available at law and in

equity, including, but not limited to, injunctive relief and specific performance, provided, however, the Owner and Master Developer (and any Subdeveloper to the extent it assumes the rights or obligations of this MDA) agree that it will not seek monetary damages against the County, MSD, or any of their elected or appointed officials, officers, employees, agents, representatives, engineers, or attorneys, on account of the negotiation, execution, or breach of this MDA. In the event of such legal or equitable action, subject to Subsection 7.26, each party to that action will bear its own costs and fees, including attorney fees. The rights and remedies set forth herein shall be cumulative and shall also include: a) the right to draw on any security posted or provided in connection with the Planned Community and relating to remedying of the particular Default, and b) the right to withhold all further reviews, approvals, licenses, building permits and/or other permits for development of the Planned Community in the case of a default by Master Developer, or in the case of a default by a Subdeveloper, development of those Parcels owned by the Subdeveloper until the Default has been cured.

7.17.7 Public Meeting. Before any remedy in Subsection 7.17.6 may be imposed by the County, the Party allegedly in Default shall be afforded the right to address the County Mayor regarding the claimed Default.

7.17.8 Emergency Defaults. Anything in this MDA notwithstanding, if the Council or MSD Board finds on the record that a default materially impairs a compelling, countervailing interest of the County or the MSD, respectively, and that any delays in imposing such a default would also impair a compelling, countervailing interest of the County or MSD, then the County or MSD may impose the remedies of Section 7.17.6 without the requirements of mediation in Section 7.17.4 or a public meeting in Section 7.17.7. The County or MSD shall give Notice to Master Developer and/or any applicable Subdeveloper of any public meeting at which an emergency default is to be considered and the Master Developer and/or any applicable Subdeveloper shall be allowed to address the County Council or MSD Board at that meeting regarding the claimed emergency Default.

7.18 Termination

7.18.1 Termination Upon Completion of Development. This MDA shall terminate on the earlier of (a) that certain date that the Planned Community has been fully developed and the obligations of the Master Developer, the County, and the MSD in connection therewith are satisfied, or (b) the expiration of the term as set forth in Subsection 7.5. Upon such occurrence, Master Developer may request that the County and MSD record a notice that this MDA has been fully performed and therefore terminated as to the Planned Community.

7.18.2 Termination upon Default. This MDA shall be subject to termination by the County or MSD prior to the completion of the Planned Community following a judicial determination that a Default by Master Developer remains unresolved after notice and the opportunity to cure as provided herein.

7.18.3. Effect of Termination on Master Developer Obligations. Judicial termination of this MDA with respect to the Planned Community pursuant to Subsection 7.18.2 shall not affect Master Developer's obligation to comply with the terms and conditions of any applicable zoning, subdivision plat, site plan, building permit, or other land use entitlement approved pursuant to this MDA with respect to any approved Planned Community. Termination of this MDA with respect to the Planned Community shall not affect or invalidate Master Developer's obligations under Subsection 7.13.

7.18.4 Effect of Termination on the County Obligations. Upon any termination of this MDA with respect to the Planned Community, the entitlements, conditions of development, limitations on fees, and all other terms and conditions of this MDA and any amendments hereto shall no longer be vested by reason of this MDA with respect to any portion of the Planned Community then not subject to an

approved Project Plan and corresponding development agreement. Upon such a termination or expiration, the County shall no longer be prohibited by this MDA from making any changes or modifications to such entitlements, conditions, or fees applicable to such portions of the Planned Community that are not subject to an approved Project Plan and corresponding development agreement, or that are subject to a Project Plan with expired vested rights.

7.19 Titles and Captions. All Section titles or captions contained in this MDA are for convenience only and shall not be deemed part of the context nor affect the interpretation hereof.

7.20 Savings Clause. If any provision of this MDA, or the application of such provision to any person or circumstance, shall be held invalid, the remainder of this MDA, or the application of such provision to persons or circumstances other than those as to which it is held invalid, shall not be affected thereby.

7.21 Incorporation of Recitals and Exhibits. All recitals stated above and all attached **Exhibits A thru _** shall be incorporated into and deemed a part of this MDA as though fully set forth herein, and the same shall be binding upon the Parties hereto.

7.22 Force Majeure. Any default or inability to cure a default caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, enemy or hostile governmental action, civil commotion, fire or other casualty, or any other similar causes beyond the reasonable control of the Party obligated to perform, shall excuse the performance by such Party for a period equal to the period during which any such event prevented, delayed or stopped any required performance or effort to cure a default in spite of the said Party's reasonable best efforts.

7.23 Severability. If any provision of this MDA is held by a court of competent jurisdiction to be invalid for any reason, the Parties consider and intend that this MDA shall be deemed amended to the extent necessary to make it consistent with such decision and the balance of this MDA shall remain in full force and affect. If this Agreement in its entirety is determined by a court to be invalid or unenforceable, this Agreement shall automatically terminate as of the date of final entry of judgment. If any provision of this Agreement shall be determined by a court to be invalid and unenforceable, any Party in good faith determines that such provision or provisions are material to its entering into this Agreement, that Party may elect to terminate this Agreement as to all of its obligations remaining unperformed and if any such termination causes any other Party to in good faith determine that the said termination adversely impacts the interests of said other Party, the other Party may also elect to terminate this MDA as to all of its obligations remaining unperformed.

7.24 Estoppel Certificate. Upon fifteen (15) business days prior written request by Master Developer or a Subdeveloper, the County will execute an estoppel certificate to any third party certifying that Master Developer or a Subdeveloper, as the case may be, at that time is not in default of the terms of this Agreement.

7.25 Planned Community is a Private Undertaking. It is agreed among the Parties that the Planned Community is a private development and that neither the County nor the MSD has any interest therein except as authorized in the exercise of its governmental functions. The Planned Community is not a joint venture, and there is no such relationship involving the County or the MSD. Nothing in this Agreement shall preclude the Master Developer from forming any lawful form of investment entity for the purpose of completing any portion of the Planned Community.

7.26 Attorney's Fees. In the event litigation is filed to enforce the terms of this MDA, the prevailing party in such litigation shall be entitled to receive its reasonable attorneys' fees and expenses

from the non-prevailing party, subject to the limitations set forth in the Utah Governmental Immunity Act for property damages.

7.27 Warranty of Authority. The Parties to this MDA each warrant that they have all of the necessary authority to execute this MDA. Specifically, on behalf of the County, the signature of the Mayor of the County is affixed to this MDA to lawfully bind the County pursuant to the Ordinance Approving a Planned Community Zone Plan and Associated Master Development Agreement adopted by the County Council on March 3, 2020. This MDA is approved as to form by the Salt Lake County District Attorney.

Table of Exhibits:

Exhibit "A"	Legal Description of the Property (not including the School District Property)
Exhibit "A-1"	Legal Description of School District Property
Exhibit "B"	Land Use Plan
Exhibit "C"	Design Standards
Exhibit "D"	Traffic Impact Study
Exhibit "E"	Regional Compatibility Plan and Guidelines
Exhibit "F"	Parking Authority and Parking Policies
Exhibit "G"	County's Vested Laws
Exhibit "H"	Affordable/Workforce Housing Plan

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by and through their respective, duly authorized representatives as of the day and year first herein above written.

MASTER DEVELOPER:

OLYMPIA LAND, LLC

By: _____
Its: _____

COUNTY:

SALT LAKE COUNTY

By: _____
Its: Mayor/Designee

Approved as to form and legality:

Zach Shaw

Salt Lake County District Attorney

Attest:

County Clerk

MSD:

GREATER SALT LAKE MUNICIPAL SERVICES DISTRICT:

By: _____
Its: _____

OWNER:

THE LAST HOULDOUT, L.L.C.

By: _____
Its: Manager

SPECIAL OWNER:

JORDAN SCHOOL DISTRICT

By: _____
Its: _____

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by and through their respective, duly authorized representatives as of the day and year first herein above written.

MASTER DEVELOPER:

OLYMPIA LAND, LLC

By: _____
Its: _____

COUNTY:

SALT LAKE COUNTY

By: _____
Its: Mayor/Designee

Approved as to form and legality:

Zach Shaw
Salt Lake County District Attorney

Attest:

County Clerk

MSD:

OWNER:

THE LAST HOULDOUT, L.L.C.

By: _____
Its: Manager

GREATER SALT LAKE MUNICIPAL SERVICES DISTRICT:

By: Joe Smolka
Its: Chair

SPECIAL OWNER:

JORDAN SCHOOL DISTRICT

By: _____
Its: _____

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by and through their respective, duly authorized representatives as of the day and year first herein above written.

MASTER DEVELOPER:

OLYMPIA LAND, LLC

By: Doug Young
Its: MANAGER

COUNTY:

SALT LAKE COUNTY

By: _____
Its: Mayor/Designee

Approved as to form and legality:

Zack Shaw
Salt Lake County District Attorney

Attest:

County Clerk

MSD:

OWNER:

THE LAST HOULDOUT, L.L.C.

Emily B Markham
By: _____
Its: Manager

GREATER SALT LAKE MUNICIPAL SERVICES DISTRICT:

By: _____
Its: _____

SPECIAL OWNER:

JORDAN SCHOOL DISTRICT

By: _____
Its: _____

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by and through their respective, duly authorized representatives as of the day and year first herein above written.

MASTER DEVELOPER:

OLYMPIA LAND, LLC

By: _____
Its: _____

COUNTY:

SALT LAKE COUNTY

By: _____
Its: Mayor/Designee

Approved as to form and legality:

_____
Salt Lake County District Attorney

Attest:

_____
County Clerk

MSD:

GREATER SALT LAKE MUNICIPAL SERVICES DISTRICT:

OWNER:

THE LAST HOULDOUT, L.L.C.

By: _____
Its: Manager

By: _____
Its: _____

SPECIAL OWNER:

JORDAN SCHOOL DISTRICT

By: BRYCE SUNFORD
Its: BOARD PRESIDENT

COUNTY ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the 26 day of March, 2020, Mik Rebery personally appeared before me Destiny Garcia, who being by me duly sworn, did say that he is the Associate Deputy Mayor of Salt Lake County, a political subdivision of the State of Utah, and that said instrument was signed in behalf of the County by authority of its governing body and said Associate Deputy Mayor acknowledged to me that the County executed the same.

DESTINY GARCIA
NOTARY PUBLIC -STATE OF UTAH
My Comm. Exp 02/05/2023
Commission # 704425

NOTARY PUBLIC
Residing at: Salt lake county

MSD ACKNOWLEDGEMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the _____day of _____, 2020, _____ personally appeared before me _____, who being by me duly sworn, did say that he is the _____ of Greater Salt Lake Municipal Services District ("MSD"), a political subdivision of the State of Utah, and that said instrument was signed in behalf of the MSD by authority of its governing body and said _____ acknowledged to me that the MSD executed the same.

NOTARY PUBLIC
Residing at: _____

COUNTY ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the _____day of _____, 2020, _____ personally appeared before me _____, who being by me duly sworn, did say that he is the Mayor of Salt Lake County, a political subdivision of the State of Utah, and that said instrument was signed in behalf of the County by authority of its governing body and said Mayor acknowledged to me that the County executed the same.

_____
NOTARY PUBLIC
Residing at: _____

MSD ACKNOWLEDGEMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the 26th day of February, 2020, Joe Smolka personally appeared before me Ina Oviatt, who being by me duly sworn, did say that he is the ~~Executive~~ Chair of Greater Salt Lake Municipal Services District ("MSD"), a political subdivision of the State of Utah, and that said instrument was signed in behalf of the MSD by authority of its governing body and said He acknowledged to me that the MSD executed the same.

Ina Oviatt
NOTARY PUBLIC
Residing at: Salt Lake City, Utah

INA OVIATT
NOTARY PUBLIC -STATE OF UTAH
My Comm. Exp 9/10/2021
Commission # 696526

MASTER DEVELOPER ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the 26 day of March, 2020 personally appeared before me Doug Young, the Manager of Olympia Land, LLC, a Utah limited liability company, who acknowledged that he/she, being duly authorized, did execute the foregoing instrument on behalf of Olympia Land, LLC

APRIL GOMEZ
NOTARY PUBLIC-STATE OF UTAH
COMMISSION# 705743
COMM. EXP. 04-12-2023

NOTARY PUBLIC
Residing at: Salt Lake County

OWNER ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the 27 day of March, 2020, personally appeared before me Emily B Markham the Manager of The Last Holdout, L.L.C., who acknowledged that she, being duly authorized, did execute the foregoing instrument on behalf of The Last Holdout, L.L.C.

WENDE HARRIS
NOTARY PUBLIC-STATE OF UTAH
COMMISSION# 690710
COMM. EXP. 10-12-2020

NOTARY PUBLIC
Residing at: SLC, Utah

SPECIAL OWNER ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the _____ day of _____, 2020, personally appeared before me _____, the _____ of the Jordan School District, who acknowledged that _____, being duly authorized, did execute the foregoing instrument on behalf of the Jordan School District.

NOTARY PUBLIC
Residing at: _____

MASTER DEVELOPER ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the _____ day of _____, 2020 personally appeared before me _____, the ___ _____ of Olympia Land, LLC, a Utah limited liability company, who acknowledged that he/she, being duly authorized, did execute the foregoing instrument on behalf of Olympia Land, LLC_____

_____
NOTARY PUBLIC
Residing at: _____

OWNER ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the _____ day of _____, 2020, personally appeared before me _____, the Manager of The Last Holdout, L.L.C., who acknowledged that she, being duly authorized, did execute the foregoing instrument on behalf of The Last Holdout, L.L.C.

_____
NOTARY PUBLIC
Residing at: _____

SPECIAL OWNER ACKNOWLEDGMENT

STATE OF UTAH)
:ss.
COUNTY OF SALT LAKE)

On the 13th day of July, 2020, personally appeared before me Bryce Dunford, the Board President of the Jordan School District, who acknowledged that he, being duly authorized, did execute the foregoing instrument on behalf of the Jordan School District.

Notary Public
KATHLEEN CHARON
Commission #692338
My Commission Expires
January 6, 2021
State of Utah

Kathleen Charon
NOTARY PUBLIC
Residing at: Salt Lake City, UT

EXHIBIT A

Legal Description of Property (not including the School District Property)

A parcel of land, situate in parts of Sections 27, 32, 33 and 34, Township 3 South, Range 2 West, Salt Lake Base and Meridian, U.S. Survey, more particularly described as follows:

Beginning at the Northeast Corner of Section 33, Township 3 South, Range 2 West, Salt Lake Base and Meridian; and running

thence North 00°41'26" East 1,324.02 feet along the section line to the Northeast Corner of the Southwest Quarter of the Southwest Quarter of Section 27, Township 3 South, Range 2 West, Salt Lake Base and Meridian;
thence South 89°30'42" East 2,657.98 feet along the 1/16 section line to the Northeast Corner of the Southeast Quarter of the Southwest Quarter of said Section 27;
thence South 00°28'09" West 1,324.47 feet along the quarter section line to the South Quarter Corner of said Section 27;
thence South 89°30'06" East 2,664.00 feet along the section line to the Southeast Corner of said Section 27;
thence South 89°48'53" East 641.53 feet along the section line;
thence South 00°30'22" East 1,043.85 feet;
thence South 89°21'31" West 820.60 feet;
thence Southeasterly 484.77 feet along the arc of a 960.00 foot radius curve to the right (center bears South 67°06'42" West and the chord bears South 08°25'19" East 479.63 feet with a central angle of 28°55'57");
thence South 06°02'39" West 47.82 feet;
thence West 1,231.28 feet to the 1/16 section line;
thence North 00°10'31" East 263.60 feet along the 1/16 section line to the Southeast Corner of the Northwest Quarter of the Northeast Quarter of said Section 34, monumented with a rebar and cap stamped "5251295";
thence North 89°31'41" West 2,661.50 feet along the 1/16 section line to the Southwest Corner of the Northeast Quarter of the Northwest Quarter of said Section 34, monumented with a Salt Lake County monument;
thence South 00°02'54" West 1,325.66 feet along the 1/16 section line to the quarter section line;
thence North 89°35'51" West 1,329.44 feet along the quarter section line to the East Quarter Corner of said Section 33, monumented with a Salt Lake County monument;
thence North 89°38'37" West 3,990.98 feet along the quarter section line to the Southwest Corner of the Southeast Quarter of the Northwest Quarter, monumented with a rebar and cap stamped "5251295";
thence South 00°20'42" East 1,323.10 feet along the 1/16 section line to the Southeast Corner of the Northwest Quarter of the Southwest Quarter of said Section 33, monumented with a rebar and cap stamped "5251295";
thence North 89°38'31" West 1,327.74 feet along the 1/16 section line to the Southeast Corner of the Northeast Quarter of the Southeast Quarter of Section 32, Township 3 South, Range 2 West, Salt Lake Base and Meridian;
thence North 89°29'26" West 2,641.53 feet along the 1/16 section line to the Southwest

Corner of the Northwest Quarter of the Southeast Quarter of said Section 32;
thence North 00°09'01" East 149.81 feet along the 1/16 section line;
thence North 86°15'53" East 292.00 feet;
thence South 88°11'07" East 207.61 feet;
thence North 00°09'01" East 185.12 feet;
thence South 86°15'53" West 500.00 feet to the 1/16 section line;
thence North 00°09'01" East 405.38 feet along the 1/16 section line to the Northeast Right-of-Way Line of State Route-111 (SR-111), also known as Bacchus Highway;
thence Northwesterly 246.50 feet along the arc of a 268.31 foot radius curve to the right (center bears North 05°49'12" East and the chord bears North 57°51'41" West 237.92 feet with a central angle of 52°38'15") along said Northeast Right-of-Way Line of SR-111;
thence North 31°32'34" West 437.23 feet along said Northeast Right-of-Way Line of SR-111;
thence Northwesterly 288.95 feet along the arc of a 331.97 foot radius curve to the right (center bears North 58°27'27" East and the chord bears North 06°36'27" West 279.91 feet with a central angle of 49°52'13") along said Northeast Right-of-Way Line of SR-111;
thence North 18°19'39" East 201.90 feet along said Northeast Right-of-Way Line of SR-111;
thence Northeasterly 470.16 feet along the arc of a 1,482.39 foot radius curve to the left (center bears North 71°40'21" West and the chord bears North 09°14'30" East 468.19 feet with a central angle of 18°10'19") along said Northeast Right-of-Way Line of SR-111;
thence North 89°50'40" West 17.00 feet along said Northeast Right-of-Way Line of SR-111;
thence North 00°09'20" East 792.30 feet along said Northeast Right-of-Way Line of SR-111;
thence North 71°13'51" East 3,153.48 feet to the Northwest Corner of said Section 33, monumented with a Salt Lake County monument;
thence South 89°35'41" East 5,303.20 feet along the section line to the point of beginning.

Contains 39,172,856 Square Feet or 899.285 Acres

Less and Excepting any portion within Utah State Highway 111, said parcel being more particularly described as follows:
Beginning at a point on the quarter section line, said point being North 00°09'01" East 1,956.63 feet from the South Quarter Corner of Section 32, Township 3 South, Range 2 West, Salt Lake Base and Meridian; and running
thence North 00°09'01" East 80.29 feet;
thence Northeasterly 68.69 feet along the arc of a 273.31 foot radius curve to the left (center bears North 05°42'57" East and the chord bears North 88°30'56" East 68.51 feet with a central angle of 14°24'03");
thence North 81°18'54" East 941.63 feet;
thence Southeasterly 405.74 feet along the arc of a 790.00 foot radius curve to the right (center bears South 08°41'06" East and the chord bears South 83°58'18" East 401.29 feet with a central angle of 29°25'36");
thence South 69°15'30" East 849.64 feet;
thence Southeasterly 791.13 feet along the arc of a 1,560.00 foot radius curve to the left

(center bears North 20°44'30" East and the chord bears South 83°47'12" East 782.68 feet with a central angle of 29°03'25");

thence North 81°41'05" East 568.85 feet;

thence Northeasterly 430.96 feet along the arc of a 2,040.00 foot radius curve to the right (center bears South 08°18'55" East and the chord bears North 87°44'12" East 430.16 feet with a central angle of 12°06'14");

thence South 00°20'57" East 80.22 feet;

thence Southwesterly 419.85 feet along the arc of a 1,960.00 foot radius curve to the left (center bears South 03°57'29" West and the chord bears South 87°49'17" West 419.04 feet with a central angle of 12°16'23");

thence South 81°41'05" West 568.85 feet;

thence Northwesterly 831.71 feet along the arc of a 1,640.00 foot radius curve to the right (center bears North 08°18'55" West and the chord bears North 83°47'12" West 822.82 feet with a central angle of 29°03'25");

thence North 69°15'30" West 849.64 feet;

thence Northwesterly 364.65 feet along the arc of a 710.00 foot radius curve to the left (center bears South 20°44'30" West and the chord bears North 83°58'18" West 360.66 feet with a central angle of 29°25'36");

thence South 81°18'54" West 941.63 feet;

thence Southwesterly 81.01 feet along the arc of a 353.31 foot radius curve to the right (center bears North 08°41'06" West and the chord bears South 87°53'02" West 80.84 feet with a central angle of 13°08'17") to the point of beginning.

Contains 324,559 Square Feet or 7.451 Acres
Net Acreage Contains 38,848,297 Square Feet or 891.834 Acres

EXHIBIT A-1

Legal Description of School District Property

A parcel of land, situate in parts of Sections 27, 32, 33 and 34, Township 3 South, Range 2 West, Salt Lake Base and Meridian, U.S. Survey, more particularly described as follows:

Beginning at a point being South 89°30'06" East 3,996.04 feet along the section line and South 00°10'31" West 1,588.66 feet along the 1/16 section line from the Northwest Corner of Section 34, Township 3 South, Range 2 West, Salt Lake Base and Meridian; and running

thence East 1,231.28 feet;
thence North 06°02'39" East 47.82 feet;
thence Northwesterly 484.77 feet along the arc of a 960.00 foot radius curve to the left (center bears North 83°57'21" West and the chord bears North 08°25'19" West 479.63 feet with a central angle of 28°55'57");
thence North 89°21'31" East 820.60 feet;
thence South 00°30'22" East 615.14 feet to the extension of the Northerly Boundary Line of Blackhawk Estates Plat "C", recorded as Entry No. 11719743 in Book 2013P at Page 178 in the Office of the Salt Lake County Recorder;
thence South 56°51'10" West 333.22 feet along the extension of and said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 68°38'27" West 95.94 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 56°30'13" West 98.90 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 51°26'05" West 67.14 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 41°54'31" West 111.54 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 48°31'38" West 142.42 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 54°24'10" West 87.46 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 44°19'04" West 94.58 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C";
thence South 72°52'33" West 99.94 feet along said Northerly Boundary Line of Blackhawk Estates Plat "C" to the Northerly Boundary Line of Blackhawk Estates Plat "B", recorded as Entry No. 11386427 in Book 2012P at Page 53 in the Office of the Salt Lake County Recorder;
thence South 72°52'34" West 12.55 feet along said Northerly Boundary Line of Blackhawk Estates Plat "B";
thence South 82°11'10" West 94.89 feet along said Northerly Boundary Line of Blackhawk Estates Plat "B";
thence South 86°16'00" West 83.86 feet along said Northerly Boundary Line of Blackhawk Estates Plat "B";
thence South 66°09'21" West 95.83 feet along said Northerly Boundary Line of Blackhawk Estates Plat "B";
thence South 58°13'58" West 137.09 feet along said Northerly Boundary Line of Blackhawk Estates Plat "B";
thence South 78°13'01" West 40.13 feet along said Northerly Boundary Line of Blackhawk Estates Plat "B" to the Northwest Corner of said Blackhawk Estates Plat "B";

thence South 12°44'34" East 10.64 feet along said Westerly Boundary Line of Blackhawk Estates Plat "B" to the Northerly Boundary Line of Western Creek PUD Plat A, recorded as Entry No. 10946923 in Book 2010P at Page 76 in the Office of the Salt Lake County Recorder;

thence South 78°07'21" West 16.66 feet along said Northerly Boundary Line of Western Creek PUD Plat A;

thence South 57°11'41" West 95.42 feet along said Northerly Boundary Line of Western Creek PUD Plat A;

thence South 73°50'10" West 172.86 feet along said Northerly Boundary Line of Western Creek PUD Plat A to the Northerly Boundary Line of Western Creek Plat B, recorded as Entry No. 11429199 in Book 2012P at Page 92 in the Office of the Salt Lake County Recorder;

thence South 73°27'12" West 291.53 feet along said Northerly Boundary Line of Western Creek Plat;

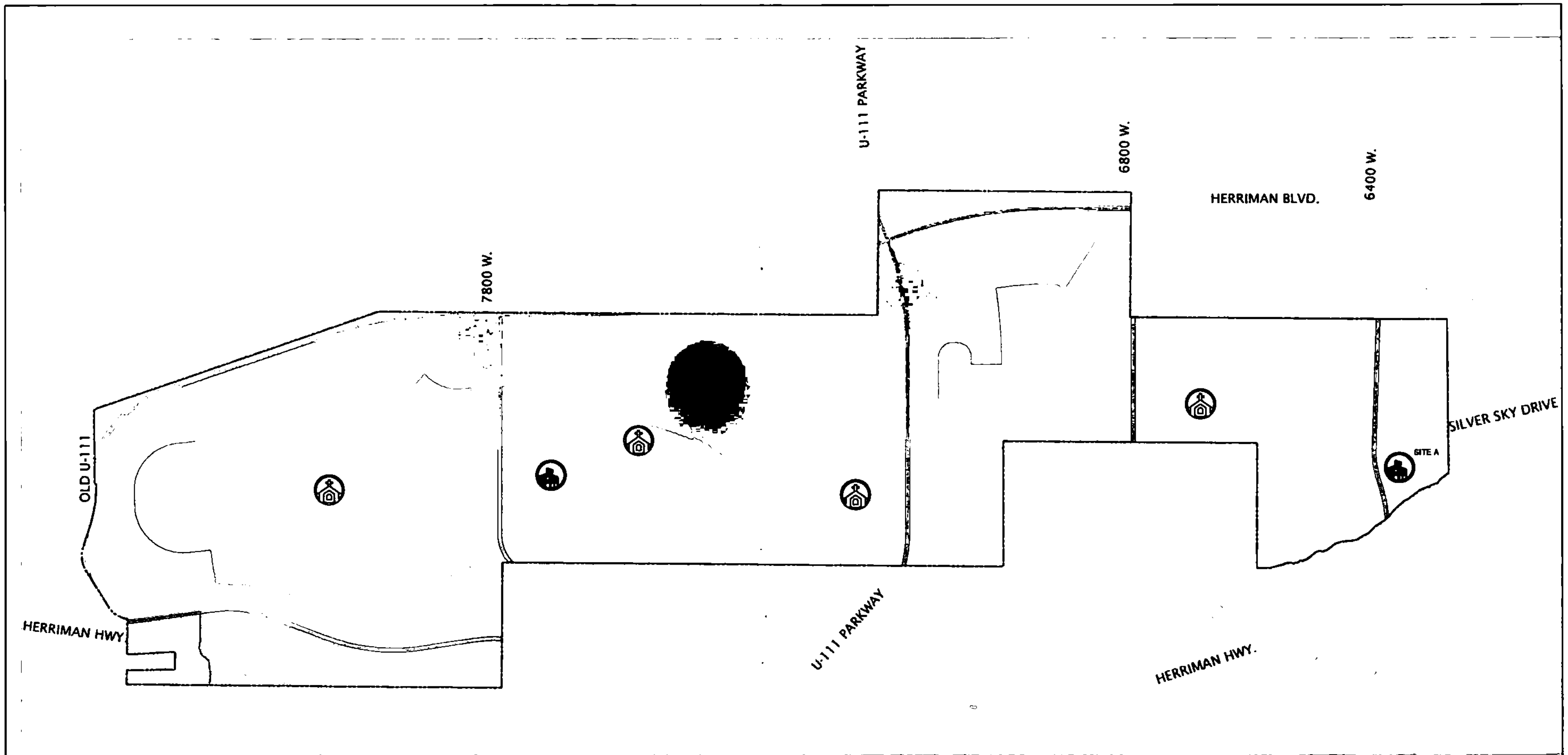
thence South 80°15'09" West 106.84 feet along said Northerly Boundary Line of Western Creek Plat to the 1/16 section line;

thence North 00°10'31" East 1,078.74 feet along the 1/16 section line the point of beginning.

Contains 1,742,312 Square Feet or 40.00 Acres

EXHIBIT B

Land Use Plan



LAND USE TABLE

LAND-USE DISTRICT	PLANNED PERMITTED USES	CONDITIONAL USES	NUMBER OF DWELLING UNITS
	RESIDENTIAL (3-8 DU/AC), PUBLIC, CHURCHES, COMMON AREAS, OPEN SPACE	NONE	1081 UNITS
	RESIDENTIAL (9-20 DU/AC), PUBLIC, CHURCHES, COMMON AREAS, OPEN SPACE	NONE	1785 UNITS
	RESIDENTIAL (21+ DU/AC), COMMERCIAL, MIXED, HEALTH-CARE, PUBLIC, CHURCHES, DAY-CARE, INDUSTRIAL, COMMON AREAS, OPEN SPACE	NONE	3454 UNITS
	MIX OF USES, PUBLIC FACILITIES, COMMON AREAS, OPEN SPACE	NONE	N/A
"OPEN SPACE"	INDEPENDENT FROM OPEN SPACE PROVIDED WITHIN OTHER LAND USE DISTRICTS	NONE	N/A
TOTAL			6,320 UNITS

*CALCULATIONS FOR OPEN SPACE LAND-USE DISTRICT ARE INDEPENDENT FROM OPEN SPACE & COMMON AREAS INCLUDED WITHIN OTHER LAND-USE DISTRICTS. GRAND TOTAL OF OPEN SPACE AND COMMON AREAS FOR THE SITE SHALL BE A MINIMUM OF 20%.
*CALCULATIONS FOR THE NUMBERS OF UNITS PER DISTRICT ARE CONCEPTUAL AND MAY VARY.
* LAND USES, BUILDING HEIGHT LIMITS, DWELLING UNITS, OPEN SPACE ACREAGE, NON-RESIDENTIAL ACREAGE, ETC. AS REQUIRED BY COUNTY ORDINANCE SECTION [illegible] ARE ADDRESSED IN THE MDA AND DESIGN STANDARDS, WHICH SHALL EACH GOVERN OVER ANY INCONSISTENCIES IN THIS LAND USE PLAN.

OVERLAYS

SYMBOL	NOTES
	NATURAL OPEN SPACE (OVERLAY)
	OPEN SPACE (OVERLAY)
	SCHOOL
	CHURCH

19.69.030 - PERMITTED USES.

THE FOLLOWING USES MAY BE CONDUCTED IN ALL AREAS WITHIN THE P-C ZONE:

- RESIDENTIAL USES OF ALL TYPES ON A RANGE OF LOT SIZES INCLUDING: SINGLE FAMILY DETACHED; SINGLE FAMILY ATTACHED; MULTIFAMILY RESIDENTIAL; TOWN HOMES; LOFT APARTMENTS; RESIDENTIAL UNITS ABOVE GROUND FLOOR RETAIL, COMMERCIAL, OR OFFICE USES; AND CONDOMINIUMS;
- RETAIL, SERVICE, OFFICE, HOTEL, RESTAURANT, ENTERTAINMENT, AND ALL OTHER COMMERCIAL USES OF ANY TYPE;
- MIX OF PERMITTED USES (INCLUDING OFFICE/COMMERCIAL, OFFICE/RESIDENTIAL, RETAIL/RESIDENTIAL) WITHIN INDIVIDUAL STRUCTURES;
- HOME-BASED BUSINESSES FOLLOWING THE PROVISIONS OF CHAPTER 19.85 OF THIS TITLE;
- HEALTH-CARE FACILITIES;
- PUBLIC FACILITIES, SUCH AS SCHOOLS, LIBRARIES, AND CIVIC BUILDINGS;
- COMMON AREAS, SUCH AS PLAZAS, PLAYGROUNDS, AND TRAILS
- CHURCHES;
- DAY-CARE FACILITIES;
- OPEN SPACE, INCLUDING LANDSCAPED AREAS AND AREAS IN NATURAL VEGETATION, GOLF COURSES, PARKS, RECREATIONAL AREAS;
- AGRICULTURE;
- INDUSTRIAL AND MANUFACTURING USES; AND
- OTHER ACCESSORY USES WHICH ARE ANCILLARY TO, AND DESIGNED TO SERVE, ANY OF THE FOREGOING USES.

(ORD. NO. 1823, § I, 10-31-17)

19.69.040 - CONDITIONAL USES.

THE APPROVED P-C ZONE PLAN OR COMMUNITY STRUCTURE PLAN MAY INCLUDE PROVISIONS FOR SPECIFIC LAND USES IDENTIFIED AS CONDITIONAL USES WITHIN A GIVEN DISTRICT, WHICH MAY INCLUDE USES LISTED UNDER SECTION 19.69.030 OR ADDITIONAL USES. THE ADDITION OF CONDITIONAL USES IN THE APPROVED P-C ZONE PLAN SHALL REQUIRE THE APPROVAL OF THE COUNTY COUNCIL, WHICH APPROVAL MAY BE ESTABLISHED BY DEVELOPMENT AGREEMENT. CONDITIONAL USES, IF ANY, ARE SUBJECT TO REVIEW AND APPROVAL AS SET FORTH IN CHAPTER 19.84 OF THIS TITLE. DESIGN STANDARDS FOR CONDITIONAL USES SHALL BE INCLUDED WITH THE APPLICABLE PROJECT SPECIFIC STANDARDS.

THE FOLLOWING USE MAY BE CONSIDERED CONDITIONAL:

- SHORT TERM NIGHTLY RENTAL

(ORD. NO. 1823, § I, 10-31-17)

blu line designs

CONSULTANTS

CLIENT
Olympia Land LLC

Olympia Hills

REVISIONS

CONCEPTUAL LAND USE PLAN

LP-101

BK 10983 PG 4678

EXHIBIT C

Design Standards

Olympia Hills Design Standards

County Submittal 12.17.2019

Olympia Hills Design Standards | Table of Contents

BK 10983 PG 4682

Page Intentionally Left Blank

1.0 Place Types

BK 10983 PG 4684

1.0 Place Types & Land Uses

1.1. Place Types.

1. Introduction

The Place Types detailed in Sections 1.1.4 through 1.1.9, outline the different types of "places" that will occur within Olympia Hills, in order to accommodate a mixture of uses, densities, and employment opportunities. Each Place Type will have a distinct purpose, and will provide residents and visitors with a unique experience and character.

2. Establishment of Place Type Districts.

The following Place Type Districts are hereby created. Refer to the Place Types detailed in Sections 1.1.4 through 1.1.9 for specific descriptions and requirements.

(1) Town Center

(2) Village Center

(3) Commercial Center

(4) Neighborhood

(5) Campus/Institutional

(6) Parks and Open Space

3. Place Type Map

The Place Type Districts will be defined in the Community Structure Plan (CSP).

4. Town Center Place Type

The Town Center will act as the Downtown for Olympia Hills. It will be the most dense district, and features a mix of land-uses. There will be an emphasis on providing office uses and promoting employment that will create a jobs-housing balance within Olympia Hills. The Town Center will also include multi-family residential in order to cluster high density residential near jobs, services, and transit. Other uses, such as commercial, retail, and recreation will be provided to support the residents and employees of both Olympia Hills and the larger region. See Figures 1.1 (1) - 1.1 (3) for precedent images.

(1) Permitted Uses. See Table 1.1 for approved uses.

(2) Transit. Transit is an important component of a successful Town Center, and is intended to become an integral piece of the Town Center. Olympia Hills shall work with UTA to provide major future transit options, such as light rail or bus rapid transit, that will connect the Town Center to the larger region.

(3) Density. Residential densities may exceed twenty units per gross acre.

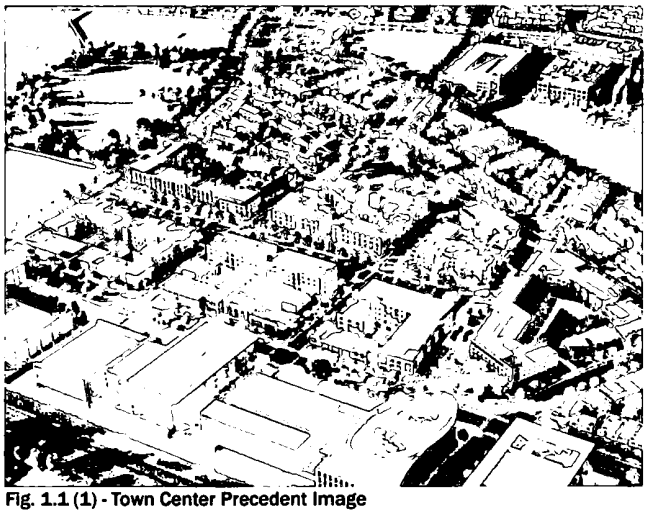


Fig. 1.1 (1) - Town Center Precedent Image

Fig. 1.1 (2) - Town Center Precedent Image

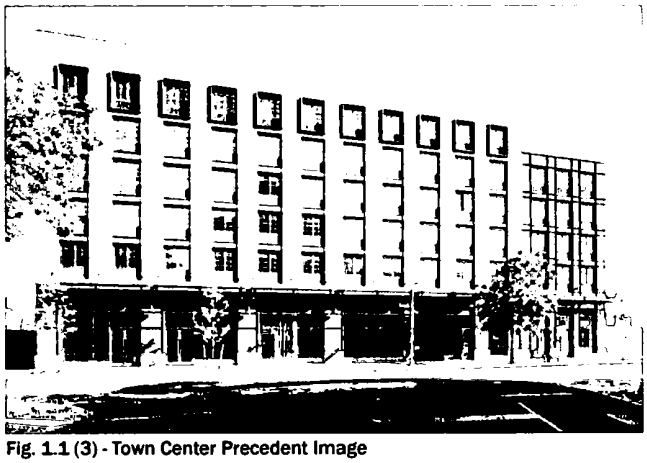


Fig. 1.1 (3) - Town Center Precedent Image

5. Village Center Place Type

Olympia Hills will contain multiple Village Centers located throughout the project. These centers will become the heart of a neighborhood or multiple neighborhoods, and will provide the daily services that will enhance neighborhoods and reduce the need to for residents to drive long distances for basic services, while promoting walking and biking. Village Centers will also include single-family residential, multi-family residential, including apartments, condominiums and townhomes.

This category is designed for medium density mixed use development that includes residential (single and multi-family), office, commercial, public/semi-public and recreational open spaces, without a predetermined emphasis on a single use. See Figures 1.2 (1) - 1.2 (4) for precedent images.

(1) Permitted Uses. See Table 1.1 for approved uses.

(2) Transit. Transit is an important component of a successful Village Center. Bus or other transit mode should connect Village Centers to the Town Center and other major employment/commercial centers in the area. Transit should also connect Village Centers to nearby major transit facilities, such as light rail or bus rapid transit stations. Olympia Hills shall work with UTA to provide these services.

(3) Density. Residential densities are anticipated to range between nine and twenty units per gross acre.

Fig. 1.2 (1) - Village Center Precedent Image

Fig. 1.2 (2) & 1.2 (3) - Village Center Precedent Images

6. Commercial Center Place Type

This Place Type is designed to accommodate large format retail uses and other commercial uses that are not compatible with the urban design aspects of Town and Village Centers. The primary land-uses in this Place Type are retail and other commercial uses. See Figure 1.3 (1) for precedent images.

(1) Permitted Uses. See Table 1.1 for approved uses.

(2) Density. Upper story residential uses are permitted in Commercial Centers.

(3) Size Limits. The total area of Commercial Center Place Type(s) shall be limited to 75 Acres.
   (a) Changes to the size limit in subsection 1.1.6 (3) requires County Council approval.

Fig. 1.2 (4) - Village Center Precedent Image

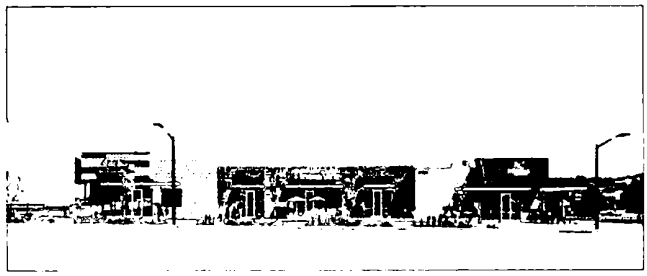


Fig. 1.3 (1) - Commercial Center Precedent Image

1.0 Place Types & Land Uses

7. Institutional Place Type

This category is designed to accommodate a campus-like environment that is dedicated to an educational institution, which may include classrooms, laboratories, research facilities, agricultural lands, offices, housing, educational facilities of all types, religious buildings, and other related uses. See Figure 1.4 (1) for example image.

(1) Bastian Agricultural Center (Utah State University). Olympia Hills has set aside 100 acres of land that will be donated to Utah State University. This land will become the Bastian Agricultural Center, which is intended to provide educational facilities, classroom/ workshop space, orchards, agricultural fields, an amphitheater, a wetland discovery center, livestock facilities, recreation opportunities and more.

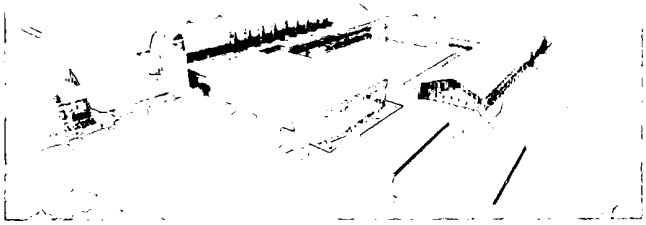


Fig. 1.4 (1) - Institutional Place Type Example

8. Neighborhood Place Type

This Place Type is designed for comparatively low-density mixed use development that emphasizes residential (single and multi-family) use, but also includes limited retail, office, commercial, and recreation/ open space uses. A mix of housing types is encouraged. See Figures 1.5 (1) - 1.5 (3) for precedent images.

(1) Permitted Uses. See Table 1.1 for approved uses.

(2) Density. Residential densities are anticipated to range between four and eight units per gross acre.

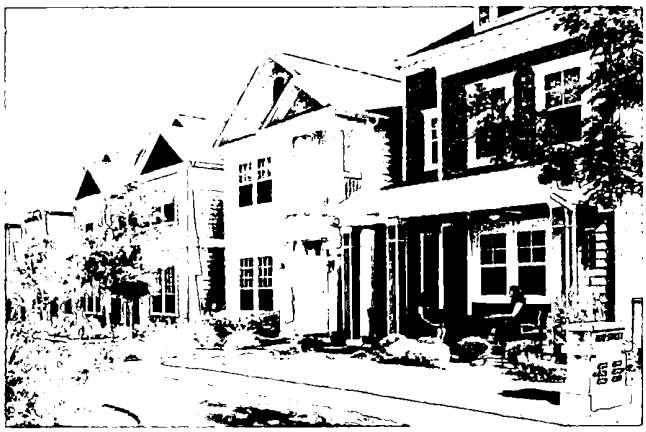


Fig. 1.5 (1) - Neighborhood Place Type Precedent

Fig. 1.5 (2) & 1.5 (3) - Neighborhood Place Type Precedent

9. Open Space

Landscaped areas, parks, natural area, stream corridors or farmland that is established to provide and preserve outdoor recreational, agricultural, or other similar uses. In addition to the open space district, areas of open space will also be provided within the other land use districts as well. See Chapter 4.0 Parks, Trails, and Open Space. See Figure 1.6 (1) for precedent images.

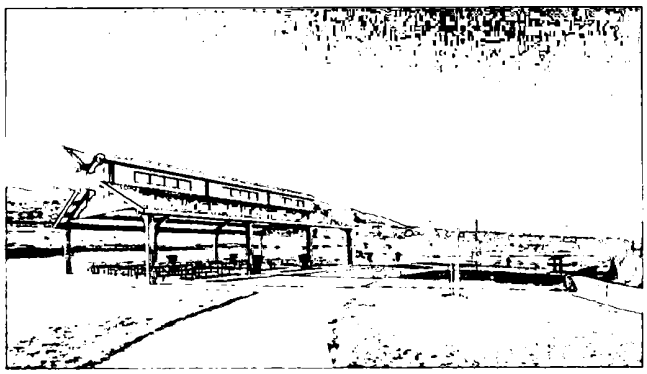


Fig. 1.6 (1) - Open Space Place Type Precedent

1.2. Community-Wide Design.

1. General Requirements

(1) The planning and design of the community shall work with existing conditions such as topography, drainages, and stream corridors to provide a context sensitive plan.

(2) The planning and design of the community shall be coordinated with adjacent properties to maximize street and trail connections to properties outside of the Olympia Hills site.

(3) Neighborhoods shall be designed to provide local access to adjacent neighborhoods, nearby destinations, transit, parks and similar places (such as USU Bastian Agricultural Center) by walking and bicycles.

(4) Small convenience retail establishments, such as corner stores, shall be permitted to occupy portions of the ground and mezzanine floors of residential and office buildings outside of the Town and Village Centers, where appropriate.

(5) A limited amount of local-serving commercial activity may be located within a Neighborhood Place Type. These commercial uses should be located near the core of each Neighborhood, or in other strategic locations that will provide convenient access from neighborhoods. Typical neighborhood center retail uses include, but are not limited to small grocery stores, cafes, restaurants, day care centers and personal service operations.

(6) The location of any elementary, middle, or high schools, community centers, and recreation spaces shall be coordinated with the appropriate public entities so as to be central gathering places, and shared-use facilities for the community, where possible.

(7) Thoughtful design solutions that enhance safety shall be implemented into the planning and design of Olympia Hills. Some of the major strategies to enhance public safety include:
   (a) Design streets to increase pedestrian and bicycle traffic
   (b) Place windows overlooking sidewalks and parking lots.
   (c) Use the shortest, least sight-limiting fence appropriate for the situation.
   (d) Place lighting along pathways and other pedestrian-use areas. Avoid using too bright or too dim of lights.
   (e) Residential uses should include porches, stoops, balconies, or other outdoor living spaces to increase eyes on the street.

2. Sustainability

(1) Alternative Energy. Alternative energy technologies, such as solar and wind power, and alternative vehicle power technologies, shall be accommodated and encouraged on both a distributed generation (e.g. rooftop solar panels, EV charging, battery storage, etc.) and utility scale (e.g. renewable procurement through the qualified entity).

1.3. Land Use.

1. Land Uses.

Table 1.1 contains the land use table. The listed uses are grouped into general categories, which may contain lists of additional uses or clusters of uses.

(1) Unlisted Similar Use. If a use is not listed but is similar in nature and impact to a use permitted within a zoning district, a County Administrator may interpret the use as permitted.
   (a) If the unlisted use is similar in nature and impact to a use requiring a Conditional Use Permit, a County Administrator may interpret the use as also requiring a Conditional Use Permit.

(2) Unlisted Dissimilar Use. If a use is not listed and cannot be interpreted as similar in nature and impact to a use within a zoning district that is either permitted or requires a Conditional Use Permit, the use is not permitted and may only be approved through an amendment of this article.

(3) All land-use requirements listed in this section supercede the current County Code.

2. Land Use Table.

Table 1.1. outlines the permitted uses in each zoning district. Each use is given one of the following designations for each zoning district in which that use is permitted.

(1) Changes to the Land Use Table (Table 1.1) requires County Council Approval.

(2) Permitted ("P"). These uses are permitted by-right in the districts in which they are listed.

(3) Permitted in Second Story or Above ("U"). These uses are permitted by-right in the districts in which they are listed, provided that the uses are located in the second story or above of a structure. These uses may also be located in the ground story provided that they are located beyond a depth of at least 30 feet from the front facade.

(4) Requires a Conditional Use Permit ("C"). These uses require administrative review and approval in order to occur in the districts in which they are listed and must follow any applicable development standards associated with the use as well as meet the requirements of the Conditional Use.

(5) Listed uses that are not permitted in the district are indicated by an ("N").

3. Prohibited Uses.

Table 1.3. outlines the prohibited uses in each zoning district.

(1) Changes to the Prohibited Use Table (Table 1.3) requires County Council Approval.

1.0 Place Types & Land Uses

Uses	Districts					
	Town Center	Village Center	Commercial Center	Neighborhood	Institutional	Open Space
Residential & Lodging						
Residential	P[1]	P[1]	U	P	P[2]	N
Hotel & Inn	P	P	P	N	N	N
Short Term	P	P	N	N	N	N
Facility for Persons w/Disability	P	P	P	P	P	N
Residential Care	P	P	P	N	N	N
Civic						
Assembly	P	P	P	P	P	N
Hospital & Clinic	P	P	P	N	P	N
Library/Museum/Post Office	P	P	P	P	P	N
Police & Fire	P	P	P	P	P	N
School	P	P	P	P	P	N
Retail						
Center Retail*	P	P	P	P[3]	N	N
Commercial Retail*	N	N	P	N	N	N
Outdoor Sales Lot*	N	N	P	N	N	N
Service						
Center Service*	P	P	P	P[3]	N	N
Commercial Service*	N	N	P	N	N	N
Office						
Office*	P	P	P	P[3]	N	N
Small Scale Craftsman*	P	P	P	N	N	N
Utility						
Parking Structures	C	C	C	N	C	N
Parking Lots	C	C	C	N	C	N
Utility Lot*	C	C	P	N	C	C
Accessory Uses						
Home Occupation	P	P	P	P	P	N
Outdoor Storage of Goods	N	N	P	N	N	N
Parking Lot	P	P	P	P	P	P
Parking Structures	P	P	P	P[4]	P	N

*See Corresponding List

Table 1.1. Uses by District.

KEY

- P Permitted
- P[1] Permitted with limitations on Designated Primary Streets. See 5.4.
- P[2] Permitted as student housing controlled by the Institution.
- P[3] Permitted on corner lot only and shall be a maximum of a 10,000 sf building footprint.
- P[4] Permitted with County Staff approval. See CSP for parking structure typologies.
- U Permitted in Second Story or Above
- N Not Permitted
- C Conditional

Center Retail
Alcohol & Liquor Sales
Antique Shop
Apparel & Accessory Store
Art & Education Supplies
Bakery, Retail
Bicycle Sales & Repair
Book, Magazine, & Newspaper Store
Building Materials, Hardware, and Garden Supply
Camera & Photo Supply Store
China & Glassware Shop
Convenience Store
Drug Store/Pharmacy
Fabric & Craft Store
Florist
Gift, Novelty, & Souvenir Shop
Grocery Store
Hardware Store
Hobby Shop
Jewelry Sales & Repair
Luggage & Leather Goods
Music Store
Musical Instrument Repair & Sales
Office Supply
Optical Goods
Paint & Wallpaper
Party Supply Shop
Pet & Pet Supply
Specialty Food Market (Butcher, Candy, Fish Market, Produce, etc.)
Sporting Goods Sales & Rental
Stationary & Paper Store
Toy Shop
Video/Game Sales & Rental
Vertical Mixed-Use Storage

Commercial Retail
All Neighborhood Retail
Appliance & Electronic Sales & Service
Automotive Supply (no service)
Computer Software Sales & Leasing
Department Store
Gun Shop
Home Furnishings & Accessories Sales
& Rentals
Medical Supply Store & Rental
Motorcycle & Motor Scooter Sales
Heating, Air Conditioning & Plumbing
Supplies, Sales, & Service
Cabinet Supply (display only)
Machine Sales and Rental
Agriculture Equipment and Supply
Electrical Supplies
Merchandise Vending Machine Operators
Medical Supply Store & Sales
Large Format Retail
Large Format Grocery Store

Outdoor Sales Lot
Holiday Sales
Agriculture Equipment Sales

Table 1.2 (1). Typical Retail Uses.

Center Service
Arcade
Bank or other Financial Service
Barber Shop, Beauty Salon, & Spa
Billiard Hall
Catering
Day Care, Adult or Child
Dry Cleaning & Laundry
Emergency Care Clinic
Fitness, Dance Studio, & Gym
Framing
Home Furniture & Equipment Repair
Locksmith
Mailing Services
Microbrewery
Pet Grooming
Photocopying & Printing
Photography Studio & Supplies
Restaurants (refer to state law for alcoholic beverage requests)
Shoe Repair
Tailor & Seamstress
Tanning Salon
Theater
Training Center
Travel Agency & Tour Operator
Veterinarian

Commercial Service
All Center Services
Auto Repair
Auto Sales
Auto Fuel Station
Exterminating & Disinfecting Service
Funeral Home
Miniature Golf Course
Recreation, Commercial Indoor
Repair of Small Goods & Electronics
Shooting & Archery Ranges (indoor only)
Warehouse

Table 1.2 (2). Typical Service Uses.

Utility Lot
Power Station
Underground Utility Station

Table 1.2 (3). Typical Utility Lot Uses.

Office
Architecture/Engineering/Design
Building Contractor (office only)
Business Consulting
Charitable Institutions
Computer Programming & Support
Detective Services
Educational Services (tutor & testing)
Employment Agency
Financial & Insurance
Government Offices
Legal Services
Management Services
Physical Therapy/Physical Rehabilitation
Medical & Dental with Laboratory
Public Relations & Advertising
Property Development
Radio & TV Studio
Real Estate

Table 1.2 (4). Typical Office Uses.

1.0 Place Types & Land Uses

Prohibited uses, limitations – Within Olympia Hills the following are specific use prohibitions and/or limitations:	SPECIFIC USE LIMITATION APPLICABLE TO ALL OLYMPIA HILLS PLACE TYPES
USE	
Detention facility/jail	Not allowed
Outdoor gun range	Not allowed
Animal Boarding	Not allowed
Displays (products held for sale) over five feet in horizontal distance from the main building.	Only in CC
Equipment, car or truck rental	Only in CC Place Type
Fuel sales	Allowed in CC . Allowed in TC, VC, with pumps in side or rear of building.
Pole type commercial wireless communication structures.	Pole type only allowed in Commercial and on top of buildings in TC and VC
Outdoor kennel	Not allowed
Sexually oriented businesses	Not allowed
Pawnshop, retail tobacco specialty business, hookah lounge, tattoo, body piercing, non-depository lending establishments as the principle use.	Not allowed
Massage or reiki as the principal use including associated services	Only in TC, VC, CC
Sale or lease of new or used vehicles of all types, moving trucks, watercraft, mobile homes, travel trailers, campers, motorcycles and other recreational vehicles	Only in CC
Secondhand stores including general merchandise, precious metal dealer/processor and/or precious gem dealer	Only in TC, VC, CC
Self-storage facility single story & single use, including small to large storage units, neighborhood storage	Only in CC

Continued - Prohibited uses, limitations – Within the Olympia Hills the following are specific use prohibitions and/or limitations:	CONTINUED - SPECIFIC USE LIMITATION APPLICABLE TO ALL OLYMPIA HILLS PLACE TYPES
USE	
Taxicab and/or limousine business	Only in CC
Tavern, as defined by State Code	Only in TC, VC, CC
Manufactured home park or manufactured home subdivision	Not allowed
Regular flea markets, swap meets	Not allowed
Recreational vehicle campgrounds	Not allowed
Impound, vehicle recycling, and/or junk yards	Not allowed
Automobile repair	Only in CC
Distribution, limited	Not allowed
Manufacturing, light	Not allowed
Fireworks stands	Only in CC
Convalescent facilities	Not allowed
Billboards, pylon signs, pole signs	Not allowed
Bail bonds	Not allowed
Rehabilitation facility	Not allowed
Greenhouse	Not allowed
Landscape supply yard	Only in CC
Temporary or seasonal merchant, excluding farmers markets, food trucks, or civic events	Not allowed
Warehouse	Not allowed

KEY

TC Town Center
VC Village Center
CC Commercial Center

Table 1.3. Prohibited Uses.

1.4. Definition of Uses.

1. Residential and Lodging Uses.

A category of uses that include several residence types.

(1) Residential. One or more dwelling units located within the principal structure of a lot, in which the units may or may not share a common wall with the adjacent (horizontally or vertically) unit or have individual entrances from the outside.

(2) Hotel & Inn. A facility offering temporary or permanent lodging to the general public consisting of sleeping rooms with or without in-room kitchen facilities. Secondary service uses may also be provided, such as restaurants and meeting rooms. Rooms shall be accessed from the interior of the building. Hotel units shall not count against approved Residential Dwelling Units (RDU).

(3) Short Term. Any dwelling or portion thereof that is available for uses or is used for accommodations or lodging of guests, paying a fee, or other compensation for a period of less than thirty consecutive days.

(4) Facility for Persons w/Disability. Residential facility for persons with a disability.

(5) Residential Care. A facility offering temporary or permanent lodging to the general public consisting of sleeping rooms with or without in-room kitchen facilities. Residential care includes such uses as independent and assisted living facilities, nursing homes, residential care homes, congregate care, and transitional treatment facilities. Assistance with daily activities may be provided for residents. Secondary service uses may also be provided, such as restaurants and meeting rooms. Rooms shall be accessed from the interior of the building. For density calculations, expected room occupancy (1-16 individuals) equals 1 Residential Dwelling Units (RDU).

2. Civic Uses.

A category of uses related to fulfilling the needs of day-to-day community life including assembly, public services, educational facilities, and hospitals.

(1) Assembly. A facility that has organized services, meetings, or programs to benefit, educate, entertain, or promote discourse amongst the residents of the community in a public or private setting. Assembly includes such uses as a community center, house of worship, and private clubs and lodges.

(2) Hospital & Clinic. A licensed institution providing medical care and health services to the community. These services may be located in one building or clustered in several buildings and may include laboratories, in- and out-patient facilities, training facilities, medical offices, staff residences, food service, pharmacies, and gift shop.

(3) Library/Museum. A structure open to the general public housing educational, cultural, artistic, or historic information, resources, and exhibits. May also include food service and a gift shop.

(4) Post Office. A publicly accessed facility for the selling of supplies and mail related products and the small scale collection and distribution of mail and packages. Large-scale postal sorting and distribution is not permitted.

(5) Police and Fire. A facility providing public safety and emergency services; training facilities, locker rooms, and limited overnight accommodations may also be included. The facilities shall be housed in a permitted building, but shall have the following additional allowances:
   (a) Garage doors are permitted on the front facade.
   (b) Exempt from maximum driveway widths.

(6) School. An education facility with classrooms and offices, that may also include associated indoor facilities such as ball courts, gymnasium, theater, and food service.

3. Retail Uses.

A category of uses involving the sale of goods or merchandise to the general public for personal or household consumption.

(1) Center Retail. Center retail includes such uses as those listed in the "Center Retail" list found in Table 1.2 (1). Typical Retail Uses.

(2) Commercial Retail. A use in this category includes all Center Retail uses as well as such uses as those listed in the "Commercial Retail" list found in Table 1.2 (1). Typical Retail Uses.

(3) Outdoor Sales Lot. A use involving the sale of goods or merchandise to businesses and/or the general public, where the majority of the goods are stored or displayed outdoors. Outdoor sales lots include such uses as the sale and rental of automobiles, trucks, trailers, boats, and recreational vehicles; and the sale of building materials, landscape materials, and garden supplies.

(4) See 9.0 Appendix for definitions of retail uses.

4. Service.

A category of uses that provide patrons services and limited retail products related to those services. Visibility and accessibility are important to these uses, as most patrons do not utilize scheduled appointments.

(1) Center Service. Center service includes such uses as those listed in the "Center Service" list found in Table 1.2 (2). Typical Service Uses.

(2) Commercial Service. A use in this category includes all Neighborhood Service uses as well as such uses as those listed in the "Commercial Service" list found in Table 1.2 (2).

(4) See 9.0 Appendix for definitions of service uses.

BK 10983 PG 4692

5. Office Uses.

A category of uses for businesses that involve the transaction of affairs of a profession, service, industry, or government. Patrons of these businesses usually have set appointments or meeting times; the businesses do not typically rely on walk-in customers. Office uses include those listed in Table 1.2 (4).

(1) See 9.0 Appendix for definitions of office uses.

6. Small Scale Craftsman.

A use involving small scale manufacturing, production, assembly, and/or repair with little to no noxious by-products that includes a showroom or small retail outlet. Small Scale Craftsman includes such uses, but are not limited to those found in Table 1.2 (5). This use may also include associated facilities such as offices and small scale warehousing, but distribution is limited. The maximum overall gross floor area is limited to 20,000 square feet, unless otherwise noted.

7. Parking Lot.

A lot that does not contain a permitted building or Open Space Type and is solely used for the parking of vehicles. In the districts where a parking lot is a conditional use ("C"), the following apply:

(1) Corner Lots. A corner lot shall not be used as a parking lot.

(2) Adjacent Parking Lots. Two parking lots cannot be located directly adjacent to one another.

(3) Single Family. Parking lot cannot be associated with a single family use.

(4) Distance. Parking lot must be within 1,000 feet of the principal entrance to the associated use unless:
  (a) At least 75% of the spaces are dedicated for public use.
  (b) An approved parking agreement is in place.

(5) Pedestrian Access. Must be connected to associated use by a public pedestrian pathway.

(6) Commercial Vehicles. Parking lots for commercial vehicles are not permitted in these districts.

Small Scale Craftsman
Apparel & Finished Fabric Products
Bakery & Confections
Beverages, including Beer, Wine, Liquor, Soft Drinks, Coffee
Botanical Products
Commercial Scale Copying & Printing
Film Making
Furniture & Fixtures
Glass
Jewelry, Watches, Clocks, & Silverware
Leather Products
Musical Instruments & Parts
Pottery, Ceramics, & Related Products
Printing, Publishing & Allied Industries
Shoes & Boots
Signs & Advertising
Textile, Fabric, Cloth
Toys & Athletic Goods
Upholstery
Woodworking

Table 1.2 (5). Typical Small Scale Craftsman Uses.

8. Parking Structure.

A parking structure on a lot that does not contain a permitted Building Type and is solely used for the parking of vehicles. In the districts where a parking structure is a conditional use ("C"), the following apply:

(1) Corner Lots. A corner lot shall not be used for a parking structure.

(2) Primary Street. No facade of the Parking Structure shall be located on a Primary Street unless active uses are provided on the ground floor.

(3) Distance. Parking lot must be within 1,500 feet of the principal entrance to the associated use unless:
  (a) At least 75% of the spaces are dedicated for public use.
  (b) An approved parking agreement is in place.

(4) Pedestrian Access. Must be connected to associated use by a public pedestrian pathway.

(5) Commercial Vehicles. Parking structures for commercial vehicles are not permitted in these districts.

9. Utility Lot.

A lot that is primarily utilized for the City/County infrastructure needs. Utility and infrastructure includes such uses as electric or gas services, sewage treatment, water treatment and storage, and energy conversion systems. In the districts where a utility lot is a conditional use ("C"), the following apply:

(1) Public hearing and notification of neighbors

(2) Landscape buffer (along with required landscape plan) of 10 feet on all street facing sides, with additional shrubs 1 per 7 linear feet and 1 large deciduous tree or conifer per 30 feet.

10. Open Space.

A use of land for active or passive, public or private, outdoor space, including such uses as parks, plazas, greens, playgrounds, or community gardens. Refer to 4.0 Open Space Types for permitted forms of open space. Open space uses may also be utilized to host temporary private or community events, such as a farmer's market or art fair.

(1) This use may involve small scale food and beverage service, no more than 300 square feet in space, located in a kiosk, with no service access.

(2) Buildings located directly adjacent to an open space use should treat facades facing this use with street facade requirements.

11. Accessory Uses.

A category of uses that are not permitted to serve as the principal use on a zoning lot.

(1) Home Occupation. An occupational use that is clearly subordinate to the principal use as a residence and does not require any alteration to the exterior of a building.

(2) Parking Lot. An uncovered paved surface used solely for the parking of vehicles, intended for use by the occupants in an adjacent building on the lot. See 5.0 Site Design for location of parking lots.

(3) Parking Structure. A structure used solely for the parking of vehicles, intended for use by the occupants in an adjacent building on the lot.

(4) Outdoor Storage of Goods. Permanent outdoor storage of goods not typically housed or sold indoors, such as large scale materials and building and landscape supplies.

Page Intentionally Left Blank

2.0 Street Network

2.0 Street Network

1. Intent

Olympia Hills intends to create a well-connected street network with appropriate sized blocks in order to create a highly walkable environment that maximizes mobility. The benefits of a well-connected street network include:

- More transportation options and routes
- Improved active transportation
- Increased real estate values
- Shorter emergency response times and larger emergency response areas
- Reduced traffic congestion
- Better flexibility for redevelopment
- Community health benefits
- Safer streets

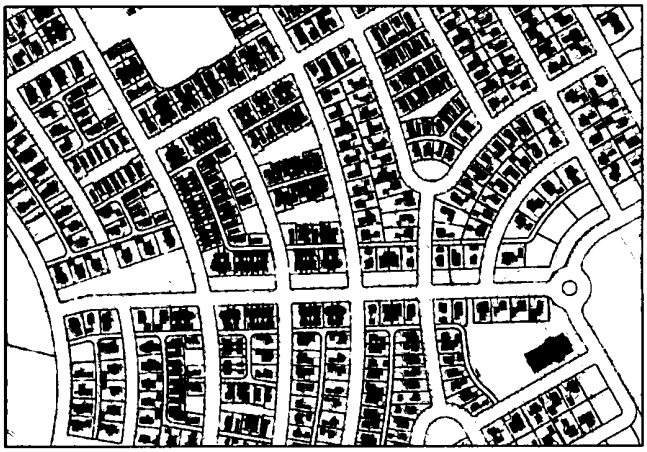


Fig. 2.1 - Daybreak Neighborhood, South Jordan, UT
Scale: 1"= 400'

2. General Requirements

(1) Compatibility. All street and transportation elements will comply with the following standards, where applicable:

- A Policy on Geometric Design of Highways and Streets (Green Book), AASHTO, latest version
- Manual on Uniform Traffic Control Devices (MUTCD), FHWA, latest version
- Highway Capacity Manual (HCM), TRB, latest version
- Roadside Design Guidelines, AASHTO, latest version
- UDOT Roadway Manual of Instruction / Standards, latest versions
- Guide for the Development of Bicycle Facilities, AASHTO, latest version
- Urban Bikeway Design Guide, NACTO, latest version
- Separated Bike Lane Planning and Design Guide, FHWA, latest version
- Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts, FHWA, latest version
- Incorporating On-Road Bicycle Networks into Resurfacing Projects, FHWA, latest version

(2) Transit. Olympia Hills will coordinate with the Utah Transit Authority to provide future transit facilities that connect Olympia Hills to the larger UTA system.

Fig. 2.2 - Salt Lake City, UT
Scale: 1"= 400'

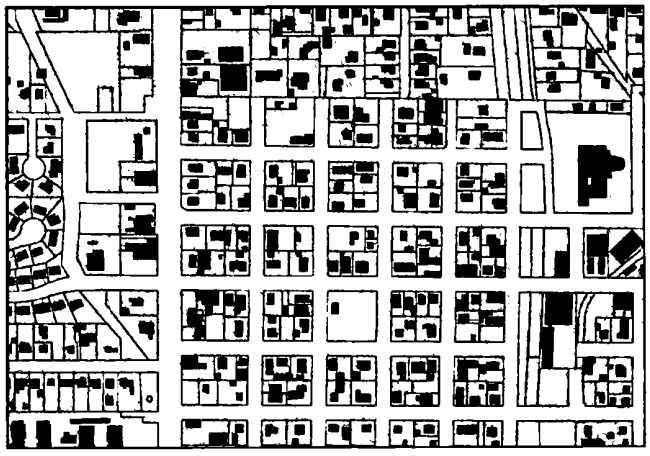


Fig. 2.3 - Historic Sandy, UT
Scale: 1"= 400'

3. Connectivity Metrics

(1) Overview

While the concept of connectivity is simple, it is important to establish clear metrics and standards to define, measure and improve connectivity. These standards center around two primary concepts: relative connectivity and network density. Both are important to consider when analyzing street networks; the two concepts complement one another to provide a well-connected network.

(a) Relative Connectivity: The relative level of connectivity means that intersections provide a certain amount of connections among streets. For example, a 4-way intersection provides more connectivity than a 3-way intersection, and both provide more connectivity than a cul-de-sac, or other dead end, which provides no connectivity. Relative connectivity is measured primarily by the connectivity index, which is the ratio of street segments ("links") to intersections and dead ends ("nodes") in an area. The standards in this chapter require a minimum connectivity index. The level of connectivity is further established through requirements and restrictions on cul-de-sacs and dead ends.

(b) Network Density: While relative connectivity is important, it is not the only important factor. Network density is the number of nodes per given unit of area, such as nodes per square mile. A city with only 4-way intersections and 800-foot blocks may not be as well connected as a city with a few cul-de-sacs and 350-foot blocks. A city with smaller blocks will have more total intersections per square mile (and be more connected) than a city with a similar level of relative connectivity and larger blocks. Network density is established by a maximum block length as well as maximum spacing of pedestrian paths and streets connecting outside the project to existing or future developments.

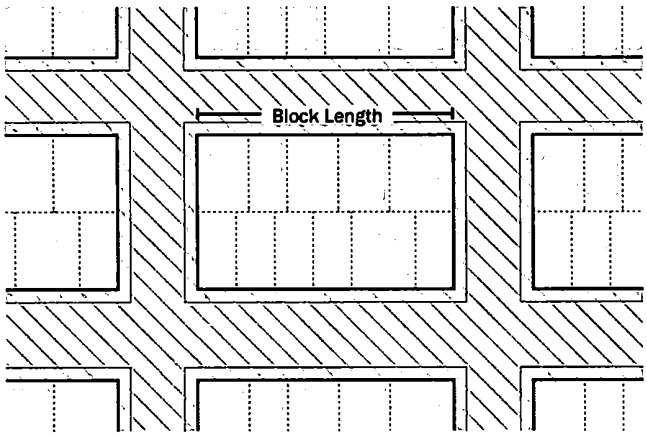


Figure 2.4 - Block Length and Right of Way

(2) Definitions

(a) *Area.* The portion of land that is being evaluated; generally the property or project phase being developed.

(b) *Block.* A contiguous group of properties bounded by multiple thoroughfares, rights-of-way, railroads, water bodies or other similar features. The block's perimeter is formed by outer property lines of the properties within the block. (Figure 2.4)

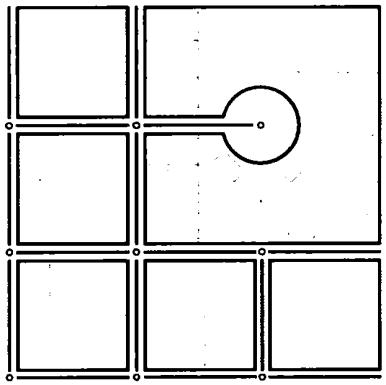


Fig. 2.5 - Links and Nodes — Link o Node

(c) *Block Length.* The length of one side of a block between two streets. (Fig. 2.4). May vary by Place Type to meet specific goals for different Place Types. See Table 2.1.

(d) *Block Perimeter.* The block perimeter is defined as the length of all sides of a block added together. (Figure 2.4).

(e) *Collector Street.* A street providing land access within commercial, industrial and residential areas. A collector street enables traffic movement between local streets and the major street network. See Salt Lake County Code of Ordinances 14.12.010.

(f) *Connectivity Index.* Calculated by dividing the number of links in an area by the number of nodes in that same area. Include one-half (1/2) of the perimeter links and nodes in link and node totals. See Figure 2.7.

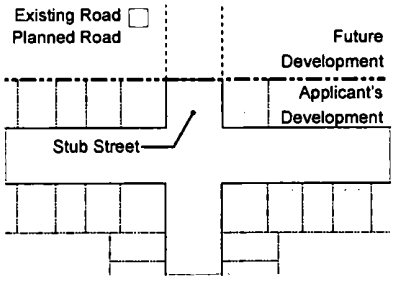
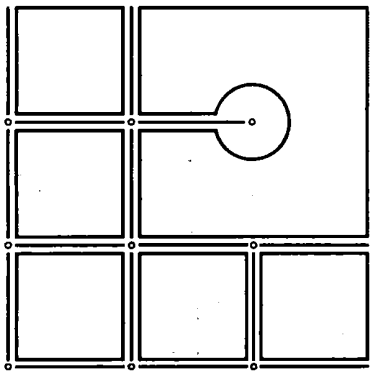


Fig. 2.6 - Stub Street

2.0 Street Network

(g) *Cul-de-sac.* A street ending in a vehicular turnaround whose roadway does not connect to other streets.

(h) *Link.* A segment of street between two nodes, or a stub street (Figure 2.5).



Number of Links: 15
Number of Nodes: 9

Connectivity Index= Links/Nodes

15 Links/9 Nodes = 1.67 Connectivity Index

Fig. 2.7 - Example Connectivity Index Calculation

(i) *Major Street.* A street that is collector-level or above. See Salt Lake County Code of Ordinances 14.12.010 for street classification definitions.

(j) *Node.* An intersection or a dead end (a cul-de-sac is considered a dead end) (Figure 2.5).

(k) *Pedestrian Pathway.* A hard-surfaced, ADA-compliant path reserved for pedestrian or other non-motorized use. May be privately owned but must be publicly accessible to meet pedestrian pathway connectivity requirements.

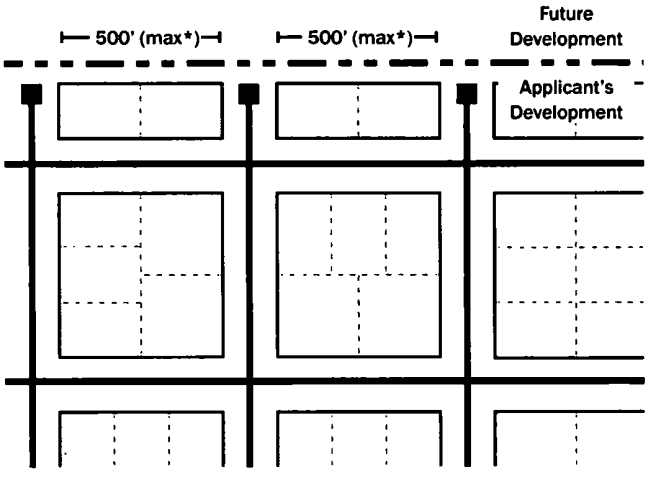


Fig. 2.8 - Stub Street Spacing

***Max Stub Street Spacing Distance Varies by Place Type. See Table 2.1.**

(l) *Right-of-Way.* A strip of land reserved for transportation, infrastructure and/or public use between the perimeter property lines of adjacent blocks.

(m) *Street.* A public thoroughfare including roads, highways, drives, lanes, avenues, places, boulevards or any other thoroughfare dedicated for public use that affords primary access to abutting properties.

(n) *Street Network.* System of interconnected streets that forms the framework for community development and transportation.

(o) *Stub Street.* A street that runs from an intersection to connect to a future adjacent development. (See Figure 2.6)

(3) Metrics

(a) *Minimum Connectivity Index.* Requires that the configuration of streets and intersections meets a threshold of connectivity. The connectivity index for an area in a Master Planned Community must be at least high as the value listed in Table 2.1 for the corresponding place type. Calculation demonstrated in Figure 2.7.

(b) *Maximum Block Length.* Requires that street connections occur frequently enough. No block length within the Place Type should be longer than the value listed in Table 2.1.

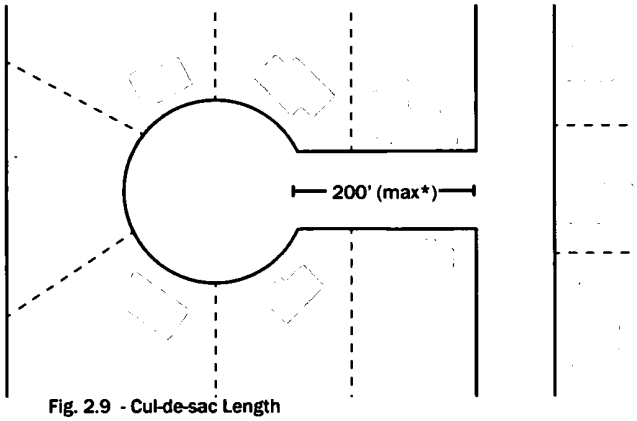


Fig. 2.9 - Cul-de-sac Length

***See section 2.4(4) for exemptions to max length.**

(c) *Maximum Pedestrian Pathway Spacing.* Requires that pedestrian pathways occur frequently enough. No pedestrian pathway spacing in Master Planned Communities should be longer than the value listed in Table 2.1 for the corresponding place type.

(d) *Maximum Stub Street Spacing.* Requires that street stubs occur frequently enough. No Stub Street spacing in Master Planned Communities should be longer than the value listed in Table 2.1 for the corresponding place type. Demonstrated in Figure 2.8.

(e) *Maximum cul-de-sac length.* Requires that cul-de-sacs are limited in length. Calculated by measuring or estimating the distance from the street intersection to the opening of the cul-de-sac bulb and ensuring it is no longer than the maximum listed in Table 2.1. Demonstrated in Figure 2.9.

(f) Maximum Major Street Spacing. Requires that major streets occur frequently enough. Calculated by measuring or estimating the distances between all major streets and ensuring that none is longer than the value listed in Table 2.1. Demonstrated in Figure 2.8.

4. Connectivity Requirements

(1) Existing Street Network. Olympia Hill's street network will be coordinated with and connect into the existing street network. Connecting to the existing street network takes priority over Connectivity Requirements in Table 2.1, where conflicts occur.

(2) Adjacent Properties. Adopted plans for properties adjacent to Olympia Hills will be collected to understand any forthcoming street networks, and Olympia Hills will coordinate street connections with these properties.

(3) Mid-Block Pedestrian Crossings. Mid-block pedestrian crossings should be utilized to cross streets where blocks are longer than 500 feet in Town Centers and Village Centers.

(a) Mid-block pedestrian crossings should be located in the middle third of the block face.

(4) In the case of topography (slopes greater than 15%), existing development, or other site specific issues, the Connectivity Requirements in Table 2.1 may be adjusted as needed by the administrator pursuant to the Master Development Agreement (MDA) to better accommodate development on the site.

(5) The Connectivity Requirements listed in Table 2.1 may be modified by the administrator on a case-by-case basis pursuant to Master Development Agreement process at Community Structure Plan (CSP) or Project Plan.

(6) Changes to the Connectivity Requirements in Table 2.1 require County Council approval.

CONNECTIVITY REQUIREMENTS							
Place Type	**Connectivity Index**	**Maximum Block Length (ft)***	**Maximum Block Perimeter (ft)**	**Maximum Pedestrian Pathway Spacing (ft)**	**Maximum Stub Street Spacing (ft)******	**Cul-de-sac Maximum Length (ft)****	**Major Streets Maximum Spacing**
Commercial Center	1.6	1000	3000	500	1000	N/A	0.5 mile
Town Center	1.6	500	2000	300	500	Not Allowed	0.5 mile
Village	1.6	500	2000	500	500	Not Allowed	0.5 mile
Neighborhood	1.6	800	2000	500	800	200	0.5 mile
Institutional	1.6	1000	3000	400	1000	200	0.5 mile
Open Space	N/A	N/A	N/A	500	***	100	0.5 mile

Table 2.1 - Connectivity Requirements

* Streets managed by UDOT with access management requirements or corridor agreements may create exceptions to block lengths; pedestrian pathway spacing requirements still apply.

** Every cul-de-sac must have a pedestrian pathway through to the other side of the block, where applicable.

*** Any street network in the open space should connect directly to the surrounding street network.

**** Stub street exemptions may be granted when adjacent land would not be developed due to ownership, existing water bodies, topography or utility infrastructure.

Page Intentionally Left Blank

3.0 Street Types & Design

BK 10983 PG 4702

3.0 Street Types & Design

1. Intent.

Olympia Hills intends to provide a variety of street types in order to:

(1) Create complete streets that address all modes of travel, including pedestrian traffic, bicycle traffic, transit, and vehicular traffic.

(2) Address all features of the street right-of-way, including sidewalks, parkways, traffic lanes, bicycle lanes, and medians.

(3) Continue the existing logical and comprehensible system of streets and street names that result in a simple, consistent and understandable pattern of blocks, lots, and house numbers.

(4) Provide adequate access to all lots for vehicles and pedestrians.

(5) Create streets that are appropriate for their contexts in residential, commercial, or mixed use districts and are designed to encourage travel at appropriate volumes and speeds.

(6) Encourage streets that respect natural features by following topography and drainage systems, rather than interrupting or dead-ending at the feature.

(7) Create streets and public rights-of-way that result in stormwater runoff quantity reduction and improved quality of stormwater runoff.

(8) Ensure streets are designed to be safe and walkable, no matter how many cars they accommodate, or how continuous they are across the community/region.

2. General Requirements.

All proposed streets, landscape or furnishings zones, and sidewalks shall be located in dedicated vehicular Rights-of-Way as required by this article.

(1) Compatibility. All street types and design will comply with the applicable standards as listed in 2.2 (1).

(2) On-Street Parking. On-street parking is encouraged, where appropriate, either through parallel or angled parking.

(3) Street Trees. Street Trees are required on all streets, with the exception of an alley or lane street type. See 7.3 Street Trees & Streetscape Design for street tree requirements.

(4) Bulb-outs. To shorten pedestrian crossing distances, bulb-outs should be utilized at all intersections for street types with on-street parking. Refer to Figure 3.2.

(5) Bus Pull-Outs. Bus pull-outs should be integrated into the streetscape design in appropriate locations. Bus routes and pull-outs should be coordinated with UTA at the Community Structure Plan (CSP).

(6) Emerging Mobility Options. Streets should be designed to accommodate ridesharing services with pull-outs in appropriate areas. Street design should also respond to future technologies as they emerge, if appropriate, with the goal of enhancing and increasing mobility.

(7) Public Use. All streets shall be available for public use. Gated streets and streets posted as private are not permitted.

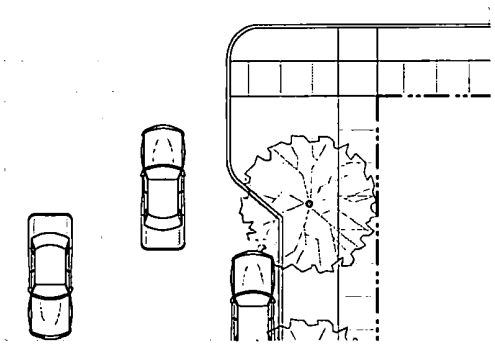


Figure 3.2. Bulb Out.

3. Typical Street Elements.

Typical elements of a vehicular right-of-way are divided into the vehicular and pedestrian realm. Each street type detailed in this article outlines which facilities are applicable. Refer to Figure 3.3: Typical Right-of-Way Elements.

(1) Vehicular Realm. The vehicular realm is comprised of the travel lanes, bicycle lanes, and parking lanes.

(2) Pedestrian Realm. The pedestrian realm is typically comprised of pedestrian facilities, such as sidewalk, path/trail, or off-street bicycle path, and a buffer area, consisting of a landscape zone or furnishings zone that serves to buffer pedestrians or bicyclists from the movements of higher speed vehicles in the vehicular realm.

(a) Landscape Zone. A landscape area between the back of curb or edge of pavement to the sidewalk in which street trees, swales, lighting, and signage may be located. Typically used adjacent to residential buildings.

(b) Furnishings Zone. A hardscape area that extends from the sidewalk to the back of curb, in which street trees, street furniture, lighting, and signage may be located. Typically used adjacent to commercial or office buildings.

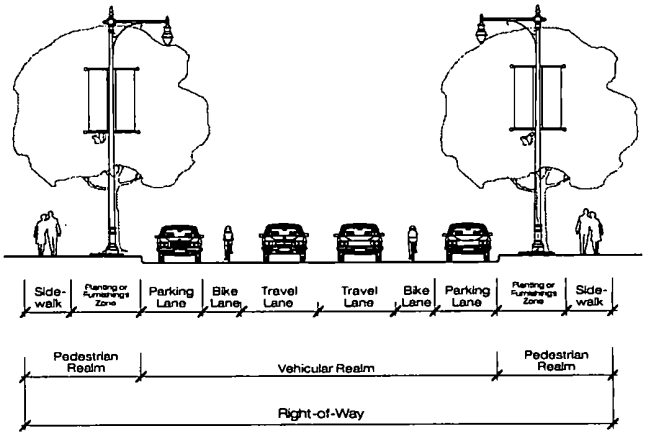


Figure 3.3. Typical Right-of-Way Elements.

4. Bicycle Facilities.

The majority of streets within Olympia Hills are intended to be designed for a slow vehicular speed, allowing bicycles to safely share travel lanes with vehicles.

For major streets that are designed for faster vehicular speeds and larger traffic volumes, the following types of bicycle accommodations are permitted in the vehicular realm per Street Type. Refer to Figure 3.4.

Locations for bike lanes will be identified in the Master Circulation System Plan during the Community Structure Plan (CSP) submittal.

(1) Cycle Track. A cycle track is a separate on-road bicycle facility that is typically adjacent to, but physically separated from, vehicular traffic and parking by a barrier.

(2) Dedicated Bicycle Lane. Dedicated bicycle lanes are striped lanes on the outside of the outermost travel lanes that are designated for only bicycle use. This lane occurs on both sides of the street and shall be five to six feet wide.

(3) Designated Shared Lane. A designated shared lane is a lane that is shared between vehicles and bicycles. This lane is typically wider than a standard vehicular lane, minimum 13 feet, in order to accommodate both types of users, and includes a painted bicycle marker combined with a double arrow (known as a "sharrow"). This improvement occurs on both directions.

(4) Shared Lane. A shared lane refers to a street that does not have bicycle lanes or a designated shared lane, but the speed and configuration of the street is such that bicycles could comfortably share lanes with traffic. The majority of streets within Olympia Hills will be designed for slower speeds that wil allow bicycles to comfortably share the traffic lane.

5. Stormwater Management.

Incorporation of stormwater management best practices into the right-of-way design, such as incorporating drainage swales and slotted curbs into the Landscape Zone or permeable paving in the parking lane, will be utilized where appropriate and practicable.

6. Street Types.

Street Types defined in this section outline acceptable street configurations, and represent the most common streets that will be used in Olympia Hills. These streets should be designed using the principles and characteristics defined by each street type. Other specialty street types are encouraged to be used where appropriate, including transit streets, festival streets, pedestrian streets, and more.

(1) The graphics provided here, illustrating each street type, are samples of recommendations and illustrate the intent for a possible configuration of that street type. By applying the standards outlined, and working with County Staff, other configurations are possible.

(2) The dimensions used for street types may be changed up to a foot, as necessary, by working with the County to determine the most appropriate dimensions.

(3) Corridors and streets with major transit lines, such as bus rapid transit, light rail, streetcar, or others, should create a new street type that is designed to specifically accommodate the transit mode, surrounding land-uses, and other specific factors.

(4) The Street Types listed in Sections 3.6 - 3.11 may vary, or additional Street Types may be created by the Administrator pursuant to the Master Development Agreement process at Community Structure Plan (CSP) or Project Plan. See Section 4.1 of the Master Development Agreement.

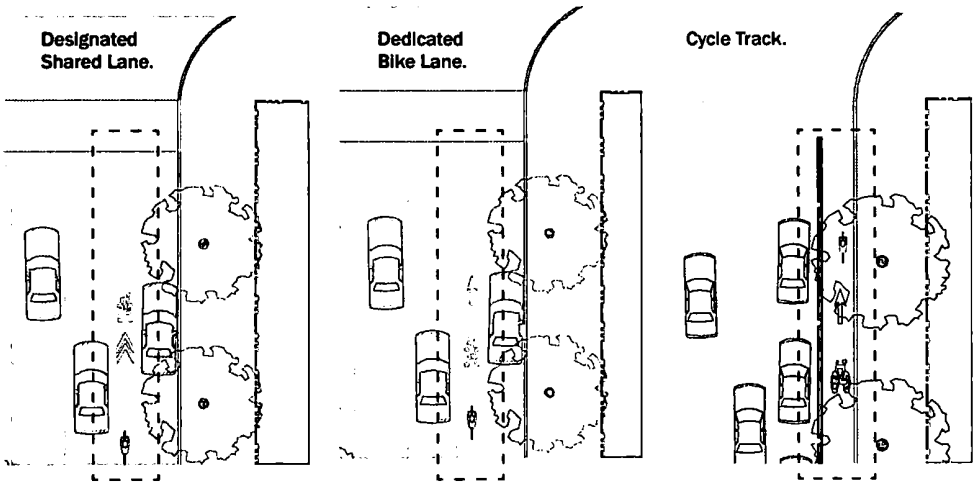


Figure 3.4. On-Street Bicycle Facilities.

3.0 Street Types & Design

3.6 Alley.

1. Intent.

The Alley is a very low capacity drive located at the rear of parcels. From the Alley, access to parking facilities, loading facilities, and service areas, such as refuse and utilities is possible without a curb cut or driveway interrupting a street type. Refer to the typical plan and section in Figure 3.6.

2. General Requirements.

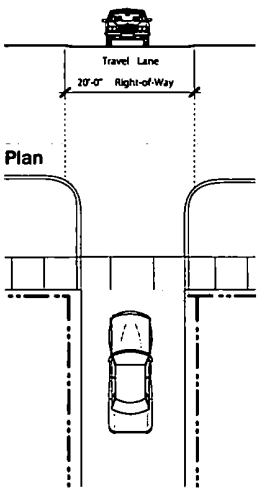
Alleys shall be developed using the standards in Table 3.6.

Alley Requirements	
Typical Right-of-Way Width	20'
Vehicular Realm	
Travel Lanes	1 yield lane
Lane Width	16'
Allowable Turn Lanes	Not applicable
Parking Lanes	Not applicable
Pavement Width	Minimum 16' Maximum 20'
Median	No
Bicycle Facilities [1]	Shared
Pedestrian Realm	
Pedestrian Facilities	Shared; travel lanes are shared among drivers, pedestrians and bicyclists
Street Buffer	None required

[1] Reference 3.4 for bicycle facility types and requirements

Table 3.6. Alley Requirements.

Section



Plan

Figure 3.6. Typical Alley.

3.7 Lane

1. Intent.

A Lane is a low capacity Street Type that serves only those properties directly adjacent to it. Lanes can have designated realms for vehicular and pedestrian traffic, or these modes can share lanes given the low capacity and slow speed. Refer to the typical plan and section, Figure 3.7.

2. General Requirements.

The Lane shall be developed using the standards in Table 3.7.

Lane Requirements	
Typical Right-of-Way Width	30'
Vehicular Realm	
Travel Lanes	1 yield lane
Lane Width	10'
Allowable Turn Lanes	Not applicable
Parking Lanes	1 parallel lane required
Pavement Width	Minimum 17' Maximum 24'
Median	No
Bicycle Facilities [1]	Shared
Pedestrian Realm	
Pedestrian Facilities	Minimum 5' wide clear sidewalk on both sides
Street Buffer	None required

[1] Reference 3.4 for bicycle facility types and requirements

Table 3.7. Lane Requirements.

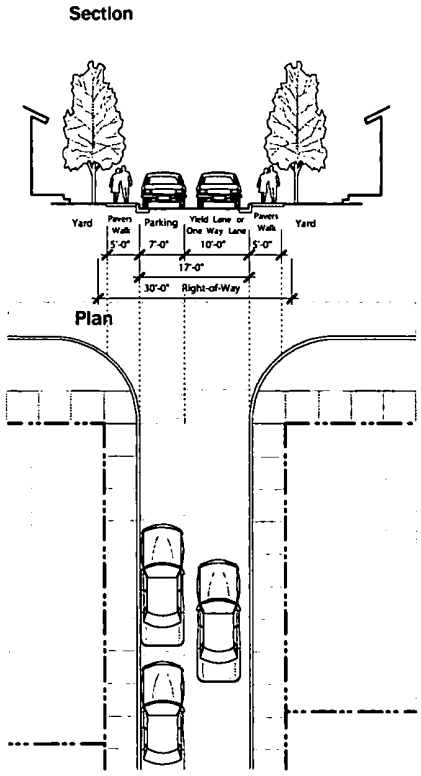


Figure 3.7. Typical Lane.

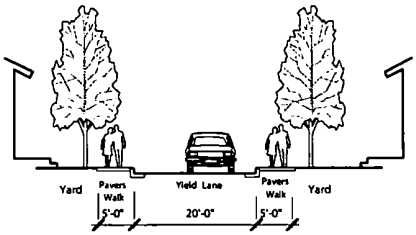


Figure 3.7 (2). Alternative Yield Lane with no Parking.

3.0 Street Types & Design

3.8 Neighborhood Street.

1. Intent.

The Neighborhood Street is a low capacity street designed for slow speeds with a standard right-of-way. It primarily serves those residences or businesses directly adjacent to it. Refer to the typical plan and section, Figure 3.8 (1).

2. General Requirements.

The Neighborhood Street shall be developed using the standards in Table 3.8.

Neighborhood Street Requirements	
Typical Right-of-Way Width	58'
Vehicular Realm	
Travel Lanes	1 yield lane
Lane Width	16' to 18'
Allowable Turn Lanes	Not applicable
Parking Lanes	Parallel required on one side of street
Pavement Width	32', 20' for alternative
Median	Permitted
Bicycle Facilities [1]	Shared
Pedestrian Realm	
Pedestrian Facilities	Minimum 5' wide clear sidewalk on both sides
Street Buffer	Minimum 8' wide Landscape Zone

[1] Reference 3.4 for bicycle facility types and requirements

Table 3.8. Neighborhood Street Requirements.

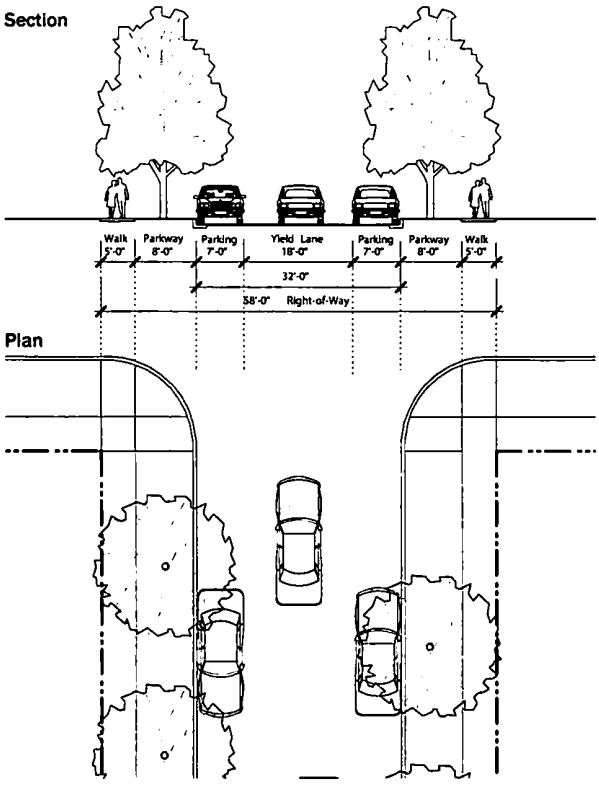


Figure 3.8 (1). Typical Neighborhood Street.

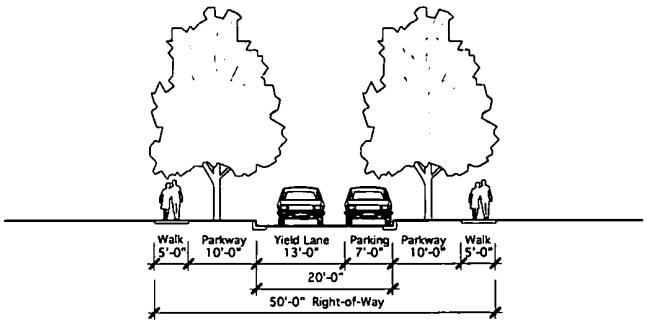


Figure 3.8 (2) Alternative 50' Right-of-Way Neighborhood Street.

3.9 Connector Street.

1. Intent.

The Connector Street is a medium capacity street for slow speeds with a standard right-of-way. It primarily serves as a through street within the Neighborhood and connects Neighborhood Streets to Avenues. Refer to the typical plan and section, Figure 3.9 (1).

2. General Requirements.

Connectors shall be developed using the standards in Table 3.9.

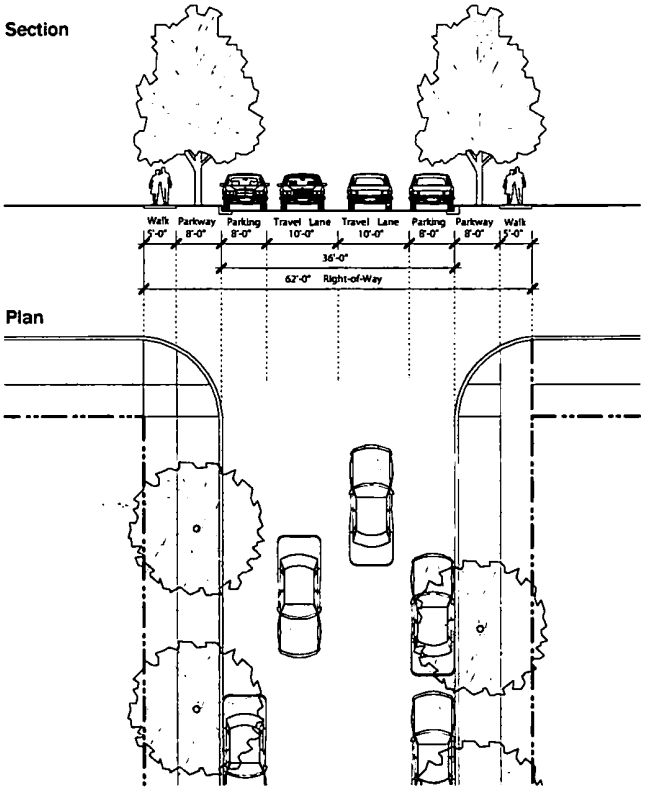


Figure 3.9 (1) . Typical Connector Street.

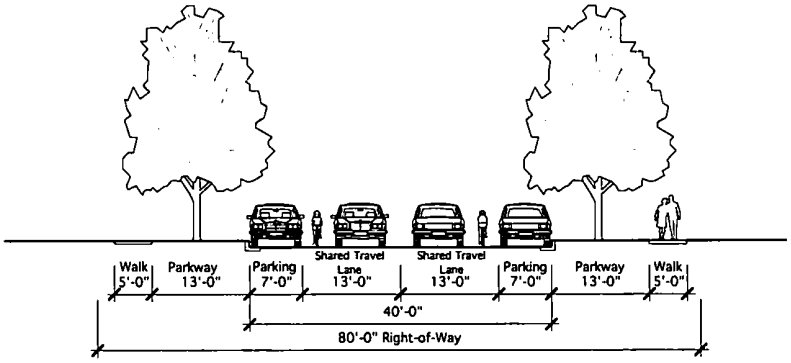


Figure 3.9 (2). Alternative 80' Shared Right-of-Way Connector.

Connector Street Requirements	
Typical Right-of-Way Width	60' to 70'
Vehicular Realm	
Travel Lanes	1 lane in each direction
Lane Width	10'
Allowable Turn Lanes	Right permitted in place of parking at intersections with Avenue; left only with median alternative
Parking Lanes	Parallel required on both sides of street.
Pavement Width	36'; 40' for alternative
Median	Permitted with 80' or greater right-of-way.
Bicycle Facilities [1]	Shared
Pedestrian Realm	
Pedestrian Facilities	Minimum 5' wide clear sidewalk on both sides
Street Buffer	Minimum 8' wide planting zone or furnishings zone; adjacent to Residential Districts, Open Space Districts, the planting zone is required
[1] Reference 3.4 for bicycle facility types and requirements	

Table 3.9. Connector Requirements.

3.0 Street Types & Design

3.10 Avenue.

1. Intent.

The Avenue is a medium to high capacity street for higher speeds with a wider right-of-way. It serves all types of development and provides crosstown connections. Refer to the typical plan and section in Figure 3.10 (1).

2. General Requirements.

Avenues shall be developed using the standards in Table 3.10.

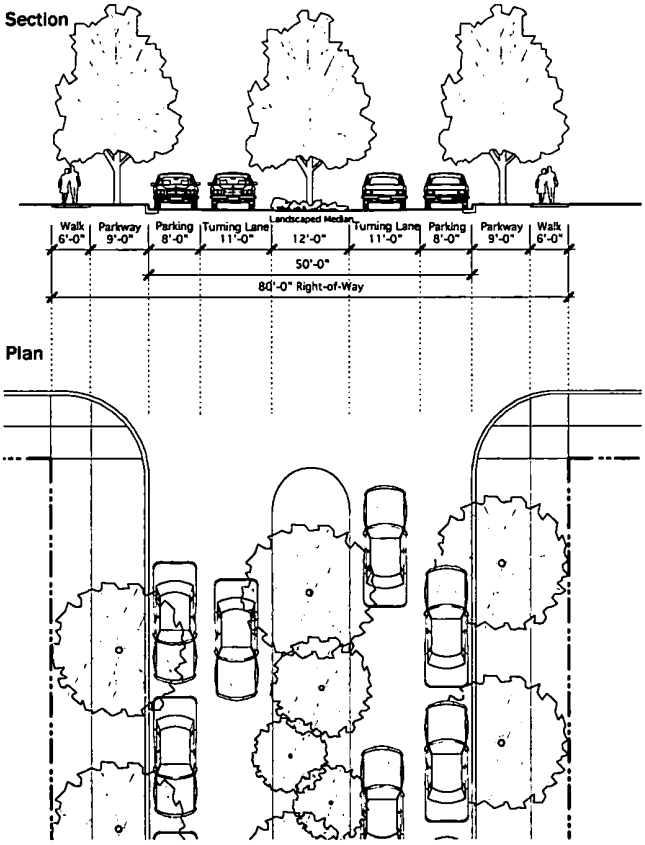


Figure 2.8 (1). Typical Avenue.

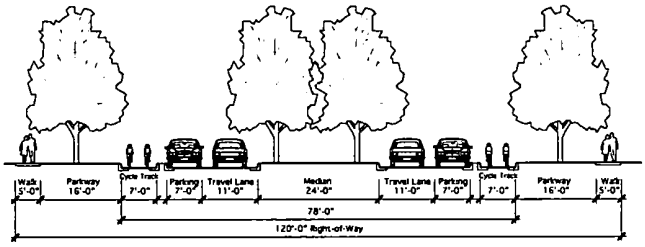


Figure 3.10 (2). Alternative 120' with Median & Cycle Track Connector.

Avenue Requirements	
Typical Right-of-Way Width	66' to 80'
Vehicular Realm	
Travel Lanes	1 lane in each direction
Lane Width	11' or 12' with truck traffic
Allowable Turn Lanes	Right permitted in place of parking at intersections with Connector; left only with median.
Parking Lanes	Parallel required on both sides of street; angled permitted for alternative.
Pavement Width	50'; 78' for alternative
Median	Permitted with 80' or greater right-of-way.
Bicycle Facilities [1]	Shared; dedicated bike lane with alternative.
Pedestrian Realm	
Pedestrian Facilities	Minimum 5' wide clear sidewalk on both sides
Street Buffer	Minimum 9' wide planting zone or furnishings zone; adjacent to Residential Districts, Open Space Districts, the planting zone is required

[1] Reference 3.4 for bicycle facility types and requirements

Table 3.10. Avenue Requirements.

3.11 Boulevard.

1. Intent.

The Boulevard is a high capacity street for higher speeds with a wider right-of-way. It serves all types of development and provides crosstown connections. Bicycle facilities should generally be included on Boulevard street types to provide dedicated bikeways on major corridors. Refer to the typical plan and section, Figure 3.11 (1).

2. General Requirements.

Boulevards shall be developed using the guidelines in Table 3.11.

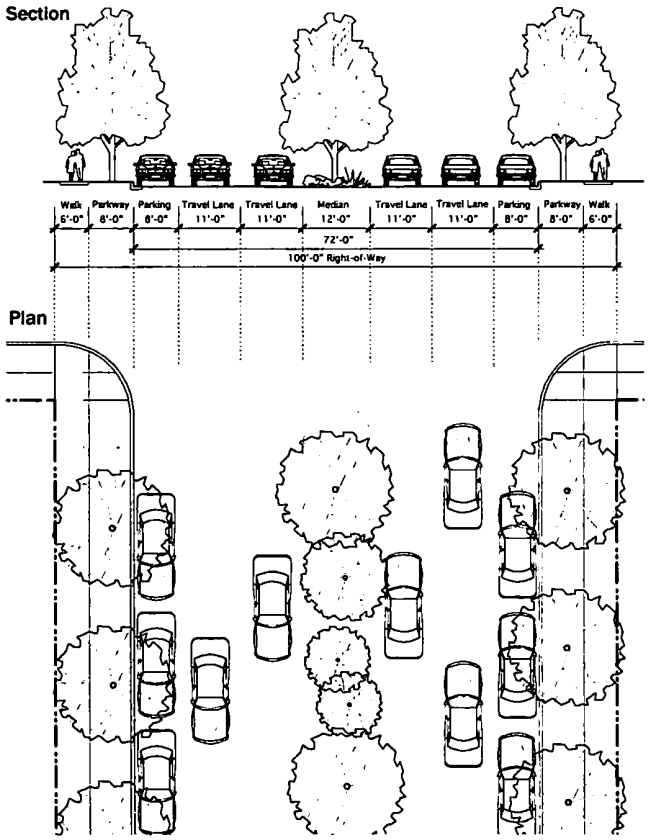


Figure 3.11 (1). Typical Boulevard.

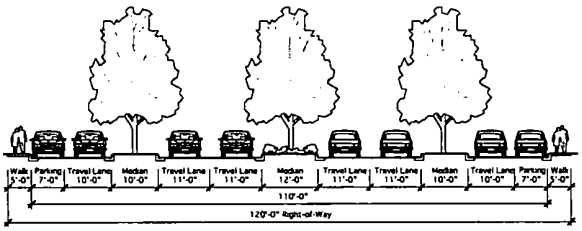


Figure 3.11 (2). Alternative 120' Right-of-Way with Local Lanes Boulevard.

Boulevard Requirements	
Typical Right-of-Way Width	100'; 120' alternative
Vehicular Realm	
Travel Lanes	up to 2 lanes each direction
Lane Width	11' or 12' with truck traffic
Allowable Turn Lanes	Permitted in place of parking and bulb out at intersections
Parking Lanes	Both sides, parallel only
Pavement Width	72'; 102', 120' alternatives
Median	Permitted, minimum 9' wide, preferably 12' wide
Bicycle Facilities [1]	Designated Shared; Cycle Track alternative
Pedestrian Realm	
Pedestrian Facilities	Minimum 5' wide clear sidewalk on both sides with bulbouts
Buffer	Minimum 5' wide landscape zone or furnishings zone, both sides; adjacent to Residential Districts, Open Space Districts, the planting zone is required

[1] Reference 3.4 for bicycle facility types and requirements

Table 3.11. Boulevard Requirements.

Page Intentionally Left Blank

4.0 Parks, Trails & Open Space

BK 10983 PG 4712

4.0 Parks, Trails & Open Space

1. Intent.

Olympia Hills intends to provide Parks, Trails and Open Space as an amenity that promotes physical and environmental health within the community and to provide each household with access to a variety of active and passive Parks, Trail and Open Spaces. This also includes providing connections to existing and proposed trails, including trails into Butterfield Canyon.

2. General Requirements.

(1) Access. All Parks, Trails and Open Spaces shall provide public access from a vehicular right-of-way.

(2) Location. Parks and Open Spaces shall be platted as a lot or, with permission of the County, may be located within the right-of-way.

(3) Ownership and Maintenance. Olympia Hills should use a variety of strategies to manage and maintain open space, including: public/private partnerships, intergovernmental agreements, community associations, and other arrangements.

(4) Olympia Hills parks and open space system shall afford residents with parks, open space, and trails through various sizes of parks, including regional parks, community parks, and neighborhood parks, distributed throughout the project area.

(5) A regional park shall be planned to accommodate transit stops, and may include natural resources such as creeks.

(6) Smaller community and neighborhood parks and recreation facilities shall be distributed through the project to provide park facilities within walking proximity of residents. Community parks shall be located near transit stops and/or recreation facilities. Smaller neighborhood parks are intended to be primarily focused on serving walk-to or bike-to recreation needs and will often be located adjacent to schools.

(7) Parks, Open Space, and Common Areas shall be phased based on the timing of the various Project Plans.

(8) Connections to existing or planned trails or parks and open spaces shall be made when the park or open space abuts an existing or planned Trail right-of-way or other civic open space or park. Refer to the corresponding plans by the County and adjacent Cities and/or Townships.

(9) Community Structure Plan and Project Plan submittals must include the following:
   (a) Parks Plan.
      (i) Community Structure Plan. Must show general location and size of planned parks.
      (ii) Project Plan. Must show specific location and size of planned parks.
   (b) Parks Walking Distance Plan. Must show residential lots within walking distance of each Park.
   (c) Trails Plan. Must show trail connections to key destinations such as schools, parks and other community facilities, the intended uses/modes of travel for each segment of trail and the material and width of trails.
   (d) Open Space Plan.
      (i) Community Structure Plan. Must show general location, size and function of open spaces.
      (ii) Project Plan. Must show specific location, size and function of open spaces.
   (e) Project-level Maintenance & Management Plan. Must designate the parties responsible for maintenance, the maintenance methods and budget, and define the areas to be maintained.

3. Parks.

A Park is defined as a non-commercial, not-for-profit public facility for general community use. Parks include programming and facilities that support active and passive recreation, and may be publicly or privately owned. Commercial uses are allowed inside parks with the approval of County Staff. Qualifying uses can be found in Table 4.1.

Qualifying Uses for Parks and Open Space

Use	Meets Park Requirements	Meets Open Space Requirements
Trails within Parks	Yes	Yes
Trails in Open Space	No	Yes
Ball courts	Yes	Yes
Nature Preserve	No	Yes
Farm or Agricultural Lands	No	Yes
Pavilions	Yes	Yes
Stormwater for Parks	Yes	Yes
Stormwater for Development	Yes [a]	Yes
Stormwater in Common Areas	Yes [a]	Yes
Parking for Parks	Yes	Yes
Public Plazas	Yes	Yes
Public Courtyards	Yes	Yes
Landscape around Private Buildings	No	No
Recreation Center Buildings	Yes	Yes
Agriculture Buildings	No	No
Rooftop Gardens	No	Yes [b]
Playgrounds	Yes	Yes
Restricted Common Areas for Developments	No	Yes
Amphitheater	Yes	Yes
Sports Fields	Yes	Yes
Community Pools & Pool Areas	Yes	Yes
Institutional Green Space	Yes [c]	Yes
Community Garden	Yes	Yes

a. See Section 4.6
b. See Section 4.4 (2)
c. See Section 4.3 (6)

* Additional Park Uses may be approved by appointed County Administrator with input provided by Parks and Recreation Department, or as specified in Community Structure Plan (CSP) or Project Plan.

Table 4.1. Qualifying Park and Open Space Uses

(1) The required amount of Park Space shall be 5 acres per 1,000 residents. Population planning for the project is 3.6 people per household.
   (a) Changes to the required amount of Park Space in subsection 4.3 (1) requires County Council approval.

(2) There shall be one Regional Park that is at least 50 acres in size. It shall be dedicated to the County. The County shall be responsible for developing it according to County parks standards, but the County may do so when it determines at its sole discretion. The County shall be responsible for maintaining it, both before and after it is developed. See SLCO Parks & Recreation Facilities Master Plan for County park standards.
   (a) Changes to the dedication of a Regional Park in subsection 4.3 (2) requires County Council approval.

(3) There shall be at least four Community Parks that are each at least 10 acres in size and comprise a total of at least 40 acres. These shall be dedicated to the County but shall become property of the successor jurisdiction when, or if, the project annexes or incorporates. Developer shall be responsible for developing each of these according to County parks standards. The Municipal Services District shall be responsible for maintaining these, both before and after they are developed, which shall be commemorated via a written agreement between the County and District.
   (a) Changes to the requirement for Community Parks in subsection 4.3 (3) requires County Council approval.

(4) All dwelling units shall have at least one Park no greater distance than one-quarter (1/4) mile away as measured from property lines. Parks shall be planned and phased in such a way that residents shall have a completed park no greater than one-quarter (1/4) mile away from their home within two years of completion of their home.
   (a) Changes to this standard in subsection 4.3 (4) requires County Council approval.

(5) There shall be local parks (typically less than 5 acres in size) in a number determined by Developer but comprising at least 20% of total park space. Private parks shall be developed and maintained privately. Private parks shall be designed and built according to the park types found in Sections 4.8 - 4.14.

(6) Portions of the Utah State University property may count toward the required amount of Park Space outlined in this Section 3 to the extent that the owner of Institutional lands and the County enter into a long-term agreement satisfactory to both parties wherein those portions of Industrial lands are open and available to the public for programmable use at no charge on a regular prescribed basis.

(7) All parks referenced shall be open to the public.

(8) All park design and construction shall meet County park construction standards.

4. Open Space.

Open Space is defined as land preserved for the purpose of conservation, preservation, agriculture, resource enhancement, recreation, enhancing value to the public of adjacent parks or preserves, or otherwise providing a buffer to adjacent properties. Qualifying uses can be found in Table 4.1.

(1) The required amount of Open Space shall be 20% of the gross Master Planned Community land area. All park land area, as described in 4.3, may be counted toward the Open Space requirement.
   (a) Changes to this standard in subsection 4.4 (1) requires in County Council approval.

(2) Fifty (50%) percent of roof top garden space may be applicable to Open Space square footage requirements. The roof top garden space must be accessible to residents of the project or contain permanent plant material to qualify as open space.

(3) Stream buffers shall be a minimum of 50 feet from top of bank or high water mark on both sides of the waterway.

(4) Agricultural fields may count towards Open Space requirements, but buildings, small garden areas, and impervious surfaces shall not count toward requirements.

5. Trails.

A Trail is defined as a path physically separated from motor vehicle traffic by open space, landscape or a barrier for non-motorized travel such as walking, jogging, biking, skateboarding or other similar modes of transportation. Trail systems should work with the street network and sidewalk system to enhance community connectivity.

(1) Trails should be implemented in existing stream corridor buffers, where possible. These trails should connect to the street network and sidewalk system.

(2) Trails should connect Olympia Hills with major natural assets, such as Butterfield Canyon.

(3) Developer shall dedicate to the County a trail corridor along Butterfield Canyon Creek of at least a 30' width that can accommodate at least a 12' wide asphalt paved path with 1.5' paved shoulders on either side. The remainder of the corridor can remain in a natural (undisturbed) state. The precise location of the trail corridor shall be determined in the Community Structure Plan. This trail would be located within the 50' stream buffer as specified in 4.4 (3). The County shall be responsible for developing this Butterfield Creek regional trail according to County trail standards, but the County may do so when it determines at its sole discretion. Alternatively, Developer may develop the trail in coordination with and approval by the County if doing so is beneficial to Developer's project or development goals. County shall be responsible for maintaining this regional trail, both before and after it is developed.

(4) Whenever practical, non-regional trails should connect the Regional Park to the Community parks. Non-regional trails shall be privately maintained.

(5) A connected street network shall take priority over a continuous trail system, where any conflicts exist. See Chapter 2.0 Street Network for street network requirements.

(6) Trails may run parallel to streets where they should either replace the sidewalk, or add an additional pathway. To be considered a

trail, the pathway must be a paved 12 foot wide path, with at least 8 feet of landscape area on the street side of the pathway.

(7) All trails shall be open to the public.
  (a) Changes to this standard in subsection 4.5 (7) requires County Council approval.

(8) Trails shall have minimal driveway crossings. For residential areas with trails parallel to streets the garages and driveways shall be located at the rear of homes and accessed via alleys.

6. Stormwater in Parks & Open Spaces.

(1) At the County's absolute discretion, developed stormwater retention facilities may count towards the Park Space required in section 3 of this chapter. The Administrator (as defined in the Master Development Agreement) shall make all such determinations, after consultation with the County Parks and Recreation Division and the County Department of Public Works.

(2) To be requested by Master Developer and considered by the County whether to approve as required Park Space, stormwater retention facilities must at minimum be engineered in accordance with industry and County standards. Stormwater facilities shall be designed as formal or natural amenities with additional uses, such as amphitheater, pond, creek, dry riverbed, rain gardens, and more. Stormwater facilities shall not be located in recreational facilities such as fields, courts and playgrounds, and designed in accordance with the Salt Lake County 2015 Parks & Recreation Facilities Master Plan.

(3) If determined to be required Park Space, stormwater retention facilities that fail (as determined by the County in accordance with County and industry standards) shall be the responsibility of Master Developer to repair or replace in accordance with County and industry standards, and failure to do so will result in a Default of the Master Development Agreement, and the facilities will no longer count as required Park Space.

(4) Developed stormwater retention facilities may count towards no more than 10% of the total required Park Space in Section 3. No more than 25% of an individual park's surface are may be used as stormwater detention and count toward the required Park Space in Section 3. Subsurface detention facilities are encouraged and are not subject to the limitations described in this subsection (4).

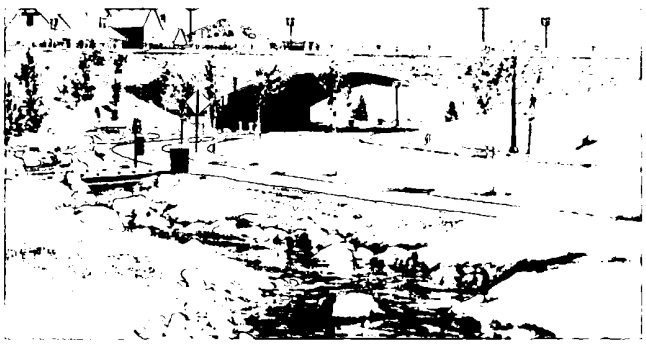


Figure 4.1 (1). Stormwater Park Feature Precedent Image

7. Definition of Requirements.

The following further explains or defines the requirements included in Tables 4.8 (1) through 4.14 (1) for each Park/Open Space type. Refer to each table for the specific requirements of each Open Space type.

(1) Size. (See Figure 4.2)
  (a) Minimum Size. The minimum size of the Park/Open Space Type is measured within the parcel lines of the property.
  (b) Maximum Size. The maximum size of the Park/Open Space Type is measured within the parcel lines of the property.
  (c) Minimum Dimension. The minimum length or width of the Park/Open Space type, as measured along the longest two straight lines intersecting at a right angle defining the maximum length and width of the lot.

(2) Minimum Percentage of Vehicular Right-of-Way Frontage Required. The minimum percentage of the civic Park/Open Space perimeter, as measured along the outer parcel line, that shall be located directly adjacent to a vehicular right-of-way, excluding alley frontage. This requirement provides access and visibility to the Open Space.

(3) Adjacent Parcels. Parcels directly adjacent to, as well as across a street from a Park/Open Space.
  (a) Frontage Orientation of Adjacent Parcels. The preferred orientation of the adjacent parcels' frontages to the civic Open Space. Front, corner side, side, and rear refers to the property line either adjacent to the Park/Open Space or facing the Park/Open Space across the street.

(4) Improvements. The following types of development and improvements may be permitted on a Park/Open Space Type.
  (a) Designated Sports Fields Permitted. Sport fields, ball courts, or structures designated for one or more particular sports including, but not limited to, baseball fields, softball fields, soccer fields, basketball courts, football fields, tennis courts, pickle ball courts, climbing walls, and skate parks are permitted.
  (b) Playgrounds Permitted. Playgrounds include a defined area with play structures and equipment typically for children, such as slides, swings, climbing structures.

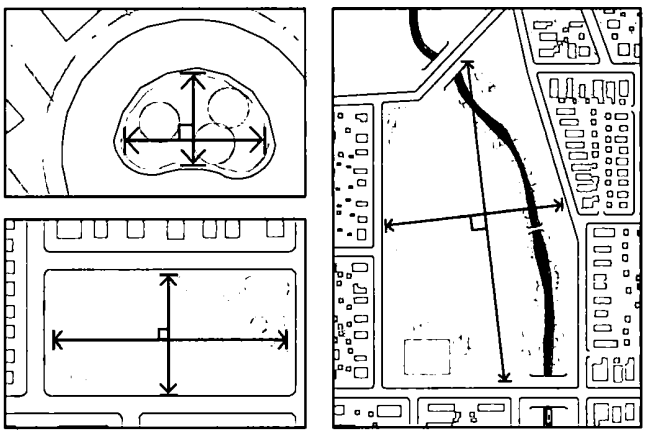


Figure 4.2. Examples of Measuring the Minimum Dimension of Open Space Types.

(c) Fully Enclosed Structures Permitted. Fully enclosed structures may include such uses as park offices, maintenance sheds, community centers, and rest rooms.
  (i) Maximum Area. For some civic Open Space types, fully enclosed structures are permitted, but limited to a maximum building coverage as a percentage of the Open Space area.
  (ii) Semi-Enclosed Structures. Open-air structures, such as gazebos, are permitted in all Open Space types.

(d). Maximum Impervious and Semi-Pervious Surface Permitted. The amounts of impervious and semi-pervious coverage are provided separately to allow an additional amount of semi-pervious surface, such as permeable paving, above the Impervious surfaces permitted, including, but not limited to, parking facilities, driveways, sidewalks, paths, and structures as permitted.

(e) Minimum number of Parks Amenities. The minimum number of amenities that must be included in each park type. Table 4.3 contains a list of park amenities that could be included in a park. This list is not exhaustive, and other thoughtful and creative amenities are encouraged to used, as approved by County Staff.

Qualifying Parks Amenities
Playground
Restroom
Drinking Fountain
Dog Park
Sports Field (Soccer, Softball, etc.)
Sports Court (Tennis, Pickleball, Basketball, etc.)
Pavilion
Gazebo
Interactive Water Feature (Splash Pad, etc.)
Decorative/Ornamental Water Feature
Amphitheater
Pond
Jogging/Walking Path
BBQ Grills
Picnic Tables
Community Garden
Memorial
Fitness Equipment
Skate Park (or Skateable Features)
BMX Track

Table 4.3. Qualifying Park Amenities

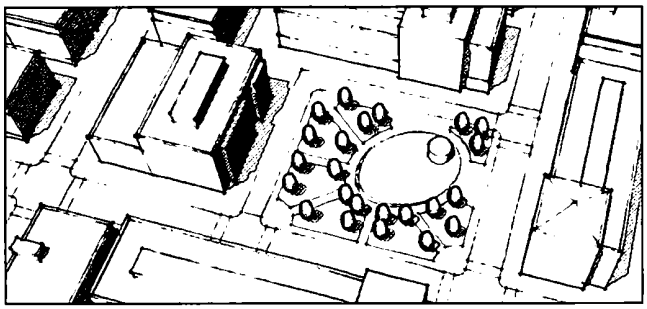


Figure 4.8 (1). Typical Plaza.

4.8 Plaza.

1. Intent.

To provide a formal Park or Open Space of medium scale to serve as a gathering place for civic, social, and commercial purposes. The Plaza may contain a greater amount of impervious coverage than any other Open Space Type. Special features, such as fountains and public art installations, are encouraged.

2. Plaza Requirements	
(1) Dimensions	
Minimum Size (acres)	0.25
Maximum Size (acres)	2
Minimum Dimension (feet)	80'
Minimum % of Vehicular ROW Frontage Required	25%
(2) Adjacent Parcels	
Frontage Orientation of Adjacent Parcels	Front or Corner Side
(3) Improvements	
Designated Sports Fields Permitted	Not permitted
Playgrounds Permitted	Not permitted
Fully Enclosed Structures Permitted	Permitted; maximum 10% of area
Maximum Impervious + Semi-Pervious Surface	minimum: 40% maximum: 80% + 10%
Minimum Number of Park Amenities	1
(4) Additional Design Requirements	

(a) Minimum Building Frontage. At least 50% of the plaza's perimeter that does not front on vehicular right-of-way shall be lined by building frontages.
(b) Fully Enclosed Structures Permitted. Fully enclosed structures are permitted, and are allowed to cover a maximum of 10% of the total area of the plaza.

Table 4.8. Plaza Requirement.

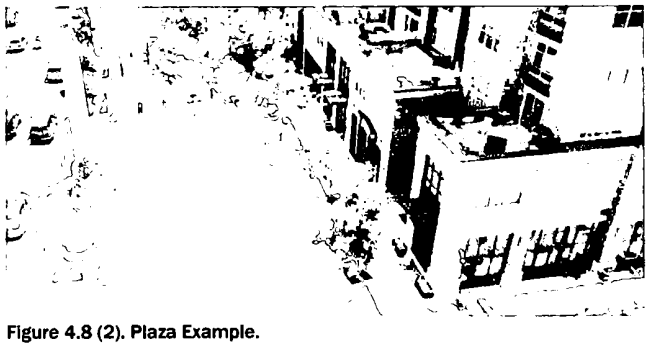


Figure 4.8 (2). Plaza Example.

4.0 Parks, Trails & Open Space

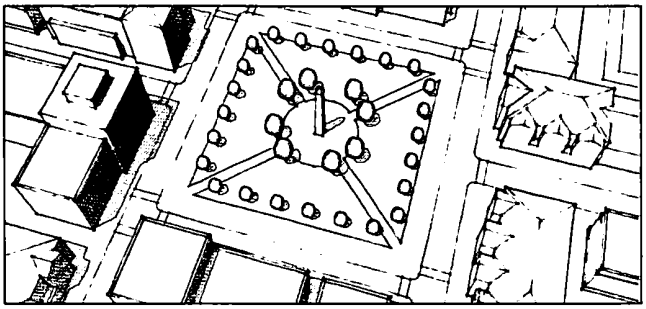


Figure 4.9 (1). Typical Square.

4.9 Square.

1. Intent.

To provide a formal Park or Open Space of medium scale to serve as a gathering place for civic, social, and commercial purposes. Squares are rectilinear in shape and are bordered on all sides by a vehicular right-of-way, which together with building facades creates its definition.

2. Square Requirements	
(1) Dimensions	
Minimum Size (acres)	0.25
Maximum Size (acres)	5
Minimum Dimension (feet)	80'
Minimum % of Vehicular ROW Frontage Required	25%
(2) Adjacent Parcels	
Frontage Orientation of Adjacent Parcels	Front or Corner Side
(3) Improvements	
Designated Sports Fields Permitted	Not permitted
Playgrounds Permitted	Not permitted
Fully Enclosed Structures Permitted	Permitted; maximum 5% of area
Maximum Impervious + Semi-Pervious Surface	40% + 20%
Minimum Number of Park Amenities	1
(4) Additional Design Requirements	

(a) Fully Enclosed Structures Permitted. Fully enclosed structures are permitted, and are allowed to cover a maximum of 10% of the total area of the Square.

Table 4.9. Square Requirement.

Figure 4.9 (2). Square Example.

Figure 4.10 (1). Typical Small Park Layout.

4.10 Small Park.

1. Intent.

To provide informal, small to medium scale active or passive recreation for neighborhood residents within walking distance, mainly fronted by streets.

2. Small Park Requirements	
(1) Dimensions	
Minimum Size (acres)	1
Maximum Size (acres)	5
Minimum Dimension (feet)	45'
Minimum % of Vehicular ROW Frontage Required	25%
(2) Adjacent Parcels	
Frontage Orientation of Adjacent Parcels	Rear, Front or Corner Side
(3) Improvements	
Designated Sports Fields Permitted	Not permitted
Playgrounds Permitted	Permitted
Fully Enclosed Structures Permitted	Not permitted
Maximum Impervious + Semi-Pervious Surface	20% + 15%
Minimum Number of Park Amenities	2

Table 4.10. Commons/Green Requirements.

Figure 4.10 (2). Small Park Example.

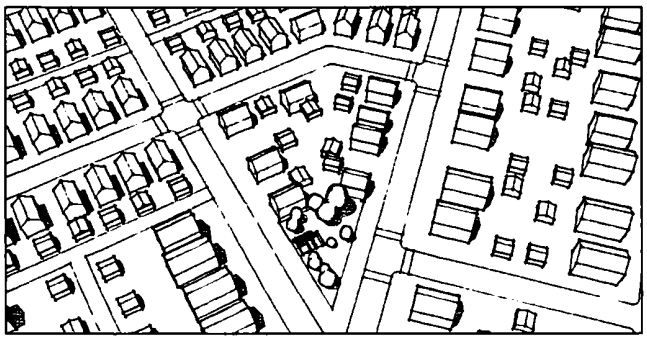


Figure 4.11 (1). Typical Pocket Park Layout.

4.11 Pocket Park.

1. Intent.

To provide small scale, primarily landscaped active or passive recreation and gathering space for neighborhood residents within walking distance.

2. Pocket Park Requirements	
(1) Dimensions	
Minimum Size (acres)	0.10
Maximum Size (acres)	1
Minimum Dimension (feet)	None
Minimum % of Vehicular ROW Frontage Required	25%
(2) Adjacent Parcels	
Frontage Orientation of Adjacent Parcels	Any
(3) Improvements	
Designated Sports Fields Permitted	Not permitted
Playgrounds Permitted	Permitted
Fully Enclosed Structures Permitted	Not permitted
Maximum Impervious + Semi-Pervious Surface	30% + 10%
Minimum Number of Park Amenities	1

Table 4.11. Pocket Park Requirements.

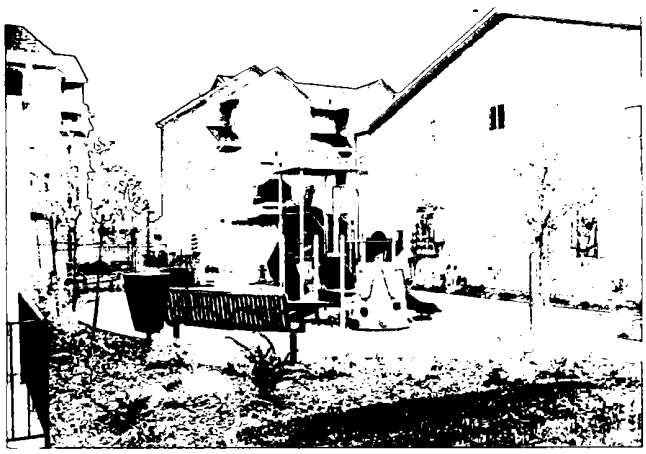


Figure 4.11 (2). Pocket Park Example.

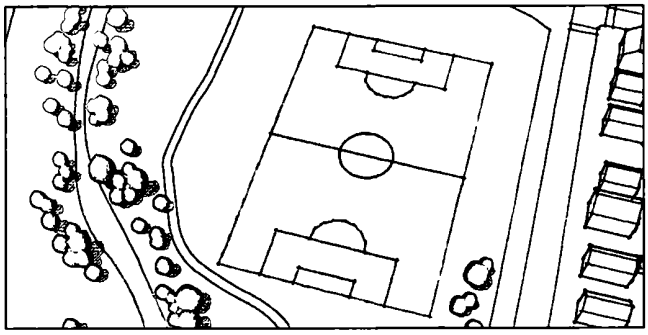


Figure 4.12 (1). Typical Community Park.

4.12 Community Park.

1. Intent.

To provide informal active and passive large-scale recreational amenities to local residents and the greater region. Parks have primarily natural plantings and are frequently created around an existing natural feature such as a water body or stands of trees. Parks may include water features. Restrooms are required.

2. Community Park Requirements	
(1) Dimensions	
Minimum Size (acres)	5
Maximum Size (acres)	None
Minimum Dimension (feet)	100'
Minimum % of Vehicular ROW Frontage Required	30%; up to 5 acres; 20% over 5 acres
(2) Adjacent Parcels	
Frontage Orientation of Adjacent Parcels	Any
(3) Improvements	
Designated Sports Fields Permitted	Permitted
Playgrounds Permitted	Permitted
Fully Enclosed Structures Permitted	Permitted, minimum 5 acre Park required
Maximum Impervious + Semi-Pervious Surface	20% + 10%
Minimum Number of Park Amenities	5
(4) Additional Design Requirements	
(1) Vehicular Right-of-Way Frontage of Parks Less Than 5 Acres. At least 30% of the park shall continuously front on a vehicular right-of-way.	
(2) Vehicular Right-of-Way Frontage of Parks Larger Than 5 Acres. At least 20% of the park shall continuously front on a vehicular right-of-way.	

Table 4.12. Park Requirements..

Figure 4.12 (2). Community Park Example.

4.0 Parks, Trails & Open Space

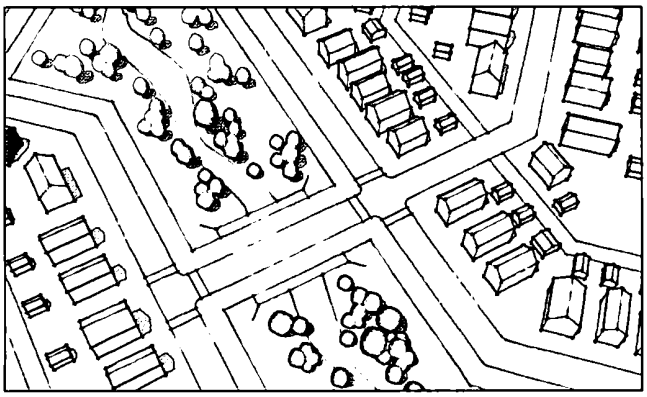


Figure 4.13 (1). Typical Greenway.

4.13 Greenway.

1. Intent.

To provide informal, primarily natural linear open spaces that serve to enhance connectivity between open space types and other uses. Greenways are linear open spaces that often follow a natural feature, such as a river, stream, ravine, or man-made feature, such as a vehicular right-of-way.

2. Greenway Requirements	
(1) Dimensions	
Minimum Size (acres)	1
Maximum Size (acres)	None
Minimum Dimension (feet)	30'; recommended minimum average width 50'
Minimum % of Vehicular ROW Frontage Required	0%; 1 access point required per quarter mile of length, minimum 20' width
(2) Adjacent Parcels	
Frontage Orientation of Adjacent Parcels	Any
(3) Improvements	
Designated Sports Fields Permitted	Permitted
Playgrounds Permitted	Permitted
Fully Enclosed Structures Permitted	Not permitted
Maximum Impervious + Semi-Pervious Surface	20% + 10%
Minimum Number of Park Amenities	N/A

Table 4.13. Greenway Requirements.

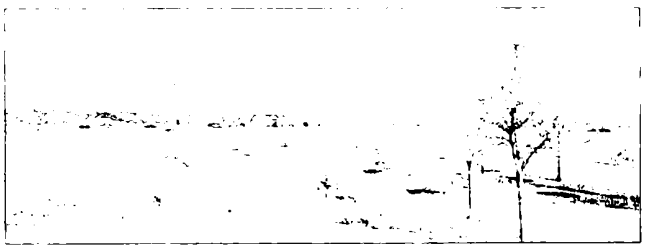


Figure 4.13 (2). Greenway Example.

Figure 4.14 (1) Regional Park

4.14 Regional Park.

1. Intent.

To provide informal active and passive large-scale recreational amenities to local residents and the greater region. Regional parks contain various park amenities in greater numbers and greater variety than local and city parks such as open space, trails, sports fields, sports courts, swimming pools, rec centers, disc golf and skate parks.

2. Regional Park Requirements	
(1) Dimensions	
Minimum Size (acres)	50
Maximum Size (acres)	None
Minimum Dimension (feet)	100'
Minimum % of Vehicular ROW Frontage Required	0%; 1 access point required per quarter mile of length, minimum 20' width
(2) Adjacent Parcels	
Frontage Orientation of Adjacent Parcels	Any
(3) Improvements	
Designated Sports Fields Permitted	Permitted
Playgrounds Permitted	Permitted
Fully Enclosed Structures Permitted	Permitted, Minimum 5 acre Park required.
Maximum Impervious + Semi-Pervious Surface	20% + 10%
Minimum Number of Park Amenities	N/A

Table 4.14. Regional Park Requirements.

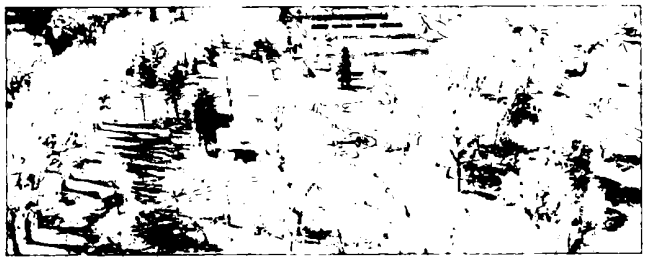


Figure 4.14 (2). Regional Park Example.

5.0 Site Design

5.0 Site Design

1. Intent.

Olympia Hills intends to promote and encourage site layouts that balance the needs of pedestrians, drivers and cyclists while creating a good environment for individuals and community activities such as shopping, eating, recreation, community events and socializing.

The site standards outlined in this section are designed to meet the following set of goals.

(1) Create sites that provide mobility throughout the site for pedestrians, bicyclists, transit and automobiles.

(2) Promote sense of place and identity

(3) Foster commercial success and positive pedestrian and community experiences

(4) To encourage urban design best practices

(5) To promote livability

2. Designate Primary Streets.

The intent of the Primary Street designation is to develop a network of streets in the Town Center and Village Centers with continuous building frontage and no or limited vehicular access to reduce conflicts between pedestrians and vehicular traffic. Primary Streets will be designated at the Community Structure Plan (CSP).

(1) Each Town Center and Village Center shall designate two or more Primary Streets. For centers with only two Primary Streets, the streets should be perpendicular to each other.
   (a) Changes to this standard in subsection 5.2 (1) requires County Council approval.

(2) Lots with two Primary Street frontages shall consult with County Staff to determine which street frontage warrants primary designation and the front of the lot.

3. Primary Street Frontage Requirements.

The street frontage requirements are used to create a continuous street wall along Primary Streets in Town Centers and Village Centers. Street frontage calculations may be done by parcel, or by block face, depending on whichever method is most appropriate.

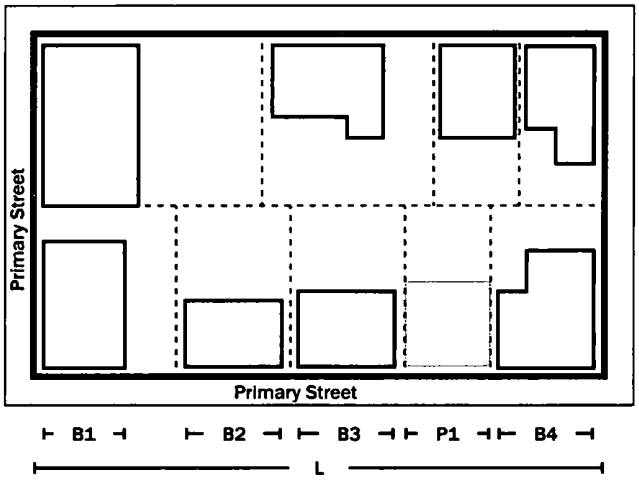
(1) Street Frontage by Block Face. Refer to Figure 5.1. The sum of all building widths shall be divided by the length of the block face. The width of any public open space may be excluded from length of the block face, for calculation purposes.

(2) Street Frontage by Parcel. Refer to Figure 5.2. The width of the building shall be divided by the width of the parcel to determine the percentage of building frontage.

(3) Building Street Frontage requirements are listed in Table 5.1.
   (a) Changes to these standards in subsection 5.3 (3) require County Council approval.

Primary Street Frontage Requirements		
Place Type	Town Center	Village Center
Street Frontage Requirement	80%	70%

Table 5.1. Street Frontage Requirements



Building Frontage Formula (B = Width of Building, L = Length of Block Face, P = Public Open Space)

$$\frac{B1+B2+B3+B4}{L1-P1}$$

Figure 5.1 Building Frontage Measurement by Block Face

4. Active Ground Floor Uses on Primary Streets

Primary streets need active ground floor uses along them in order to activate the pedestrian environment, which is the intent of the primary street designation.

(1) 70% of ground floor uses on a designated primary street shall be an active use.
   (a) Active ground floor use shall have a minimum of 30 foot depth.
   (b) Active uses may include a variety of non-residential uses such as retail, restaurant, office, lobby space, gym, and more, as approved by the County.
   (c) Residential uses shall not count toward the 70% active ground floor use requirement. Residential uses are allowed in the remaining 30%, but shall have entrances to individual units on the ground floor facing the Primary Street.
   (d) Changes to the standards in this section 5.4 requires County Council approval.

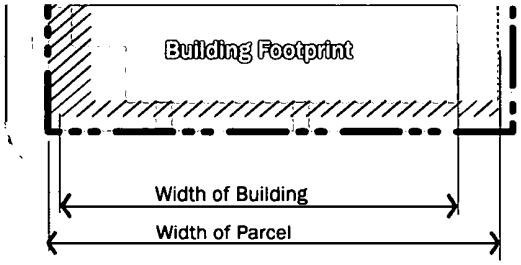


Figure 5.2. Building Frontage Measurement by Parcel

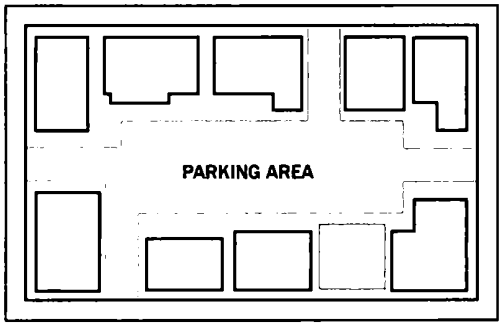


Figure 5.3. Parking and Building Locations.

5. Setbacks.

Building Setbacks will be used to enhance the pedestrian environment on the street by placing buildings at an appropriate distance from the sidewalk. Setbacks will vary by street type and adjacent land-use.

(1) All setback areas must contain either landscape, trees, patio space, or sidewalk space.

(2) Commercial buildings should have a setback varying between zero feet (0') and six feet (6').

(3) Multi-family buildings should have a setback varying between zero feet (0') and ten feet (10').

(4) Attached single-family houses, such as townhomes, shall have a setback varying between zero feet (0') and twenty feet (20').

(5) Detached single-family houses shall have a landscaped setback varying between seven feet (7') and twenty feet (20').

(6) Exceptions. Setback distances may be increased on major streets, or due to topography, utilities or other natural features, as approved by the County.

6. Connectivity Requirements.

(1) Cross Access. All commercial development should be designed to allow for cross-access to adjacent properties to encourage shared parking and shared access points on public or private streets, unless otherwise specified. When cross-access is deemed impractical by the County on the basis of topography, the presence of natural features, or vehicular safety factors, this requirement may be waived provided that appropriate bicycle and pedestrian connections are provided between adjacent developments or land uses.

(2) Alley Standards
   (a) Where Alleys can be accommodated, a continuous network of Alleys shall be planned to connect the service side of commercial and/or other buildings.
   (b) A continuously connected rear or side circulation aisle within a parking area may provide an acceptable alley alternative where exceptional circumstances or existing conditions are present. Cross access easements between parking areas shall be provided and coordinated with neighboring land owners and the County.
   (c) All Alleys shall be designed for public use.

(3) Sidewalks and Trails. All building front entryways shall have a continuous sidewalk to the street sidewalk. All street frontages shall have sidewalks according to the width standards in this section and shall apply only to commercial zones and not to residential zones.

7. Off-Street Parking.

(1) Off-street parking on Primary Streets shall be located behind or to the side of buildings. See Figure 5.3.
   (a) Changes to this standard in subsection 5.7 (1) requires County Council approval.

(2) Lots wider than 140 feet are permitted one double-loaded aisle of parking (maximum width 72 feet), located perpendicular to the front property line, which is exempt from Primary Street Frontage Requirements.

(3) Off-street Parking Space Dimensions. Parking spaces must be at least nine feet (9') wide by eighteen feet (18') long. The County Engineer may approve minor variations in Parking Space dimensions. ADA Parking Space width requirements vary and shall be consistent with current International Building Code Standards.

(4) Access to off-street Parking Facilities.
   (a) Forward travel to and from parking facilities from a dedicated street or alley shall be required for all uses except for private parking. The parking area shall be adequate to facilitate the turning of vehicles to permit forward travel upon entering a street.
   (b) The access to all off street parking facilities shall be designed in a manner which will not interfere with the movement of traffic.
   (c) Access driveways across sidewalks or pedestrian ways shall be designed in such a manner as to promote pedestrian safety.

5.0 Site Design

(d) Circulation Within an off-street Parking Area
  (i) Circulation within a parking area with more than one aisles must be such that a car need not enter the street or turn to reach another aisle within the same parking area. See Figure 5.4
  (ii) Directional signs shall be required to differentiate between entrance and exit access points to the streets.

(5) Lighting of off-street Parking Areas. Any lighting used to illuminate off street parking facilities or vehicle sales areas shall be so arranged as to reflect the light away from the adjoining premises.

(6) On-Street Parking. See 3.2 (1) for on-street parking.

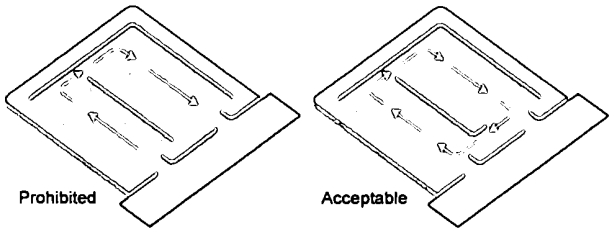


Figure 5.4. Parking Circulation

8. Site Furnishings.

(1) Applicability. Site furnishings are applicable in the following Place Types: Village Centers, Town Centers, Commercial Centers.
  (a) The developer or builder is responsible for providing site furnishings as required in this document. All site furnishings shall be specified on the plans at site plan.
  (b) Benches. Each project shall provide one (1) outdoor bench per building 20,000 square feet or smaller and 2 outdoor benches for buildings greater than 20,000 square feet. Benches shall be durable and permanently installed on a hardscape (concrete, pavers, etc) surface.
  (c) Tables and Seating. Restaurants and food venues are encouraged to provide outdoor seating.
  (d) Trash and Recycling Receptacles. Trash and recycle receptacles are required to be provided at a minimum of one (1) (both trash and recycle) per public entrance at commercial Buildings. Recycle bins will be required only when recycling is available by County or other service provider.
  (e) Bike Racks. Bike racks shall be provided and installed at a minimum of four (4) bike stalls per 50 vehicle parking stalls within each development (minimum of four (4) bike rack stalls) for commercial developments and apartments/ condominiums. Bike racks should be located near the entrance to the building and visible from the street or drive. Bike Racks shall be durable and permanently installed over a hardscape surface.

9. Single Family Residential and Townhome Site Design.

The primary factor that influences site design for single family houses and townhomes is the method of parking access and garage location. There are two types of methods allowed, including parking access from the street, and parking access from an alley.

(1) Single Family Residential
  (a) Parking Access via Street. The following standards apply to detached single family units where the garage is accessed from the street in front of the house, or from the side street on corner lots. See Figure 5.6.
    (i) Garage shall not be more than 60% of the overall building width.
    (ii) Garages must be set back at least four feet from the front face of the building.
    (iii) Changes to these standards in subsection 5.9 (1)(a) require County Council approval.
  (b) Parking Access via Alley. Garages may also be located in the rear of the property and accessed through a rear alley. See Figure 5.7.
  (c) Street Frontage Requirement. For all detached single family units, the building shall cover 60% or more of the street frontage, as defined by the width of the building, divided by the width of the parcel. See Figure 5.8.

(2) Townhome
  (a) Parking Access via Street. The following standards apply to townhome units where the garage is accessed from the street in front of the house. See Figure 5.5.
    (i) Garage width shall not be more than 77% of the overall building width.
    (ii) Garages must be set back at least four feet from the front face of the building, not including the porch/stoop.
    (iii) A sidewalk shall directly connect the front entry to the street sidewalk.

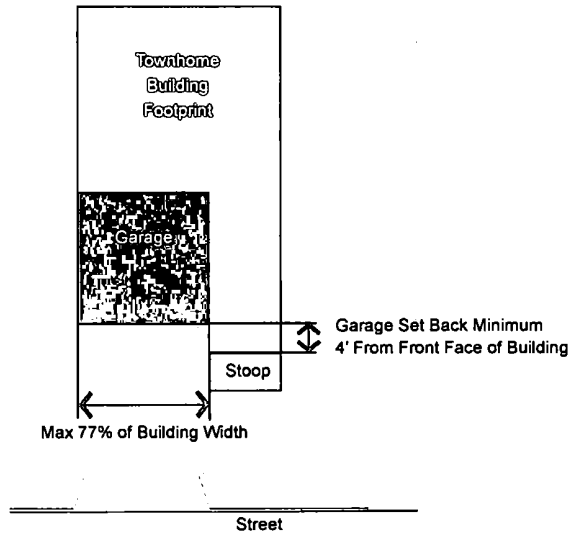


Figure 5.5 Townhome with Parking Access via Street

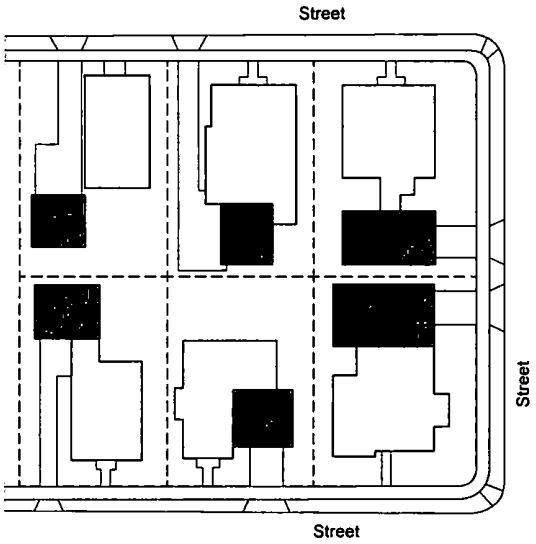


Figure 5.6 Single Family
Residential Parking Access via Street

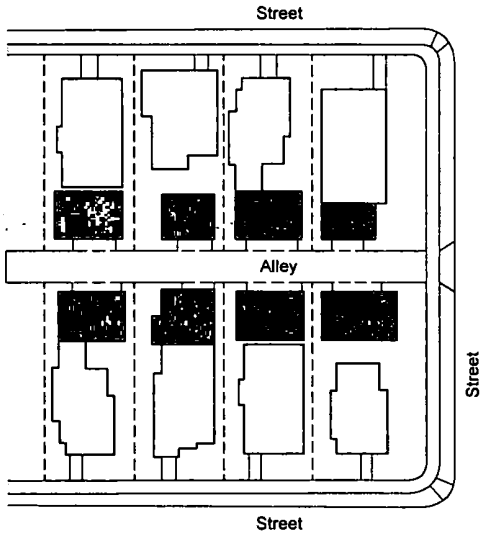


Figure 5.7 Single Family
Residential Parking Access via Alley

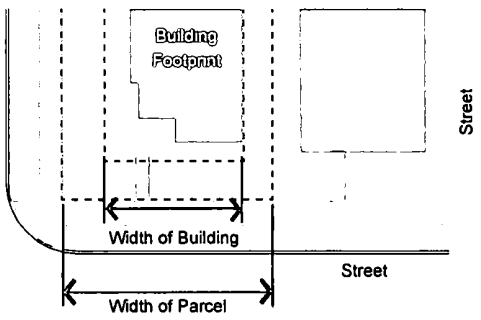


Figure 5.8 Measuring Front Property Line Coverage

(iv) Changes to these standards in subsection 5.9 (2)(a) require County Council approval.

(b) Parking Access via Alley. Garages may also be located in the rear of the building and accessed through a rear alley.

10. Fencing.

(1) No fencing that is parallel to any sidewalk shall be within two feet of the edge of the sidewalk.

(2) Height. Rear fencing shall be a maximum height of 75 inches, unless approved or directed by the County, for such circumstances as proximity to a railroad right-of-way or utility lot. Fencing in a side yard adjacent to a street shall be a maximum height of 48 inches.

(3) Front yards. Front yard fence height shall be a maximum height of 36 inches, and the fence opacity shall be no greater than 60% .

(4) Type. Chain-link fencing is not permitted along any street frontage, with the exception of dedicated sports field or court fencing approved by the County.

(5) Spacing of Openings. Openings or gates shall be provided on every street face at a minimum of every 200 feet.

11. Sign Requirements.

(1) Additional sign types and standards will be specified at the CSP.

12. Trash Enclosure Standards.

(1) All garbage dumpsters shall be enclosed by a masonry wall or architectural design with materials that are consistent with the building. The enclosure gate shall be metal and accessible to service vehicles. The enclosure wall and gate shall be a minimum of 12" higher than the trash receptacle bin. See figure 5.9.

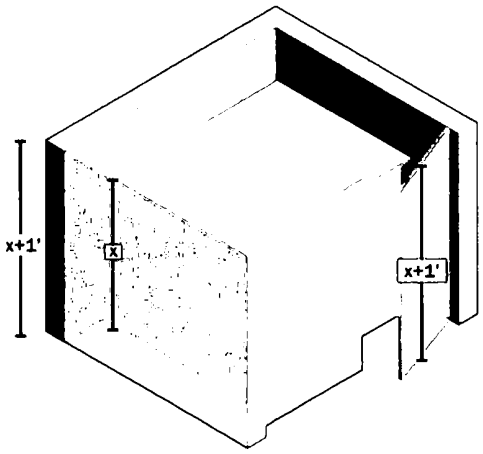


Figure 5.9. Dumpster Enclosure

13. Lighting.

(1) Dark Skies. Lighting with cut-off fixtures shall be used to promote dark sky standards. See Figure 5.9 for a sample of acceptable light fixture types that meet dark sky requirements.

(a) Changes to this standard requires County Council approval.

(2) Energy Efficiency. Light fixtures shall use energy efficient bulbs to minimize energy use.

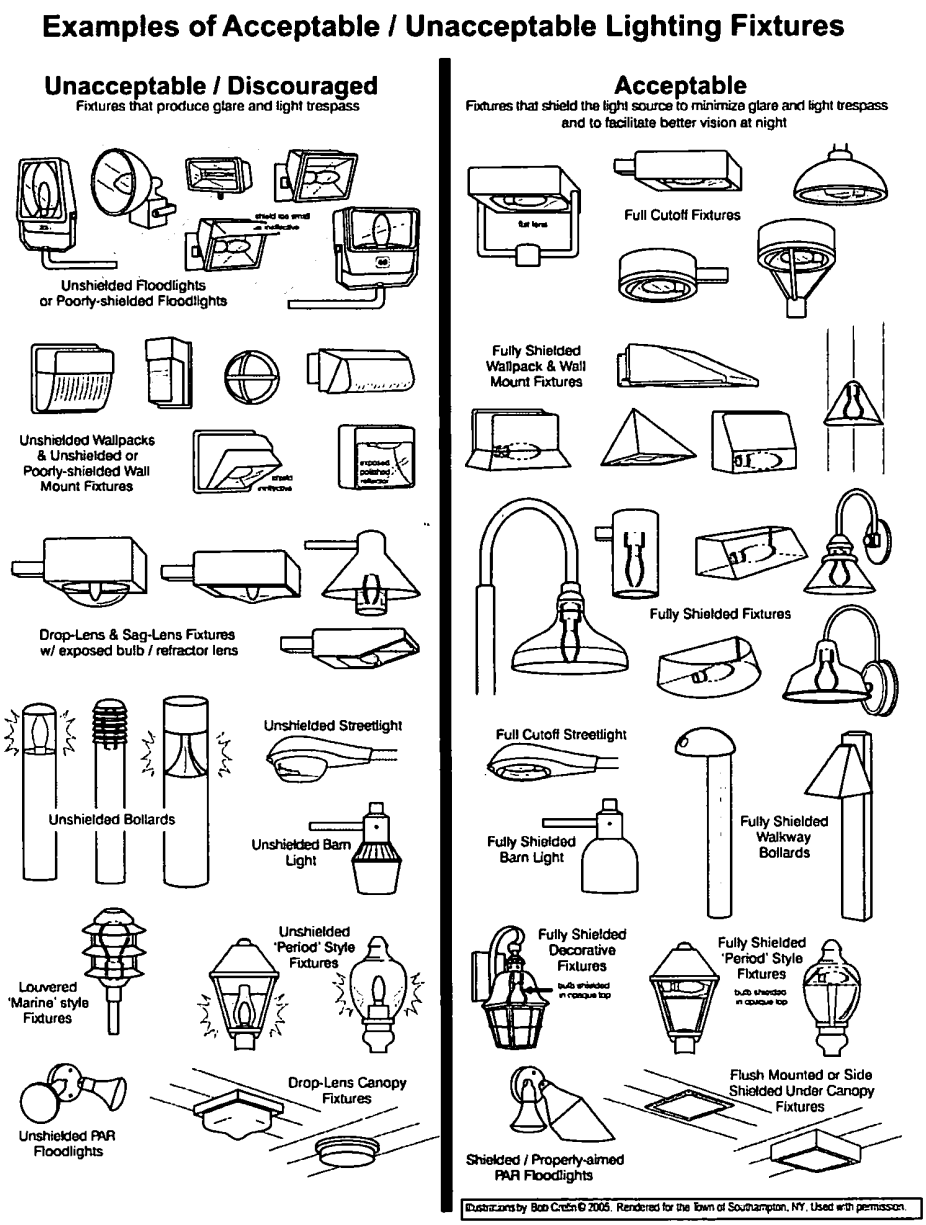


Figure 5.9 - Acceptable Light Fixture Types (From darksky.org)

6.0 Buildings & Architecture

BK 10983 PG 4726

6.0 Buildings & Architecture

1. Intent.

Olympia Hills intends to provide a wide range of building types in order to create a complete, mixed-use community. This section outlines the standards that will help make all building types support walkability and enhance livability in the community. They have a specific focus on the ground floor of buildings to help activate the street.

2. Building Typologies

Building Typologies will be determined at the Community Structure Plan (CSP). Building typologies will dictate form, glazing/transparency, and other features.

3. Building Massing.

The massing of buildings should be designed to relate to a human scale.

(1) Vertical Facade Divisions. Buildings shall use vertically oriented expression lines or forms to divide the facade into smaller increments. Elements may include a column, pilaster, or other continuous vertical ornamentation a minimum of one and a half inch depth.

(2) Horizontal Facade Divisions. Buildings shall use horizontally oriented expression lines or forms to divide portions of the facade into horizontal divisions. Elements may include a cornice, belt course, molding, string courses, or other continuous horizontal ornamentation a minimum of one and a half inch depth.

(3) Distances for facade division requirements will be dictated by building type at the Community Structure Plan (CSP).

4. Building Variety.

Olympia Hills shall utilize varying architectural elements throughout the community to create dynamic and interesting Centers and Neighborhoods.

(1) No buildings on the same block face (on both sides of the street) may be the same, up to 400 foot maximum distance. Building design must distinctly vary 3 of the following 8 elements:

Architectural Style, Color, Roof Line, Materials, Window Locations, Door/Porch Locations, Floor Plan, Exterior Wall Changes (to Create Shadow Patterns).

(a) Changes to these standards require County Council approval.

5. Blank Wall Limitations.

A restriction of the amount of windowless area permitted on a facade with street frontage.

(1) No rectangular area greater than 30% of a story's facade, as measure from floor to floor, may be windowless.

6. Housing Types

Olympia Hills shall provide a range of housing types, including multifamily buildings, townhomes, and a variety of single family opportunities.

7. Building Height Transitions

Building height transitions between mixed-use centers (Town Centers, Village Centers, and Commercial Centers) and Neighborhoods shall be gradual. Where a mixed-use center is adjacent to a Neighborhood Place Type, a sensitive approach to height transitions shall be used.

Maximum building story height difference between Town Center, Village Center, and Commercial Center buildings adjacent to Neighborhood Place Type buildings shall be two (2) stories.

Buildings on the perimeter of the Master Planned Area shall not be greater than two stories higher than directly adjacent existing buildings.

8. Building Height Maximums

See Table 6.1 for list of building height maximums by Place Type.

(1) Changes to Building Height standards requires County Council approval.

Building Height Maximums

Place Type	Number of Stories
Town Center	10
Village Center	5
Commercial Center	4
Institutional	4
Neighborhood	3
Open Space	-

Table 6.1. Building Height Maximums

9. Ground Story and Upper Story Height.

Buildings in Town Centers and Village Centers shall have a minimum and maximum height standard for both the ground floor and upper floors.

(1) Ground Story. The ground story of all buildings in Town Centers and Village Centers shall be between 14' and 20'.

(2) Upper Stories. The upper stories of all buildings in Town Centers and Village Centers shall be between 9' and 14'.

(3) Floor Height is measured in feet between the floor of a story to the floor to the story above it.

(4) Floor height requirements apply to street facing facades.

10. Entrance Types.

The intent of the entrance type standards is to guide the design of the ground story of all buildings to relate appropriately to pedestrians on the street.

Entrance type standards apply to the ground story and visible basement of front facades of all Building Types. The following options may be used. Other options may be used with approval from County Staff.

(1) Storefront Entrance Type. The storefront entrance type is a highly transparent ground story treatment designed to serve primarily as the display area and primary entrance for retail or service uses (Refer to Figure 6.1).
   (a) Horizontal Facade Division. Horizontally define the ground story facade from the upper stories.
   (b) Entrance. All entries should be recessed from the front facade a minimum of three feet and a maximum of eight feet.

(2) Standard Entrance Type. The standard entrance type uses architectural elements to create a highly visible building entrance that is well integrated into the building's overall design. (Refer to Figure 6.2).

(3) Stoop Entrance Type. A stoop is a roofed or unroofed, open platform (Refer to Figure 6.3).
   (a) Stoop Size. Stoops should be a minimum of three feet deep and six feet wide.
   (b) Elevation. Stoop elevation should be located a maximum of 2'-6" above the sidewalk without visible basement and a maximum of 4'-6" above the sidewalk with a visible basement.
   (c) Visible Basement. A visible basement is permitted and shall be separated from the ground story by an expression line.

(4) Arcade Entrance Type. An Arcade entrance type is a covered pedestrian walkway within the recess of a ground story (Refer to Figure 6.4).
   (a) Arcade. An open-air public walkway is required from the face of the building recessed into the building a minimum of eight and a maximum of 15 feet.
   (b) Build-to Zone. When the Arcade is utilized, the outside face of the Arcade shall be considered the front facade, located within the required build-to zone.
   (c) Recessed or Interior Facade. Storefront entrance type is required on the recessed ground story facade.
   (d) Column Spacing. Columns should be spaced between ten feet and 12 feet on center.
   (e) Column Width. Columns should be a minimum of 1'-8" and a maximum 2'-4" in width.
   (f) Arcade Opening. Opening shall not be flush with interior arcade ceiling and may be arched or straight.
   (g) Horizontal Facade Division. Horizontally define the ground story facade from the upper stories.

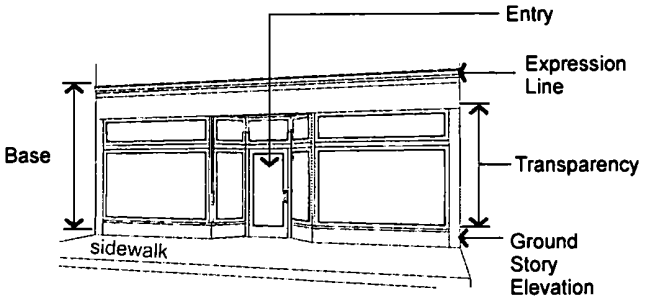


Figure 6.1. Storefront Entrance Type

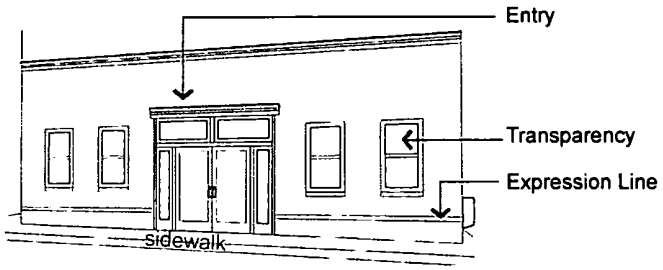


Figure 6.2. Standard Entrance Type

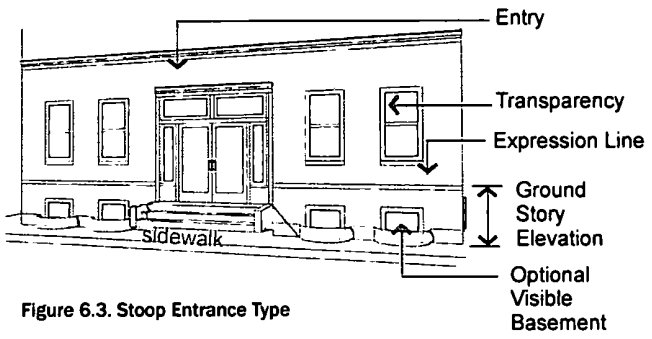


Figure 6.3. Stoop Entrance Type

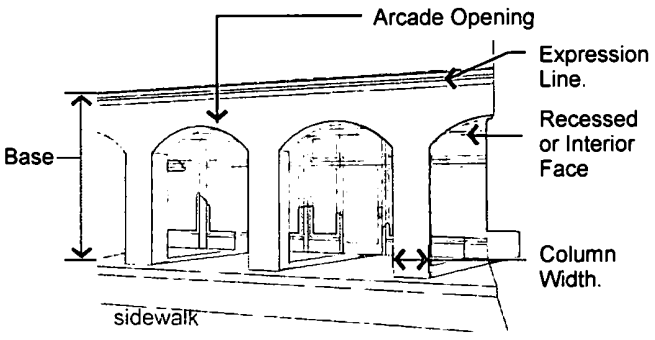


Figure 6.4. Arcade Entrance Type

(4) Porch Entrance Type. A porch is a raised, roofed platform that may or may not be enclosed on all sides (Refer to Figure 6.5).
  (a) Porch Size. The porch shall be a minimum of five feet deep and eight feet wide.
  (b) Elevation. Porch elevation should be located a maximum of 2'-6" above the sidewalk without a visible basement and a maximum of 4'-6" above the sidewalk with a visible basement.
  (c) Visible Basement. A visible basement is permitted.
  (d) Height. Porch may be two stories to provide a balcony on the second floor.
  (e) Entrance. All entries shall be located off a porch.

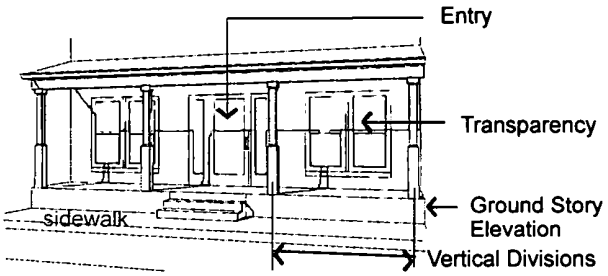


Figure 6.5. Porch Entrance Type

11. Sustainability.

(1) Water Conservation. Buildings shall be designed and constructed to use water-saving strategies, such as:
  (a) Water conserving appliances, toilets, plumbing and fixtures that possess a WaterSense label from the U.S. Environmental Protection Agency, and piping to facilitate future grey-water systems, etc.

(2) Energy Conservation. Buildings shall be designed and constructed to use energy-saving strategies, such as:
  (a) Energy efficient windows which exceed prescriptive requirements of the 2015 International Energy Conservation Code (IECC) shall be used to reduce heat loss in the winter and heat gain in the summer.
  (b) Energy efficient furnaces, air conditioners, water heaters, and dryers shall be used. All dwelling units and buildings shall, at minimum, be constructed with Ultra-low NOx water heaters that are Energy Star certified and furnaces that meet a 97% AFUE (Annual Fuel Utilization Efficiency) rating.
  (c) Airtight and well-insulated building envelopes to reduce mechanical loads and facilitate cost savings from needing smaller mechanical/HVAC systems. The air tightness level and wall insulation shall exceed the prescriptive requirements of the 2015 IECC (when the "building envelope" is air tight and well-insulated a smaller mechanical/HVAC system is required).
  (d) Building materials that have a low embodied energy rating, such as locally produced materials, materials with a higher recycled content, and materials that require less energy to produce or manufacture.

(3) Changes to the Sustainability standards in this section 6.11 requires County Council approval.

7.0 Landscape

BK 10983 PG 4730

7.0 Landscape

7.1 General Requirements.

1. Intent.

Olympia Hills intends to meet the following landscape standards outlined in this section, which are designed to meet the following set of goals.

(1) To provide for healthy, long-living street trees within all public right-of-ways to improve the appearance of streets and to create a buffer between pedestrian and vehicular travel lanes.

(2) To increase the compatibility of adjacent uses and minimize the adverse impacts created by adjoining or neighboring uses.

(3) To promote the prudent use of water and energy resources by achieving and maintaining sustainable, functional landscapes.

(4) To shade large expanses of pavement and reduce the urban heat island effect.

(5) Create beautiful landscapes and places for people to live, work and play.

2. Applicability.

All requirements listed in this section supercede any CC&R requirements and/or current County Code.

(1) Temporary Uses. These provisions do not apply to temporary uses, unless determined otherwise by the County.

(2) Landscaped roof gardens count towards required landscape areas and plant requirements.

(3) Buffers. Landscape buffers are required according to the provisions in this section with the following exceptions.
   (a) Shared Driveways. Buffers shall not be required along a property line where a curb cut or aisle is shared between two adjoining lots.
   (b) Points of Access. Buffering is not required at driveways or other points of access to a lot.

3. Lawn Area.

Lawn area should be limited and confined to highly usable and/or prominent spaces that will maximize its use.

(1) Residential Landscapes. Lawn areas in residential landscapes shall not exceed 2,000 sf or 35% of the total landscaped area, whichever is greater.
   (a) Changes to this standard requires County Council approval.
   (b) Exemptions. Common spaces for multi-family residential buildings are exempt from lawn restrictions.
   (c) Lawn areas should be at least eight feet wide in all directions.

(2) Commercial, Industrial, and Institutional Landscapes. Outside of active recreation areas, lawn in commercial, industrial, and institutional landscapes shall not exceed 20% of the total landscape area.
   (a) Changes to this standard requires County Council approval.

(2) Park Strips. Lawn should not be used in park strips or other narrow areas that are less than eight feet wide. Plants, mulch, drip irrigation, and hardscape should be used instead.

(3) Obstructions. Lawn aras should be free from obstructions such as trees, sign posts, and boulders.
   (a) Exceptions. Where lawn is used in park strips over eight feet wide, obstructions such as street trees are allowed.

(4) Slopes. Lawn shall not be used on slopes greater than 25% (4:1 grade).

(5) Turf grass alternatives. Turf grass alternatives are encouraged where appropriate, such as medians, parkstrips or other less-usable spaces where turf grass is not necessary. These include native grasses or other low-water grasses that create a natural look. See Figure 7.1 for turf grass alternative example.

(6) Water Efficient Landscape Options. All homebuilders should offer at least one water-efficient landscaping option to prospective home buyers.
   (a) Model homes. Model homes should be designed with water-efficient landscaping.

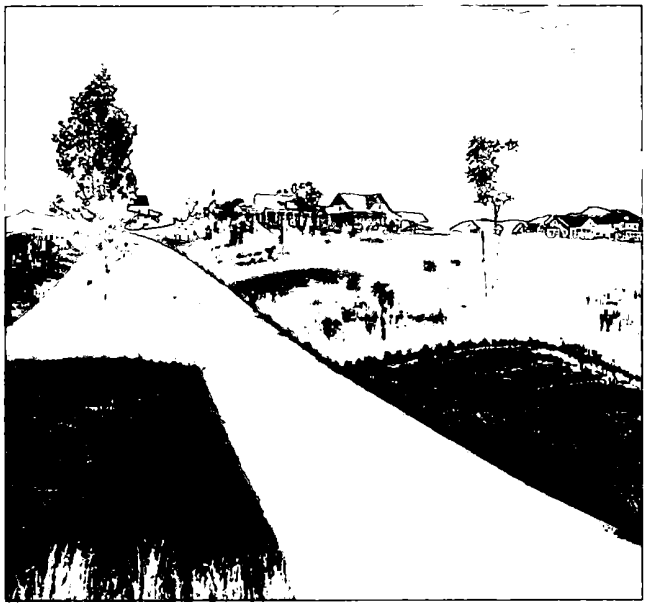


Figure 7.1. Turf Grass Alternative Example.

4. Planting Area.

(1) At least 3-4 inches of Mulch, permeable to air and water, shall be used in Planting Beds to control weeds and improve the appearance of the landscaping.

(2) At maturity, landscapes shall have enough plant material (perennials and shrubs) to create at least 50% living plant cover at maturity at the ground plane, not including tree canopies.

(3) Planting beds may include shrubs, ornamental grasses, ground cover, vines, annuals, or perennials.

7.2 Installation of Landscape.

1. Intent.

The following provisions aid in ensuring that all required landscaping is installed and maintained properly.

2. Applicability.

These provisions apply to landscape installation as required by this section.

3. General Requirements.

The installation of landscaping shall adhere to the following standards.

(1) National Standards. Best management practices and procedures according to the nationally accepted standards shall be practiced.
   (a) Installation. All landscaping and trees shall be installed in conformance with the practices and procedures established by the most recent edition of the American Standard for Nursery Stock (ANSI Z60.1) as published by the American Association of Nurserymen.
   (b) Maintenance and Protection. All landscaping and trees shall be maintained, including its provisions on pruning, fertilizing, support systems, lighting protection, and safety.

(2) Installation. Landscaping shall be fully installed prior to the issuance of a certificate of occupancy unless approved by the County.
   (a) Single family residential units shall have front and street-side yards landscaped prior to the issuance of a certificate of occupancy. Backyards are exempt.
   (b) If seasonal conditions preclude the complete installation of required improvements, a bond or other guarantee assurance acceptable to the County may be posted. The amount shall be equal to the installation costs as estimated by the County or by qualified professionals in accordance with State Law.
   (c) Complete front and side yard installation is required within nine months of the issuance of the temporary certificate of completeness or occupancy permit or the cash escrow or letter of credit may be forfeited.

(3) Plant Requirements. Plant material shall be sized according to Table 7.1 at the time of installation, unless otherwise noted in this section.

(4) Condition of Landscape Materials. The landscaping materials used shall be:
   (a) Healthy and hardy with a good root system.
   (b) Chosen for its form, texture, color, fruit, pattern of growth, and suitability to local conditions.
   (c) Tolerant of the natural and man-made environment, including tolerant of drought, wind, salt, and pollution.
   (d) Appropriate for the conditions of the site, including slope, water table, and soil type.
   (e) Protected from damage by grates, pavers, or other measures.
   (f) Plants that will not cause a nuisance or have negative impacts on an adjacent property.
   (g) Species native or naturalized to the Wasatch Front, whenever possible.

(5) Installation of container plants must address root girdling by loosening the root ball and cutting problematic roots as necessary.

(5) Soil amendments should be utilized to increase the health and sustainability of the landscaping, as recommended by a Landscape Architect.

(6) Establishment. All installed plant material shall be fully maintained until established, including watering, fertilization, and replacement as necessary.

Plant Material Type	Minimum Size
Deciduous Shade/Overstory Tree	
Single Trunk	1.5" caliper
Single Trunk (Street Tree)	2" caliper
Multi Trunk	8' in height
Evergreen Tree	6' in height
Ornamental Tree	1.5" caliper
Shrubbery - Deciduous	3 gallon
Shrubbery - Evergreen	3 gallon
Groundcover	3" in height
Ornamental Grass	1 gallon
Perennial	1 gallon

Table 7.1. Plant Material Size at Installation.

7.0 Landscape

4. Tree Installations.

This section applies to all trees, including street trees (refer to Table 7.3 (1) and Table 7.3 (2) for the list of sample street tree types).

(1) Tree Measurement. New trees shall be measured at six inches above the mean grade of the tree's trunk when four inch caliper or less and twelve inches for tree trunks above four inches, and as noted as caliper inches throughout this ordinance.

(2) Tree Maintenance. Tree trimming, fertilization, and other similar work shall be performed by or under the management of an ISA certified arborist.

(4) Tree Size. All site trees to be installed to meet the requirements of this section shall have a minimum of 1.5 inch caliper at the time of installation. Street trees shall be a minimum of 2 inch caliper at the time of installation.
  (a) Trees stakes are required until tree caliper reaches 2", at which point they shall be removed.

(5) Permeable Surface. For each tree preserved or planted, a minimum amount of permeable surface area is recommended.
  (a) Planted trees have a suggested minimum permeable area and soil volume based upon tree size; refer to Table 7.2 for details.

(6) Structural Soil. When the Soil Surface Area (per Table 7.2) of a tree will extend below any pavement, structural soil is required underneath that pavement. Structural soil is a medium that can be compacted to pavement design and installation requirements while still permitting root growth. It is a mixture of gap-graded gravels (made of crushed stone), clay loam, and a hydrogel stabilizing agent to keep the mixture from separating. It provides an integrated, root penetrable, high strength pavement system that shifts design away from individual tree pits (source: Cornell University, Urban Horticulture Institute).
  (a) Soil cell systems are allowed as an alternative to structural soil.

Tree Size	Soil Volume (cubic ft)	Soil Surface Area (sq ft) with 2.5' Soil Depth	Permeable Surface Area Requirement (sq ft)
Small (less than 25' mature canopy)	736	294 (approx. 17' x 17')	100 (10' x 10')
Medium (25'-35' mature canopy)	2852	1141 approx. 34' x 34')	225 (15' x 15')
Large (larger than 35' mature canopy)	6532	2681 (approx. 50' x 50')	400 (20' x 20')

Table 7.2. Minimum Recommended Soil Volumes and Permeable Area per Planted Tree.

5. Irrigation Systems.

Permanent irrigation, beyond establishment, is required and shall adhere to the following standards.

(1) All irrigation systems shall be designed to minimize the use of water.

(2) The irrigation system shall provide sufficient coverage to all landscape areas.

(3) Landscaped areas shall be provided with a WaterSense labeled smart irrigation controller which automatically adjusts the frequency and/or duration of irrigation events in response to changing weather conditions. All controllers shall be equipped with automatic rain delay or rain shut-off capabilities.

(4) Each irrigation valve shall irrigate landscaping with similar site, slope and soil conditions, and plant materials with similar watering needs. Lawn and Planting Beds shall be irrigated on separate irrigation valves. In addition, drip emitters and sprinklers shall be placed on separate irrigation valves.

(5) All irrigation shall be appropriate for the designated plant material to achieve the highest water efficiency. Drip irrigation or bubblers shall be used except in turf areas. Drip irrigation systems shall be equipped with a pressure regulator, filter, flush-end assembly, and any other appropriate components.

(6) The irrigation system shall not spray or irrigate impervious surfaces, including sidewalks, driveways, streets, and parking and loading areas.

(7) All systems connected to culinary water shall be equipped with a back-flow prevention device.

(8) All mechanical systems including controllers and back-flow prevention devices shall be properly screened from public view.

(9) All irrigation plans shall be stamped by Professional Landscape Architect or Certified Irrigation Designer (IA) and submitted to the County for review.

6. Maintenance of Landscape.

All landscaping shall be maintained in good condition at all times to ensure a healthy and orderly appearance.

(1) All required landscape shall be maintained to adhere to all

requirements of this ordinance.

(2) Replacing Unhealthy Landscaping. Unhealthy landscaping shall be replaced with healthy, live plants by the end of the next applicable growing season. This includes all plant material that shows dead branches over a minimum of 25% of the normal branching pattern.

(3) Maintenance Responsibility. The owner is responsible for the maintenance, repair, and replacement of all landscaping, screening, and curbing required herein.

(4) Maintain Quality and Quantity. Maintenance shall preserve at least the same quantity, quality, and screening effectiveness as initially installed.

(5) Tree Topping. Tree topping is not permitted. When necessary, crown reduction thinning or pruning is permitted.

(6) County Inspection. All landscaped areas regulated by this ordinance may be inspected by the County.

7.3 Street Trees & Streetscape Design.

1. Intent.

To line all streets with a consistent and appropriate planting of trees and to create an established tree canopy for environmental benefit and a sense of identity for all streets.

2. Applicability.

The requirements herein apply to all streets within Master Planned Communities.

(1) Street Tree Master Plan. A street tree master plan is required at the Community Structure Plan (CSP) submittal for arterial and collector streets. At the Project Plan level, a street tree master plan is required for all street types that require street trees. See 3.0 Street Types & Design. These plans specify street tree species on all required streets, by block face. These plans will ensure consistency of street trees by block, while also ensuring proper species diversity across Olympia Hills.
   (a) Changes to this process requires County Council approval.

3. Streetscape Design Submittal.

A consistent streetscape design shall be submitted at the Project Plan/ Subdivision Plat submittal for approval of all new streets within the development. At a minimum, the submittal shall include the following:

All Landscape Plans shall be stamped by a Professional Landscape Architect.

(1) Street Trees. Trees meeting the minimum requirements of Section 7.3.4 Minimum Street Tree Requirements, shall be included in the streetscape design, with details related to tree pits, tree planting to meet the requirements of Section 7.2.4 Tree Installations.

(2) Street Furnishings. Benches, seatwalls, planters, planter fences, trash receptacles, and bicycle racks at the least shall be specified and quantities and locations listed for each street type. Each Project Plan to include a plan with furnishings.

(3) Landscape Design. Ground plane vegetation shall be designated for any landscape bed areas, planter areas, and tree wells.

(4) Lighting. Pedestrian and vehicular lighting shall be specified and locations and quantities noted. Street lighting shall comply with Public Works Standards and Section 5.9 Lighting.

(5) Identity Elements. Any other elements designed to establish the identity of each Street, such as banners, pavement markers, artwork, or signage, shall be included in the streetscape design submittal.

4. Minimum Street Tree Requirements.

The following standards apply to the installation of street trees.

(1) Exception. Street Trees are not required on Alley Streets (refer to Chapter 2 for Street Types).

(2) Clear Branch Height. Minimum clear branch height is eight feet.

(3) Street Tree Type. Medium and large shade trees are required to be installed as street trees see Table 7.3 (1) and 7.3 (2) for a sample list of permitted trees. This list is only a sample to demonstrate intent. Other tree species are encouraged, as appropriate, and may be used with approval from the County.

(4) Street Tree Spacing. Street trees shall be planted as follows.
   (a) Each Lot is required to have minimum of one tree. Medium trees shall go in a park strip less than 6 feet and Large trees shall go in a park strip greater than 7 feet.

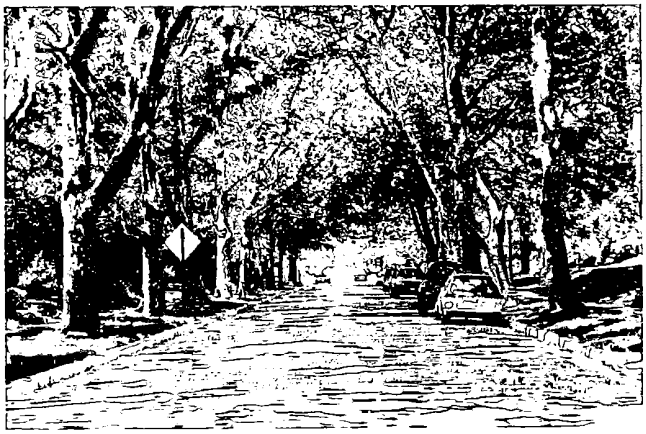


Figure 7.2. Residential Street Tree Example.

7.0 Landscape

(b) Tree Spacing.
  (i) Large trees must be spaced a minimum of 20 and a maximum of 40 feet on center.
  (ii) Medium trees must be spaced a minimum of 15 and a maximum of 30 feet on center.
  (iii) Small trees, less than 20 feet in diameter at maturity, are not permitted as street trees. Conifer trees are also not permitted as street trees.

(c) Limited Distance between Curb and Sidewalk. Where the distance from the back of the curb to the edge of the right-of-way or property line is less than nine feet with a sidewalk, Applicant shall work with The County to determine the appropriate tree species.

(d) Changes to these standards require County Council approval.

(5) Tree Wells. In commercial districts, where the sidewalk extends from the back of curb to the property line, tree wells shall be utilized.
  (a) For tree wells adjacent to sidewalks five feet wide or less, open pit is not permitted.
    (i) The opening must be covered with a tree grate or pervious pavement.
    (ii) The opening in a tree grate for the trunk must be expandable.

(6) Streets shall have the same tree species per block on both sides of the streets with changes at intersections.

Figure 7.3. Commercial Street Tree Example.

Sample of Large Street Trees	
Sycamore Maple	*Acer pseudoplatanus*
Emerald Queen Maple	*Acer platanoides 'Emerald Queen'*
Catalpa	*Catalpa speciosa*
Hackberry	*Celtis occidentalis*
Riversii Beech	*Fagus sylvatica 'Riversii'*
Cimmaron Ash	*Fraxinus pennsylvanica 'Cimmaron'*
Marshall Seedless Ash	*Fraxinus pennsylvanica 'Marshall Seedless'*
Patmore Ash	*Fraxinus pennsylvanica 'Patmore'*
Gingko	*Gingko biloba 'Princeton Sentry'*
Honeylocust	*Gleditsia triacanthos*
Kentucky Coffeetree	*Gymnocladus dioicus*
London Planetree	*Platanus x acerifolia*
Japanese Pagodatree	*Sophora japonica*
Accolade Elm	*Ulmus carpinifolia 'Accolade'*

Table 7.3 (1). Sample List of Permitted Tree Species.

Sample of Medium Street Trees	
Fairview Maple	*Acer platanoides 'Fairview'*
Sensation Boxelder	*Acer negundo 'Sensation'*
Briotii Horsechestnut	*Aesculus x carnea 'Briotii'*
Chinese Fringetree	*Chionanthus retusus*
Yellowwood	*Cladrastis kentukea*
Manchurian Ash	*Fraxinus mandshurica 'Mancana'*
Goldenraintree	*Koelreuteria paniculata*
Fruitless Mulberry	*Morus alba 'Fruitless'*
Mayday Tree	*Prunus padus*
Purple Robe Locust	*Robinia pseudoacacia, 'Purple Robe'*
Lacebark Elm	*Ulmus parvifolia*
Frontier Elm	*Ulmus parvifolia 'Frontier'*
Japanese Zelkova	Zelkova serrata
Chanticleer Pear	Pyrus calleryana 'Chanticleer'

Table 7.3 (2). Sample List of Permitted Tree Species.

7.4 Frontage Buffer.

1. Intent & Applicability.

(1) Intent. To lessen the visual impact of vehicular parking areas visible from the street.

(2) General Applicability. Applies to properties in all districts.
  (a) Exceptions. Vehicular areas along alleys, except when a residential district is located across the alley; Single and two family residences.

(3) The frontage buffer may be used for storm water drainage with a maximum depth of one foot and no more than a 2 to 1 slope on the edges. Such areas shall be creatively landscaped with a combination of trees, shrubs, inert mulches, boulders, etc.

7.4 Frontage Buffer Requirements		
1. Buffer Depth & Location [1]		
Depth	5'	ⓐ
Location on the Site	Between street facing property line and parking area [2]	ⓑ
2. Buffer Landscape Requirements		
Uses & Materials	Uses and materials other than those indicated are prohibited in the buffer	
Shade Trees	Medium or large shade tree required at least every 40'; Locate on the street side of the fence; Spacing should alternate with street trees	ⓒ
Hedge	Required continuous hedge on street side of fence, between shade trees & in front of vehicular areas	ⓓ
Hedge Composition	Individual shrubs with a minimum width of 24", spaced no more than 36" on center, height maintained no more than 48".	
Existing Vegetation	May be credited toward buffer area	

Notes:

[1] This screening requirement does not prohibit the installation of or provision for openings necessary for allowable access drives and walkways connecting to the public sidewalk.

[2] In front, corner, and rear yards (on a through lot), when the parking area is located adjacent to any building on the lot, the buffer must be located so that it aligns with or is behind the face of the adjacent building back to the vehicular area. The area between the buffer and the property line must be landscaped.

Table 7.4. Frontage Buffer Requirements.

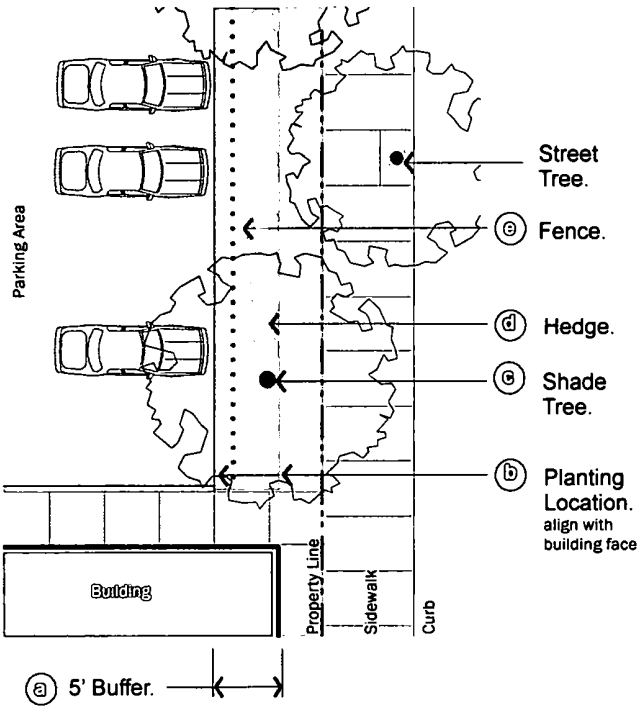


Figure 7.4 (1). Frontage Buffer Plan View

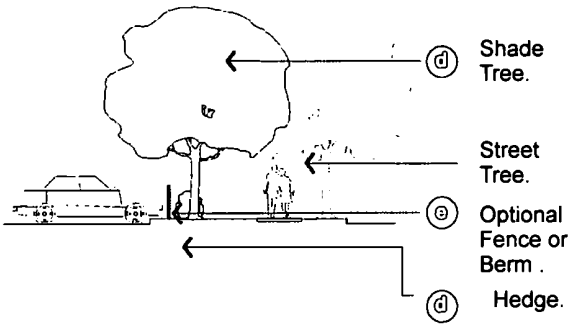


Figure 7.4 (2). Frontage Buffer Section.

7.0 Landscape

7.5 Side & Rear Buffer.

1. Intent & Applicability.

(1) Intent. To minimize the impact that commercial uses may have on a residential neighborhood and to provide a transition between uses. A County Administrator will determine which uses require buffers.

(2) General Applicability. Applies to all commercial properties directly adjoining single-family residential properties.

7.5 Side & Rear Buffer Requirements		
1. Buffer Depth & Location		
Depth	10'	ⓐ
Location on the Site	Locate buffers on more intensively zoned lot, along shared property line; Buffer is measured from side and rear property lines.	
2. Required Landscape Screen		
Width	5' landscape screen in addition to any other buffer landscaping	ⓑ
Location	Directly adjacent to the rear or side property line	
Hedge	Continuous double row of shrubs required between shade trees	ⓒ
Hedge Composition	Double row of individual shrubs with a minimum width of 24", spaced no more than 36" on center; Mature height in one year of 24"	
Hedge Frequency	Minimum of 15 shrubs per 100' of property line is required	
Shade Trees	At least 1 medium or large shade tree per every 40' within the buffer	ⓓ
3. Buffer Landscape Requirements		
Uses and Materials	Uses and materials other than those indicated are prohibited within the buffer	
Tree Canopy Coverage	1 medium or large shade tree required per 2,000 square feet of buffer, excluding the area within the required landscape screen	ⓓ
Existing Vegetation	May be credited toward buffer area	
4. Buffer Fence Requirements		
Uses and Materials	A six foot fence is required by where buffer requirement is applicable. The fence shall be light proof and be constructed of materials that compliment the adjacent building. White vinyl and chain link with slats are not allowed.	ⓔ

Notes:

[1] The County may reduce width of buffer, width of landscape screen, or location of landscape screen based on existing landscaping and topography.

Table 7.5. Side & Rear Buffer Requirements.

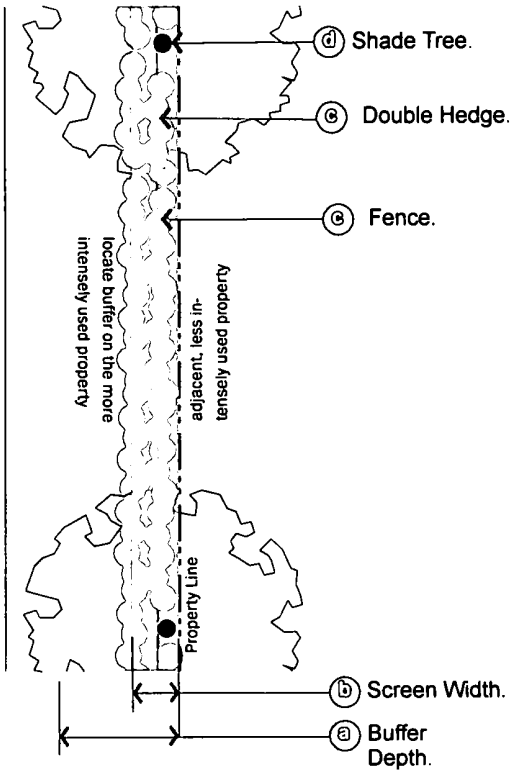


Figure 7.5 (1). Landscape Screen Plan View.

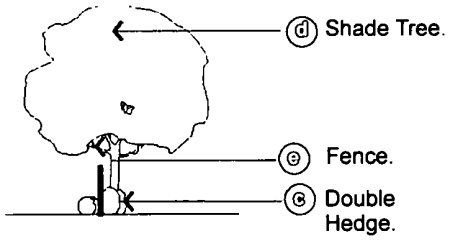


Figure 7.5 (2). Landscape Screen Section.

7.6 Interior Parking Lot Landscape.

1. Intent & Applicability.

(1) Intent. To provide shade, minimize paving & associated stormwater runoff, & improve the aesthetic look of parking lots.

(2) General Applicability. All Parking lots within Olympia Hills.

(3) Other Internal Parking Lot Areas. Internal areas not dedicated to parking or drives shall be landscaped with a minimum of one medium or large shade tree for the first 150 square feet and one medium or large shade tree for every 650' thereafter.

(4) Existing Vegetation. Existing vegetation may be credited toward these requirements.

7.6 (1) Interior Parking Lot Landscape Requirements		
1. Landscape Island Requirements		
Required Island Locations	Terminal ends [2] of free standing rows or bays of parking; After every 12th parking space for rows of parking greater than 12 spaces in length. Landscape islands are not required specifically for stalls with covered parking, this only applies to covered parking areas. [3]	ⓐ
Minimum Width	5'; Islands less than 15' must utilize structural soil under any paved surface within a tree's critical root zone; Islands under 9' must install an aeration system and utilize permeable pavement for the curb and gutter.	ⓑ
Required Trees and Storm Water	Minimum of 1 medium or large shade tree per island. Islands shall be designed to accommodate storm (as bio-swales) water run off where the drainage plan can be reasonably designed to accomplish that objective.	ⓒ
2. Landscape Median Requirements		
Required Median Location	Required in each free-standing bay of parking along the length of the bay	
Minimum Width	5'; Medians less than 15' must utilize structural soil under any paved surface within a tree's critical root zone; Islands under 9' must install an aeration system and utilize permeable pavement	ⓓ
3. Tree Requirements		
Requirements per Parking Space [4]	Each parking space must be located within 50' of a tree planted within parking lot interior	
	Minimum of 1 shade tree must be planted within parking lot interior or within 7' of parking lot's edge for every 5 parking spaces	
Tree Shade Goal	Within 20 years of tree installation, 25% of the interior of the parking lot should be shaded by tree canopy. Refer to Table 7.6 (2) for calculation.	

Table 7.6 (1) Interior Parking Lot Landscape Requirements.

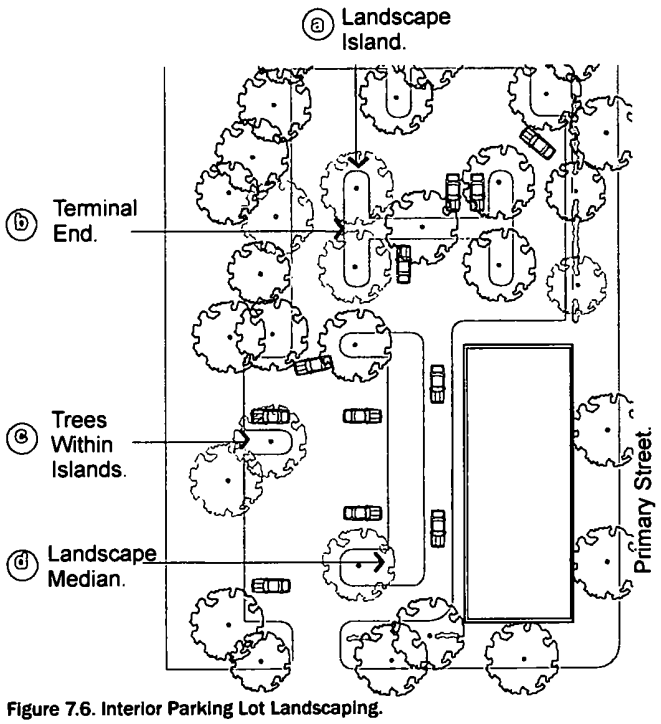


Figure 7.6. Interior Parking Lot Landscaping.

Tree Size	Estimated Canopy at Maturity (sq ft)	Estimated Height at Maturity (ft)
Very Small	150	under 15'
Small	400	15'-25'
Medium	900	25'-40'
Large	1600	40'+

Table 7.6 (2). Estimated Canopy and Height at Maturity.

Footnotes:
[1] Parking lot interior is defined as the area dedicated to parking on a given parcel as measured from edge of pavement to edge of pavement.
[2] Freestanding rows or bays of parking are those not abutting the parking lot perimeter or building face, and may have a single or double row of parking.
[3] There shall be no more than 12 continuous parking spaces in a row without a landscape island.
[4] Trees within a designated buffer area may not be utilized to meet these requirements

7.0 Landscape

7.7 Landscape Screening

1. Intent & Applicability.

(1) Intent. To reduce the visibility of open storage, refuse areas, and utility appurtenances from public areas and adjacent properties.

(2) General Applicability. All dumpsters, open storage, refuse areas, and utility appurtenances..

7.7 Screening of Open Storage, Refuse. and Utility Areas		
1. Open Storage & Refuse Area Screening Requirements		
Location on the Site	Not permitted in front or corner side yards, within 10 feet of property line and between building and street	
Opaque Screen Wall [1]	Required around 3 sides of the dumpster and trash bin area	
Screen Wall Height	Height shall be the higher of the following: 1. 6' 2. Height of use to be screened plus one foot 3. Height as determined by city to accomplish objective of the screen	ⓐ
Visible Openings	Openings visible from the public way or adjacent properties must be furnished with opaque gates	
Landscape Requirement	If refuse area is located within larger paved area, such as a parking lot, landscape islands must be located on 3 sides of the area, with at least 1 medium or large shade tree in at least 1 of the landscape areas [2]	ⓑ
2. Utility Appurtenance Screening Requirements		
Large Private Mechanical Equipment [3]	Shall be fenced with opaque wood or brick-faced masonry on all sides facing right-of-way	ⓒ
Small Private Mechanical Equipment [4]	Shall have landscape screening and a shrub bed containing shrubs spaced no more than 36" on center	

Notes:

[1] Vertical structured barrier to visibility at all times such as a fence or wall
[2] This tree, if located within 50' of a parking space, may be utilized to meet the minimum shade requirements
[3] Large private mechanical equipment is equal to or greater than 4' in height
[4] Small private mechanical equipment is smaller than 4' in height

Table 7.7. Screening of Open Storage, Refuse and Utility Areas.

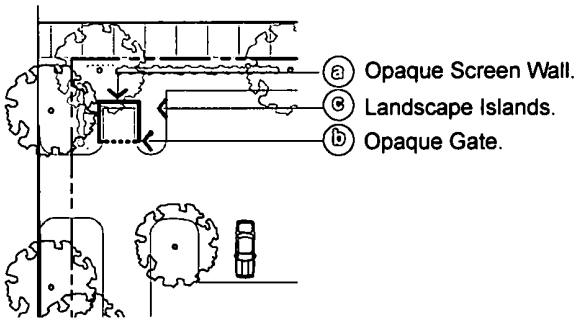


Figure 7.7. Screening of Open Storage & Refuse Areas.

8.0 Sustainability Overview

8.0 Sustainability Overview

Sustainability Overview

Sustainability is a key element of Olympia Hills, and these standards have been created with an emphasis on promoting and enhancing sustainability in a comprehensive manner. Each section of the document has sustainable design and/or construction methods integrated into it.

This section is an overview of those sustainable measures, and will describe both the intent, as well as highlight the specific measures that have been built into the design standards throughout this document.

Many of these design standards indirectly promote sustainability. However, this section will only highlight the specific sustainability measures found in the design standards, such as standards deal with energy, water conservation, water quality, and open space preservation.

1.0 Place Types and Land-Uses.

1. Sustainability Summary

The vision for Olympia Hills is to create a community where residents can live, work, and play. This section addresses the planning and design of the overall community, including creating a number of "place types." This will ensure the ability to provide the mix of uses necessary to create a community where residents can live, work, play, shop and perform other daily functions within close proximity to each other.

This section also promotes compact development in town centers and village centers, which enhances walkability and reduces dependency on automobiles.

2. References to Sustainability

1.2.2. Sustainability

2.0 Street Network.

1. Sustainability Summary

A connected street network is one of the most important features of a compact, walkable neighborhood. It is one of the most effective ways to improve accessibility and encourage the use of non-motorized traffic modes. This section also addresses the integration of transit into the project, and encourages strong collaboration with UTA to provide a high-level of public transportation.

2. References to Sustainability

2.2.(2) Transit

3.0 Street Types & Design.

1. Sustainability Summary

The street types in Olympia Hills will promote sustainability by being designed to be highly walkable, and by promoting multiple alternate transportation modes such as bicycles and transit. Lane widths are minimized, in part, to reduce impervious materials and therefore reduce stormwater runoff. This section also promotes incorporating innovative stormwater management practices to reduce runoff and improve water quality.

2. References to Sustainability

3.5. Stormwater Management.

4.0 Parks, Trails & Open Space.

1. Sustainability Summary

Olympia Hills will provide significant parks and open space throughout the community, which will provide active and passive recreation for residents, as well as also helping to support biodiversity and healthy ecological systems. This section also promotes utilizing open spaces to promote innovative stormwater management practices.

2. References to Sustainability

4.3. Parks.

4.4. Open Space.

4.5. Trails.

4.6. Stormwater in Open Spaces.

5.0 Site Design.

1. Sustainability Summary

The Site Design section focuses on the details of how to create walkable, active, and vibrant Town Centers, Village Centers, and Neighborhoods. It also specifies how design elements, such as lighting, can become more environmentally sensitive.

2. References to Sustainability

5.13. Lighting.

6.0 Buildings & Architecture.

1. Sustainability Summary

Buildings are a large source of emissions, and this section outlines measures that Olympia Hills will utilize to minimize environmental impacts from buildings. This section also contains water efficiency standards for buildings.

2. References to Sustainability

6.11. Sustainability.

7.0 Landscape.

1. Sustainability Summary

Outdoor water use is one of the most important sustainability issues for the Wasatch Front. This section specifically focuses on how to limit high water-using plant materials, without compromising the livability and beauty of the community. The driving focus behind these landscape standards is to specify where lawn areas will be most effective, and to limit lawn where it is unnecessary.

2. References to Sustainability

7.3. Lawn Area.

7.4. Planting Area.

7.6. Irrigation Systems.

9.0 Appendix

9.1 Definitions.

(1) **Agricultural Equipment and Supply** - The retail sale of equipment and supplies specific to agricultural uses.

(2) **Alcohol & Liquor Sales** - The retail sale of beer, wine, or other alcoholic beverages for on- or off-premise consumption. It is unlawful for any person to engage in the sale of alcoholic beverages at retail within the county without first procuring a license therefor, as hereinafter provided. A separate license shall be required for each place of sale. All licenses shall comply with the provisions of the Alcoholic Beverage Control Act of Utah and the regulations of the Alcoholic Beverage Control Commission.

(3) **Alternative Energy** - Technologies such as solar and wind power, and alternative vehicle power technologies. Includes distributed generation (e.g. rooftop solar panels, EV charging battery storage, etc.) and utility-scale (e.g. renewable procurement through the qualified entity).

(4) **Animal Boarding** - "Animal boarding establishment" means any commercial establishment that takes in animals for the purpose of providing temporary shelter or care and charges a fee for such service.

(5) **Apparel & Accessory Store** - Retail stores where clothing is sold, such as department stores, shoe stores, dress, hosiery, and millinery shops. Stores selling or accepting for sale clothing retail.

(6) **Appliance & Electronic Sales & Service** - The retail sale and servicing of appliances and electronics.

(7) **Arcade** - Any business catering to minors, containing four or more amusement devices.

(8) **Architecture/Engineering/Design** - A firm/business with the purpose of providing architecture, engineering, or design services.

(9) **Area** - The portion of land that is being evaluated; generally, the property or project phase being developed.

(10) **Art & Educational Supplies** - The retail sale of art and educational supplies.

(11) **Auto Fuel Station** - Any place where motor vehicle fuel is sold and dispensed as either a principal or incidental activity or where car washing services are sold. Where the sale and dispensing of vehicle fuel is the principal activity, accessory activities may include the retail sale of lubricants, tires, batteries, motor vehicle accessories, and supplies, including minor installation services or repairs customarily incidental thereto.

(12) **Auto Repair** - General repair, rebuilding or reconditioning of engines, motor vehicles, or trailers, including bodywork, framework, welding, and major painting service.

(13) **Auto Sales** - The retail sale of automobiles/vehicles.

(14) **Automotive Supply (no service)** - A business that practices the retail sale of automotive supply but does not offer automobile sales and servicing.

(15) **Bakery, Retail** - An establishment primarily engaged in the retail sale of baked products for consumption off-site. The products may be prepared either on or off-site. Such use may include incidental food service. A bakery shall be considered a general retail use.

(16) **Bank or other Financial Service** - A financial institution that is open to the public and engaged in deposit banking, and that performs closely related functions such as making loans, investments, and fiduciary activities.

(17) **Barber Shop, Beauty Salon, & Spa** - Any establishment or place of business within which the practice of barbering is engaged in or carried on by one or more barbers. Any establishment where cosmetology services are provided including hair care, nail care, and skincare on a regular basis for compensation. A place or building where active exercise and related activities are performed utilizing weight control or muscle building equipment or apparatus for the purpose of physical fitness. Also, a place or building that provides massage, exercise, and related activities with or without such equipment or apparatus.

(18) **Bicycle Sales & Repair** - The retail sale and servicing of bicycles.

(19) **Billiard Hall** - A primary commercial entertainment land use containing one or more pool or billiard tables, does not include the sales of alcohol.

(20) **Block** - A contiguous group of properties bounded by multiple thoroughfares, rights-of-way, railroads, water bodies or other similar features. The block's perimeter is formed by outer property lines of the properties within the block.

(21) **Block Face** - The portion or side of a block that abuts a street.

(22) **Block Length** - The length of one side of a block between two streets.

(23) **Block Perimeter** - The block perimeter is defined as the length of all sides of a block added together.

(24) **Book, Magazine, & Newspaper Store** - A retail establishment that, as its primary business, engages in the sale, rental, or other charge-for-use of books, magazines, newspapers, greeting cards, postcards, videotapes, computer software, or any other printed or electronically conveyed information or media, excluding any "adult bookstore," "adult theater," "theater," or "studio theater".

(25) **Building Contractor (office only)** - A room or group of rooms used for conducting business affairs that does not use any exterior storage area.

(26) **Building Massing** - The three-dimensional bulk of a building: height, width, and depth.

(27) **Building Materials, Hardware, and Garden Supply** - Retail stores where items such as plumbing, heating, and electrical supplies, sporting goods, and paints are sold.

(28) **Bulb-Outs** - Infrastructure that provides additional pedestrian space at the corners of intersections and mid-block opportunities by extending sidewalks, curb, and gutter into the roadway.

(29) **Cabinet Supply (display only)** - A retail establishment used to display and sell cabinets.

(30) **Camera & Photo Supply Store** - A retail establishment used to sale cameras and photo supplies.

(31) **Catering** - An establishment that serves and supplies food to be consumed off-premises.

(32) **Charitable Institutions** - A chapter, branch, area, or office, or similar affiliate or any person soliciting contributions within the state of Utah for charitable organization that has its principal place of business outside the state of Utah. Charitable organization shall be such entities as defined below and by the Charitable Solicitation Act of the Utah Code. A charitable institution includes any person, joint venture, partnership, limited liability company, corporation, association, group, or other entity that is voluntarily performing a benevolent, educational, health-related, philanthropic, humane, patriotic, religious or eleemosynary activity; and/or is involved with social welfare or advocacy group, public health project, environmental or conservation activity, or civic organization or for the benefit of a public safety, law enforcement, or firefighter fraternal association, and established for any charitable purpose.

(33) City Impact Fee - A fee that is imposed by local governments to pay for all or a portion of the costs of providing public services to a new or proposed developments costs.

(34) **Collector Street** - A street proving land access within commercial, industrial, and residential areas. A collector street enables traffic movement between local streets and the major street network. See Salt Lake Code of Ordinances 14.12.010.

(35) **Community Structure Plan (CSP)** - A community structure plan is a framework plan for large developments laying important systems such as streets, trails, active transportation, parks, stormwater, and more.

(36) **Computer Programming & Support** - The retail sale of computer programming and support services.

(37) **Computer Software Sales & Leasing** - The retail sale and leasing of computer software.

(38) **Connectivity Index** - Calculated by diving the number of links in an area by the number of nodes in that same area. Include one-half (1/2) of the perimeter links and nodes in link and node totals.

(39) **Context Sensitive Plan** - Development practices and standards that are sensitive to community specific values.

(40) **Congregate Housing** - Any building which contains facilities for living, sleeping and sanitation and may include facilities for eating and cooking, for occupancy by other than a family. Congregate housing includes convents, monasteries, dormitories, boarding and rooming houses, hostels, fraternity and sorority houses.

(41) **Convenience Store** - A small retail establishment, usually located within or associated with another use, that offers for sale convenience goods, such as prepackaged food items, tobacco, periodicals, and other household goods.

(42) **Cul-de-sac** - A street ending in a vehicular turnaround whose roadway does not connect to other streets.

(43) **Cycle Track** - A cycle track is a separate on-road bicycle facility that is typically adjacent to, but physically separated from, vehicular traffic and parking by a barrier.

(44) **Dark Skies** - A movement with the goal of reducing light pollution and the negative impacts associated with urban environments.

(45) **Day Care, Adult or Child** - A facility that houses the temporary care of children and or adults.

(46) **Dedicated Bicycle Lane** - Dedicated bicycle lanes are striped lanes on the outside of the outermost travel lanes that are designated for only bicycle use. This lane occurs on both sides of the street and shall be five to six feet wide.

(47) **Density** - The allowable density for planned unit developments and dwelling groups shall be determined by the planning commission on a case by case basis, taking into account the following factors: recommendations of county and non-county agencies; site constraints; compatibility with nearby land uses; and the provisions of the applicable general plan.

(48) **Department Store** - A business that practices the retail of a variety of unrelated merchandise and services.

(49) **Designated Shared Lane** - A designated shared lane is a lane that is shared between vehicles and bicycles. This lane is typically wider than a standard vehicular lane, minimum 13 feet, in order to accommodate both types of users, and includes a painted bicycle marker combined with a double arrow (known as a "sharrow"). This improvement occurs on both directions.

(50) **Detention Facility/Jail** - A facility that houses inmates and individuals who have been accused of or guilty of crimes.

(51) **Drug Store/Pharmacy** - An establishment engaged in the retail sale of prescription drugs, nonprescription medicines, cosmetics, and related supplies.

(52) **Dry Cleaning & Laundry** - An establishment that practices dry cleaning and laundry practices and services.

(53) **Educational Services (tutor & testing)** - A business that offers education services such as tutoring and test preparation.

(54) **Electrical Supplies** - An establishment that practices the retail sale of electrical supplies.

(55) **Emergency Care Clinic** - A clinic that offers emergency care to individuals.

(56) **Employment Agency** - An agency that offers the service of helping people find and procuring employment.

(57) **Energy Efficiency** - Reducing wasteful energy practices and encouraging more sustainable practices.

9.0 Appendix

(58) **Exterminating & Disinfecting Service** - A business that offers exterminating and disinfecting services.

(59) **Fabric & Craft Store** - Any business establishment that produces on the premise's articles for sale of artistic quality or effect or handmade workmanship. Examples include candle making, glass blowing, weaving, pottery making, woodworking, sculpting, painting, and other associated activities.

(60) **Facade Divisions (Vertical)** - Buildings shall use vertically oriented expression lines or forms to divide the facade into smaller increments. Elements may include a column, pilaster, or other continuous vertical ornamentation a minimum of one and a half-inch depth.

(61) **Facade Divisions (Horizontal)** - Buildings shall use horizontally oriented expression lines or forms to divide portions of the facade into horizontal divisions. Elements may include a cornice, belt course, molding, string courses, or other continuous horizontal ornamentation a minimum of one and a half-inch depth.

(62) **Facility for Persons w/Disability (Residential)** - Residential facility for persons with a disability

(63) **Fence** - An enclosure or barrier, such as wooden posts, wire, iron, etc., used as a boundary, means of protection, privacy screening or confinement, but not including hedges, shrubs, trees, or other natural growth.

(64) **Financial & Insurance** - A business that provides financial and insurance benefits and services.

(65) **Fitness, Dance Studio, & Gym** - A facility that offers health and fitness-related activities.

(66) **Florist** - Retail business whose principal activity is the selling of plants which are not grown on the site and conducting business within an enclosed building.

(67) **Framing** - A business that offers framing construction.

(68) **Frontage (Building)** - That facade of the building that abuts the required front yard as stipulated in this zoning code.

(69) **Funeral Home** - An establishment that provides the service of preparing the deceased for cremation or burial.

(70) **Furnishing Zone** - A hardscape area that extends from the sidewalk to the back of curb, in which street trees, street furniture, lighting, and signage may be located. Typically used adjacent to commercial or office buildings.

(71) **Gift, Novelty, & Souvenir Shop** - Retail stores where items such as art, antiques, jewelry books, and notions are sold.

(72) **Government Offices** - A place that houses governmental practices that serve public needs.

(73) **Grocery Store** - Stores where most of the floor area is devoted to the sale of food products for home preparation and consumption, which typically also offer other home care and personal care products, and which are substantially larger and carry a broader range of merchandise than convenience stores.

(74) **Ground Story (Building)** - The story or floor in a building that is same level as the main entrance or outside ground elevation.

(75) **Gun Shop** - A business practicing the retail sale of guns and related goods.

(76) **Heating, Air Conditioning & Plumbing** - A business that offers services associated with heating, air conditioning, and plumbing.

(77) **Holiday Sales** - Temporary sales no greater than thirty days.

(78) **Home Furnishings & Accessories Sales** - The retail sale of home furnishing and accessories.

(79) **Home Furniture & Equipment Repair** - An establishment that offers repair services on home furniture and equipment.

(80) **Home Occupation** - An occupational use that is clearly subordinate to the principal use as a residence and does not require any alteration to the exterior of a building

(81) **Intergovernmental Agreements** - A contractual or other formal agreement between two or more political jurisdictions that results in a cooperative action or activity.

(82) **Irrigation (Landscaping)** - A permanent, artificial watering system designed to transport and distribute water to plants.

(83) **Jewelry Sales & Repair** - Shops that sell new merchandise primarily and some used merchandise from estate sales or reconstitute precious metals they purchase into jewelry forms that are sold at retail on the premises.

(84) **Landscape Buffer** - A landscaped area, often serving as a buffer between different uses.

(85) **Landscape Zone** - A landscape area between the back of curb or edge of pavement to the sidewalk in which street trees, swales, lighting, and signage may be located. Typically used adjacent to residential buildings.

(86) **Large Format Grocery Store** - A establishment with large physical characteristics that offers the retail sale of groceries and associated items.

(87) **Large Format Retail** - A establishment with large physical characteristics that offers the retail sale of a variety of goods.

(88) **Legal Services** - The business of providing legal services such as advice and representation to individuals and the public.

(89) **Link** - A segment of street between two nodes or a stub street.

(90) **Locksmith** - An individual or business that provides the retail sale and or services associated with keys and locks.

(91) **Luggage & Leather Goods** - A business that conducts retail sales and supply of luggage and leather goods.

(92) **Machine Sales and Rental** - A business that practices the retail sale and rental of machines.

(93) **Mailing Services** -A commercial business which conducts the retail sale of stationery products, provides packaging and mail

services (both U.S. Postal and private service), and provides mailboxes for lease.

(94) **Management Services** - A business that provides services associated with business and management.

(95) **Master Development Agreement (MDA)** - An agreement between a developer and the political governing body.

(96) **Medical & Dental with Laboratory** - A facility with a laboratory that practices the healing arts, examination, and treatment of patients seeking medical and or dental services.

(97) **Medical Supply Store & Rental** - An establishment that offers the retail sale and rental of medical supplies.

(98) **Merchandise Vending Machine Operators** - One who provides service to vending machines that sell merchandise.

(99) **Microbrewery** - An establishment that practices the craft of brewing beer and retail sales on a smaller scale in comparison to large commercial breweries.

(100) **Miniature Golf Course** - A novelty version of golf played with a putter and a golf ball on a miniature course, typically with artificial playing surfaces, and including obstacles such as bridges and tunnels.

(101) **Mixed Use Development** - Zoning which provides a variety of uses (limited commercial, office and residential), as an appropriate transition between high-traffic arterial streets and nearby residential uses. Ensures compatibility of new development and residential conversions with existing and future residential development.

(102) **Motorcycle & Motor Scooter Sales** - The retail sale of motorcycles and motor scooters.

(103) **Music Store** - An establishment that practices the retail sale of music and associated goods.

(104) **Musical Instrument Repair & Sales** - An establishment that practices repair services and the retail sale of musical instruments, related equipment, and accessories.

(105) **Network Density** - Network density is the number of nodes per given unit of area, such as nodes per square mile. Network density is established by a maximum block length as well as maximum spacing of pedestrian paths and streets connecting outside the project to existing or future developments.

(106) **Node** - An intersection or dead end (a cul-de-sac is considered a dead end).

(107) **Office Supply** - An establishment that practices the retail sale of office related supplies and goods.

(108) **Open Space** - A use of land for active or passive, public or private, outdoor space, including such uses as parks, plazas, greens, playgrounds, or community gardens. This land is preserved for the purpose of conservation, preservation, agriculture, resource enhancement, recreation, enhancing value to the public of adjacent parks or preserves, or otherwise providing a buffer to adjacent properties.

(109) **Optical Goods** - A business with the purpose of providing goods and services related to optical goods.

(110) **Outdoor Gun Range** - An outdoor area dedicated to practices associated with gun handling, firing, and practice.

(111) **Outdoor Kennel** - An outdoor area dedicated to housing, breeding, and or care of animals such as dogs.

(112) **Outdoor Sales Lot** - An outdoor area dedicated to the sale of goods.

(113) **Outdoor Storage (of Goods)** - Permanent outdoor storage of goods not typically housed or sold indoors, such as large-scale materials and building and landscape supplies.

(114) **Paint & Wallpaper** - An establishment that practices the supply and retail sale of paint and wallpaper.

(115) **Park** - A Park is defined as a non-commercial, not-for-profit public facility for general community use. Parks include programming and facilities that support active and passive recreation. Commercial uses are allowed inside parks with the approval of County Staff.

(116) **Party Supply Shop** - A business that practices the retail sale of party supplies and associated goods.

(117) **Pedestrian Pathway** - A hard-surfaced, ADA-compliant path reserved for pedestrian or other non-motorized use. May be privately owned but must be publicly accessible to meet pedestrian pathway connectivity requirements.

(118) **Pet & Pet Supply** - A business that practices the sale of certain animals (pets), and pet supplies.

(119) **Pet Grooming** - Any place or establishment, public or private, where animals are bathed, clipped, or combed for the purpose of enhancing their aesthetic value or health and for which a fee is charged.

(120) **Photocopying & Printing** - An entity associated with the sale and service of photocopying and printing.

(121) **Photography Studio & Supplies** - A business that offers an area for photography services and the retail sale of photography-related supplies.

(122) **Physical Therapy/Physical Rehabilitation** - A business that provides services associated with physical therapy and physical rehabilitation.

(123) **Power Station** - An area dedicated to the creation of power utility.

(124) **Public Relations & Advertising** - A business that provides services associated with public relations and advertising.

(125) **Radio & TV Studio** - An area dedicated to radio and television production.

(126) **Recreation, Commercial Indoor** - Recreational facilities operated as a business and open to the general public for a fee, such as golf driving ranges and baseball batting ranges.

9.0 Appendix

(127) Relative Connectivity - The relative level of connectivity means that intersections that provide a certain amount of connections among streets. For example, a 4-way intersection provides more connectivity than a 3-way intersection, and both provide more connectivity than a cul-de-sac, or other dead end, which provides no connectivity. Relative connectivity is measured primarily by the connectivity index, which is the ratio of street segments ("links") to intersections and dead ends ("nodes") in an area.

(128) Repair of Small Goods & Electronics - A business the provides the service associated with the repair of small goods and electronics.

(129) Restaurants (refer to state law for alcoholic beverage requests) - Any facility where food is prepared for immediate consumption, including but not limited to coffee shops, cafeterias, restaurants, luncheonettes, soda fountains, fast-food services or outlets and all other similar facilities. Doe not include any retail establishment whose primary business function is the sale of fuel or food items for off-premise, but not immediate, consumption.

(130) Right of Way - A strip of land reserved for transportation, infrastructure and/or public use between the perimeter property lines of adjacent blocks.

(131) Roof Garden - Green space or gardens on the roof of buildings.

(132) Setback (Building) - Used to enhance the pedestrian environment on the street by placing buildings at an appropriate distance from the sidewalk. Setbacks will vary by street type and adjacent land-use.

(133) Sexually Oriented Business - Adult businesses, nude entertainment business, seminude dancing bars, outcall services, and nude and seminude dancing agencies as defined in Chapter 5.136.

(134) Shared Lane - A shared lane refers to a street that does not have bicycle lanes or a designated shared lane, but the speed and configuration of the street is such that bicycles could comfortably share lanes with traffic.

(135) Shoe Repair - An individual or business that provides the service of repairing shoes.

(136) Shooting & Archery Ranges (indoor only) - An indoor area to practices associated with gun and archery handling, firing, and practice.

(137) Short Term (Residential) - Any dwelling or portion thereof that is available for uses or is used for accommodations or lodging of guests, paying a fee, or other compensation for a period of less than thirty consecutive days.

(138) Specialty Food Market (Butcher, Candy, Fish Market, Produce, etc.) - A business associated with the retail sale of specific foods.

(139) Sporting Goods Sales & Rental - A business that practices the retail sale and rental of sporting and outdoor goods.

(140) Stationery & Paper Store - An establishment that practices the retail sale of stationery, paper, and related supplies.

(141) Storm Water - Means stormwater runoff, snow melt runoff, surface runoff, street wash waters related to street cleaning or maintenance, infiltration, and drainage.

(142) Story (Building) - Story means that portion of a building included between the upper surface of any floor and the upper surface of the floor next above, except that the topmost story shall be that portion of a building included between the upper surface of the topmost floor and the ceiling or roof above. If the finished floor level directly above a usable or unused underfloor space is more than six feet above grade for more than fifty percent of the total perimeter or is more than twelve feet above grade at any point, such usable or unused underfloor space shall be considered as a story.

(143) Stream Buffer - A vegetated area that separates and protects a stream from other land uses.

(144) Street - A public thoroughfare including roads, highways, drives, lanes, avenues, places, boulevards or any other thoroughfare dedicated for public use that affords primary access to abutting properties.

(145) Street (Connector) - A medium capacity street for slow speeds with a standard right-of-way. It primarily serves as a through street within the Neighborhood and connects Neighborhood Street to Avenues.

(146) Street (Major) - A street that is collector-level or above. See Salt Lake County Code of Ordinances 14.21.010 for street classification definitions.

(147) Street (Primary) - A designation with the purpose of developing a network of streets in the Town Center and Village Centers with continuous building frontage and no or limited vehicular access to reduce conflicts between pedestrians and vehicular traffic.

(148) Street Connectivity - How wells streets connect and handle differing transportation densities.

(149) Street Network - System of interconnected streets that forms the framework for community development and transportation.

(150) Stub Street - A street that runs from an intersection to connect to a future adjacent development.

(151) Surface (Impervious) - Any hard-surfaced, man-made area that does not readily absorb or retain water, including but not limited to building roofs, parking and driveway areas, graveled areas, sidewalks, and paved recreation areas.

(152) Surface (Semi-Impervious) - Land surface that partially allows penetration of water.

(153) Tailor & Seamstress - An individual or business that practices the service of tailoring.

(154) **Tanning Salon** - An establishment dedicated to providing services and retail sales of items associated with artificial tanning.

(155) **Theater** - A structure used for dramatic, operatic, motion pictures, or other performance, for admission to which entrance money is received and no audience participation or meal service allowed.

(156) **Toy Shop** - An establishment dedicated to the retail sale of toys and related items.

(157) **Traffic Impact Study (TIS)** - A tool used to reduce and plan for traffic impacts created by new development. A study (or studies) conducted to quantify traffic and needed roadway improvements.

(158) **Training Center** - An establishment with space for the conduction of training services.

(159) **Transit** - The conveyance of persons or goods from one place to another by means of a local, public transportation system.

(160) **Travel Agency & Tour Operator** - A business that offers services associated with travel.

(161) **Typology (Building)** - Dictate form, glazing/transparency, and other features of a building.

(162) **Underground Utility Station** - A station related to a utility that is placed beneath the surface grade or underground.

(163) **Utility and Infrastructure** - An area that is primarily utilized for the City's infrastructure needs. Utility and infrastructure include such uses as electric or gas services, sewage treatment, water treatment and storage, and energy conversion systems.

(164) **Vertical Mixed-Use Storage** - Vertical land use with mixed commercial uses on the ground street facing floor with storage options above and behind said uses.

(165) **Veterinarian** - An establishment for the care and treatment of the diseases and injuries of animals and where animals may be boarded during their convalescence.

(166) **Video/Games Sales & Rental** - A business that practices the retail sale or rental of videos and or games.

(167) **Warehouse** - Facilities characterized by extensive warehousing, frequent heavy trucking activity, open storage of material, or nuisances such as dust, noise, and odors, but not involved in manufacturing or production.

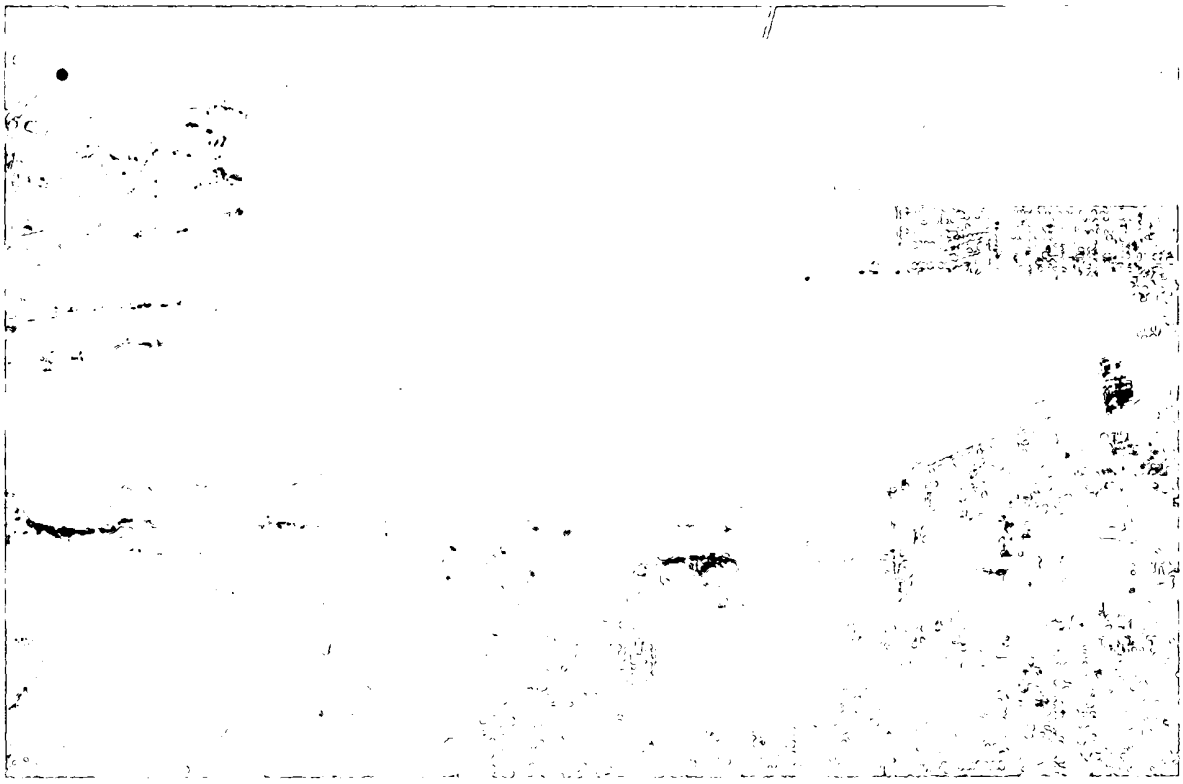
EXHIBIT D

Traffic Impact Study

HALES ENGINEERING
innovative transportation solutions

OLYMPIA HILLS

Traffic Impact Study



Salt Lake County, Utah

December 13, 2019

UT19-1472

LICENSED PROFESSIONAL ENGINEER
NO. 295699
RYAN R. HALES
12/13/2019
STATE OF UTAH

1220 North 500 West, Ste. 202 Lehi, UT 84043 p 801.766.4343
www.halesengineering.com

BK 10983 PG 4750

HALES ENGINEERING
innovative transportation solutions

EXECUTIVE SUMMARY

This study addresses the traffic impacts associated with the proposed Olympia Hills development located in Salt Lake County, Utah. The proposed project is located generally between 6400 West and Bacchus Highway on the east and west, and 12600 South and Herriman Highway on the north and south.

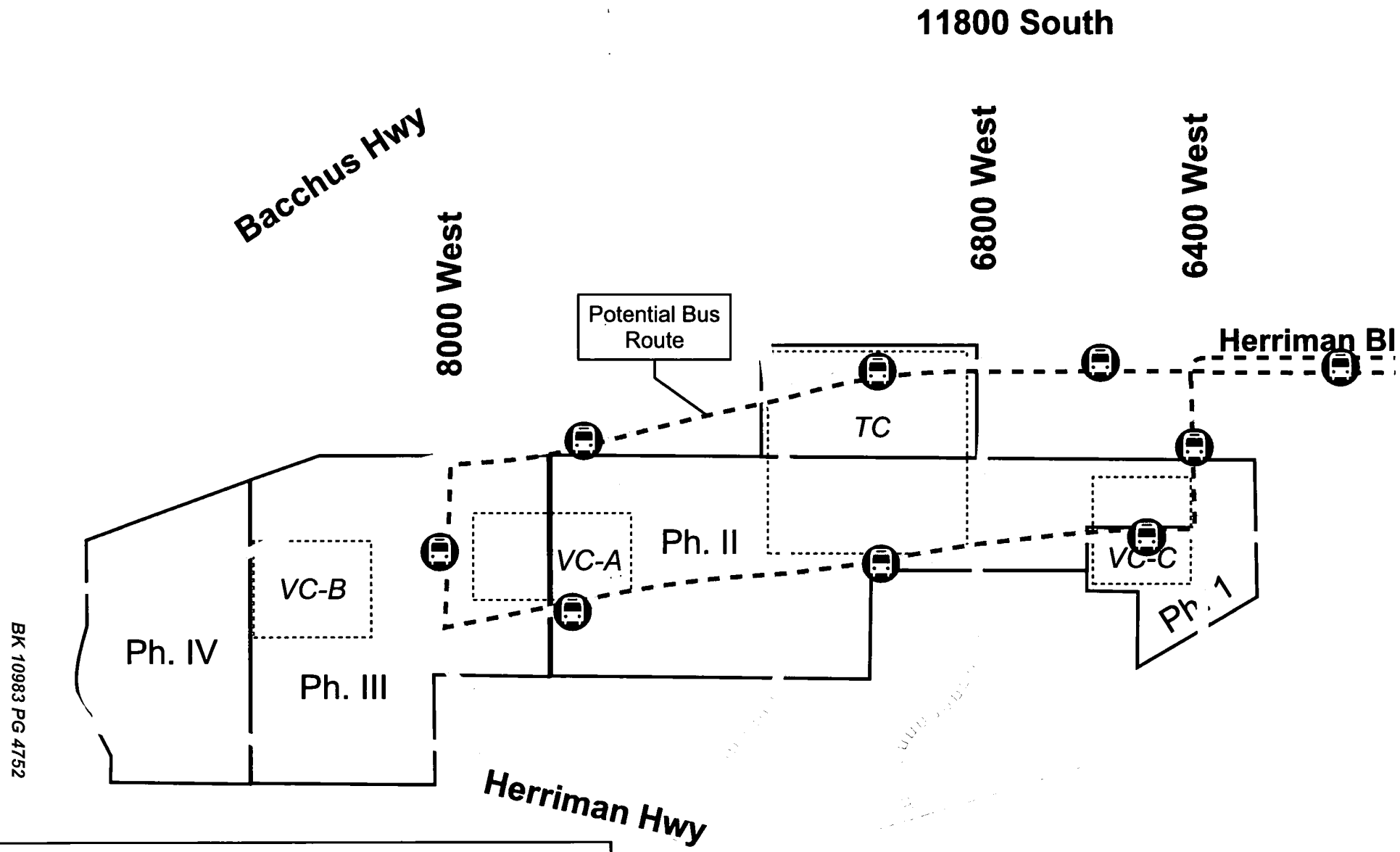
Included within the analyses for this study are the traffic operations and recommended mitigation measures for existing (2019) conditions at key intersections and roadways near the project site, and future background conditions starting in 2022 and in five-year increments thereafter. Plus project conditions (conditions after development of the proposed project) were analyzed starting in 2027 and in five-year increments thereafter.

The morning and evening peak hour levels of service (LOS) were computed for each study intersection. LOS A, B, C, and D were considered to be acceptable according to standard practice. When an intersection was anticipated to operate at LOS E or F or when there was excessive queueing, Hales Engineering made recommendations to improve the intersection. In each background and plus project scenario, Hales Engineering was able to mitigate all poor levels of service except for poor LOS at the Mountain View Corridor and Bangerter Highway intersections, which are under UDOT jurisdiction.

A map showing the proposed roadway and transit network is shown in Figure ES-1. A summary of the original and mitigated LOS results for each scenario is shown in Table ES-1. The recommended improvements by scenario are shown in Table ES-2. Additional improvement details are found in Appendix F.

Phasing and Land Use Plans are CONCEPT ONLY
May be modified in the MDA, CSPs or Project Plans.

Note: Active transportation elements to be designed at the CSP level.



Level of Service Results - Salt Lake County Olyr

	Intersection	Existing (2019)				Future (2022)				Future (2027)								Future (2032)							
		Background				Background				Background				Plus Project				Background				Plus Project			
		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
		O	M	O	M	O	M	O	M	O	M	O	M	O	M	O	M	O	M	O	M	O	M	O	M
1	Bacchus Hwy / 11800 S	a	-	a	-	a	-	c	-	f	D	f	D	D	-	D	-	D	-	C	-	C	-	C	-
2	7300 W / 11800 S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	b	-	c	-	f	B	f	E
3	6400 W / 11800 S	-	-	-	-	-	-	-	-	-	-	-	-	b	-	b	-	f	B	f	C	C	-	D	-
4	6000 W / 11800 S	B	-	B	-	B	-	B	-	E	C	E	C	C	-	D	-	B	-	A	-	B	-	B	-
5	Freedom Park Dr / 11800 S	B	-	B	-	B	-	C	-	D	-	D	-	C	-	D	-	B	-	C	-	C	-	C	-
6	8000 W / Bacchus Hwy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	-	a	-
7	Bingham Canyon / Bacchus Hwy	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-
8	6400 W / Herriman Blvd	-	-	-	-	-	-	-	-	-	-	-	-	a	-	b	-	d	-	c	-	C	-	D	-
9	6000 W / Herriman Blvd	B	-	A	-	A	-	A	-	A	-	A	-	B	-	B	-	B	-	A	-	B	-	B	-
10	Anthem Park Blvd / Herriman Blvd	C	-	B	-	B	-	B	-	C	-	B	-	E	D	C	-	D	-	B	-	E	D	D	-
11	Main St / Herriman Blvd	C	-	A	-	E	C	D	-	E	C	D	-	D	-	D	-	D	-	C	-	F	D	E	C
12	SB MVC / 12600 S	C	-	C	-	E	D	E	C	E	D	E	D	E	D	E	C	E	-	F	-	n/a	-	n/a	-
13	NB MVC / 12600 S	C	-	C	-	C	-	C	-	D	-	D	-	D	-	F	C	D	-	F	-	n/a	-	n/a	-
14	Bangerter Hwy / 12600 S	D	-	F	C	C	-	E	D	C	-	D	-	C	-	F	D	C	-	C	-	n/a	-	n/a	-
15	Silver Sky Dr / 6000 W	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-
16	Butterfield Cnyn / Herriman Hwy	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-	a	-
17	8000 W / Herriman Hwy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	-	a	-
18	7300 W / Herriman Hwy	a	-	a	-	a	-	a	-	a	-	a	-	a	-	b	-	b	-	b	-	c	-	d	-
19	6800 W / Herriman Hwy	-	-	-	-	-	-	-	-	-	-	-	-	a	-	b	-	-	-	-	-	b	-	f	E
20	6400 W / Main St	b	-	c	-	c	-	c	-	d	-	f	B	C	-	F	C	C	-	C	-	C	-	F	D
21	5600 W / Main St	B	-	C	-	B	-	B	-	B	-	C	-	B	-	C	-	B	-	B	-	B	-	D	-
22	6400 W / 13400 S	B	-	B	-	B	-	D	-	B	-	F	B	B	-	B	-	B	-	C	-	E	D	D	-
23	5600 W / 13400 S	C	-	D	-	C	-	D	-	C	-	F	D	C	-	E	D	D	-	D	-	D	-	F	D
24	5000 W / 13400 S	C	-	C	-	C	-	B	-	D	-	C	-	C	-	C	-	F	C	C	-	D	-	E	C
25	SB MVC / 13400 S	E	D	D	-	D	-	D	-	E	C	D	-	C	-	C	-	F	-	D	-	n/a	-	n/a	-
26	NB MVC / 13400 S	E	C	D	-	D	-	E	D	E	B	E	-	B	-	D	-	F	-	F	-	n/a	-	n/a	-
27	8000 W / Herriman Blvd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	-	a	-
28	7300 W / Herriman Blvd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	-	c	-	f	B	f	D
29	6800 W / Herriman Blvd	-	-	-	-	-	-	-	-	-	-	-	-	a	-	a	-	-	-	-	-	f	B	f	C
30	Silver Sky Dr / 6400 W	-	-	-	-	-	-	-	-	-	-	-	-	a	-	a	-	-	-	-	-	d	-	c	-

	Intersection	Recommended Improvements									
		2019	2022	2027		2032		2037		2042	
		BG	BG	BG	PP	BG	PP	BG	PP	BG	PP
1	Bacchus Hwy / 11800 S			1.1		1.2					
2	7300 W / 11800 S						2.1	2.2	2.3		2.4
3	6400 W / 11800 S					3.1	3.2	3.3	3.4	3.5	3.6
4	6000 W / 11800 S			4.1							
5	Freedom Park Dr / 11800 S				5.1						
6	8000 W / Bacchus Hwy										6.1
8	6400 W / Herriman Blvd						8.1	8.2	8.3		
10	Anthem Park Blvd / Herriman Blvd				10.1		10.2	10.3		10.4	10.5
11	Main St / Herriman Blvd		11.1	11.2	11.3		11.4			11.5	11.6
12	SB MVC / 12600 S		*S.4*	12.1	12.2	12.3					
13	NB MVC / 12600 S				13.1	13.2					
14	Bangerter Hwy / 12600 S	14.1	14.2		*13.1*						
17	8000 W / Herriman Hwy										17.1
18	7300 W / Herriman Hwy						18.1	18.2	*20.4*		18.3
19	6800 W / Herriman Hwy						19.1				
20	6400 W / Main St			20.1	20.2		20.3		20.4	20.5	20.6
22	6400 W / 13400 S			22.1			22.2		22.3	22.4	
23	5600 W / 13400 S			23.1	23.2		23.3	23.4			23.5
24	5000 W / 13400 S					*25.2*	24.1				
25	SB MVC / 13400 S	*S.6*		25.1		25.2					
26	NB MVC / 13400 S	*S.6*	*S.7*	26.1		*S.18*					
27	8000 W / Herriman Blvd										27.1
28	7300 W / Herriman Blvd						28.1	28.2	28.3	28.4	28.5
29	6800 W / Herriman Blvd						29.1				
-	11800 South					S.1					
-	Herriman Boulevard					S.2					S.3
-	12600 South		S.4								
-	Herriman Highway					S.5					
	13400 South	S.6	S.7				S.8	S.9			

#	Description
1.1	Signal, Turn Pockets on All Approaches, Dual SB L
1.2	NB RT Lane
2.1	Signal, Turn Pockets on All Approaches
2.2	Signal, Turn Pockets on All Approaches
2.3	PM/PT LT Phasing on All Approaches
2.4	NB & WB Dual Left Turn Lanes
3.1	Signal, Turn Pockets on All Approaches, EB & WB
3.2	EB & WB RT Lanes, NB PM/PT LT Phasing
3.3	EB Dual LT Lanes, NB & SB PM/PT LT Phasing
3.4	PM/PT LT Phasing on All Approaches, NB Dual LT
3.5	EB & WB RT Lanes
3.6	Add SB Thru Lane, Convert NB RT Lane to Shared Phase
4.1	WB PM/PT LT Phasing, Extend WB LT Storage
5.1	WB Dual LT Lanes
6.1	Signal, Turn Pockets on All Approaches
8.1	Signal, Turn Pockets on All Approaches, EB & WB
8.2	Signal, Turn Pockets on All Approaches
8.3	PM/PT LT Phasing on All Approaches
10.1	WB RT Pocket, Extend LT Lanes on All Approaches
10.2	Convert NB RT to Shared T/RT
10.3	EB Dual LT Lanes
10.4	EB & WB RT Lanes
10.5	NB & WB Dual LT Lanes, Extend NB LT Lane, Conv Shared T/RT Lanes
11.1	NB Channelized RT Lane
11.2	SB Dual LT Lanes
11.3	WB Dual LT Lanes
11.4	Additional NB Thru lane, Convert EB RT to Shared
11.5	2 NB Thru Lanes, WB Dual LT Lanes, Lengthen SB
11.6	EB RT Lane, Add WB Thru Lane
12.1	SB & WB Dual LT Lanes
12.2	Freeway Grade- Separated Interchange
12.3	Channelized EB & WB RT Lanes
13.1	Freeway Grade- Separated Interchange, Addition Channelized EB/WB RT Lanes
13.2	Channelized EB & WB RT Lanes, Convert NB Thru
14.1	SPUI
14.2	Additional LT Lane on NB Off Ramp

HALES ENGINEERING
innovative transportation solutions

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

HALES ENGINEERING
innovative transportation solutions

I. INTRODUCTION

A. Purpose

This study addresses the traffic impacts associated with the proposed Olympia Hills development located in Salt Lake County, Utah. The proposed project is located generally between 6400 West and Bacchus Highway on the east and west, and 12600 South and Herriman Highway on the north and south. Figure 1 shows a vicinity map of the proposed development.

Included within the analyses for this study are the traffic operations and recommended mitigation measures for existing (2019) conditions at key intersections and roadways near the project site, and future background conditions starting in 2022 and in five-year increments thereafter. Plus project conditions (conditions after development of the proposed project) were analyzed starting in 2027 and in five-year increments thereafter.

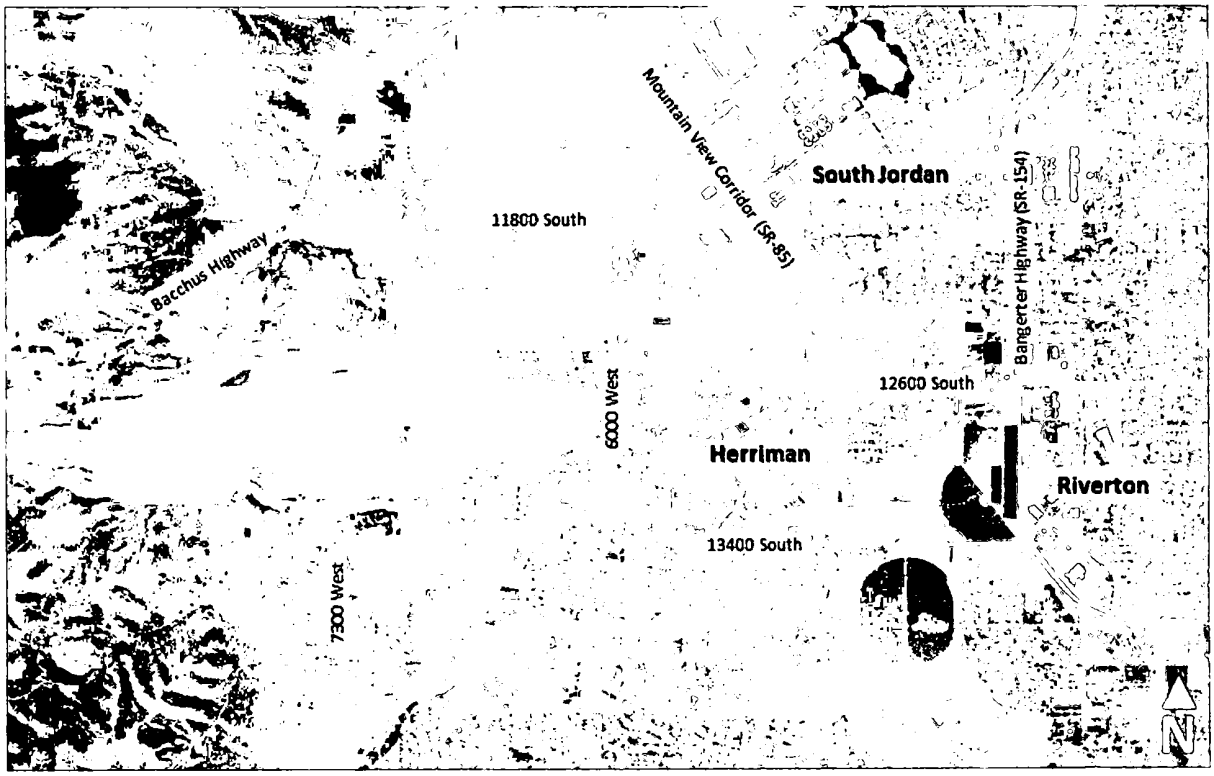


Figure 1: Vicinity map showing the project location in Salt Lake County, Utah

B. Scope

The study area was defined based on conversations with Salt Lake County staff. This study was scoped to evaluate the traffic operational performance impacts of the project on the following intersections:

- Bacchus Highway / 11800 South
- 6000 West / 11800 South
- Freedom Park Drive / 11800 South
- Bingham Canyon Mine / Bacchus Highway
- 6000 West / Herriman Boulevard
- Anthem Park Boulevard / Herriman Boulevard
- Main Street / Herriman Boulevard / 12600 South
- Mountain View Corridor (SR-85) / 12600 South
- Bangerter Highway (SR-154) / 12600 South
- Silver Sky Drive / 6000 West
- Butterfield Canyon Road / Herriman Highway / Bacchus Highway
- 7300 West / Herriman Highway
- 6400 West / Main Street
- 5600 West / Main Street
- 6400 West / 13400 South
- 5600 West / 13400 South
- 5000 West / 13400 South
- Mountain View Corridor (SR-85) / 13400 South

C. Analysis Methodology

Level of service (LOS) is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Table 1 provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections. Figure 2 provides a visual representation of each LOS letter designation.

The *Highway Capacity Manual* (HCM), 6th Edition, 2016 methodology was used in this study to remain consistent with "state-of-the-practice" professional standards. This methodology has different quantitative evaluations for signalized and unsignalized intersections. For signalized and all-way stop intersections, the LOS is provided for the overall intersection (weighted average of all approach delays). For all other unsignalized intersections, LOS is reported based on the worst approach.

Using Synchro/SimTraffic software, which follow the HCM methodology, the peak hour LOS was computed for each study intersection. Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. The detailed LOS reports are provided in Appendix D. Hales Engineering also calculated the 95th percentile queue lengths for each of the study intersections using SimTraffic. The detailed queue length reports are provided in Appendix E.

Table 1: Level of Service Description

Level of Service	Description of Traffic Conditions	Average Delay (seconds/vehicle)
	Signalized Intersections	**Overall Intersection**
A	Extremely favorable progression and a very low level of control delay. Individual users are virtually unaffected by others in the traffic stream.	0 ≤ 10.0
B	Good progression and a low level of control delay. The presence of other users in the traffic stream becomes noticeable.	> 10.0 and ≤ 20.0
C	Fair progression and a moderate level of control delay. The operation of individual users becomes somewhat affected by interactions with others in the traffic stream.	>20.0 and ≤ 35.0
D	Marginal progression with relatively elevated levels of control delay. Operating conditions are noticeably more constrained.	> 35.0 and ≤ 55.0
E	Poor progression with unacceptably elevated levels of control delay. Operating conditions are at or near capacity.	> 55.0 and ≤ 80.0
F	Unacceptable progression with forced or breakdown operating conditions.	> 80.0
	Unsignalized Intersections	**Worst Approach**
A	Free Flow / Insignificant Delay	0 ≤ 10.0
B	Stable Operations / Minimum Delays	>10.0 and ≤ 15.0
C	Stable Operations / Acceptable Delays	>15.0 and ≤ 25.0
D	Approaching Unstable Flows / Tolerable Delays	>25.0 and ≤ 35.0
E	Unstable Operations / Significant Delays Can Occur	>35.0 and ≤ 50.0
F	Forced Flows / Unpredictable Flows / Excessive Delays Occur	> 50.0

Source: Hales Engineering Descriptions, based on the *Highway Capacity Manual* (HCM), 6th Edition, 2016 Methodology (Transportation Research Board)

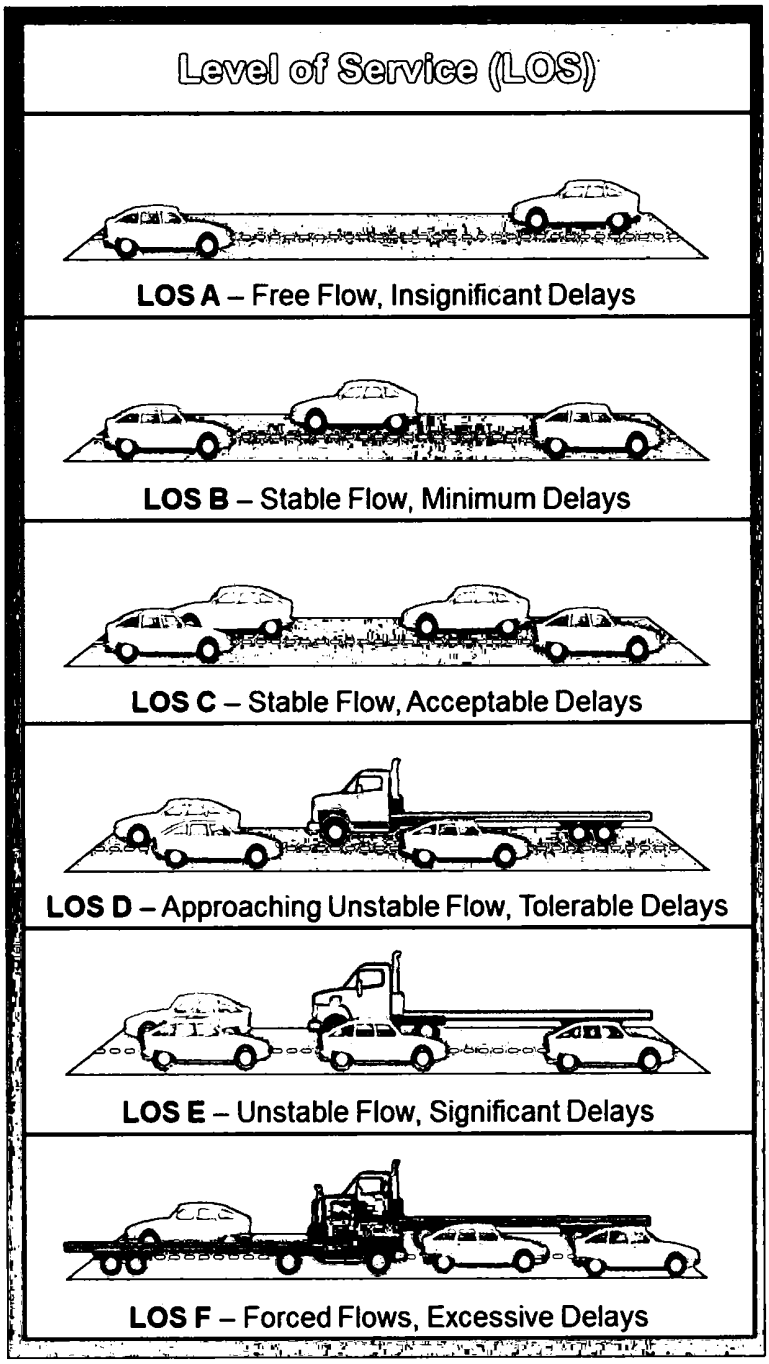


Figure 2: Visual representation of the LOS letter designations

II. EXISTING (2019) BACKGROUND CONDITIONS

A. Purpose

The purpose of the background analysis is to study the intersections and roadways during the peak travel periods of the day with background traffic and geometric conditions. Through this analysis, background traffic operational deficiencies can be identified, and potential mitigation measures recommended. This analysis provides a baseline condition that may be compared to the build conditions to identify the impacts of the development.

B. Roadway System

The primary roadways that will provide access to the project site are described below:

11800 South – is a city-maintained (South Jordan/Herriman) roadway that runs east/west between Bacchus Highway and Mountain View Corridor (SR-85). 11800 South currently consists of a five-lane cross section east of 6000 West, and a two-lane cross section west of 6000 West. The posted speed limit is 35 mph in the study area.

According to Wasatch Choice 2050, the regional transportation plan (RTP) published in 2019 by the Wasatch Front Regional Council (WFRC), 11800 South between 6000 West and Bacchus Highway is planned to be widened to five lanes. This is planned as a Phase 1 (2019-2030) project.

Herriman Boulevard – is a city-maintained (Herriman) roadway that currently extends west from Mountain View Corridor (SR-85) at 12600 South and currently terminates at approximately 6800 West. Herriman Boulevard consists of a five-lane cross section east of 6000 West, and a three-lane cross section west of 6000 West. The posted speed limit is 40 mph in the study area.

According to the WFRC RTP, Herriman Boulevard is planned to be extended west to connect to Bacchus Highway. This is planned as a Phase 1 (2019-2030) project.

Herriman Highway/Main Street – is a county/city-maintained (Salt Lake County/Herriman) roadway that runs east/west between Bacchus Highway and Herriman Boulevard (12600 South near Mountain View Corridor (SR-85). The roadway consists of a two-lane cross section between Bacchus Highway and approximately 6200 West, a three-lane cross section between 6200 West and 5600 West, and a five-lane cross section between 5600 West and Herriman Boulevard (12600 South). The posted speed limit is 35 mph east of 5600 West and 30 mph west of 5600 West.

The segment of Main street between Herriman Boulevard (12600 South) and Anthem Park Boulevard is planned to be completed by the end of 2019.

Bacchus Highway – is a north/south route that spans the entire west bench of the Salt Lake Valley, connecting to SR-201 on the north and Herriman Highway on the south. Bacchus Highway is a county-maintained (Salt Lake County) roadway within the study area. The roadway consists of a two-lane cross section and the posted speed limit is 50 mph within the study area.

Although no formal plan has been adopted, there are talks at the County level about realigning Bacchus Highway south of Old Bingham Highway through the study area. For this study it was assumed that the New Bacchus Highway would deviate from the current alignment near the Trans Jordan Landfill, follow a generally north/south route, and connect to Herriman Highway at 7300 West. It was also assumed that the existing Bacchus Highway would remain and will be referred to in this study as the Old Bacchus Highway once the new alignment is completed.

Other roadways included in this study are described below:

Mountain View Corridor (SR-85) – is a state-maintained roadway (classified by UDOT access management standards as a "Freeway – One-Way Frontage Road" facility, or access category 10 roadway). Mountain View Corridor (SR-85) has two travel lanes in each direction with left- and right-turn lanes at intersections. The north- and southbound lanes are currently separated by a wide median. In the future, a freeway facility will be constructed in this median resulting in a freeway/frontage road system. As identified and controlled by UDOT, a "Freeway – One-Way Frontage Road" access classification identifies minimum signalized intersection spacing of one-quarter mile (1,320 feet), minimum unsignalized street spacing of 660 feet. The posted speed limit on Mountain View Corridor (SR-85) is 55 mph in the study area.

Bangerter Highway (SR-154) – is a state-maintained roadway (classified by UDOT access management standards as a "Freeway/Interstate System" facility, or access category 1 roadway). Bangerter Highway (SR-154) has three travel lanes in each direction with left- and right-turn lanes at intersections and the posted speed limit is 60 mph in the study area. North- and southbound traffic are separated by a raised center median and access is currently limited to signalized intersections or interchanges at major cross streets. According to the WFRC RTP, five at-grade intersections on Bangerter Highway (SR-154) are planned to be converted to grade-separated interchanges as Phase 1 (2019-2030) projects, including at 12600 South.

C. Traffic Volumes

Weekday morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak period traffic counts were performed at the following intersections:

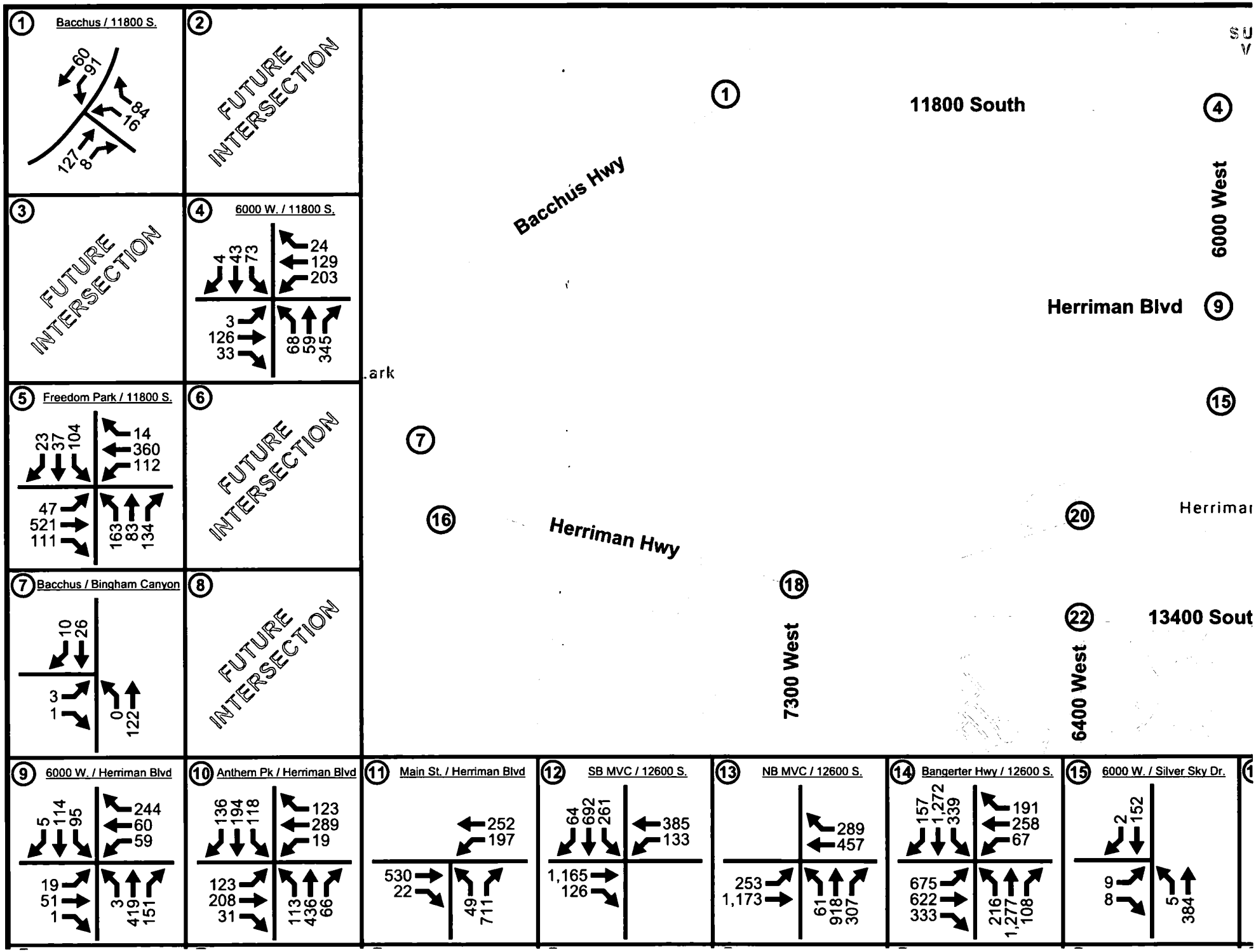
- Bacchus Highway / 11800 South

- 6000 West / 11800 South
- Freedom Park Drive / 11800 South
- Bingham Canyon Mine / Bacchus Highway
- 6000 West / Herriman Boulevard
- Anthem Park Boulevard / Herriman Boulevard
- Main Street / Herriman Boulevard / 12600 South
- Mountain View Corridor (SR-85) / 12600 South
- Bangerter Highway (SR-154) / 12600 South
- Silver Sky Drive / 6000 West
- Butterfield Canyon Road / Herriman Highway / Bacchus Highway
- 7300 West / Herriman Highway
- 6400 West / Main Street
- 5600 West / Main Street
- 6400 West / 13400 South
- 5600 West / 13400 South
- 5000 West / 13400 South
- Mountain View Corridor (SR-85) / 13400 South

The counts were performed on typical weekdays (Tuesday, Wednesday, or Thursday) throughout 2019. The morning peak hour was determined to be between 7:00 and 8:00 a.m., and the evening peak hour was determined to be between 5:00 and 6:00 p.m. The evening peak hour volumes were approximately 30% higher than the morning peak hour volumes. However, at the request of Salt Lake County Staff, both morning and evening peak hours were analyzed in this study. Detailed count data are included in Appendix A. Figure 3 and Figure 4 show the existing morning and evening peak hour volumes at the study intersections.

D. Level of Service Analysis

Hales Engineering determined that the north- and southbound Mountain View Corridor / 13400 South intersections are currently operating at LOS E during the morning peak hour as shown in Table 2, and the Bangerter Highway / 12600 South intersection is operating at LOS F during the evening peak hour as shown in Table 3. All other study intersections are currently operating at acceptable levels of service. These results serve as a baseline condition for the impact analysis of the proposed development during existing (2019) conditions.



BK 10983 PG 4797

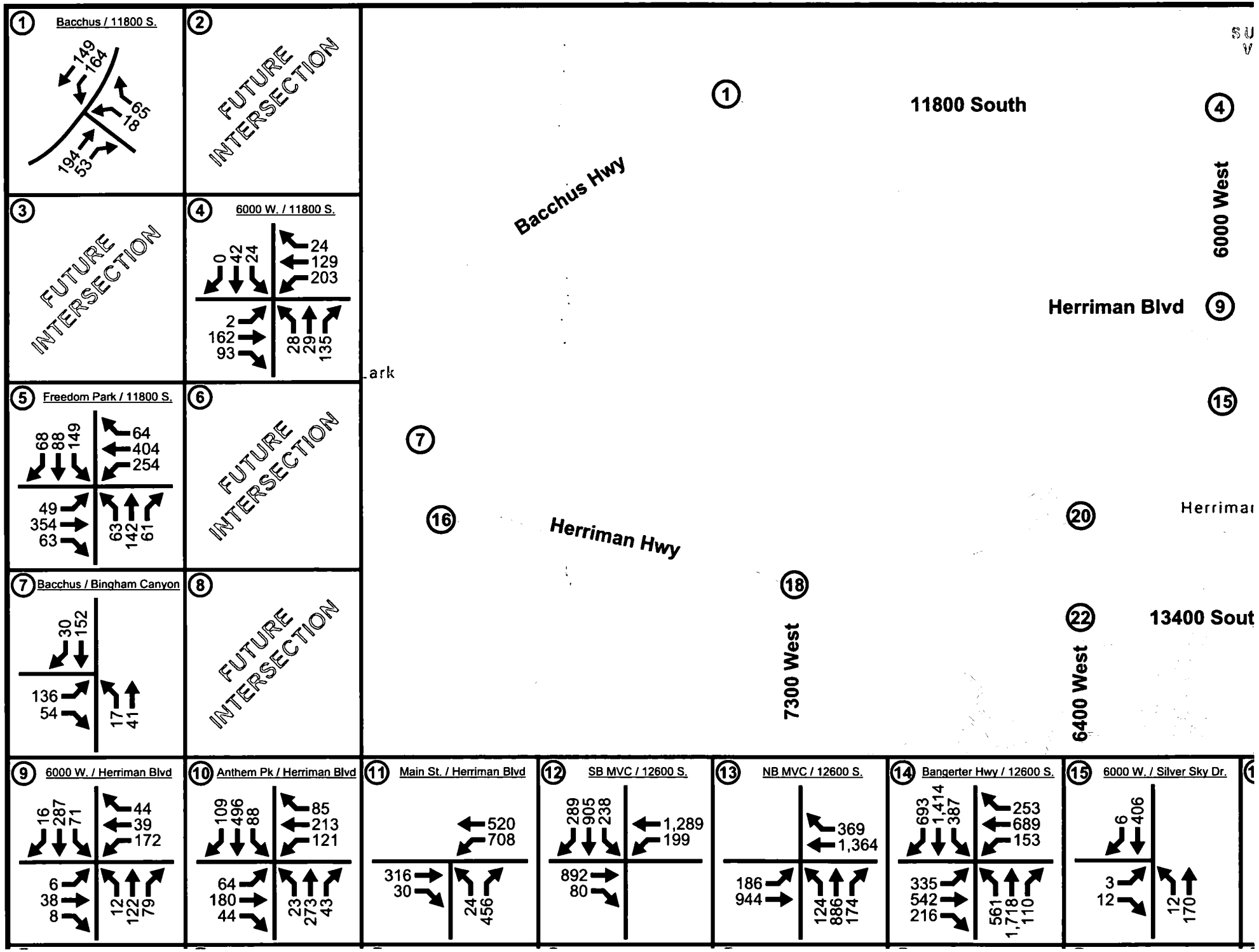


Table 2: Existing (2019) Background Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	WB Stop	WB	2.6	A	-	-	-
6000 West / 11800 South	Signal	-	-	-	11.3	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	11.3	B	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	2.6	A	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	10.6	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	15.4	B	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	11.2	B	-
SB MVC / 12600 South	Signal	-	-	-	22.2	C	-
NB MVC / 12600 South	Signal	-	-	-	24.2	C	-
Bangerter Highway / 12600 South	Signal	-	-	-	47.0	D	-
Silver Sky Drive / 6000 West	EB Stop	EB	4.6	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	2.1	A	-	-	-
7300 West / Herriman Highway	NB Stop	NB	5.6	A	-	-	-
6400 West / Main Street	NB/SB Stop	NB	13.0	B	-	-	-
5600 West / Main Street	Signal	-	-	-	20.0	B	-
6400 West / 13400 South	Signal	-	-	-	11.3	B	-
5600 West / 13400 South	Signal	-	-	-	23.2	C	-
5000 West / 13400 South	Signal	-	-	-	34.4	C	-
SB MVC / 13400 South	Signal	-	-	-	59.0	E	D (43.5)
NB MVC / 13400 South	Signal	-	-	-	56.7	E	C (30.1)

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, October 2019

Table 3: Existing (2019) Background Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	WB Stop	NB	5.0	A	-	-	-
6000 West / 11800 South	Signal	-	-	-	11.4	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	13.5	B	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	5.3	A	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	10.0	A	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	11.5	B	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	7.7	A	-
SB MVC / 12600 South	Signal	-	-	-	22.8	C	-
NB MVC / 12600 South	Signal	-	-	-	29.5	C	-
Bangerter Highway / 12600 South	Signal	-	-	-	83.3	F	C (34.7)
Silver Sky Drive / 6000 West	EB Stop	EB	4.7	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	3.1	A	-	-	-
7300 West / Herriman Highway	NB Stop	NB	6.1	A	-	-	-
6400 West / Main Street	NB/SB Stop	NB	17.1	C	-	-	-
5600 West / Main Street	Signal	-	-	-	28.0	C	-
6400 West / 13400 South	Signal	-	-	-	15.9	B	-
5600 West / 13400 South	Signal	-	-	-	52.0	D	-
5000 West / 13400 South	Signal	-	-	-	20.3	C	-
SB MVC / 13400 South	Signal	-	-	-	41.2	D	-
NB MVC / 13400 South	Signal	-	-	-	48.4	D	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop and signalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, October 2019

E. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Mountain View Corridor / 12600 South
  - Westbound Approach – 410 feet (a.m. peak)
- Bangerter Highway / 12600 South
  - Significant queueing (approximately 610 feet) on the eastbound approach during the morning peak hour.
  - Significant queueing (>1,000 feet) on the south- and westbound approaches during the evening peak hour.
- 5600 West / Main Street
  - Northbound Approach – 365 feet (a.m. peak)
  - Southbound Approach – 730 feet (p.m. peak)
- 6400 West / 13400 South
  - Southbound Approach – 335 feet (p.m. peak)
- 5600 West / 13400 South
  - Northbound Approach – 365 feet (a.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
- 5000 West / 13400 South
  - Eastbound Approach – 520 feet (a.m. peak)
  - Westbound Approach – 340 feet (p.m. peak)
- Mountain View Corridor / 13400 South
  - Northbound Approach – >1,000 feet (a.m. peak)
  - Southbound Approach – 590 feet (p.m. peak)
  - Eastbound Approach – 525 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.

F. Mitigation Measures

Additional capacity is needed at the Bangerter Highway / 12600 South intersection and the Mountain View Corridor / 13400 South intersection.

As discussed previously, the Bangerter Highway / 12600 South intersection is slated to become a grade-separated interchange before 2030 (Phase 1 Project). According to the State Environmental Study (SES) completed in 2018 by UDOT for this project, construction is anticipated to begin in 2020.

According to the WFRC RTP, Mountain View Corridor south of 13400 South is planned to be widened to three lanes in each direction prior to 2030. (No information could be found regarding a specific construction timeline.

Hales Engineering analyzed a mitigated scenario assuming that both of these improvements had been implemented. By converting the Bangerter Highway / 12600 South intersection to a grade-separated single point urban interchange (SPUI), the intersection is anticipated to operate at an acceptable level of service in both the morning and evening peak hours.

Adding additional lanes to Mountain View Corridor south of 13400 South is not anticipated to improve the level of service at the Mountain View Corridor / 13400 South intersection. It is recommended that an additional eastbound lane be added to 13400 South through the Mountain View Corridor intersection to match the number of eastbound lanes on 13400 South on the east side of Mountain View Corridor. This would provide the needed capacity to accommodate the eastbound demand during the morning peak hour. With this improvement it is anticipated that the Mountain View Corridor / 13400 South intersection will operate at an acceptable level of service during the morning and evening peak hours.

No additional mitigation measures are recommended.

III. FUTURE (2022) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2022) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified, and potential mitigation measures recommended.

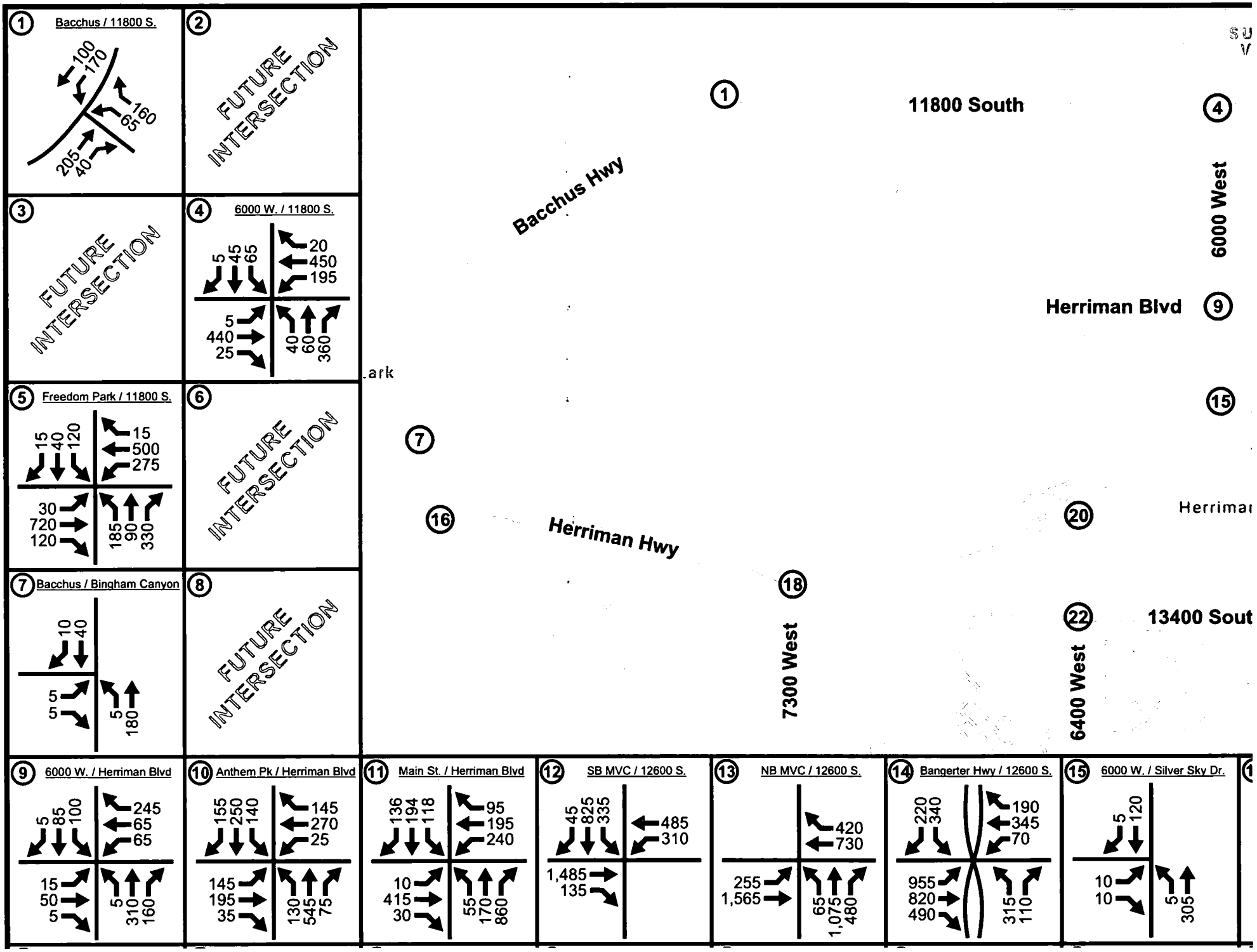
B. Roadway Network

The segment of Herriman Main Street between Herriman Boulevard (12600 South) and Anthem Park Boulevard is currently under construction and is planned to be completed by the end of 2019. It was assumed that this project was completed prior to 2022. It was also assumed that the previously recommended improvements (grade separated interchange at the Bangerter Highway / 12600 South intersection and additional east/west lanes on 13400 South at Mountain View Corridor) had been implemented prior to 2022.

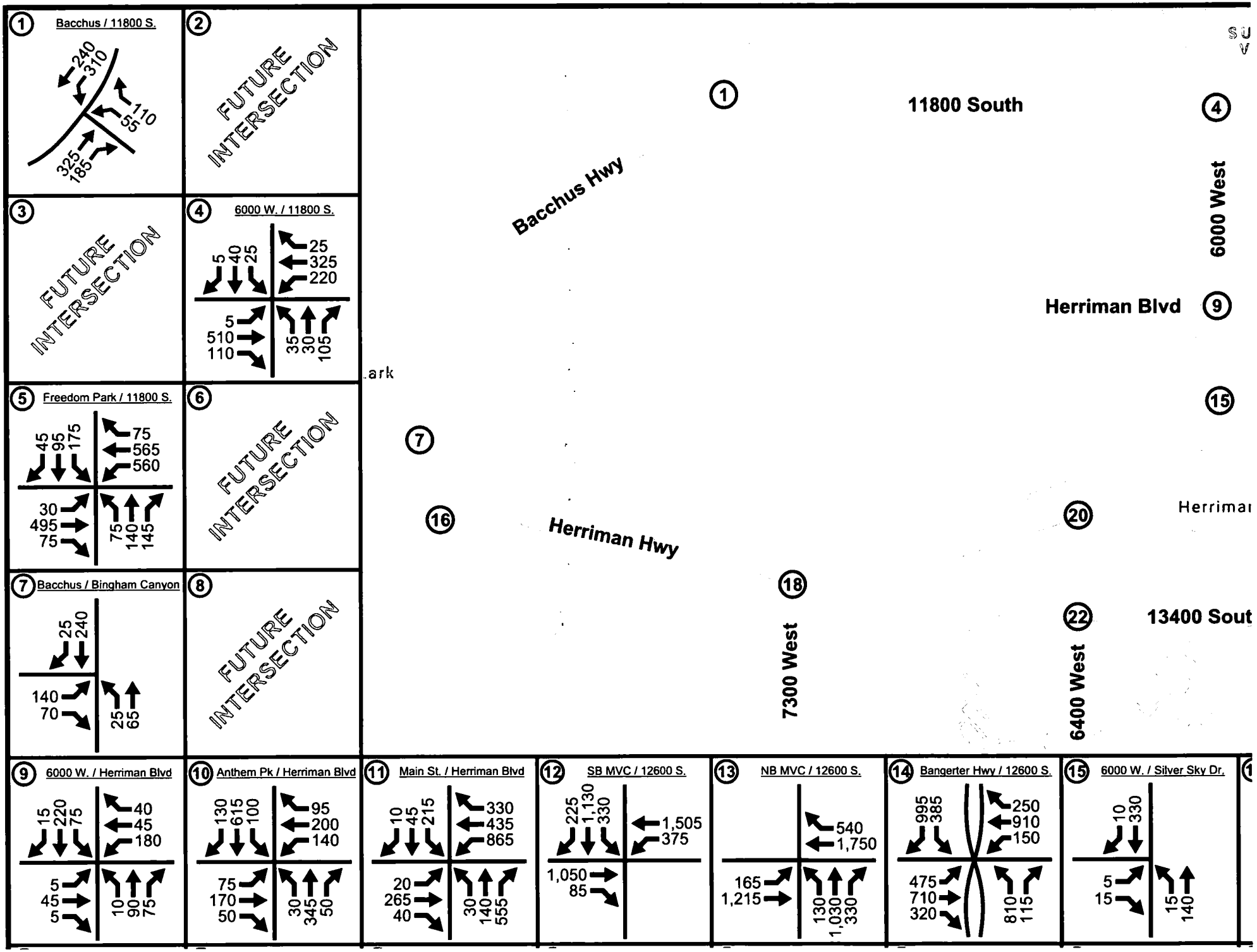
According to the WFRC Regional Transportation Plan, there are several improvement projects in the study area that are planned as Phase 1 (2019-2030) projects. However, none of these improvements were assumed to be completed prior to 2022.

C. Traffic Volumes

Hales Engineering obtained future (2022) forecasted volumes from a modified version of the WFRC / Mountainland Association of Governments (MAG) travel demand model (TDM). This version of the WFRC/MAG TDM was tailored specifically for this project by Horrocks Engineers (and reviewed by Salt Lake County) to forecast future average weekday daily traffic (AWDT) volumes within the study area. Peak period turning movement counts were estimated using National Cooperative Highway Research Program (NCHRP) 255 methodologies which utilize existing peak period turn volumes and future AWDT volumes to project the future turn volumes at the major intersections. Future (2022) morning and evening peak hour turning movement volumes are shown in Figure 5 and Figure 6.



BK 10983 PG 4774



BK 10083 PG 4775

D. Level of Service Analysis

Hales Engineering determined that the Main Street / Herriman Boulevard / 12600 South and southbound Mountain View Corridor / 12600 South intersections are anticipated to operate at LOS E during the morning peak hour in future (2022) background conditions, as shown in Table 4. The southbound Mountain View Corridor / 12600 South intersection is also anticipated to operate at LOS E during the evening peak hour, along with the northbound Mountain View Corridor / 13400 South intersection, as shown in Table 5. These results serve as a baseline condition for the impact analysis of the proposed development for future (2022) conditions.

E. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Freedom Park Drive / 11800 South
  - Westbound Approach – >500 feet (p.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – 395 feet (a.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Northbound Approach – 815 feet (a.m. peak)
  - Southbound Approach – 445 feet (a.m. peak)
  - Westbound Approach – 555 feet (p.m. peak)
- Mountain View Corridor / 12600 South
  - Northbound Approach – 500 feet (a.m. peak)
  - Southbound Approach – 480 feet (p.m. peak)
  - Eastbound Approach – 665 feet (a.m. peak), 710 feet (p.m. peak)
  - Westbound Approach – 695 feet (p.m. peak)
- Bangerter Highway / 12600 South
  - Northbound Offramp – >1,000 feet (p.m. peak)
- 6400 West / 13400 South
  - Southbound Approach – >1,000 feet (p.m. peak)
- 5600 West / 13400 South
  - Northbound Approach – 440 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Eastbound Approach – 390 feet (p.m. peak)
  - Westbound Approach – 575 feet (p.m. peak)
- 5000 West / 13400 South
  - Eastbound Approach – 400 feet (a.m. peak)
- Mountain View Corridor / 13400 South
  - Northbound Approach – >1,000 feet (a.m. peak), 580 feet (p.m. peak)

- Southbound Approach – 965 feet (p.m. peak)
- Eastbound Approach – 465 feet (a.m. peak)
- Westbound Approach – 810 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.

Table 4: Future (2022) Background Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	WB Stop	WB	5.7	A	-	-	-
6000 West / 11800 South	Signal	-	-	-	14.2	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	16.0	B	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	2.8	A	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	9.3	A	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	18.4	B	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	57.5	E	C (26.1)
SB MVC / 12600 South	Signal	-	-	-	60.7	E	D (48.0)
NB MVC / 12600 South	Signal	-	-	-	31.4	C	-
Bangerter Highway / 12600 South	Signal	-	-	-	28.1	C	-
Silver Sky Drive / 6000 West	EB Stop	EB	4.1	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.4	A	-	-	-
7300 West / Herriman Highway	NB Stop	NB	6.4	A	-	-	-
6400 West / Main Street	NB/SB Stop	NB	20.4	C	-	-	-
5600 West / Main Street	Signal	-	-	-	15.4	B	-
6400 West / 13400 South	Signal	-	-	-	13.4	B	-
5600 West / 13400 South	Signal	-	-	-	26.8	C	-
5000 West / 13400 South	Signal	-	-	-	24.8	C	-
SB MVC / 13400 South	Signal	-	-	-	37.1	D	-
NB MVC / 13400 South	Signal	-	-	-	41.1	D	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, October 2019

Table 5: Future (2022) Background Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[4,5]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	WB Stop	WB	19.6	C	-	-	-
6000 West / 11800 South	Signal	-	-	-	14.4	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	27.4	C	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	5.8	A	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	9.2	A	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	14.1	B	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	35.3	D	-
SB MVC / 12600 South	Signal	-	-	-	65.8	E	C (33.9)
NB MVC / 12600 South	Signal	-	-	-	34.4	C	-
Bangerter Highway / 12600 South	Signal	-	-	-	72.9	E	D (49.0)
Silver Sky Drive / 6000 West	EB Stop	EB	4.4	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.8	A	-	-	-
7300 West / Herriman Highway	NB Stop	NB	7.1	A	-	-	-
6400 West / Main Street	NB/SB Stop	NB	17.6	C	-	-	-
5600 West / Main Street	Signal	-	-	-	19.0	B	-
6400 West / 13400 South	Signal	-	-	-	46.4	D	-
5600 West / 13400 South	Signal	-	-	-	53.0	D	-
5000 West / 13400 South	Signal	-	-	-	19.1	B	-
SB MVC / 13400 South	Signal	-	-	-	39.4	D	-
NB MVC / 13400 South	Signal	-	-	-	58.3	E	D (52.0)

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, October 2019

F. Mitigation Measures

The poor level of service during the morning peak hour at the Main Street / Herriman Boulevard / 12600 South intersection can be attributed to high number of right-turning vehicles on the

northbound approach, as well as left-turning vehicles on the southbound approach. It is recommended that a channelized right-turn lane be considered for the northbound right-turn movement.

The poor levels of service during the morning and evening peak hours at the southbound Mountain View Corridor / 12600 South intersection can be attributed to the need for additional eastbound capacity at the intersection. According to the WFRC RTP, an additional lane in each direction is planned to be added to 12600 South between Mountain View Corridor and Bangerter Highway as a Phase 1 project. It is recommended that this seven-lane cross section be extended west to Main Street to provide the needed east/west capacity on 12600 South through Mountain View Corridor.

The poor level of service during the evening peak hour at the Bangerter Highway / 12600 South intersection can be attributed to the need for additional eastbound capacity on the northbound offramp, particularly for the northbound left-turn movement. It is recommended that additional capacity be added for the northbound left-turn movement, as well as for the westbound through movement. It is recommended that an additional westbound lane through the interchange be added along with the planned improvements to 12600 South.

The poor level of service during the evening peak hour at the northbound Mountain View Corridor / 13400 South intersection can be attributed to the need for additional westbound capacity at the intersection. It is recommended that an additional westbound through lane be added to 13400 South between Mountain View Corridor and 5000 West. This would match the existing cross section that currently exists on 13400 South east of Mountain View Corridor.

Hales Engineering analyzed a mitigated scenario assuming that these recommended improvements had been implemented. It is anticipated that with these recommended improvements the Main Street / Herriman Boulevard / 12600 South, Mountain View Corridor / 12600 South, Bangerter Highway / 12600 South, and Mountain View Corridor / 13400 South intersections will operate at acceptable levels of service during the morning and evening peak hours.

No additional mitigation measures are recommended.

IV. FUTURE (2027) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2027) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified, and potential mitigation measures recommended.

B. Roadway Network

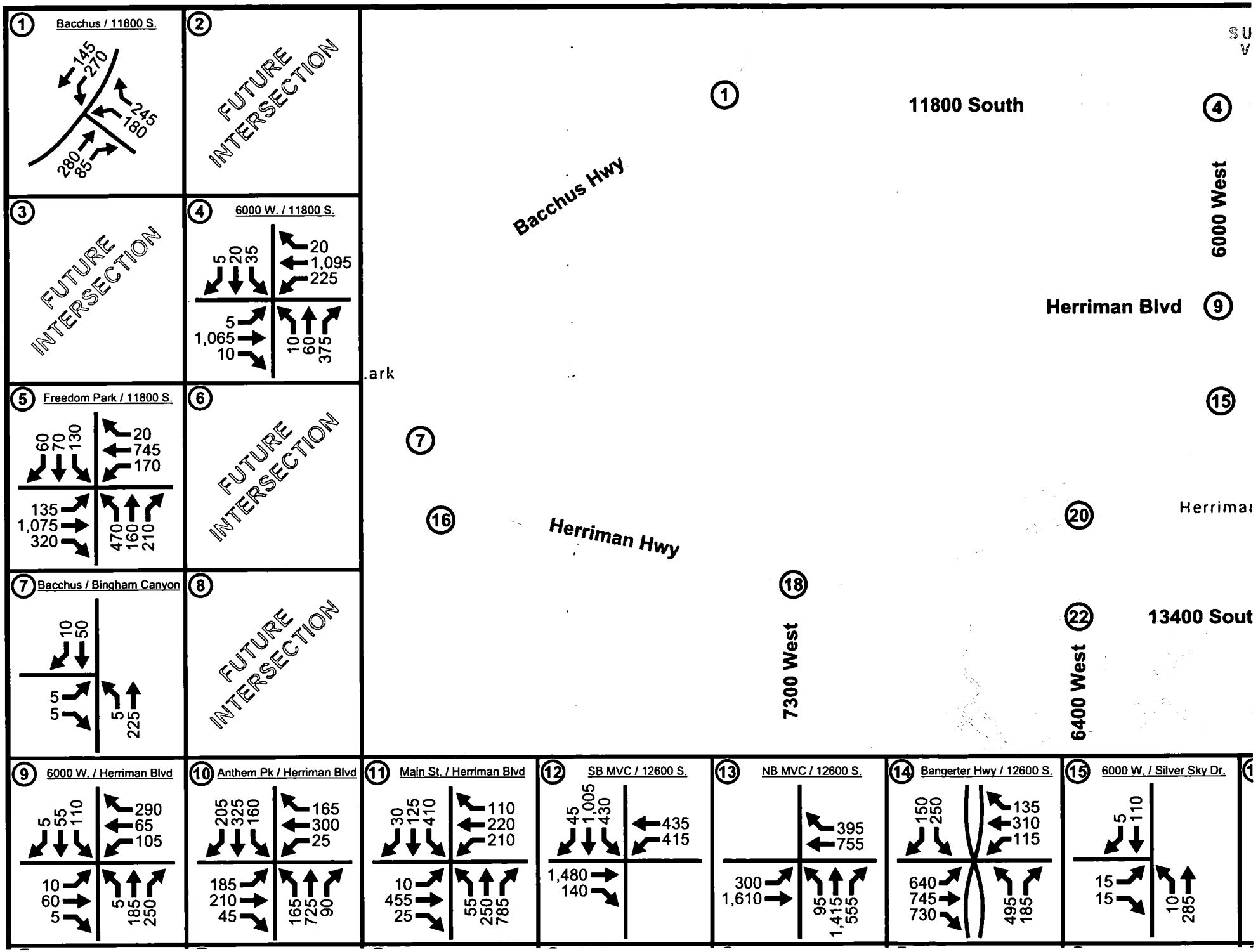
It was assumed that all previously recommended mitigation measures had been implemented prior to 2027. These mitigation measures include:

- Additional east/west travel lanes on 12600 South
- Additional east west travel lanes on 13400 South
- A channelized right-turn lane on the northbound approach to the Main Street / Herriman Boulevard / 12600 South intersection.
- Capacity improvements for the northbound left-turn movement at the Bangerter Highway / 12600 South interchange.

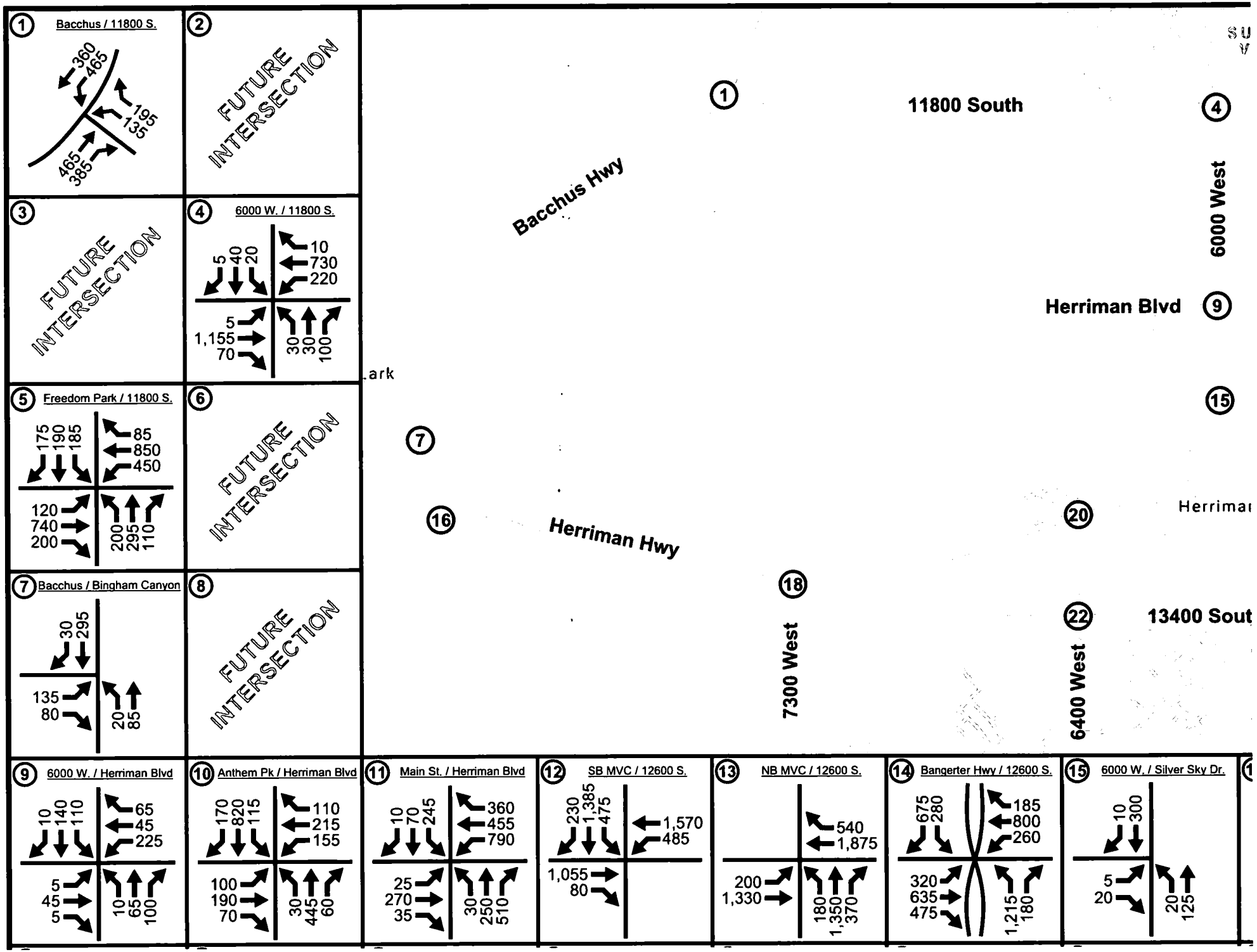
According to the WFRC Regional Transportation Plan, there are several additional improvement projects in the study area that are planned as Phase 1 (2019-2030) projects. However, none of these improvements were assumed to be completed prior to 2027.

C. Traffic Volumes

Hales Engineering obtained future (2027) forecasted volumes from a modified version of the WFRC / MAG travel demand model (TDM). This version of the WFRC/MAG TDM was tailored specifically for this project by Horrocks Engineers (and reviewed by Salt Lake County) to forecast future average weekday daily traffic (AWDT) volumes within the study area. Peak period turning movement counts were estimated using National Cooperative Highway Research Program (NCHRP) 255 methodologies which utilize existing peak period turn volumes and future AWDT volumes to project the future turn volumes at the major intersections. Future (2027) morning and evening peak hour turning movement volumes are shown in Figure 7 and Figure 8.



BK 10983 PG 4782



BK 10983 PG 4783

D. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at LOS E or LOS F in future (2027) background conditions as shown in Table 6 and Table 7:

- Bacchus Highway / 11800 South (Morning and Evening Peak)
- 6000 West / 11800 South (Morning and Evening Peak)
- Main Street / Herriman Boulevard / 12600 South (Morning Peak)
- SB Mountain View Corridor / 12600 South (Morning and Evening Peak)
- SB Mountain View Corridor / 13400 South (Morning Peak)
- 6400 West / Main Street (Evening Peak)
- 6400 West / 13400 South (Evening Peak)
- 5600 West / 13400 South (Evening Peak)
- NB Mountain View Corridor / 13400 South (Morning and Evening Peak)

These results serve as a baseline condition for the impact analysis of the proposed development for future (2027) conditions.

E. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Bacchus Highway / 11800 South
  - Southbound Approach – 425 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (a.m. and p.m. peak)
- 6000 West / 11800 South
  - Westbound Approach – >1,000 feet (a.m. and p.m. peak)
- Freedom Park Drive / 11800 South
  - Northbound Approach – 640 feet (a.m. peak)
  - Southbound Approach – 640 feet (p.m. peak)
  - Eastbound Approach – 435 feet (a.m. peak)
  - Westbound Approach – 670 feet (p.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – 815 feet (a.m. peak)
  - Southbound Approach – 540 feet (p.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Northbound Approach – 665 feet (a.m. peak)
  - Southbound Approach – >1,000 feet (a.m. peak)
  - Westbound Approach – 655 feet (p.m. peak)
- Mountain View Corridor / 12600 South

  - Northbound Approach – 485 feet (a.m. peak), 500 feet (p.m. peak)
  - Southbound Approach – 975 feet (p.m. peak)
  - Eastbound Approach – 680 feet (a.m. peak), 400 feet (p.m. peak)
  - Westbound Approach – 610 feet (a.m. peak), 960 feet (p.m. peak)
- Bangerter Highway / 12600 South
  - Northbound Offramp – 690 feet (p.m. peak)
  - Southbound Offramp – 405 feet (p.m. peak)
- 6400 West / Main Street
  - Northbound Approach – 865 feet (p.m. peak)
  - Eastbound Approach – 995 feet (p.m. peak)
  - Westbound Approach – 945 feet (p.m. peak)
- 5600 West / Main Street
  - Southbound Approach – 635 feet (p.m. peak)
- 6400 West / 13400 South
  - Southbound Approach – >1,000 feet (p.m. peak)
- 5600 West / 13400 South
  - Northbound Approach – 370 feet (a.m. peak), 360 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Eastbound Approach – 470 feet (a.m. peak), 520 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 5000 West / 13400 South
  - Southbound Approach – 630 feet (a.m. peak)
  - Eastbound Approach – 870 feet (a.m. peak)
- Mountain View Corridor / 13400 South
  - Northbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Southbound Approach – 805 feet (p.m. peak)
  - Eastbound Approach – 875 feet (a.m. peak)
  - Westbound Approach – 610 feet (a.m. peak), 760 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.

Table 6: Future (2027) Background Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	WB Stop	WB	>75.0	F	-	-	D (40.6)
6000 West / 11800 South	Signal	-	-	-	66.6	E	C (26.8)
Freedom Park Drive / 11800 South	Signal	-	-	-	35.5	D	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	3.2	A	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	8.3	A	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	30.3	C	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	64.5	E	C (27.9)
SB MVC / 12600 South	Signal	-	-	-	70.4	E	D (54.2)
NB MVC / 12600 South	Signal	-	-	-	36.4	D	-
Bangerter Highway / 12600 South	Signal	-	-	-	28.0	C	-
Silver Sky Drive / 6000 West	EB Stop	EB	4.3	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	3.7	A	-	-	-
7300 West / Herriman Highway	NB Stop	NB	7.0	A	-	-	-
6400 West / Main Street	NB/SB Stop	NB	29.1	D	-	-	-
5600 West / Main Street	Signal	-	-	-	16.8	B	-
6400 West / 13400 South	Signal	-	-	-	16.2	B	-
5600 West / 13400 South	Signal	-	-	-	25.7	C	-
5000 West / 13400 South	Signal	-	-	-	44.7	D	-
SB MVC / 13400 South	Signal	-	-	-	63.1	E	C (22.1)
NB MVC / 13400 South	Signal	-	-	-	62.6	E	B (18.3)

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, October 2019

Table 7: Future (2027) Background Evening Peak Hour Level of Service

Intersection			Worst Approach		Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	WB Stop	WB	>75.0	F	-	-	D (45.7)
6000 West / 11800 South	Signal	-	-	-	73.1	E	C (21.3)
Freedom Park Drive / 11800 South	Signal	-	-	-	46.7	D	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	5.5	A	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	9.3	A	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	19.6	B	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	36.3	D	-
SB MVC / 12600 South	Signal	-	-	-	56.0	E	D (43.4)
NB MVC / 12600 South	Signal	-	-	-	46.0	D	-
Bangerter Highway / 12600 South	Signal	-	-	-	42.9	D	-
Silver Sky Drive / 6000 West	EB Stop	EB	3.8	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.3	A	-	-	-
7300 West / Herriman Highway	NB Stop	NB	8.3	A	-	-	-
6400 West / Main Street	NB/SB Stop	NB	>120.0	F	-	-	B (17.8)
5600 West / Main Street	Signal	-	-	-	22.1	C	-
6400 West / 13400 South	Signal	-	-	-	98.8	F	B (17.1)
5600 West / 13400 South	Signal	-	-	-	89.9	F	D (54.9)
5000 West / 13400 South	Signal	-	-	-	20.4	C	-
SB MVC / 13400 South	Signal	-	-	-	37.4	D	-
NB MVC / 13400 South	Signal	-	-	-	70.7	E	D (38.0)

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, October 2019

F. Mitigation Measures

It is anticipated that by 2027 traffic volumes at the Bacchus Highway / 11800 South intersection will warrant the installation of a traffic signal (based on Utah MUTCD 2009 Chapter 4C Warrant

3). It is also anticipated that dual left-turn lanes will be warranted on the southbound approach based on the projected evening peak hour volumes. It is recommended that this intersection be monitored and that the improvements be implemented when warrants are met.

The poor level of service at the 6000 West / 11800 South intersection can be attributed to large delays experienced by westbound left-turning vehicles. It is recommended that the signal cycle length at this intersection be increased to 120 seconds, that permitted/protected left-turn phasing be added for the westbound approach, and that the westbound left-turn storage lane length be increased.

It is anticipated that dual left-turn lanes will be warranted on the southbound approach to the Main Street / Herriman Boulevard / 12600 South intersection based on projected morning peak hour volumes. It is recommended that this improvement be completed prior to 2027 and that the signal cycle length at this intersection be increased to 120 seconds during the morning peak hour (the evening peak hour cycle length is already set to 120 seconds).

It is anticipated that additional capacity will be needed at the Mountain View Corridor / 12600 South intersection. It is recommended that dual left-turn lanes be installed for the south- and westbound movements, and that the signal cycle length at this intersection be increased to 120 seconds during the morning peak hour (the evening peak hour cycle length is already set to 120 seconds).

It is anticipated that additional capacity will be needed at the 6400 West / Main Street intersection to accommodate the projected 2027 traffic volumes, particularly during the evening peak hour. It is recommended that a separate right-turn lane be added to the northbound approach and that separate left-turn lanes be added to the east- and westbound approaches. This would allow left-turning vehicles to queue and wait for gaps without blocking other movements.

The south- and eastbound approaches to the 6400 West / 13400 South intersection currently consist of a single lane. It is recommended that these approaches be expanded to match the north- and westbound approaches which consist of a through lane with separate left- and right-turn lanes.

It is anticipated that dual left-turn lanes will be warranted on the south- and westbound approaches to the 5600 West / 13400 South intersection based on projected 2027 evening peak hour traffic projections.

It is recommended that the signal cycle length at the 5000 West / 13400 south intersection be increased to 120 seconds during the morning peak hour (the evening peak hour cycle length is already set to 120 seconds), and that the signal be coordinated with other signals on the 13400 South corridor

It is anticipated that additional capacity will be needed at the Mountain View Corridor (SR-85) / 13400 South intersection to accommodate the projected 2027 traffic volumes. According to the WFRC RTP, Mountain View Corridor south of 13400 South is planned to be widened to three lanes in each direction prior to 2030.

Hales Engineering analyzed a mitigated scenario assuming that these recommended improvements had been implemented. It is anticipated that with these recommended improvements the Bacchus Highway / 11800 South intersection will improve to LOS D during the morning and evening peak hours and the 6000 West / 11800 South intersection will improve to LOS C during the morning and evening peak hours. It is anticipated that the Main Street / Herriman Boulevard / 12600 South intersection will improve to LOS C during the morning peak hour. It is also anticipated that with the recommended improvements the southbound Mountain View Corridor / 12600 South intersection will improve to LOS D during the morning and evening peak hours.

With the previously recommended mitigation measures the poor levels of service at the 6400 West / Main Street and 5600 West / 13400 South intersections are anticipated to persist during the evening peak hour, and the poor levels of service at the Mountain View Corridor / 13400 South intersections are anticipated to persist in the morning and evening peak hours.

The projected evening peak hour traffic volumes at the 6400 West / Main Street intersection will warrant the installation of a traffic signal (based on Utah MUTCD 2009 Chapter 4C Warrant 3). Therefore, a traffic signal is recommended at this intersection.

Despite the addition of dual left-turn lanes to the 5600 West / 13400 South intersection, it is anticipated that additional capacity will still be needed at the intersection during the evening peak hour. It is recommended that an additional southbound through lane be added to the intersection to increase capacity.

As previously discussed, the Mountain View Corridor is planned to have a freeway facility constructed in the median area to create a freeway/frontage road system with segments planned to be constructed in either Phase 2 (2031-2040) or Phase 3 (2041-2050). It is also recommended that the northbound right-turn movement be a channelized free right-turn movement.

An additional mitigated scenario was analyzed assuming that freeway lanes had been constructed on Mountain View Corridor creating a grade separated intersection at 13400 South. It was assumed that 75% of north- and southbound through traffic would be carried by the freeway lanes with 25% remaining on the frontage roads. (This assumption is based on the projected ratio of ADTs on the freeway and frontage roads segments in the 2042 travel demand model runs that were developed for this study.) This scenario also assumed that an additional southbound through lane had been added to the 5600 West / 13400 South intersection, and a channelized free right-

turn lane had been added to northbound Mountain View Corridor at 13400 South. With these additional mitigation measures, all study intersections are anticipated to operate at acceptable levels of service.

No additional mitigation measures are recommended.

V. PROJECT CONDITIONS

A. Purpose

The project conditions discussion explains the type and intensity of development. This provides the basis for trip generation, distribution, and assignment of project trips to the surrounding study intersections defined in Chapter I.

B. Project Description

The proposed Olympia Hills development located generally between 6400 West and Bacchus Highway on the east and west, and 12600 South and Herriman Highway on the north and south. The development will consist of several land uses in a mixed-use setting. Metrostudy completed an analysis of the project area to determine appropriate land use types, absorption rates, and build timelines for Olympia Hills.

Based on the Metrostudy analysis, IBI Group developed a land use plan with unit counts and building sizes by area. The project will consist of four town / village centers with higher density and other areas with lower density. The project is being proposed to be built in four five-year phases with the first phase being completed in 2027. A concept and phasing plan for the proposed development is provided in Appendix B.

The proposed land use for Phase I (2027) has been identified as follows:

- Single-family detached housing 219 Units
- Multi-family housing 1,223 Units
- Commercial/Retail 150,000 sq. ft.
- Office Buildings 638,500 sq. ft.

Note: Phase 1 includes half of Village Center C and half of the Town Center.

The additional proposed land use for Phase II (2032) has been identified as follows:

- Single-family detached housing 516 Units
- Multi-family housing 1,379 Units
- Commercial/Retail 172,000 sq. ft.
- Office Buildings 698,200 sq. ft.

Note: Phase 2 includes half of Village Center C, half of the Town Center, and half of Village Center A.

The additional proposed land use for Phase III (2037) has been identified as follows:

- Single-family detached housing 125 Units
- Multi-family housing 1,669 Units
- Commercial/Retail 59,000 sq. ft.
- Office Buildings 57,300 sq. ft.

Note: Phase 3 includes half of Village Center A and all of Village Center B.

The additional proposed land use for Phase IV (2042) has been identified as follows:

- Single-family detached housing 90 Units
- Multi-family housing 1,109 Units

In summary, the proposed land use for all of Olympia Hills has been identified as follows:

- Single-family detached housing 950 Units
- Multi-family housing 5,380 Units
- Commercial/Retail 381,000 sq. ft.
- Office Buildings 1,394,000 sq. ft.

C. Trip Generation

Trip generation for the development was calculated using trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation*, 10th Edition, 2017. Based on discussions with Salt Lake County and the development team, Hales Engineering also took trip reductions due to internal capture and transit use. Detailed trip generation tables are provided in Appendix C.

Internal capture rates were calculated for the Town Center and the Village Centers using standard ITE methodologies discussed in the ITE *Trip Generation Handbook*, 3rd Edition, 2017 and NCHRP Report 684. Hales Engineering used the NCHRP 684 Internal Trip Capture Estimation Tool, which follows these methodologies. Detailed internal capture calculations are shown in Appendix C.

Trip reductions due to transit use were determined based on transit ridership in neighboring communities and the anticipated transit types that may be available in the Olympia Hills development. The following transit data were pulled from the 2017 American Community Survey (formerly known as Journey to Work):

- Riverton: 2.5%
- South Jordan: 3.2%
- West Jordan: 2.3%
- Herriman: 1.1%

It is anticipated that Olympia Hills will be more conducive to transit ridership than the surrounding communities due to the concentrated densities of the town and village centers. It is also anticipated that the types of transit that will be available will be similar to that of Riverton. Therefore, a 2.5% transit reduction, which is equal to the Riverton transit ridership, was assumed. It was assumed that Olympia Hills would have access to transit by Phase II (2032).

A summary of the trip generation after reductions for Olympia Hills is included in Table 8.

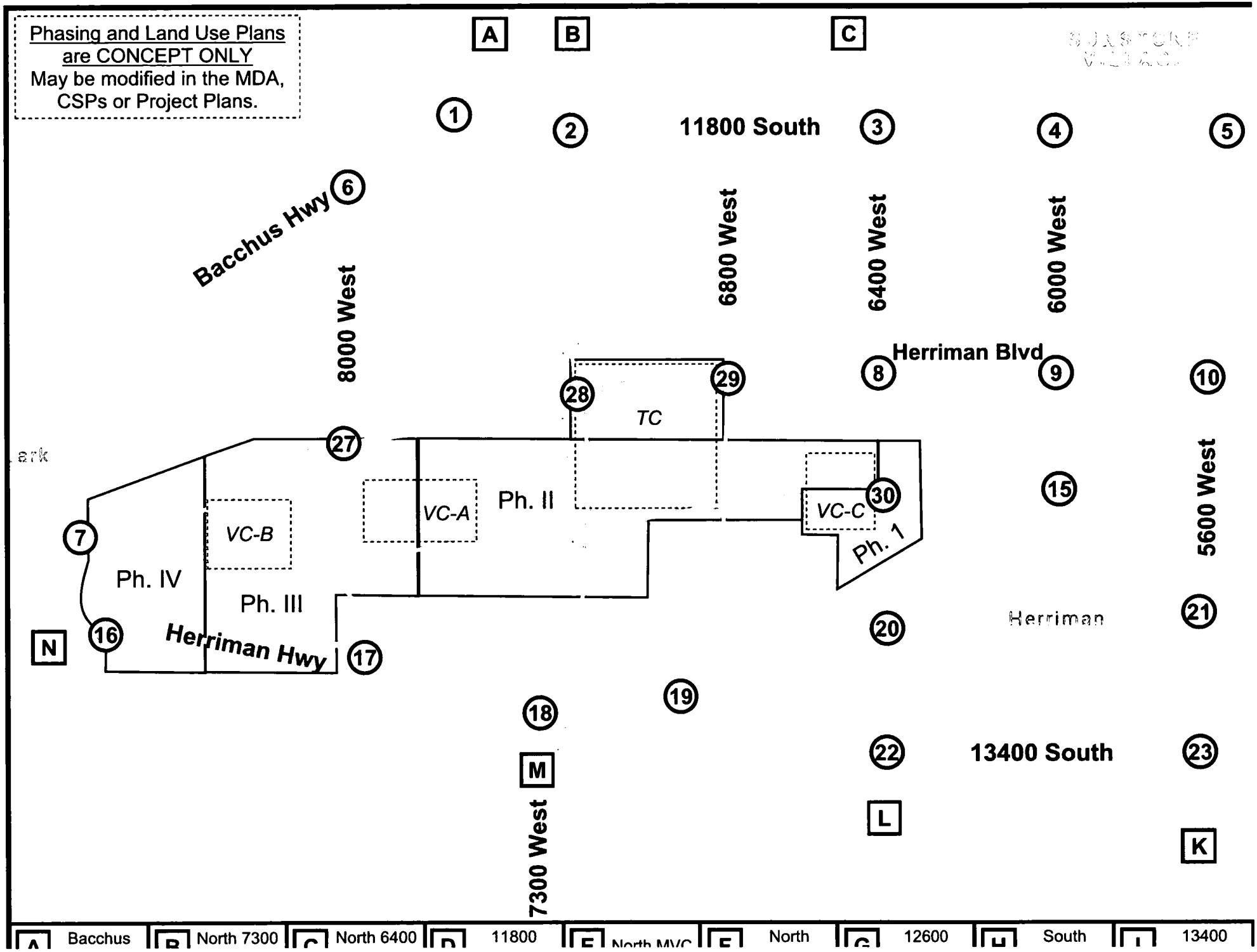
Table 8: Trip Generation Summary

Phase	Time	Reduced Trips		
		In	Out	Total
Phase I (2027)	Daily	11,772	11,772	23,544
	AM	755	663	1,418
	PM	844	1,060	1,904
Phase II (2032)	Daily	25,414	25,414	50,828
	AM	1,574	1,488	3,062
	PM	1,855	2,222	4,077
Phase III (2037)	Daily	33,563	33,563	67,126
	AM	1,830	2,114	3,944
	PM	2,502	2,692	5,194
Phase IV (2042)	Daily	38,091	38,091	76,182
	AM	1,953	2,519	4,472
	PM	2,869	2,906	5,775

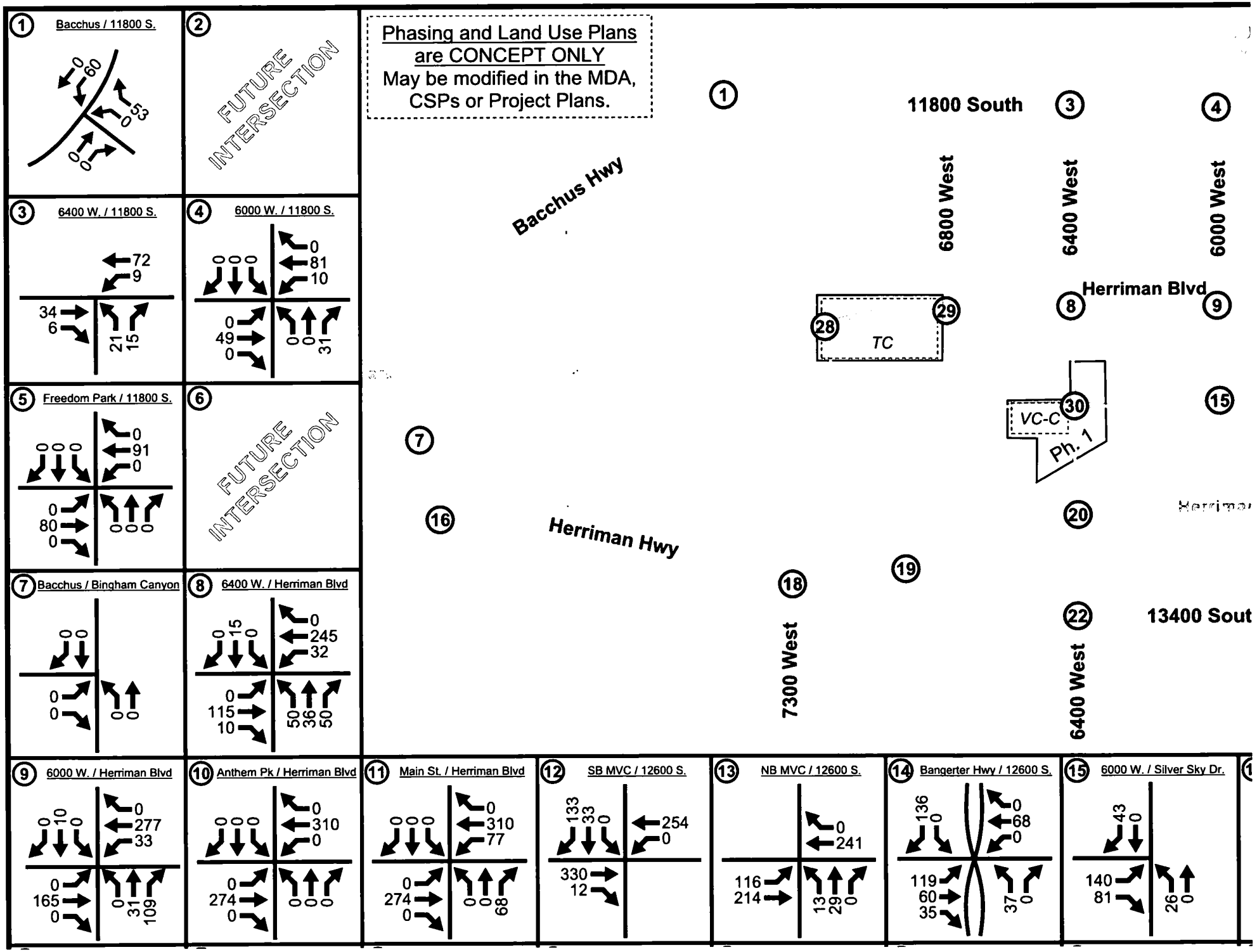
D. Trip Distribution and Assignment

Trip distribution for the Olympia Hills project was developed based on a select link analysis in the build travel demand models of the project. Horrocks Engineers ran the analysis, which provided the distribution of project trips in the study network. The distribution percentages of project trips entering and exiting 14 separate external nodes were calculated based on the select link analysis results. A summary of the assumed trip distribution based on the select link analysis is shown in Figure 9.

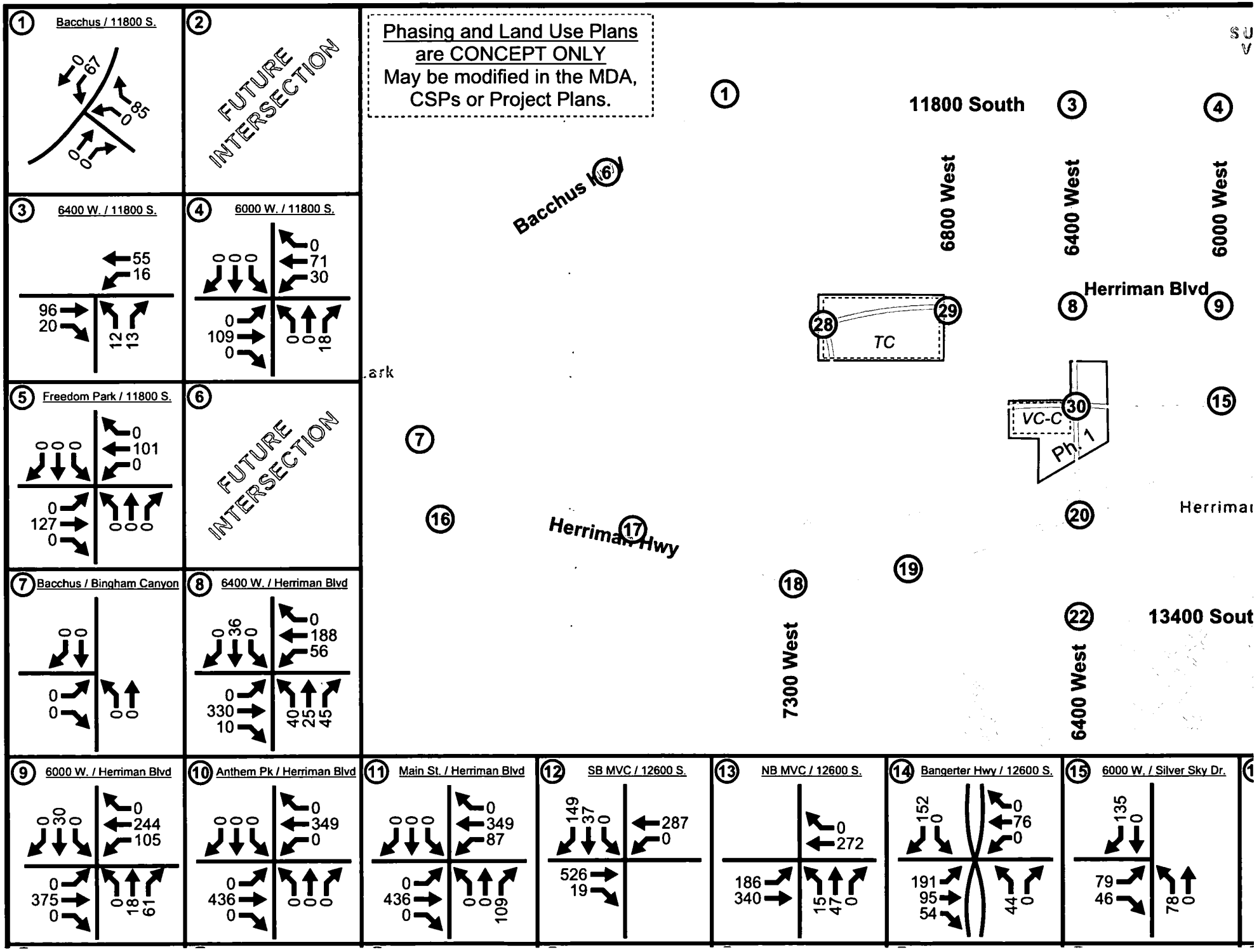
These trip distribution assumptions were used to assign the morning and evening peak hour trip generation at the study intersections to create trip assignment for the proposed development. The detailed select link results along each route were used as a guide to assign trips to the appropriate routes. Trip assignment volumes for the development for each phase and peak hour are shown in Figures 10 through 17.



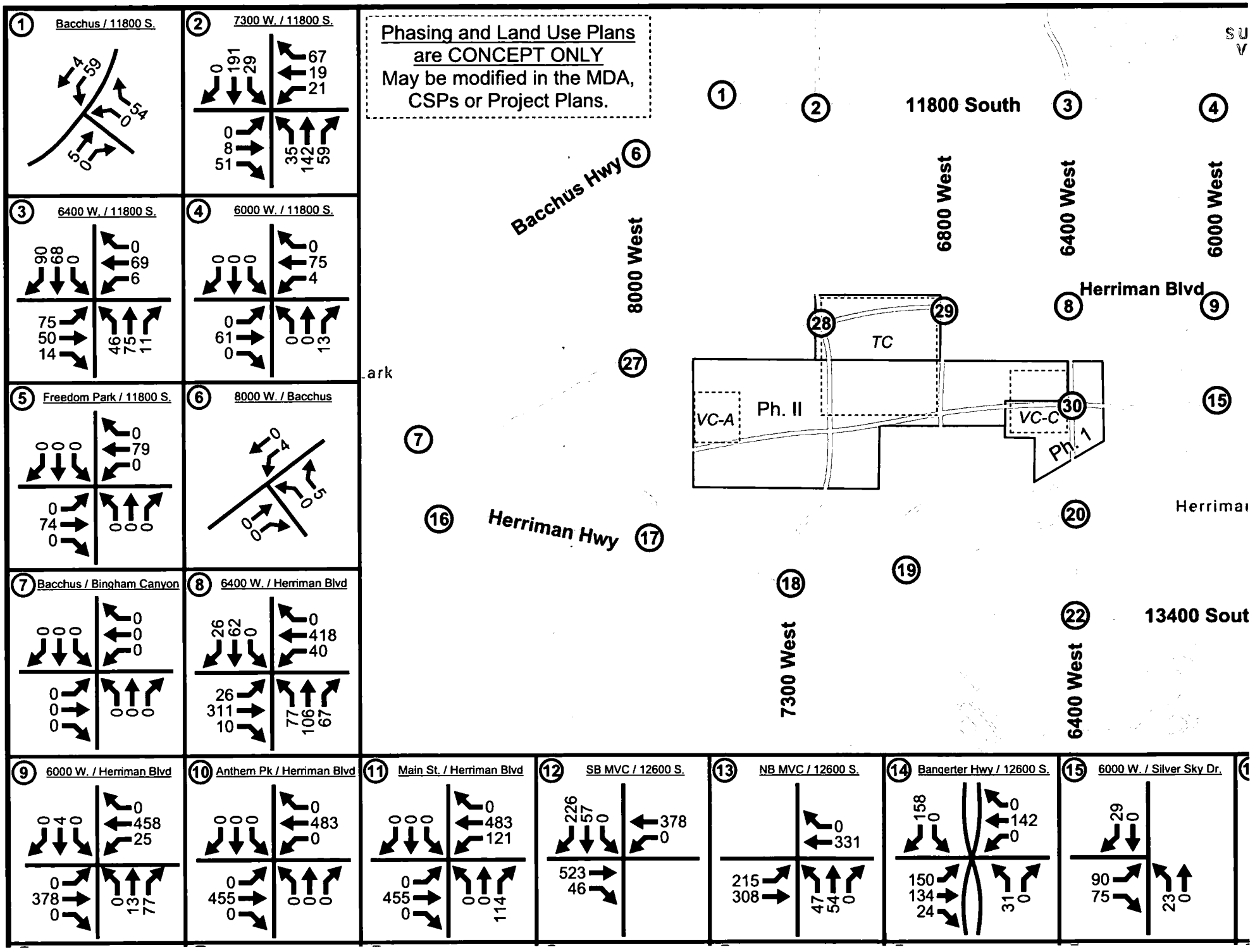
BK 10983 PG 4794



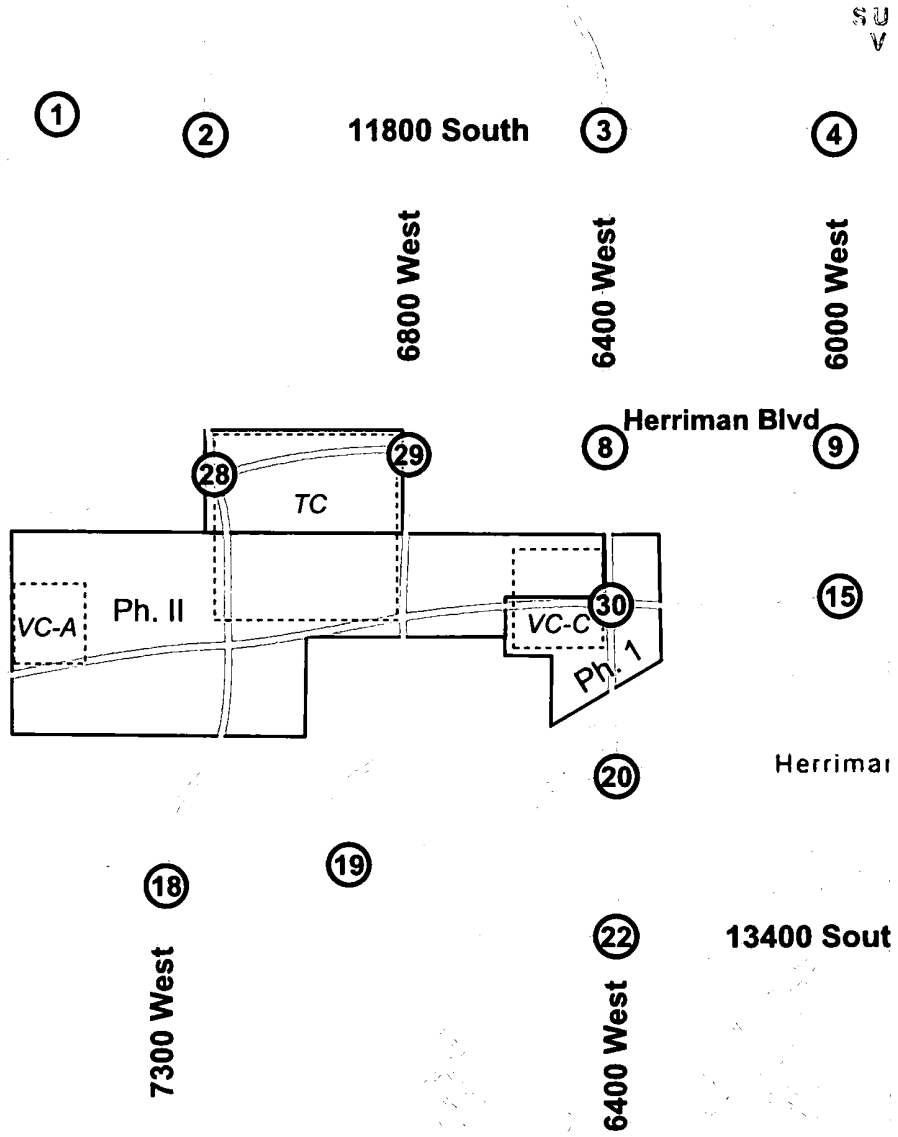
BK 10983 PG 4795



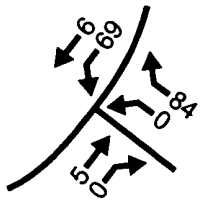
BK 10983 PG 4796


Phasing and Land Use Plans are CONCEPT ONLY
May be modified in the MDA, CSPs or Project Plans.
1 Bacchus / 11800 S.
2 7300 W. / 11800 S.
3 6400 W. / 11800 S.
4 6000 W. / 11800 S.
5 Freedom Park / 11800 S.
6 8000 W. / Bacchus
7 Bacchus / Bingham Canyon
8 6400 W. / Herriman Blvd
9 6000 W. / Herriman Blvd
10 Anthem Pk / Herriman Blvd
11 Main St. / Herriman Blvd
12 SB MVC / 12600 S.
13 NB MVC / 12600 S.
14 Bangerter Hwy / 12600 S.
15 6000 W. / Silver Sky Dr.
11800 South
Bacchus Hwy
8000 West
6800 West
6400 West
6000 West
Herriman Blvd
TC
VC-A
Ph. II
VC-C
Ph. 1
Herriman Hwy
7300 West
6400 West
13400 Sout
Herrimai

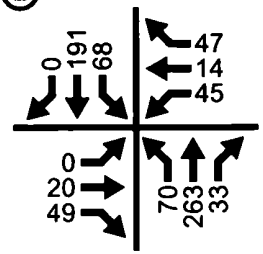
Phasing and Land Use Plans are CONCEPT ONLY
May be modified in the MDA, CSPs or Project Plans.



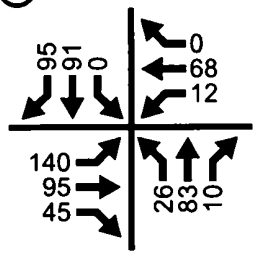
1 Bacchus / 11800 S.



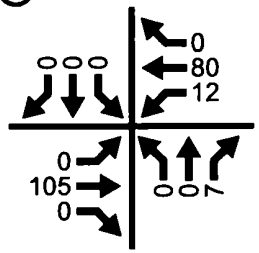
2 7300 W. / 11800 S.



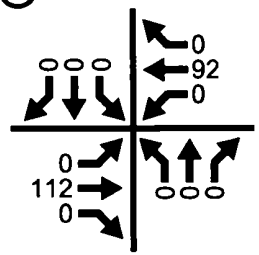
3 6400 W. / 11800 S.



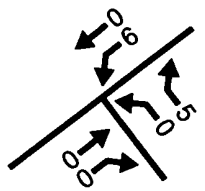
4 6000 W. / 11800 S.



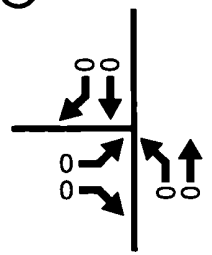
5 Freedom Park / 11800 S.



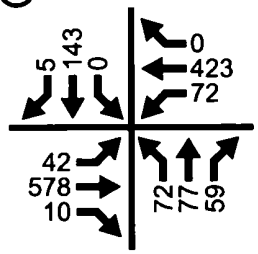
6 8000 W. / Bacchus



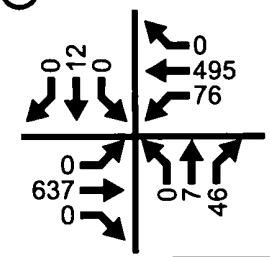
7 Bacchus / Bingham Canyon



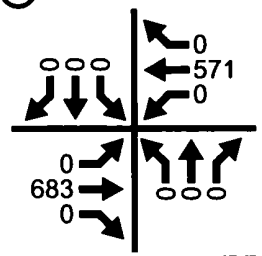
8 6400 W. / Herriman Blvd



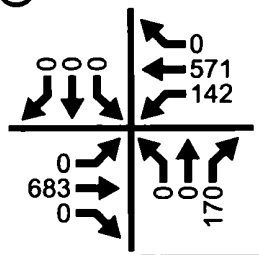
9 6000 W. / Herriman Blvd



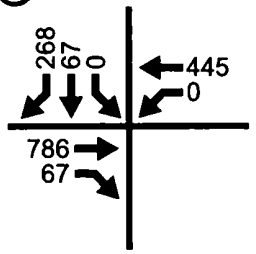
10 Anthem Pk / Herriman Blvd



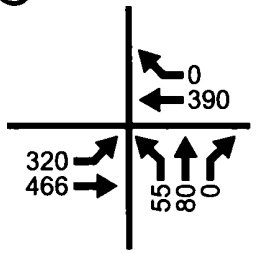
11 Main St. / Herriman Blvd



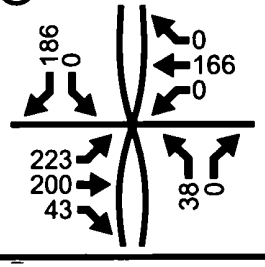
12 SB MVC / 12600 S.



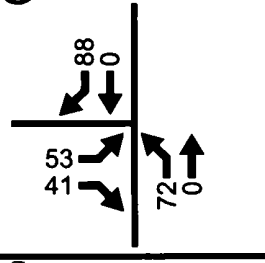
13 NB MVC / 12600 S.



14 Bangerter Hwy / 12600 S.

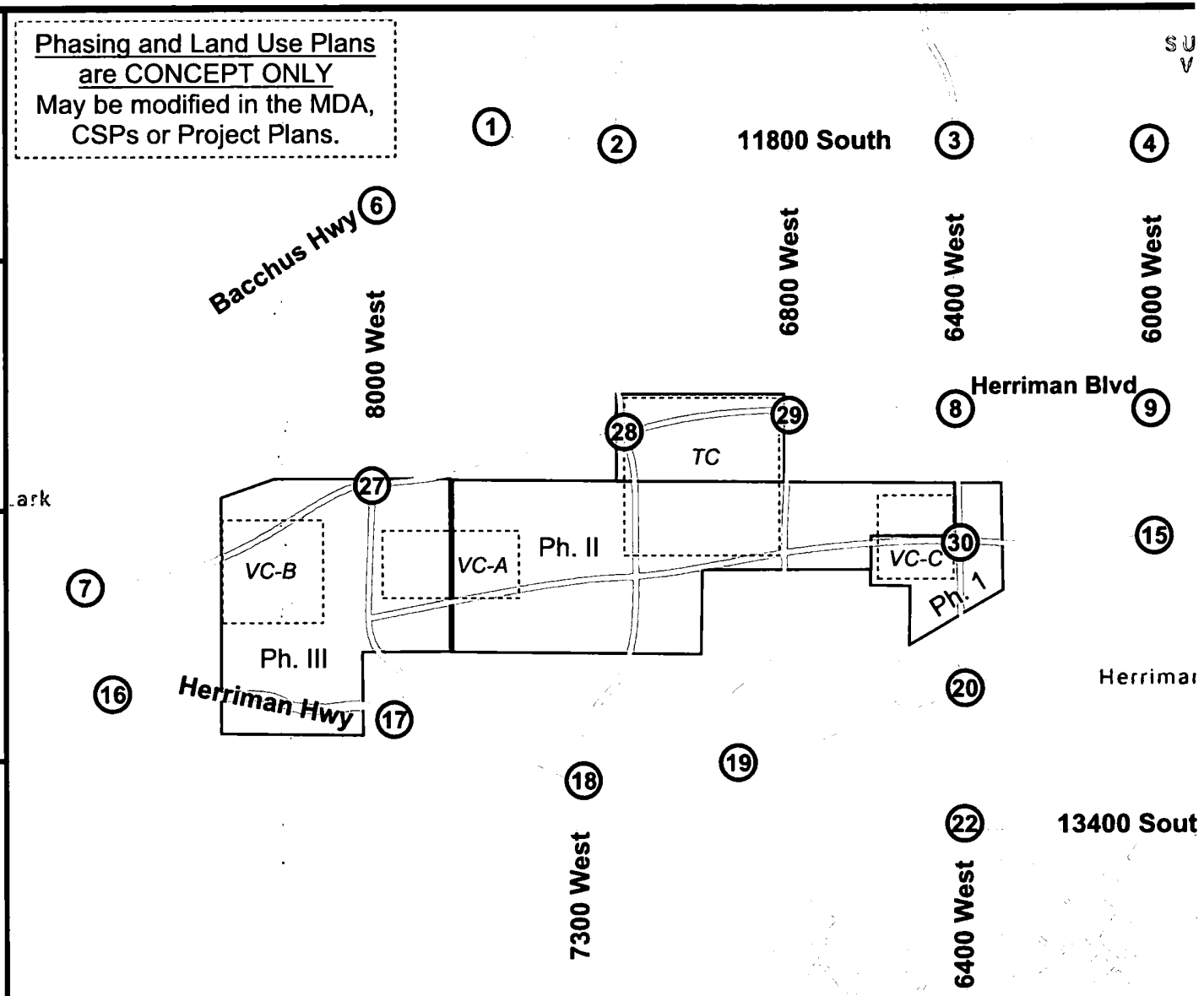


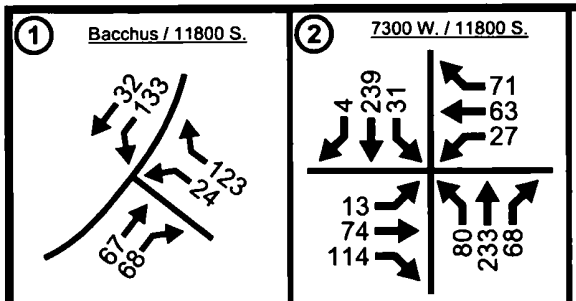
15 6000 W. / Silver Sky Dr.

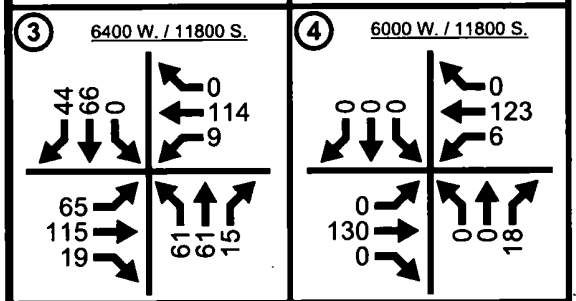


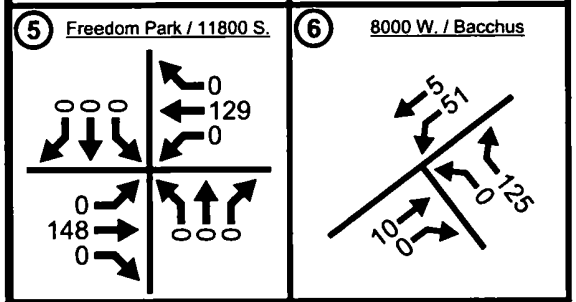
BK 10983 PG 4798

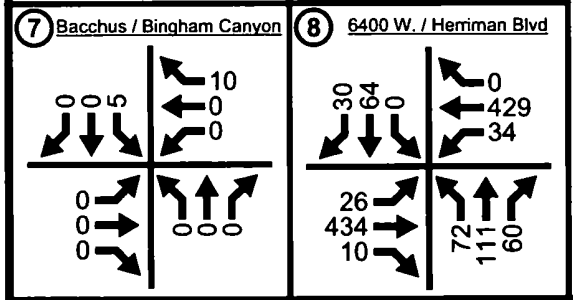
Phasing and Land Use Plans are CONCEPT ONLY
May be modified in the MDA, CSPs or Project Plans.

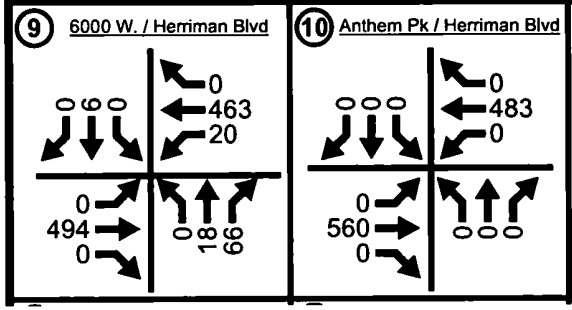


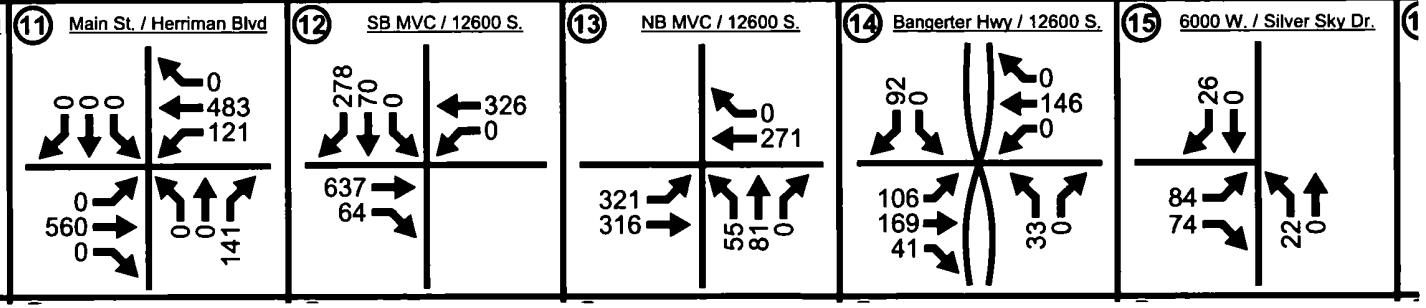




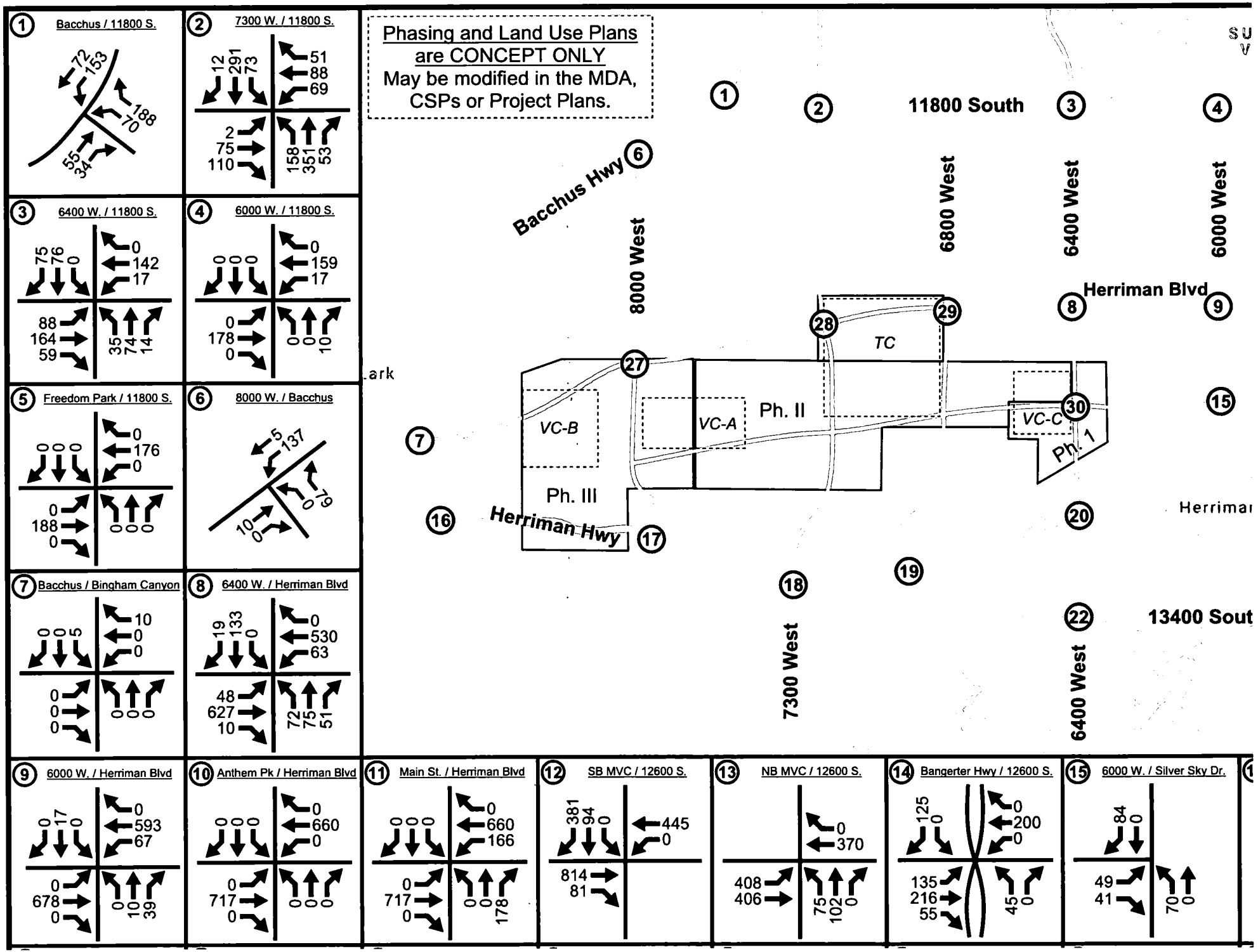


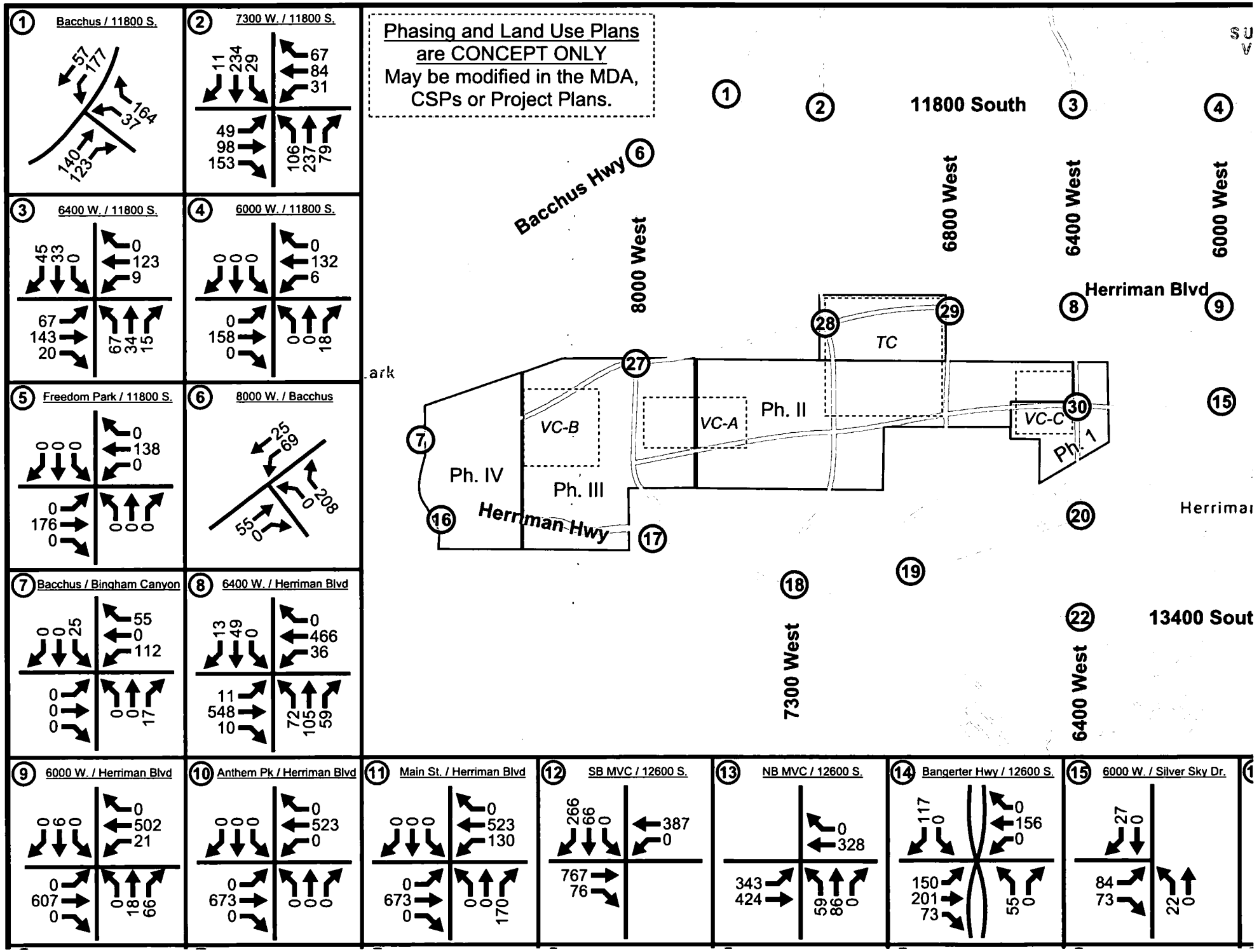




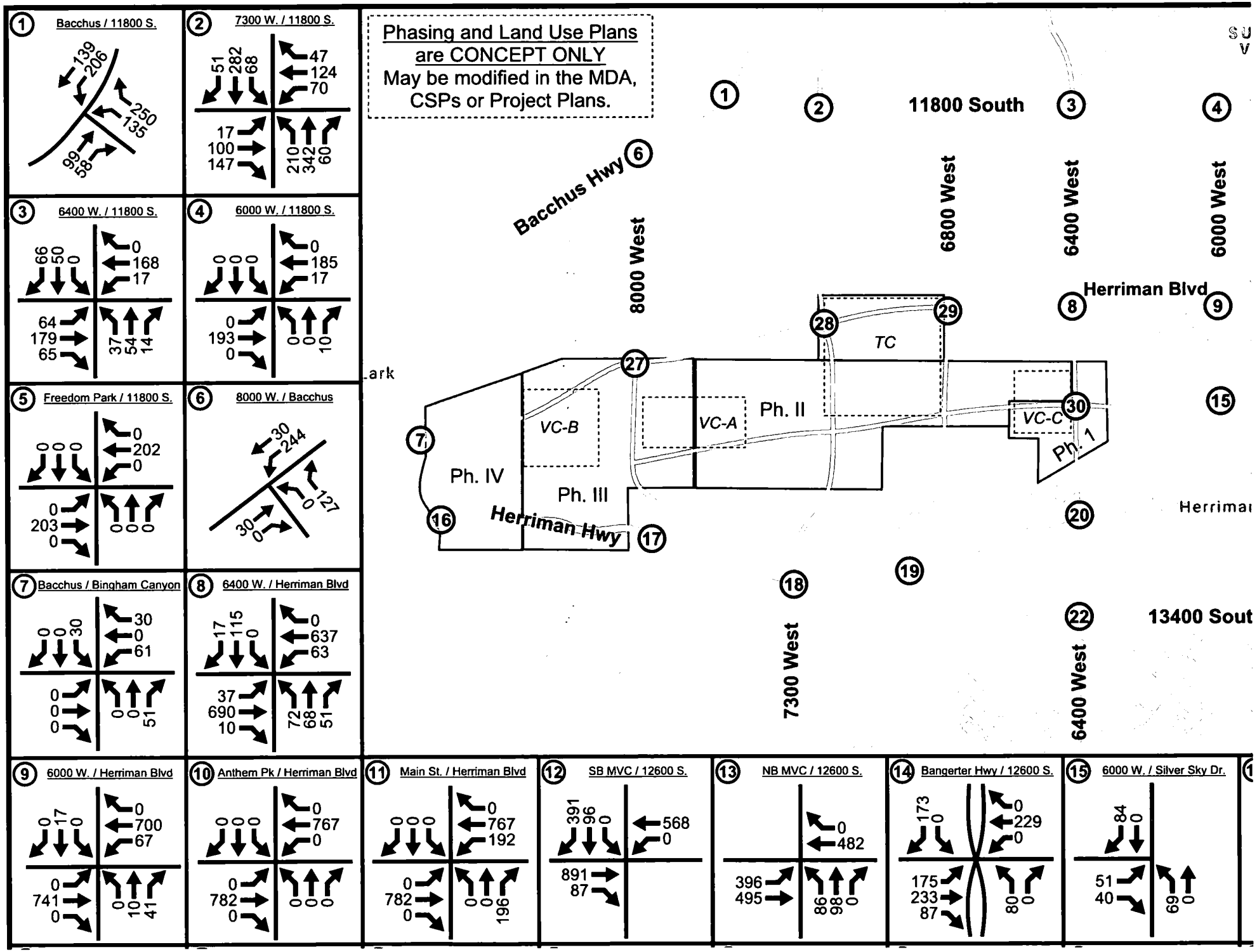


BK 10983 PG 4799





BK 10983 PG 4801



BK 10983 PG 4802

VI. FUTURE (2027) PLUS PROJECT CONDITIONS

A. Purpose

The purpose of the future (2027) plus project analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions plus the net trips generated by the proposed development. This scenario provides valuable insight into the potential impacts of the proposed project on future background traffic conditions.

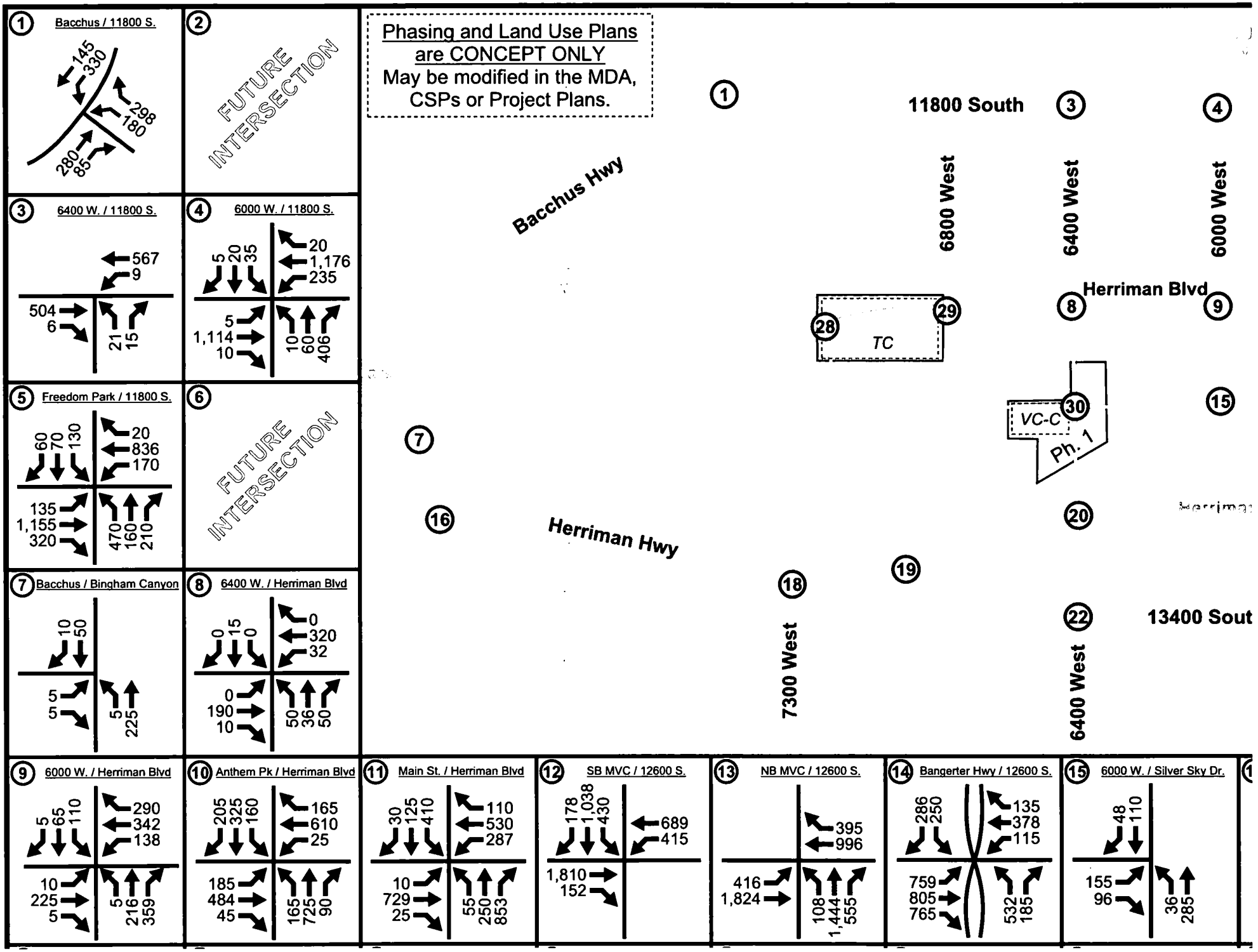
B. Traffic Volumes

Hales Engineering added the Phase I project trips discussed in Chapter V to the future (2027) background traffic volumes to predict turning movement volumes for future (2027) plus project conditions. Future (2027) plus project evening peak hour turning movement volumes are shown in Figure 18 and Figure 19.

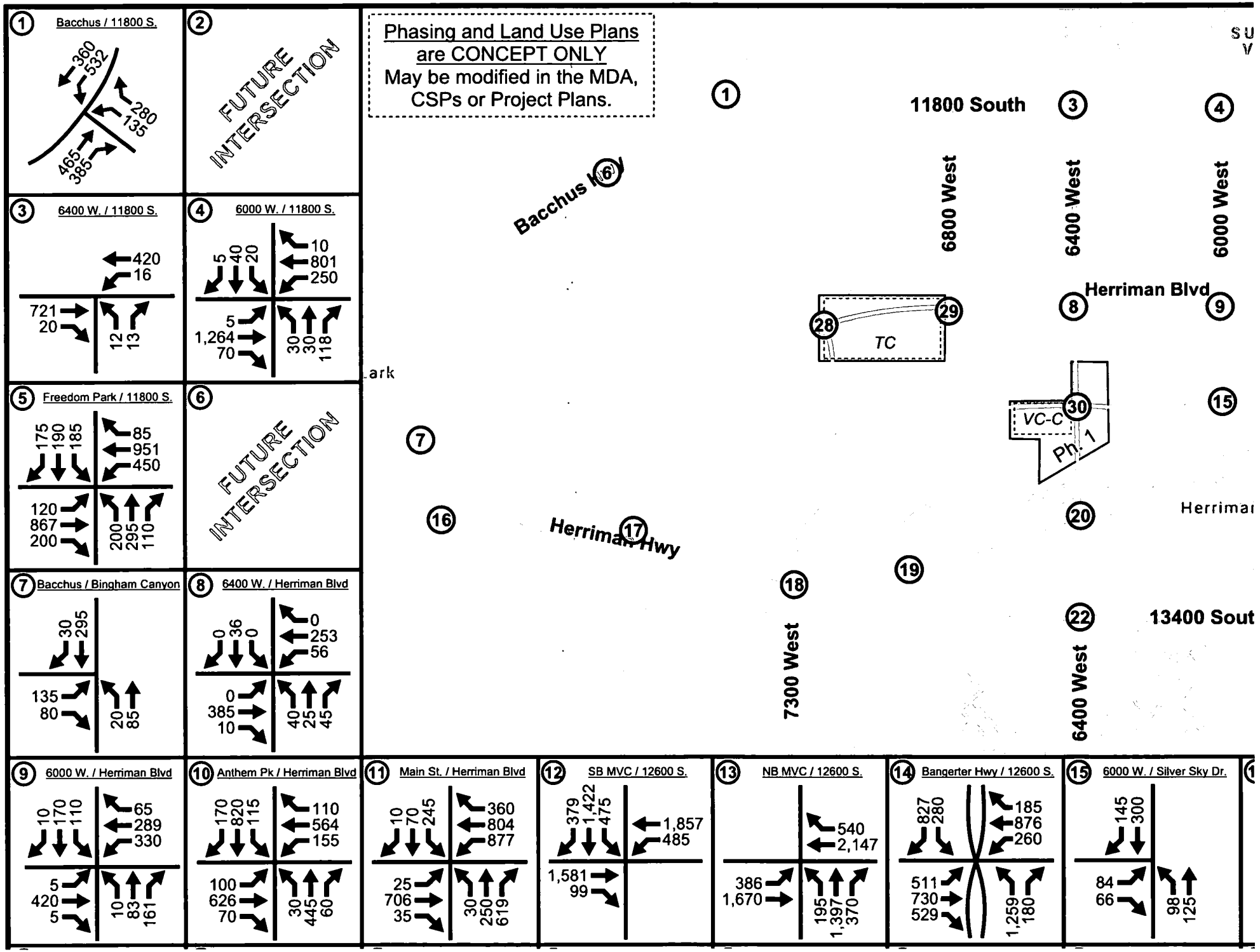
C. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at LOS E or LOS F in future (2027) plus project conditions as shown in Table 9 and Table 10:

- Anthem Park Boulevard / Herriman Boulevard (Morning Peak)
- SB Mountain View Corridor / 12600 South (Morning and Evening Peak)
- NB Mountain View Corridor / 12600 South (Evening Peak)
- Bangerter Highway / 12600 South (Evening Peak)
- 6400 West / Main Street (Evening Peak)
- 5600 West / 13400 South (Evening Peak)



BK 10983 PG 4804



BK 10983 PG 4805

Table 9: Future (2027) Plus Project Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	41.6	D	-
6400 West / 11800 South	NB Stop	NB	14.5	B	-	-	-
6000 West / 11800 South	Signal	-	-	-	32.8	C	-
Freedom Park Drive / 11800 South	Signal	-	-	-	33.6	C	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	3.1	A	-	-	-
6400 West / Herriman Boulevard	SB Stop	SB	8.2	A	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	12.9	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	63.8	E	D (44.6)
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	43.5	D	-
SB MVC / 12600 South	Signal	-	-	-	60.6	E	D (38.6)
NB MVC / 12600 South	Signal	-	-	-	35.9	D	-
Bangerter Highway / 12600 South	Signal	-	-	-	29.2	C	-
Silver Sky Drive / 6000 West	EB Stop	EB	8.5	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.0	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	SB	8.2	A	-	-	-
6800 West / Herriman Highway	SB Stop	SB	7.5	A	-	-	-
6400 West / Main Street	Signal	-	-	-	27.1	C	-
5600 West / Main Street	Signal	-	-	-	18.4	B	-
6400 West / 13400 South	Signal	-	-	-	16.7	B	-
5600 West / 13400 South	Signal	-	-	-	34.2	C	-
5000 West / 13400 South	Signal	-	-	-	33.0	C	-
SB MVC / 13400 South	Signal	-	-	-	26.7	C	-
NB MVC / 13400 South	Signal	-	-	-	19.6	B	-
6800 West / Herriman Boulevard	NB/SB Stop	SB	6.2	A	-	-	-
Silver Sky Drive / 6400 West	EB/WB Stop	EB	4.3	A	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

Table 10: Future (2027) Plus Project Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	46.3	D	-
6400 West / 11800 South	NB Stop	NB	13.4	B	-	-	-
6000 West / 11800 South	Signal	-	-	-	36.7	D	-
Freedom Park Drive / 11800 South	Signal	-	-	-	50.6	D	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	5.9	A	-	-	-
6400 West / Herriman Boulevard	SB Stop	SB	10.9	B	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	16.3	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	26.7	C	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	36.0	D	-
SB MVC / 12600 South	Signal	-	-	-	71.1	E	C (26.7)
NB MVC / 12600 South	Signal	-	-	-	108.1	F	C (23.7)
Bangerter Highway / 12600 South	Signal	-	-	-	96.2	F	D (41.9)
Silver Sky Drive / 6000 West	EB Stop	EB	8.9	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	5.4	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	SB	14.5	B	-	-	-
6800 West / Herriman Highway	SB Stop	SB	13.2	B	-	-	-
6400 West / Main Street	Signal	-	-	-	80.4	F	C (30.2)
5600 West / Main Street	Signal	-	-	-	22.0	C	-
6400 West / 13400 South	Signal	-	-	-	19.3	B	-
5600 West / 13400 South	Signal	-	-	-	70.7	E	D (52.5)
5000 West / 13400 South	Signal	-	-	-	23.0	C	-
SB MVC / 13400 South	Signal	-	-	-	23.3	C	-
NB MVC / 13400 South	Signal	-	-	-	49.5	D	-
6800 West / Herriman Boulevard	NB/SB Stop	NB	8.2	A	-	-	-
Silver Sky Drive / 6400 West	EB/WB Stop	EB	4.2	A	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

D. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Bacchus Highway / 11800 South
  - Northbound Approach – 615 feet (a.m. peak), 595 feet (p.m. peak)
- 6000 West / 11800 South
  - Northbound Approach – 400 feet (a.m. peak)
  - Eastbound Approach - >1,000 feet (a.m. and p.m. peak)
- Freedom Park Drive / 11800 South
  - Northbound Approach – 610 feet (a.m. peak), 510 feet (p.m. peak)
  - Southbound Approach – 650 feet (p.m. peak)
  - Eastbound Approach – 450 feet (a.m. peak)
  - Westbound Approach – 820 feet (p.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – >1,000 feet (a.m. peak)
  - Southbound Approach – 615 feet (p.m. peak)
  - Eastbound Approach – 560 feet (a.m. peak)
  - Westbound Approach – 710 feet (a.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Northbound Approach – 530 feet (a.m. peak)
  - Southbound Approach – 905 feet (a.m. peak)
  - Eastbound Approach – 400 feet (p.m. peak)
  - Westbound Approach – 400 feet (p.m. peak)
- Mountain View Corridor / 12600 South
  - Northbound Approach – 630 feet (a.m. peak), 540 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 475 feet (a.m. peak), >1,000 feet (p.m. peak)
- Bangerter Highway / 12600 South
  - Northbound Offramp – >1,000 feet (p.m. peak)
  - Southbound Offramp – 790 feet (p.m. peak)
  - Westbound Approach – 875 feet (p.m. peak)
- 6400 West / Main Street
  - Westbound Approach – 950 feet (p.m. peak)
- 5600 West / Main Street
  - Southbound Approach – 450 feet (p.m. peak)
- 5600 West / 13400 South
  - Northbound Approach – 425 feet (a.m. peak)
  - Southbound Approach – 690 feet (p.m. peak)

  - Eastbound Approach – 590 feet (a.m. peak), 670 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 5000 West / 13400 South
  - Northbound Approach – 475 feet (a.m. peak)
  - Eastbound Approach – 475 feet (a.m. peak), 350 feet (p.m. peak)
- Mountain View Corridor / 13400 South
  - Southbound Approach – 450 feet (p.m. peak)
  - Westbound Approach – 780 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.

E. Mitigation Measures

It is recommended that a dedicated right-turn pocket be added to the westbound approach of the Anthem Park Boulevard / Herriman Boulevard intersection to increase the westbound capacity at the intersection. It is also recommended that the storage length of all left-turn lanes be increased at the intersection.

It is anticipated that dual left-turn lanes will be warranted at the Freedom Park Drive / 11800 South intersection on the westbound approach. It is recommended that westbound dual left-turn lanes be installed when warranted. It is also recommended that the cycle length of the signal be increased to 120 seconds.

It is anticipated that left-turn permissive-protected phasing will be warranted at the 6400 West / Main Street intersection on the westbound approach. It is recommended that this phasing be implemented when warranted. It is also recommended that a separate right-turn lane be installed on the eastbound approach of the intersection.

The delays at the 5600 West / 13400 South intersection can be attributed to lack of capacity at the intersection due to high westbound volumes during the evening peak hour. It is recommended that the storage length of all left- and right-turn lanes be increased, that a right-turn overlap phase be implemented on the westbound approach, and that the northbound right-turn lane be converted into a shared through-right lane.

Significant delays are anticipated at the Mountain View Corridor / 12600 South intersections in future (2027) plus project conditions. Ultimately, this section of Mountain View Corridor will include a grade-separated freeway corridor that will pull northbound and southbound through traffic off the frontage roads. This project is planned by WFRC to be completed by 2040. It is recommended that this freeway project be expedited to be built as soon as possible. In the meantime, the following mitigation measures can be implemented at the Mountain View Corridor / 12600 South intersection to reduce delays: an additional westbound through lane at the NB MVC / 12600 South

intersection and channelizing eastbound and westbound right-turns. It is anticipated that these improvements will also improve the performance at the Bangerter Highway / 12600 South intersection, as westbound queues from Mountain View Corridor were reaching Bangerter Highway previously.

With added capacity and throughput at the Mountain View Corridor / 12600 South intersections, it is anticipated that the westbound left-turn queue at the Main Street / Herriman Boulevard intersection will increase to where it interferes with Mountain View Corridor. It is recommended that westbound dual left turns be installed at the Main Street / Herriman Boulevard intersection when warranted.

Hales Engineering completed a mitigated scenario with the proposed improvements, including the Mountain View Corridor freeway. As done previously, it was assumed that approximately 25% of the northbound and southbound traffic will remain on the frontage roads when the freeway is built. Based on the mitigated scenario, is anticipated that the proposed improvements will improve the LOS at all study intersections to an acceptable level of service.

VII. FUTURE (2032) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2032) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified, and potential mitigation measures recommended.

B. Roadway Network

It was assumed that all previously recommended background mitigation measures had been implemented prior to 2032. It was also assumed that all Phase 1 (2019-2030) improvements outlined in the WFRC RTP had been implemented These improvements include:

- 11800 South widened to a five-lane cross section between Bacchus Highway and 6000 West.
- Herriman Boulevard extended west to Bacchus Highway as a three-lane cross section.
- Herriman Highway/Main Street widened to a three-lane cross section between 7300 West and 6200 West.
- 7300 West extended north from Herriman Highway to Herriman Boulevard as a three-lane cross section.
- 6400 West extended north from Main Street to 10400 South as a three-lane cross section.
- 6000 West widened to a five-lane cross section between Main Street and Herriman Boulevard.

In addition to these improvements listed in the WFRC RTP, the 2030 WFRC/MAG TDM assumes that 7300 West had been extended farther north than Herriman Boulevard connecting to Bacchus Highway at a point north of 11000 South as a three-lane cross section. It was assumed that this improvement had been completed prior to 2032.

Also, it was assumed that Herriman Boulevard would be striped and widened to a five-lane cross-section between 6000 West and 6800 West by 2032, as the current pavement along much of this section is already 80 feet wide.

C. Traffic Volumes

Hales Engineering obtained future (2032) forecasted volumes from a modified version of the WFRC / MAG TDM. This version of the WFRC/MAG TDM was tailored specifically for this project

by Horrocks Engineers (and reviewed by Salt Lake County) to forecast future average weekday daily traffic (AWDT) volumes within the study area. Peak period turning movement counts were estimated using National Cooperative Highway Research Program (NCHRP) 255 methodologies which utilize existing peak period turn volumes and future AWDT volumes to project the future turn volumes at the major intersections. Future (2032) morning and evening peak hour turning movement volumes are shown in Figure 20 and Figure 21.

D. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at LOS E or LOS F in future (2032) background conditions as shown in Table 11 and Table 12:

- 6400 West / 11800 South (Morning and Evening Peak)
- SB Mountain View Corridor / 12600 South (Morning and Evening Peak)
- NB Mountain View Corridor / 12600 South (Evening Peak)
- SB Mountain View Corridor / 13400 South (Morning Peak)
- 5000 West / 13400 South (Morning Peak)
- SB Mountain View Corridor / 13400 South (Evening Peak)
- NB Mountain View Corridor / 13400 South (Morning and Evening Peak)

These results serve as a baseline condition for the impact analysis of the proposed development for future (2032) conditions.

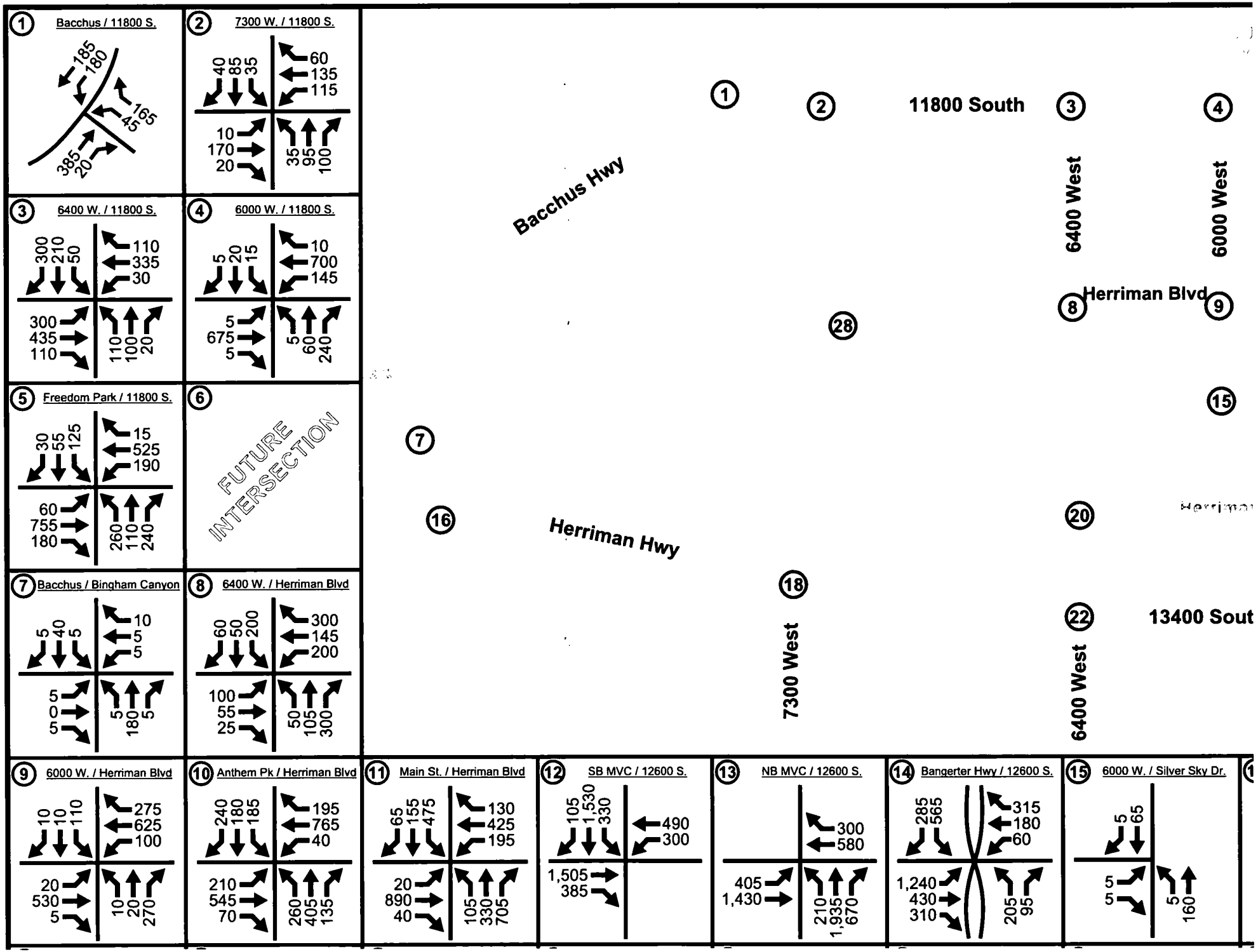
E. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

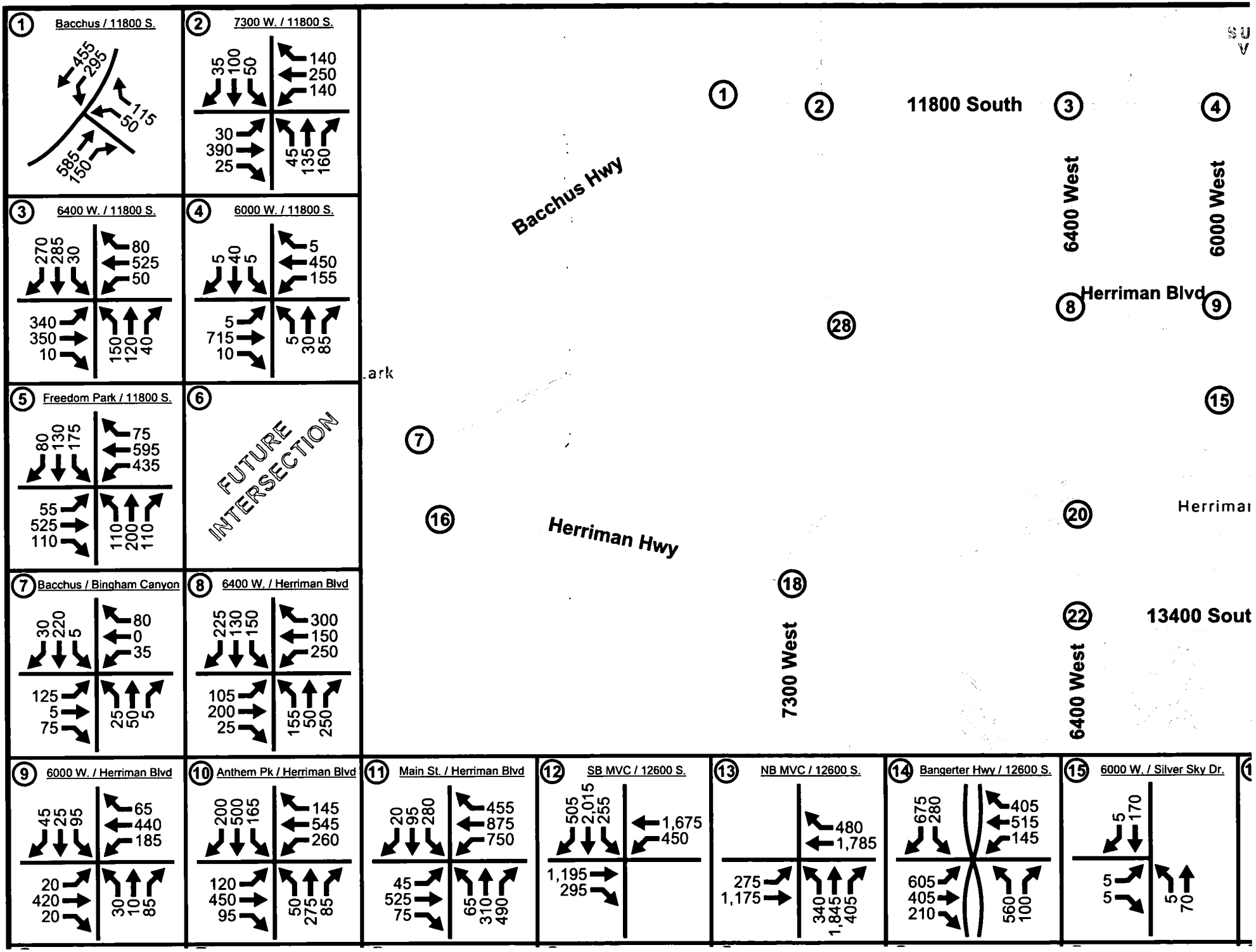
- Bacchus Highway / 11800 South
  - Northbound Approach – 515 feet (a.m. peak), 535 feet (p.m. peak)
- 6400 West / 11800 South
  - Northbound Approach – 425 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Southbound Approach – 780 feet (a.m. peak), >1,000 feet (p.m. peak)
- Freedom Park Drive / 11800 South
  - Southbound Approach – 530 feet (p.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – 500 feet (a.m. peak)
  - Westbound Approach – 620 feet (a.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Northbound Approach – 745 feet (a.m. peak)
  - Southbound Approach – >1,000 feet (a.m. peak)
- Mountain View Corridor / 12600 South

  - Northbound Approach – 465 feet (a.m. peak), 430 feet (p.m. peak)
  - Southbound Approach – 560 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Eastbound Approach – 630 feet (a.m. peak)
  - Westbound Approach – 405 feet (a.m. peak), >1,000 feet (p.m. peak)
- Bangerter Highway / 12600 South
  - Southbound Offramp – 375 feet (a.m. peak)
  - Eastbound Approach – 410 feet (a.m. peak)
- 6400 West / 13400 South
  - Northbound Approach – 420 feet (p.m. peak)
  - Southbound Approach – 375 feet (a.m. peak), 570 feet (p.m. peak)
  - Eastbound Approach – 410 feet (a.m. peak)
- 5600 West / 13400 South
  - Northbound Approach – 635 feet (a.m. peak), 400 feet (p.m. peak)
  - Eastbound Approach – 995 feet (a.m. peak), 420 feet (p.m. peak)
- 5000 West / 13400 South
  - Southbound Approach – >1,000 feet (a.m. peak)
  - Eastbound Approach – >1,000 feet (a.m. peak)
- Mountain View Corridor / 13400 South
  - Northbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Southbound Approach – 480 feet (a.m. peak)
  - Eastbound Approach – 835 feet (a.m. peak), 445 feet (p.m. peak)
  - Westbound Approach – 645 feet (a.m. peak), 595 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.



BK 10983 PG 4814



BK 10983 PG 4815

Table 11: Future (2032) Background Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	35.5	D	-
7300 West / 11800 South	NB/SB Stop	NB	10.7	B	-	-	-
6400 West / 11800 South	NB/SB Stop	SB	>75.0	F	-	-	B (15.7)
6000 West / 11800 South	Signal	-	-	-	12.2	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	16.4	B	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	2.9	A	-	-	-
7300 West / Herriman Boulevard	NB/SB Stop	SB	8.0	A	-	-	-
6400 West / Herriman Boulevard	NB/SB Stop	NB	27.7	D	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	10.9	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	39.1	D	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	53.5	D	-
SB MVC / 12600 South	Signal	-	-	-	64.2	E	N/A
NB MVC / 12600 South	Signal	-	-	-	35.3	D	N/A
Bangerter Highway / 12600 South	Signal	-	-	-	34.6	C	-
Silver Sky Drive / 6000 West	EB Stop	EB	3.4	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.1	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	SB	10.7	B	-	-	-
6400 West / Main Street	Signal	-	-	-	26.1	C	-
5600 West / Main Street	Signal	-	-	-	13.7	B	-
6400 West / 13400 South	Signal	-	-	-	18.6	B	-
5600 West / 13400 South	Signal	-	-	-	53.9	D	-
5000 West / 13400 South	Signal	-	-	-	>120.0	F	C (29.4)
SB MVC / 13400 South	Signal	-	-	-	107.1	F	N/A
NB MVC / 13400 South	Signal	-	-	-	111.9	F	N/A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

Table 12: Future (2032) Background Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	30.9	C	-
7300 West / 11800 South	NB/SB Stop	NB	18.8	C	-	-	-
6400 West / 11800 South	NB/SB Stop	SB	>75.0	F	-	-	C (25.9)
6000 West / 11800 South	Signal	-	-	-	9.9	A	-
Freedom Park Drive / 11800 South	Signal	-	-	-	28.2	C	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	6.0	A	-	-	-
7300 West / Herriman Boulevard	NB/SB Stop	NB	16.4	C	-	-	-
6400 West / Herriman Boulevard	NB/SB Stop	NB	21.7	C	-	-	-
6000 West / Herriman Boulevard	Signal	-	-	-	9.0	A	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	19.0	B	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	25.0	C	-
SB MVC / 12600 South	Signal	-	-	-	99.9	F	N/A
NB MVC / 12600 South	Signal	-	-	-	112.8	F	N/A
Bangerter Highway / 12600 South	Signal	-	-	-	26.8	C	-
Silver Sky Drive / 6000 West	EB Stop	EB	3.4	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.2	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	SB	13.7	B	-	-	-
6400 West / Main Street	Signal	-	-	-	28.0	C	-
5600 West / Main Street	Signal	-	-	-	15.1	B	-
6400 West / 13400 South	Signal	-	-	-	23.7	C	-
5600 West / 13400 South	Signal	-	-	-	39.0	D	-
5000 West / 13400 South	Signal	-	-	-	23.8	C	-
SB MVC / 13400 South	Signal	-	-	-	36.4	D	-
NB MVC / 13400 South	Signal	-	-	-	84.1	F	N/A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

F. Mitigation Measures

A northbound right-turn pocket is recommended on the northbound approach to the Bacchus Highway / 11800 South intersection is recommended to mitigate the queues that are anticipated on that approach.

It is anticipated that both morning and evening peak hour traffic volumes in 2032 at the 6400 West / 11800 South intersection will warrant the installation of a traffic signal (based on Utah MUTCD 2009 Chapter 4C Warrant 3). Therefore, a traffic signal is recommended at this intersection. It is also recommended that permissive/protected left-turn phasing be installed on the east- and westbound approaches, and that right-turn pockets be constructed on the north- and southbound approaches.

Hales Engineering analyzed a mitigated scenario which assumed that these recommended mitigation measures had been implemented. The mitigated scenario also assumed that additional improvements had been made at the Mountain View Corridor / 12600 South and Mountain View Corridor / 13400 South intersections. These improvements include channelized east- and westbound right-turn lanes at both intersections, the conversion of a northbound through lane at 12600 South to a shared through/left-turn lane and extending the three eastbound lanes on 13400 south to 5000 West.

With the recommended mitigation measures, the 6400 West / 1800 South intersection is anticipated to improve to an acceptable level of service in both the morning and evening peak hours. The poor levels of service and excessive queuing at the Mountain View Corridor / 12600 South and Mountain View Corridor / 13400 South intersections is anticipated to persist. Along with the poor levels of service, the excessive queueing at the Mountain View Corridor / 13400 South intersection is adversely impacting other intersections on 13400 South.

Projected traffic conditions at the Mountain View Corridor / 12600 South and Mountain View Corridor / 13400 South intersections are anticipated to be such that the mitigation measures required to attain acceptable levels of service exceed that of this traffic impact study. Hales Engineering acknowledges that capacity enhancements will be needed at these locations, but those enhancements will need to be developed at a system level by UDOT or other entities. Therefore, the Mountain View Corridor / 12600 South, Bangerter Highway / 12600 South, and Mountain View Corridor / 13400 South intersections will be omitted from further analyses.

An additional mitigated scenario was analyzed which assumed that the queueing at the Mountain View Corridor intersections had been mitigated. With this assumption the poor level of service during the morning peak hour at the 5000 West / 13400 South intersection is anticipated to improve to LOS C.

VIII. FUTURE (2032) PLUS PROJECT CONDITIONS

A. Purpose

The purpose of the future (2032) plus project analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions plus the net trips generated by the proposed development. This scenario provides valuable insight into the potential impacts of the proposed project on future background traffic conditions.

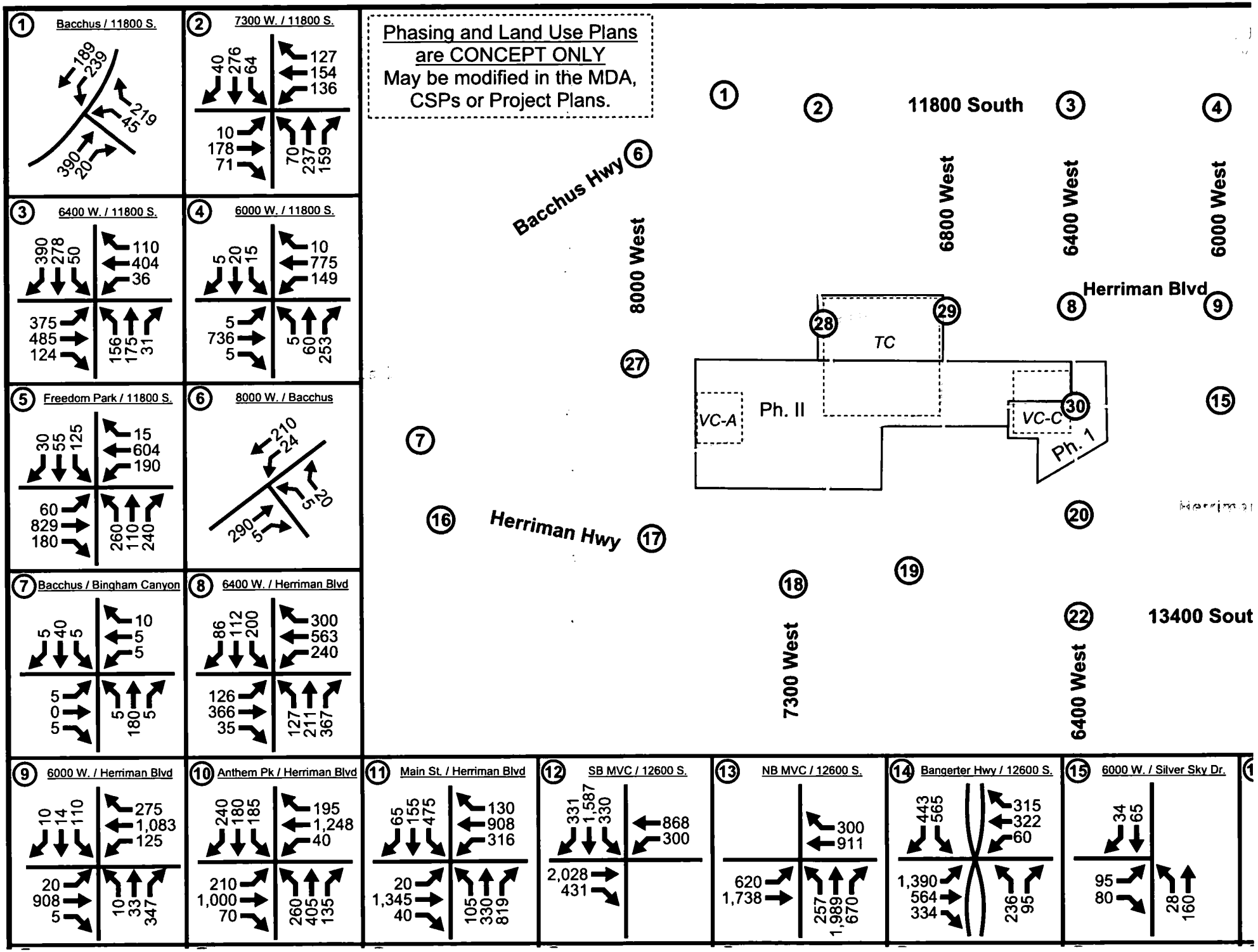
B. Traffic Volumes

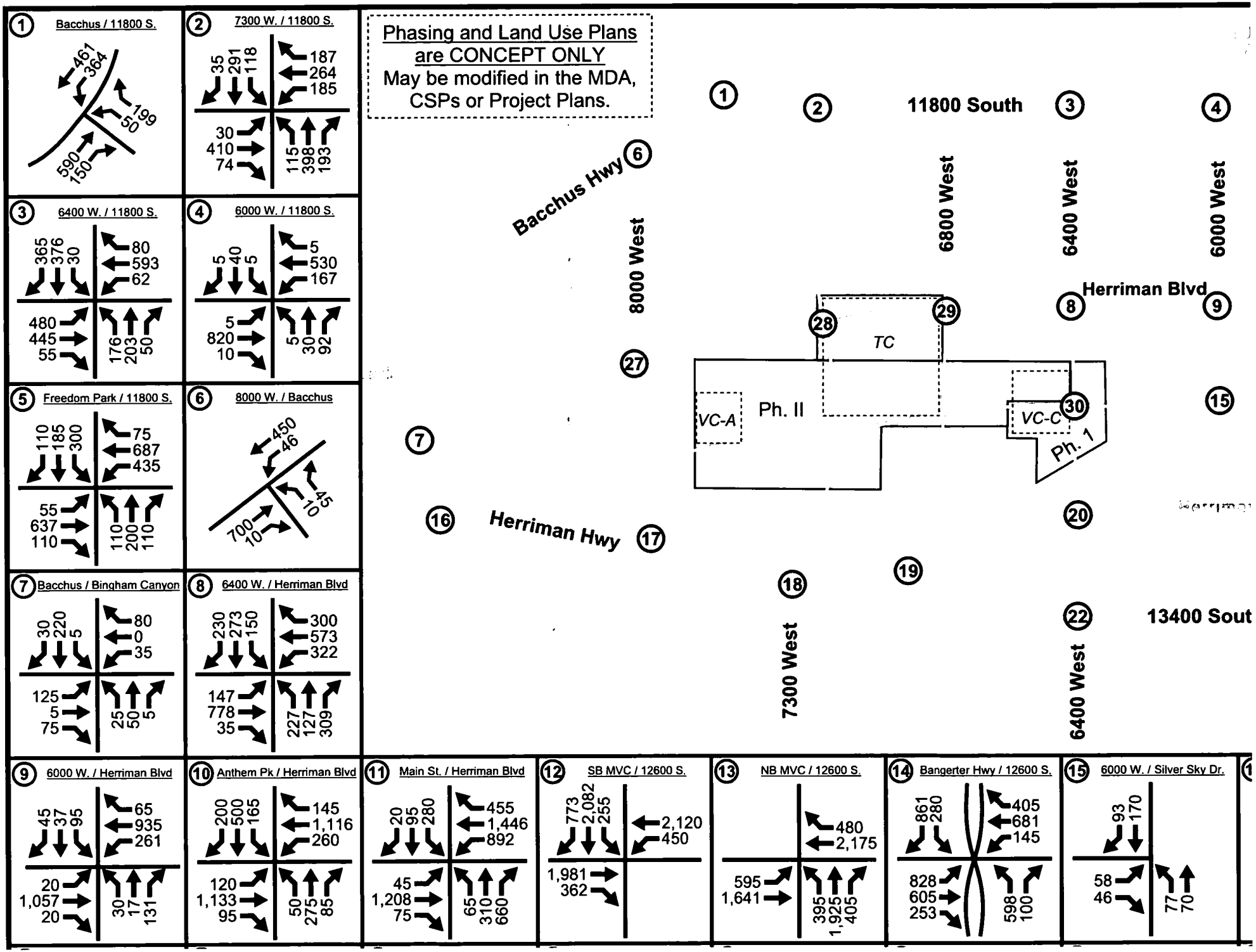
Hales Engineering added the Phase II project trips discussed in Chapter V to the future (2032) background traffic volumes to predict turning movement volumes for future (2032) plus project conditions. Additional turning movement volumes were added manually to new project roadways as well to match better with the volumes provided by Horrocks in the build travel demand models. Future (2032) plus project evening peak hour turning movement volumes are shown in Figure 22 and Figure 23.

C. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at LOS E or LOS F in future (2032) plus project conditions as shown in Table 13 and Table 14:

- 7300 West / 11800 South (Morning and Evening Peak)
- Anthem Park Boulevard / Herriman Boulevard (Morning Peak)
- Main Street / Herriman Boulevard (Morning and Evening Peak)
- 6800 West / Herriman Highway (Evening Peak)
- 6400 West / Main Street (Evening Peak)
- 6400 West / 13400 South (Morning Peak)
- 5600 West / 13400 South (Evening Peak)
- 5000 West / 13400 South (Evening Peak)
- 7300 West / Herriman Boulevard (Morning and Evening Peak)
- 6800 West / Herriman Boulevard (Morning and Evening Peak)





BK 10983 PG 4821

Table 13: Future (2032) Plus Project Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	34.5	C	-
7300 West / 11800 South	NB Stop	NB	60.6	F	-	-	B (11.3)
6400 West / 11800 South	Signal	-	-	-	22.4	C	-
6000 West / 11800 South	Signal	-	-	-	13.0	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	22.7	C	-
8000 West / Bacchus Highway	NB Stop	NB	4.0	A	-	-	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	3.4	A	-	-	-
6400 West / Herriman Boulevard	Signal	-	-	-	29.5	C	-
6000 West / Herriman Boulevard	Signal	-	-	-	16.3	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	65.1	E	D (43.9)
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	102.3	F	D (53.5)
Silver Sky Drive / 6000 West	EB Stop	EB	5.4	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	3.7	A	-	-	-
8000 West / Herriman Highway	SB Stop	SB	5.1	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	NB	23.4	C	-	-	-
6800 West / Herriman Highway	SB Stop	SB	11.9	B	-	-	-
6400 West / Main Street	Signal	-	-	-	35.0	C	-
5600 West / Main Street	Signal	-	-	-	16.6	B	-
6400 West / 13400 South	Signal	-	-	-	62.9	E	D (36.5)
5600 West / 13400 South	Signal	-	-	-	38.1	D	-
5000 West / 13400 South	Signal	-	-	-	45.4	D	-
8000 West / Herriman Boulevard	NB/SB Stop	SB	5.5	A	-	-	-
7300 West / Herriman Boulevard	NB/SB Stop	NB	72.7	F	-	-	B (15.2)
6800 West / Herriman Boulevard	NB/SB Stop	SB	>75.0	F	-	-	B (14.5)
Silver Sky Drive / 6400 West	EB/WB Stop	EB	33.2	D	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

Table 14: Future (2032) Plus Project Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	29.4	C	-
7300 West / 11800 South	NB Stop	NB	>75.0	F			B (17.0)
6400 West / 11800 South	Signal	-	-	-	48.1	D	-
6000 West / 11800 South	Signal	-	-	-	11.7	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	30.3	C	-
8000 West / Bacchus Highway	NB Stop	NB	8.5	A	-	-	-
Bingham Canyon Mine / Bacchus Highway	EB Stop	EB	5.5	A	-	-	-
6400 West / Herriman Boulevard	Signal	-	-	-	41.5	D	-
6000 West / Herriman Boulevard	Signal	-	-	-	15.3	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	40.0	D	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	56.7	E	C (34.1)
Silver Sky Drive / 6000 West	EB Stop	EB	6.1	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.1	A	-	-	-
8000 West / Herriman Highway	SB Stop	SB	6.5	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	SB	30.2	D	-	-	-
6800 West / Herriman Highway	SB Stop	SB	51.2	F	-	-	B (14.7)
6400 West / Main Street	Signal	-	-	-	>120.0	F	D (54.4)
5600 West / Main Street	Signal	-	-	-	43.8	D	-
6400 West / 13400 South	Signal	-	-	-	49.8	D	-
5600 West / 13400 South	Signal	-	-	-	>120.0	F	D (53.4)
5000 West / 13400 South	Signal	-	-	-	60.7	E	C (24.0)
8000 West / Herriman Boulevard	NB/SB Stop	SB	6.1	A	-	-	-
7300 West / Herriman Boulevard	NB/SB Stop	SB	>75.0	F	-	-	C (28.7)
6800 West / Herriman Boulevard	NB/SB Stop	SB	>75.0	F	-	-	B (18.4)
Silver Sky Drive / 6400 West	EB/WB Stop	EB	18.1	C	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

D. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Bacchus Highway / 11800 South
  - Northbound Approach – 490 feet (p.m. peak)
- 7300 West / 11800 South
  - Northbound Approach – 635 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Southbound Approach – 415 feet (a.m. peak), >1,000 feet (p.m. peak)
- 6400 West / 11800 South
  - Northbound Approach – 760 feet (p.m. peak)
  - Southbound Approach – 400 feet (p.m. peak)
  - Eastbound Approach – 625 feet (p.m. peak)
  - Westbound Approach – 365 feet (p.m. peak)
- Freedom Park Drive / 11800 South
  - Southbound Approach – 400 feet (p.m. peak)
- 6400 West / Herriman Boulevard
  - Northbound Approach – 435 feet (a.m. peak), 635 feet (p.m. peak)
  - Southbound Approach – 505 feet (p.m. peak)
  - Westbound Approach – 400 feet (p.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – 430 feet (a.m. peak)
  - Southbound Approach – 400 feet (p.m. peak)
  - Eastbound Approach – 680 feet (a.m. peak), 570 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (a.m. peak), 470 feet (p.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Northbound Approach – 875 feet (a.m. peak), 460 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (a.m. peak), 575 feet (p.m. peak)
  - Eastbound Approach – >1,000 feet (a.m. peak), 605 feet (p.m. peak)
  - Westbound Approach – 470 feet (p.m. peak)
- 6400 West / Main Street
  - Northbound Approach – 820 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Southbound Approach – 430 feet (a.m. peak), 730 feet (p.m. peak)
  - Eastbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 757 feet (p.m. peak)
- 5600 West / Main Street
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 720 feet (p.m. peak)

- 6400 West / 13400 South
  - Northbound Approach – >1,000 feet (a.m. peak)
  - Southbound Approach – 955 feet (a.m. peak), >1,000 feet (p.m. peak)
- 5600 West / 13400 South
  - Northbound Approach – 425 feet (a.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Eastbound Approach – 490 feet (a.m. peak), 595 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 5000 West / 13400 South
  - Southbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Eastbound Approach – 465 feet (a.m. peak), 390 feet (p.m. peak)
  - Westbound Approach – 930 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.

E. Mitigation Measures

It is anticipated that a traffic signal will be warranted at the 6400 West / Herriman Boulevard intersection. It is recommended that a traffic signal be installed when warranted. In order to mitigate the anticipated queueing at the intersection, it is recommended that right-turn lanes be added on all approaches and that permissive-protected phasing be implemented on the eastbound and westbound approaches.

It is anticipated that a traffic signal will be warranted at the 7300 West / 11800 South intersection. It is recommended that a traffic signal be installed with turn pockets when warranted.

At the Anthem Park Boulevard / Herriman Boulevard intersection, it is recommended that the cycle length be increased to 150 seconds and that the northbound right-turn lane be converted to a shared through-right lane.

At the Main Street / Herriman Boulevard intersection, it is recommended that the cycle length be increased to 150 seconds, that a second northbound through lane be added, and that the eastbound right-turn lane be converted to a shared through-right lane.

It is anticipated that a traffic signal will be warranted at the 6800 West / Herriman Highway intersection. It is recommended that a traffic signal be installed with turn pockets when warranted.

At the 6400 West / Main Street intersection, it is recommended that right-turn lanes be added on all approaches, that permissive-protected phasing be implemented on the north- and southbound approaches, and that a right-turn overlap phase be implemented on the eastbound approach.

At the 6400 West / 13400 South intersection, it is recommended that the cycle length be increased to 120 seconds, that dual left-turns be installed on the south- and westbound approaches, and that a right-turn overlap phase be implemented on the westbound approach.

It is recommended that 13400 South be widened to seven lanes between 5000 West and 5600 West and to five lanes between 5600 West and 6400 West to provide needed capacity at the study intersections.

At the 5600 West / 13400 South intersection, it is recommended that right-turn lanes be added on all approaches.

At the 5000 West / 13400 South intersection, it is recommended that a right-turn lane be added on the westbound approach.

It is anticipated that a traffic signal will be warranted at the 7300 West / Herriman Boulevard intersection. It is recommended that a traffic signal be installed with turn pockets when warranted.

It is anticipated that a traffic signal will be warranted at the 6800 West / Herriman Boulevard intersection. It is recommended that a traffic signal be installed with turn pockets when warranted and that permissive-protected phasing be implemented on the eastbound approach.

In order to mitigate queueing at the 6400 West / 11800 South intersection, it is recommended that right-turn lanes be added on the eastbound and westbound approaches and that permissive-protected phasing be implemented on the northbound approach.

In order to mitigate queueing at the 7300 West / Herriman Highway intersection, it is recommended that a right-turn lane be added on the westbound approach.

Hales Engineering completed a mitigated scenario with the proposed improvements. Based on the mitigated scenario, is anticipated that the proposed improvements will improve the LOS at all study intersections to an acceptable level of service.

FUTURE (2037) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2037) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified, and potential mitigation measures recommended.

B. Roadway Network

It was assumed that all previously recommended background mitigation measures had been implemented prior to 2037. It was also assumed that all traffic signals had been coordinated to optimize traffic flow along the 11800 South, Herriman Boulevard, and 13400 South corridors.

C. Traffic Volumes

Hales Engineering obtained future (2037) forecasted volumes from a modified version of the WFRC / MAG TDM. This version of the WFRC/MAG TDM was tailored specifically for this project by Horrocks Engineers (and reviewed by Salt Lake County) to forecast future average weekday daily traffic (AWDT) volumes within the study area. Peak period turning movement counts were estimated using National Cooperative Highway Research Program (NCHRP) 255 methodologies which utilize existing peak period turn volumes and future AWDT volumes to project the future turn volumes at the major intersections. Future (2037) morning and evening peak hour turning movement volumes are shown in Figure 24 and Figure 25.

D. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at LOS E or LOS F in future (2037) background conditions as shown in Table 15 and Table 16:

- 7300 West / 11800 South (Morning and Evening Peak)
- 7300 West / Herriman Boulevard (Evening Peak)
- 6400 West / Herriman Boulevard (Morning and Evening Peak)
- Anthem Park Boulevard / Herriman Boulevard (Morning Peak)
- 7300 West / Herriman Highway (Morning and Evening Peak)
- 5600 West / 13400 South (Evening Peak)

These results serve as a baseline condition for the impact analysis of the proposed development for future (2037) conditions.

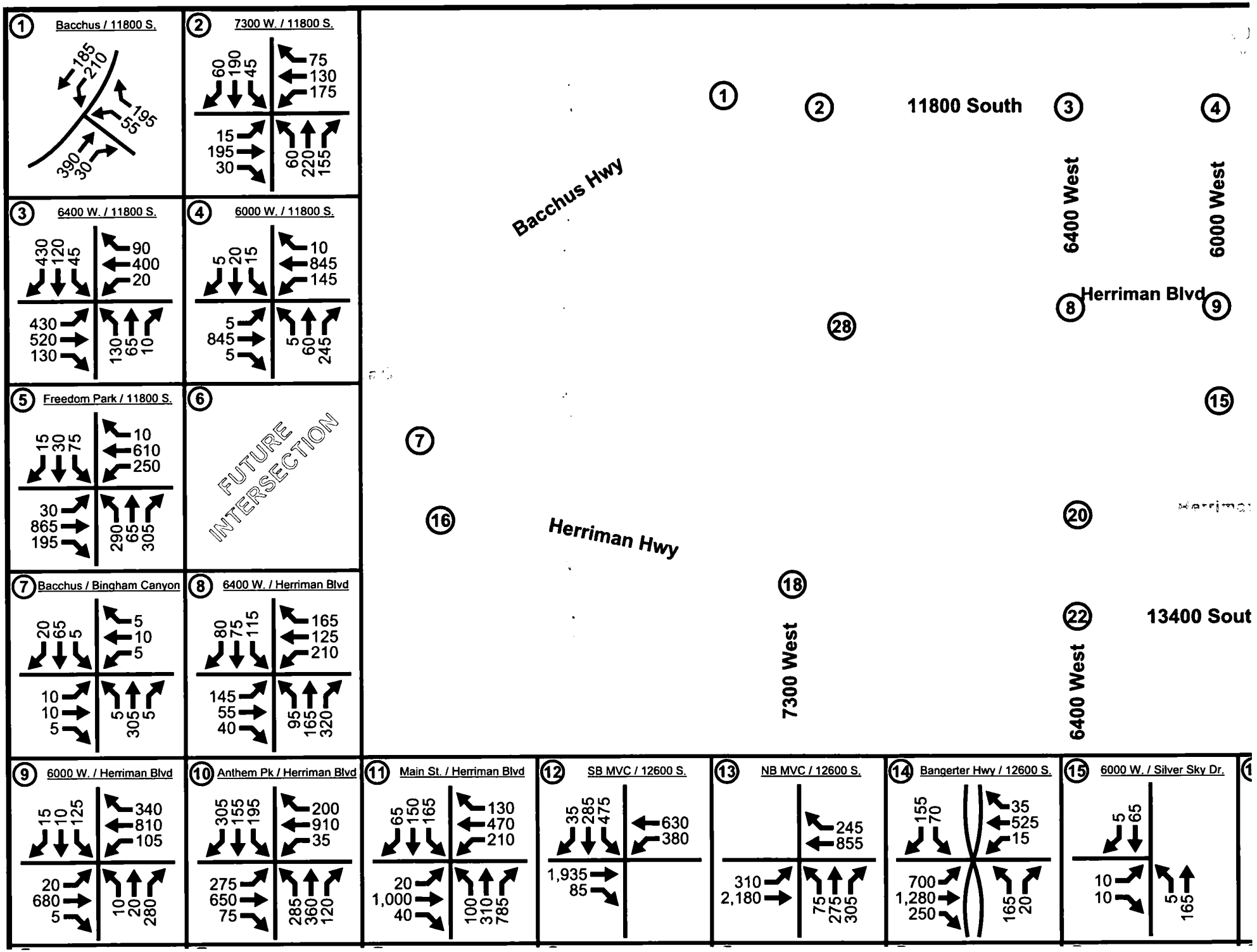
E. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

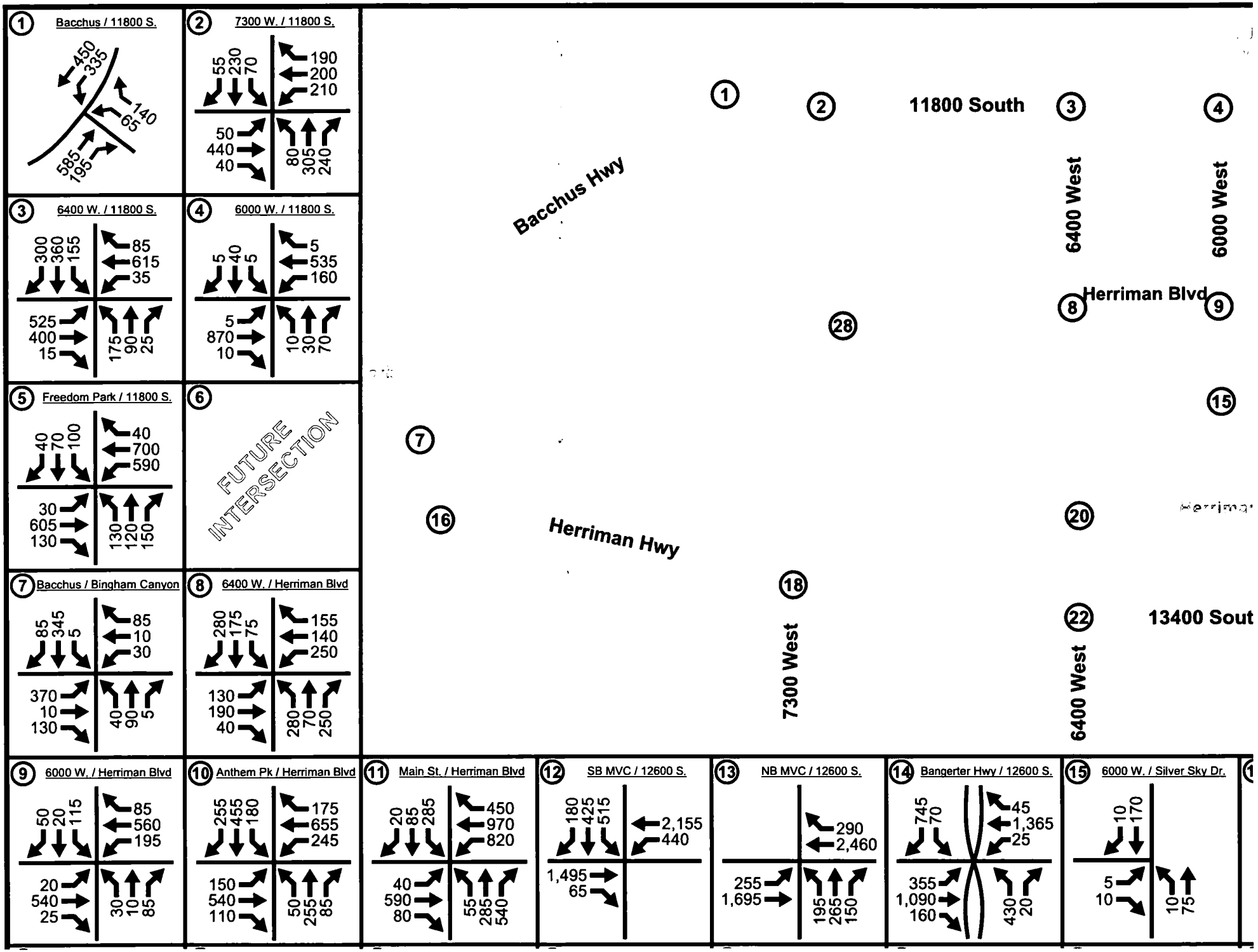
- Bacchus Highway / 11800 South
  - Northbound Approach – 585 feet (a.m. peak), 525 feet (p.m. peak)
- 7300 West / 11800 South
  - Northbound Approach – 390 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
- 6400 West / 11800 South
  - Northbound Approach – 750 feet (p.m. peak)
  - Eastbound Approach – 355 feet (p.m. peak)
- 7300 West / Herriman Boulevard
  - Northbound Approach – 815 feet (p.m. peak)
  - Eastbound Approach – 690 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 6400 West / Herriman Boulevard
  - Northbound Approach – 715 feet (a.m. peak, >1,000 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – >1,000 feet (a.m. peak)
  - Southbound Approach – 560 feet (a.m. peak), 515 feet (p.m. peak)
  - Eastbound Approach – 515 feet (a.m. peak)
  - Westbound Approach – 700 feet (a.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Southbound Approach – 380 feet (a.m. peak)
  - Westbound Approach – 795 feet (p.m. peak)
- 7300 West / Herriman Highway
  - Northbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Southbound Approach – 410 feet (p.m. peak)
- 6400 West / Main Street
  - Northbound Approach – 355 feet (a.m. peak)
  - Southbound Approach – 380 feet (a.m. peak), 350 feet (p.m. peak)
- 5600 West / Main Street
  - Northbound Approach – 550 feet (a.m. peak), 350 feet (p.m. peak)
  - Southbound Approach – 515 feet (p.m. peak)
- 6400 West / 13400 South
  - Northbound Approach – 530 feet (a.m. peak)
  - Southbound Approach – 615 feet (p.m. peak)

- 5600 West / 13400 South
  - Northbound Approach – 495 feet (a.m. peak), 380 feet (p.m. peak)
  - Eastbound Approach – 645 feet (a.m. peak), 805 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 5000 West / 13400 South
  - Southbound Approach – 990 feet (a.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.



BK 10983 PG 4830



BK 10983 PG 4831

Table 15: Future (2037) Background Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	36.9	C	-
7300 West / 11800 South	NB/SB Stop	NB	36.5	E	-	-	B (17.1)
6400 West / 11800 South	Signal	-	-	-	16.9	B	-
6000 West / 11800 South	Signal	-	-	-	13.3	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	21.6	C	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	6.5	A	-	-	-
7300 West / Herriman Boulevard	NB/SB Stop	SB	10.2	B	-	-	-
6400 West / Herriman Boulevard	NB/SB Stop	NB	52.9	F	-	-	B (15.5)
6000 West / Herriman Boulevard	Signal	-	-	-	12.2	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	57.8	E	D (46.7)
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	22.2	C	-
SB MVC / 12600 South	Signal	-	-	-	-	-	-
NB MVC / 12600 South	Signal	-	-	-	-	-	-
Bangerter Highway / 12600 South	Signal	-	-	-	-	-	-
Silver Sky Drive / 6000 West	EB Stop	EB	4.0	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	3.9	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	NB	>120.0	F	-	-	B (18.6)
6400 West / Main Street	Signal	-	-	-	27.1	C	-
5600 West / Main Street	Signal	-	-	-	23.4	C	-
6400 West / 13400 South	Signal	-	-	-	23.8	C	-
5600 West / 13400 South	Signal	-	-	-	37.1	D	-
5000 West / 13400 South	Signal	-	-	-	38.2	D	-
SB MVC / 13400 South	Signal	-	-	-	-	-	-
NB MVC / 13400 South	Signal	-	-	-	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

Table 16: Future (2037) Background Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	28.9	C	-
7300 West / 11800 South	NB/SB Stop	NB	>120.0	F	-	-	C (25.6)
6400 West / 11800 South	Signal	-	-	-	48.5	D	-
6000 West / 11800 South	Signal	-	-	-	11.9	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	21.1	C	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	14.4	B	-	-	-
7300 West / Herriman Boulevard	NB/SB Stop	NB	>75.0	F	-	-	D (40.1)
6400 West / Herriman Boulevard	NB/SB Stop	SB	>75.0	F	-	-	B (17.2)
6000 West / Herriman Boulevard	Signal	-	-	-	11.1	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	27.5	C	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	50.1	D	-
SB MVC / 12600 South	Signal	-	-	-	-	-	-
NB MVC / 12600 South	Signal	-	-	-	-	-	-
Bangerter Highway / 12600 South	Signal	-	-	-	-	-	-
Silver Sky Drive / 6000 West	EB Stop	EB	3.4	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	5.0	A	-	-	-
7300 West / Herriman Highway	NB/SB Stop	NB	>120.0	F	-	-	C (32.6)
6400 West / Main Street	Signal	-	-	-	28.8	C	-
5600 West / Main Street	Signal	-	-	-	22.6	C	-
6400 West / 13400 South	Signal	-	-	-	27.4	C	-
5600 West / 13400 South	Signal	-	-	-	>120.0	F	D (42.7)
5000 West / 13400 South	Signal	-	-	-	54.5	D	-
SB MVC / 13400 South	Signal	-	-	-	-	-	-
NB MVC / 13400 South	Signal	-	-	-	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

F. Mitigation Measures

It is anticipated that traffic signals will be warranted at the following intersections based on projected 2037 traffic volumes:

- 7300 West / 11800 South
- 7300 West / Herriman Boulevard
- 6400 West / Herriman Boulevard
- 7300 West / Herriman Highway

It is recommended that traffic signals be installed at these intersections when appropriate warrants are met. In addition to a traffic signal, it is recommended that right-turn lanes be constructed on the north- and southbound approaches to the 6400 West / Herriman Boulevard intersection.

It is recommended that dual left-turn lanes be constructed on the eastbound approach to the 6400 West / 11800 South intersection, and that permissive/protected left-turn phasing be installed on the north- and southbound approaches. Dual left-turn lanes are also recommended on the eastbound approach to the Anthem Park Boulevard / Herriman Boulevard intersection.

It is recommended that separate left- and right-turn lanes be constructed on the northbound approach to the 7300 West / Herriman Highway intersection. According to the WFRC RTP, 7300 West is planned to be expanded to a five-lane cross section south of Herriman Highway as a Phase 2 (2031-2040) project. This planned improvement would coincide with the recommended improvement at the intersection.

It is anticipated that additional capacity will be needed at the 5600 West / 13400 South intersection. It is recommended that the left- and right-turn lanes on all approaches to the 5600 West / 13400 South intersection be extended to accommodate the anticipated queueing and that separate right-turn lanes be added to the south- and eastbound approaches. It is also recommended that the five-lane cross section on 13400 South be extended to the west of 5600 West and that an additional through lane be added to the north- and southbound approaches.

Hales Engineering analyzed a mitigated scenario which assumed that these recommended mitigation measures had been implemented. Based on this analysis the recommended mitigation measures are anticipated to result in acceptable levels of service throughout the study area.

No additional mitigation measures are recommended.

IX. FUTURE (2037) PLUS PROJECT CONDITIONS

A. Purpose

The purpose of the future (2037) plus project analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions plus the net trips generated by the proposed development. This scenario provides valuable insight into the potential impacts of the proposed project on future background traffic conditions.

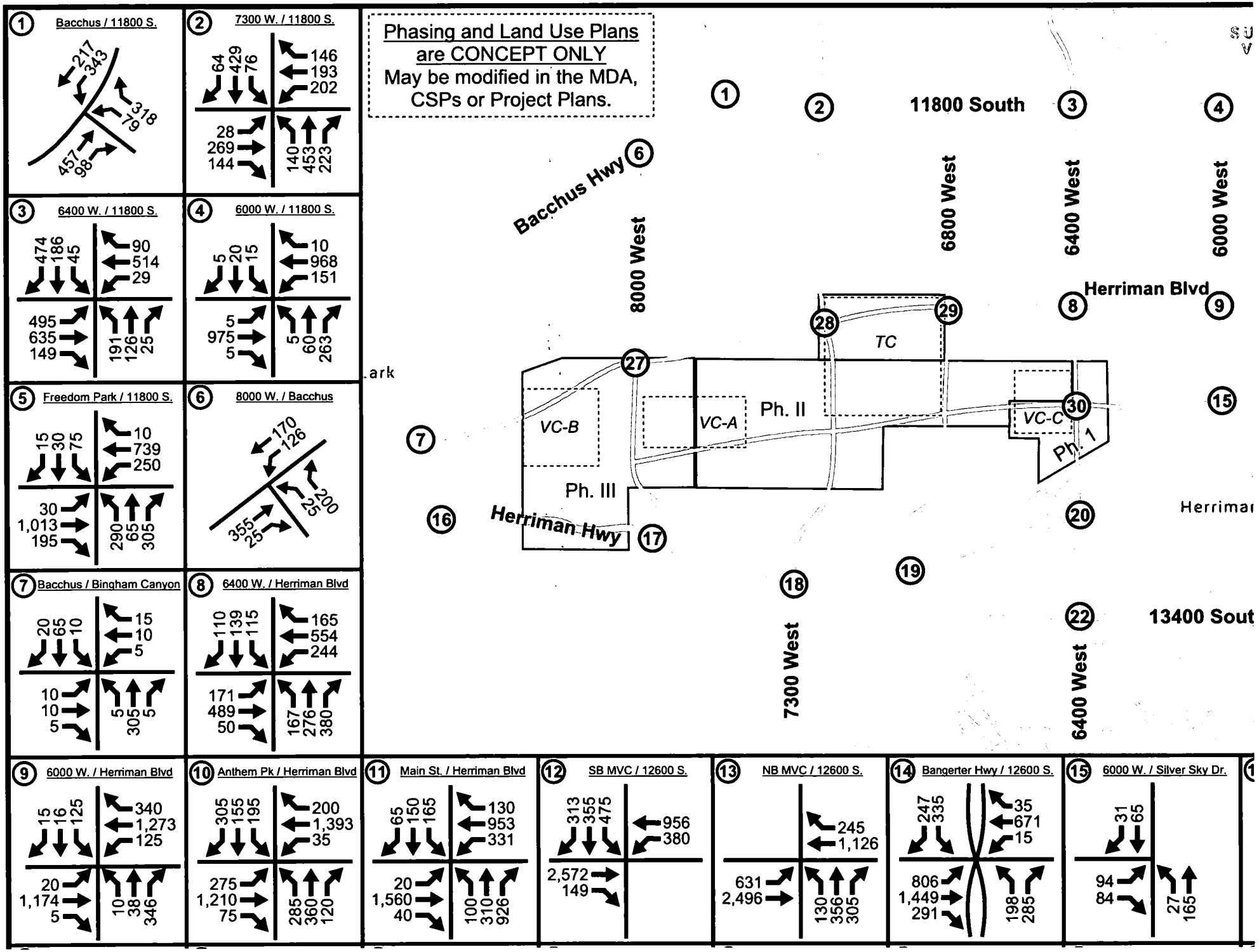
B. Traffic Volumes

Hales Engineering added the Phase III project trips discussed in Chapter V to the future (2037) background traffic volumes to predict turning movement volumes for future (2037) plus project conditions. Additional turning movement volumes were added manually to new project roadways as well to match better with the volumes provided by Horrocks in the build travel demand models. Future (2037) plus project evening peak hour turning movement volumes are shown in Figure 26 and Figure 27.

C. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at acceptable levels of service during the morning peak hour in future (2037) plus project conditions as shown in Table 17. The following intersections are anticipated to operate at LOS E or LOS F during the evening peak hour as shown in Table 18:

- 7300 West / 11800 South
- 6400 West / 11800 South
- 7300 West / Herriman Highway
- 6400 West / Main Street
- 6400 West / 13400 South
- 7300 West / Herriman Boulevard



BK 10983 PG 4836

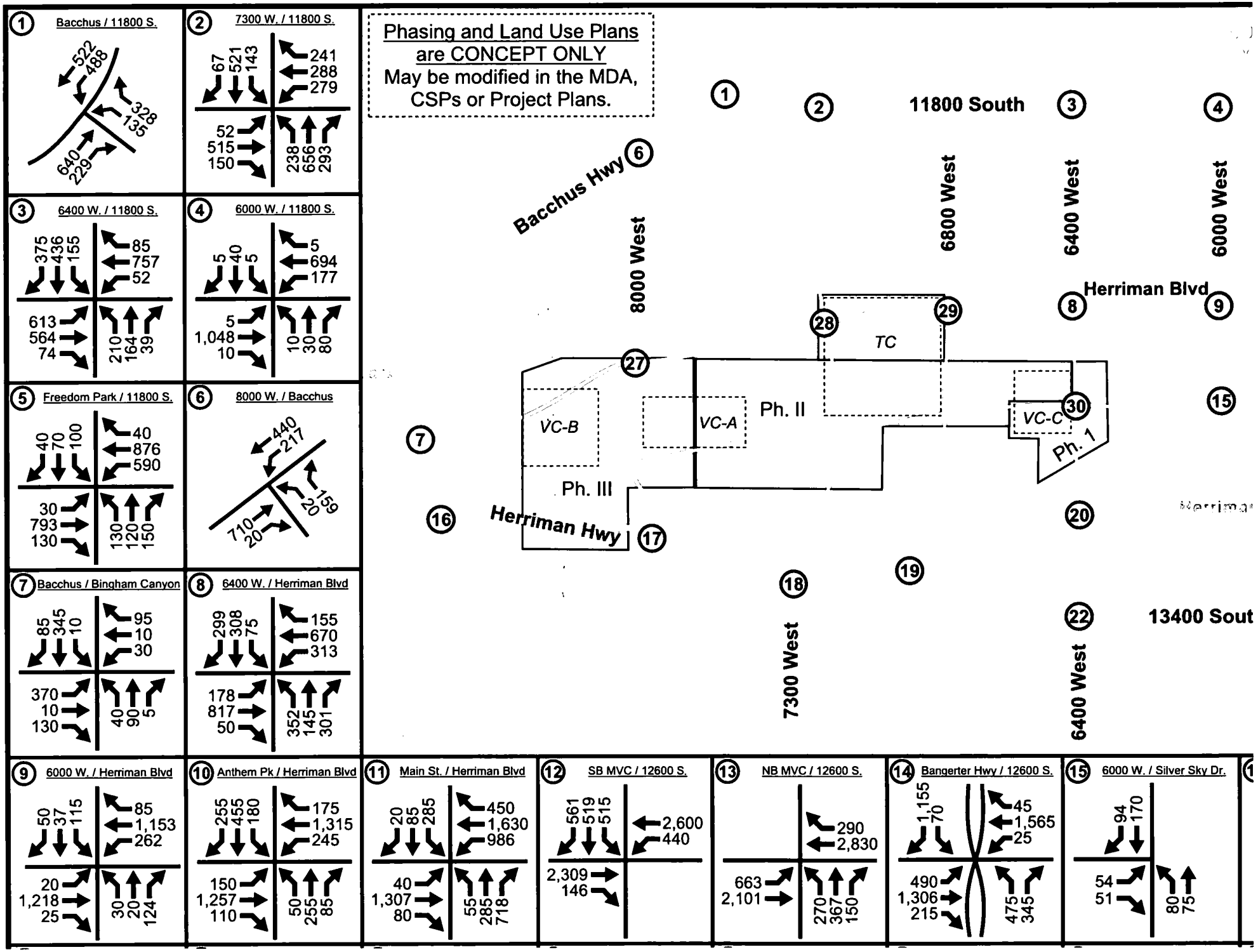

Phasing and Land Use Plans
are CONCEPT ONLY
May be modified in the MDA,
CSPs or Project Plans.
1 Bacchus / 11800 S.
522 488 328 135 640 229
2 7300 W. / 11800 S.
67 521 143 241 288 279 52 515 150 238 656 293
3 6400 W. / 11800 S.
375 436 155 85 757 52 613 564 74 210 164 39
4 6000 W. / 11800 S.
5 40 5 5 694 177 5 1,048 10 10 30 80
5 Freedom Park / 11800 S.
40 70 100 40 876 590 30 793 130 130 120 150
6 8000 W. / Bacchus
440 217 159 20 710 20
7 Bacchus / Bingham Canyon
85 345 10 95 10 30 370 10 130 40 90 5
8 6400 W. / Herriman Blvd
299 308 75 155 670 313 178 817 50 352 145 301
9 6000 W. / Herriman Blvd
50 37 115 85 1,153 262 20 1,218 25 30 20 124
10 Anthem Pk / Herriman Blvd
255 455 180 175 1,315 245 150 1,257 110 50 255 85
11 Main St. / Herriman Blvd
20 85 285 450 1,630 986 40 1,307 80 55 285 718
12 SB MVC / 12600 S.
561 519 515 2,600 440 2,309 146
13 NB MVC / 12600 S.
290 2,830 663 2,101 270 367 150
14 Bangerter Hwy / 12600 S.
1,155 70 45 1,565 25 490 1,306 215 475 345
15 6000 W. / Silver Sky Dr.
94 170 54 51 80 75
1
2
3
4
6
8
9
11800 South
Bacchus Hwy
8000 West
6800 West
6400 West
6000 West
Herriman Blvd
28
29
TC
27
VC-B
VC-A
Ph. II
VC-C
30
Ph. 1
15
7
Ph. III
16
Herriman Hwy
17
20
Herriman
18
19
7300 West
22
6400 West
13400 Sout

Table 17: Future (2037) Plus Project Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	32.0	C	-
7300 West / 11800 South	Signal	-	-	-	30.0	C	-
6400 West / 11800 South	Signal	-	-	-	24.3	C	-
6000 West / 11800 South	Signal	-	-	-	15.5	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	23.4	C	-
8000 West / Bacchus Highway	NB Stop	NB	8.8	A	-	-	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	5.0	A	-	-	-
6400 West / Herriman Boulevard	Signal	-	-	-	21.4	C	-
6000 West / Herriman Boulevard	Signal	-	-	-	21.6	C	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	46.0	D	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	37.6	D	-
Silver Sky Drive / 6000 West	EB Stop	EB	5.5	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	3.1	A	-	-	-
8000 West / Herriman Highway	SB Stop	SB	8.3	A	-	-	-
7300 West / Herriman Highway	Signal	-	-	-	49.0	D	-
6800 West / Herriman Highway	Signal	-	-	-	22.6	C	-
6400 West / Main Street	Signal	-	-	-	33.0	C	-
5600 West / Main Street	Signal	-	-	-	22.1	C	-
6400 West / 13400 South	Signal	-	-	-	26.2	C	-
5600 West / 13400 South	Signal	-	-	-	27.6	C	-
5000 West / 13400 South	Signal	-	-	-	29.7	C	-
8000 West / Herriman Boulevard	NB/SB Stop	SB	7.5	A	-	-	-
7300 West / Herriman Boulevard	Signal	-	-	-	32.7	C	-
6800 West / Herriman Boulevard	Signal	-	-	-	30.0	C	-
Silver Sky Drive / 6400 West	EB/WB Stop	EB	20.5	C	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

Table 18: Future (2037) Plus Project Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	29.8	C	-
7300 West / 11800 South	Signal	-	-	-	112.1	F	C (31.3)
6400 West / 11800 South	Signal	-	-	-	59.2	E	D (52.0)
6000 West / 11800 South	Signal	-	-	-	11.9	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	22.5	C	-
8000 West / Bacchus Highway	NB Stop	NB	15.0	B	-	-	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	11.2	B	-	-	-
6400 West / Herriman Boulevard	Signal	-	-	-	52.8	D	-
6000 West / Herriman Boulevard	Signal	-	-	-	18.6	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	48.0	D	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	32.7	C	-
Silver Sky Drive / 6000 West	EB Stop	EB	7.0	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.3	A	-	-	-
8000 West / Herriman Highway	SB Stop	SB	11.6	B	-	-	-
7300 West / Herriman Highway	Signal	-	-	-	66.0	E	D (49.2)
6800 West / Herriman Highway	Signal	-	-	-	52.6	D	-
6400 West / Main Street	Signal	-	-	-	90.1	F	D (41.2)
5600 West / Main Street	Signal	-	-	-	30.1	C	-
6400 West / 13400 South	Signal	-	-	-	78.5	E	C (32.1)
5600 West / 13400 South	Signal	-	-	-	50.8	D	-
5000 West / 13400 South	Signal	-	-	-	30.4	C	-
8000 West / Herriman Boulevard	NB/SB Stop	SB	10.4	B	-	-	-
7300 West / Herriman Boulevard	Signal	-	-	-	>120.0	F	C (31.6)
6800 West / Herriman Boulevard	Signal	-	-	-	36.2	D	-
Silver Sky Drive / 6400 West	EB/WB Stop	EB	24.4	C	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

D. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Bacchus Highway / 11800 South
  - Northbound Approach – 410 feet (a.m. peak), 525 feet (p.m. peak)
- 7300 West / 11800 South
  - Northbound Approach – 420 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 475 feet (p.m. peak)
- 6400 West / 11800 South
  - Northbound Approach – 485 feet (p.m. peak)
  - Southbound Approach – 780 feet (p.m. peak
  - Eastbound Approach – 610 feet (p.m. peak)
  - Westbound Approach – 410 feet (p.m. peak)
- 6400 West / Herriman Boulevard
  - Northbound Approach – >1,000 feet (p.m. peak)
  - Eastbound Approach – 395 feet (p.m. peak)
  - Westbound Approach – 355 feet (p.m. peak)
- 6000 West / Herriman Boulevard
  - Westbound Approach – 370 feet (a.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – 735 feet (a.m. peak)
  - Southbound Approach – 700 feet (p.m. peak)
  - Eastbound Approach – 365 feet (a.m. peak), 460 feet (p.m. peak)
  - Westbound Approach – 635 feet (a.m. peak), 400 feet (p.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Eastbound Approach – >1,000 feet (a.m. peak)
  - Westbound Approach – 545 feet (p.m. peak)
- 6800 West / Herriman Highway
  - Eastbound Approach – 610 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Westbound Approach – 515 feet (p.m. peak)
- 7300 West / Herriman Highway
  - Southbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Eastbound Approach – 665 feet (p.m. peak)
  - Westbound Approach – 415 feet (a.m. peak), 865 feet (p.m. peak)
- 6400 West / Main Street
  - Northbound Approach – 430 feet (a.m. peak)
  - Southbound Approach – 670 feet (a.m. peak), 675 feet (p.m. peak)

  - Eastbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 395 feet (p.m. peak)
- 5600 West / Main Street
  - Northbound Approach – 590 feet (a.m. peak), 725 feet (p.m. peak)
  - Southbound Approach – 540 feet (p.m. peak)
- 6400 West / 13400 South
  - Northbound Approach – 545 feet (a.m. peak)
  - Southbound Approach – 375 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 5600 West / 13400 South
  - Eastbound Approach – 455 feet (a.m. peak), 530 feet (p.m. peak)
  - Westbound Approach – 880 feet (p.m. peak)
- 5000 West / 13400 South
  - Southbound Approach – >1,000 feet (a.m. peak)
  - Westbound Approach – 530 feet (p.m. peak)
- 7300 West / Herriman Boulevard
  - Southbound Approach – 475 feet (a.m. peak), 905 feet (p.m. peak)
  - Eastbound Approach – 390 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Westbound Approach – 415 feet (a.m. peak), >1,000 feet (p.m. peak)
- 6800 West / Herriman Boulevard
  - Eastbound Approach – 510 feet (a.m. peak), 650 feet (p.m. peak)
  - Westbound Approach – 620 feet (a.m. peak), >1,000 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.

E. Mitigation Measures

It is recommended that permissive/protected left-turn phasing be installed on all approaches to the 7300 West / 11800 South, 6400 West / 11800 South, 7300 West / Herriman Boulevard, 6400 West / Herriman Boulevard, and 6400 West / Main Street intersections.

It is also recommended that dual left-turn lanes be constructed on the northbound approach to the 6400 West / 11800 South intersection and on the westbound approach to the 6400 West / 13400 South intersection.

It is also anticipated that 7300 West will need to be expanded to a five-lane cross section north of Herriman Boulevard to accommodate the projected traffic volumes.

Hales Engineering analyzed a mitigated scenario which assumed that these recommended mitigation measures had been implemented. Based on this analysis the recommended mitigation measures are anticipated to result in acceptable levels of service throughout the study area.

No additional mitigation measures are recommended.

X. FUTURE (2042) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2042) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified, and potential mitigation measures recommended.

B. Roadway Network

According to the WFRC Regional Transportation Plan, 7300 West is planned to be expanded to a five-lane cross section south of Herriman Highway as Phase 2 (2031-2040) project. It was assumed that this improvement, as well as all previously recommended background mitigation measures, had been completed prior to 2042.

C. Traffic Volumes

Hales Engineering obtained future (2042) forecasted volumes from a modified version of the WFRC / MAG TDM. This version of the WFRC/MAG TDM was tailored specifically for this project by Horrocks Engineers (and reviewed by Salt Lake County) to forecast future average weekday daily traffic (AWDT) volumes within the study area. Peak period turning movement counts were estimated using National Cooperative Highway Research Program (NCHRP) 255 methodologies which utilize existing peak period turn volumes and future AWDT volumes to project the future turn volumes at the major intersections. Future (2042) morning and evening peak hour turning movement volumes are shown in Figure 28 and Figure 29.

D. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at LOS E or LOS F in future (2042) background conditions as shown in Table 19 and Table 20:

- 6400 West / 11800 South (Evening Peak)
- 7300 West / Herriman Boulevard (Evening Peak)
- Anthem Park Boulevard / Herriman Boulevard (Morning Peak)
- Main Street / Herriman Boulevard / 12600 South (Morning and Evening Peak)
- 6400 West / Main Street (Evening Peak)
- 6400 West / 13400 South (Evening Peak)

These results serve as a baseline condition for the impact analysis of the proposed development for future (2042) conditions.

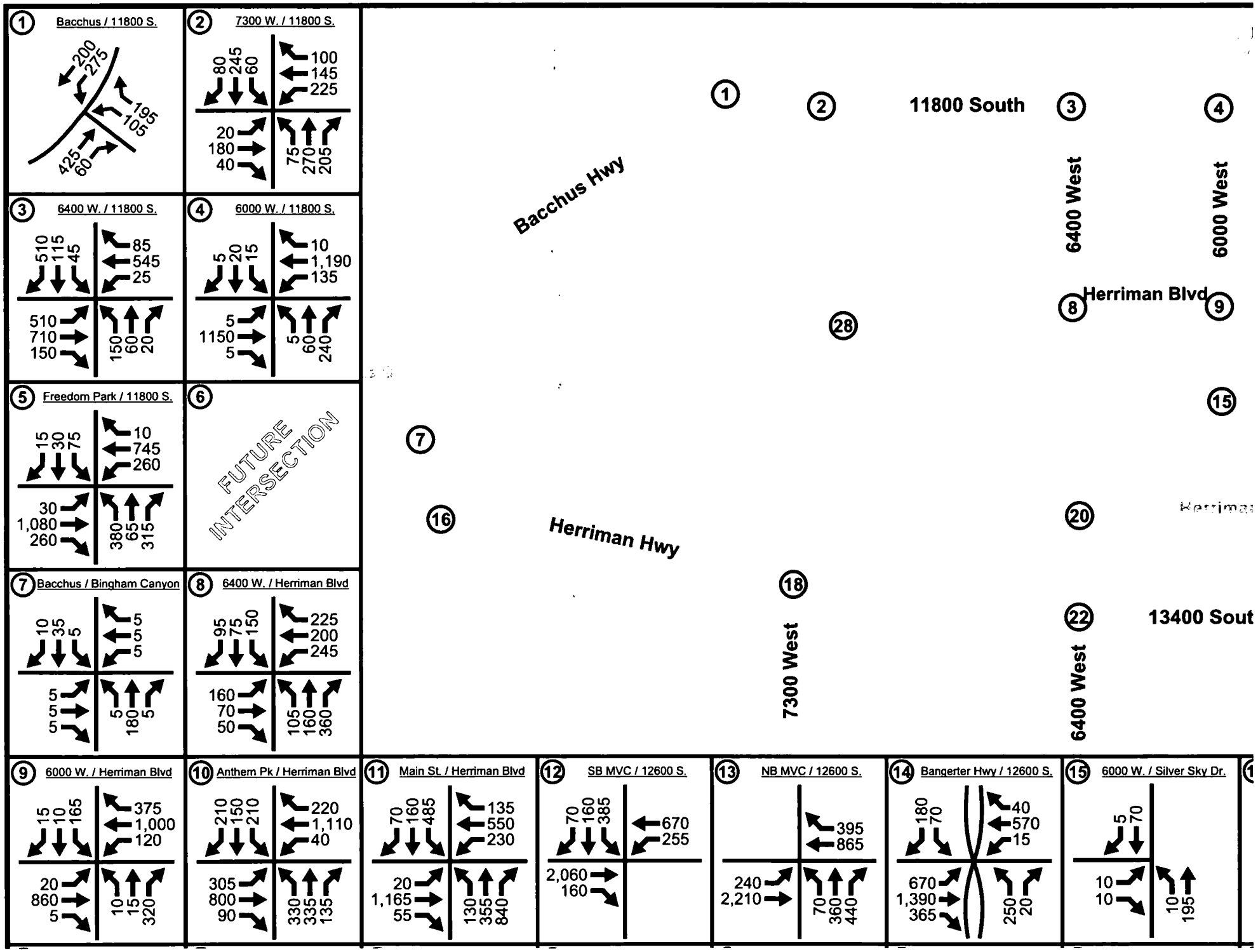
E. Queuing Analysis

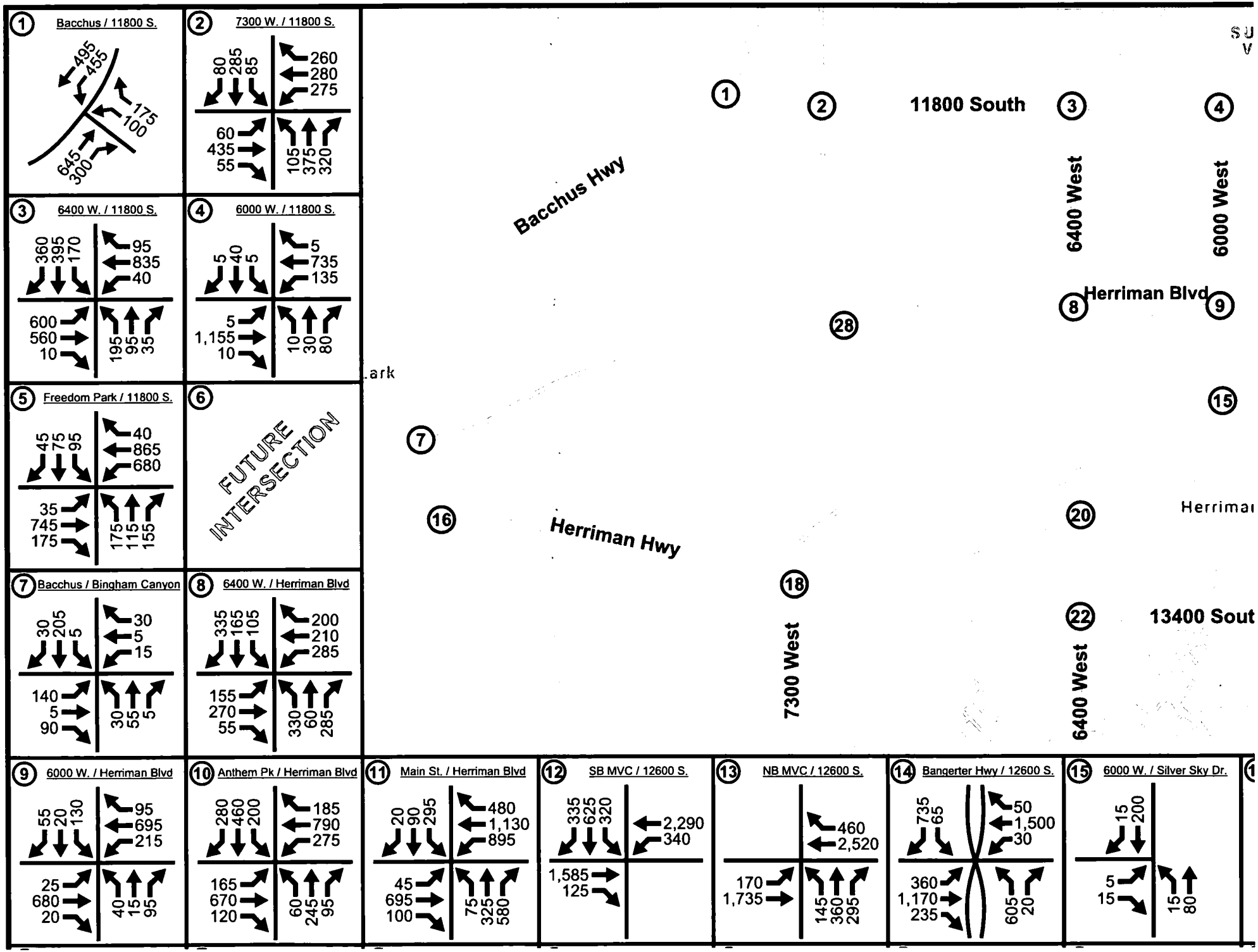
Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Bacchus Highway / 11800 South
  - Northbound Approach – 720 feet (a.m. peak), 495 feet (p.m. peak)
- 7300 West / 11800 South
  - Northbound Approach – 360 feet (a.m. peak), 655 feet (p.m. peak)
  - Southbound Approach – 855 feet (p.m. peak)
  - Westbound Approach – 825 feet (p.m. peak)
- 6400 West / 11800 South
  - Southbound Approach – 840 feet (p.m. peak)
  - Eastbound Approach – 415 feet (p.m. peak)
  - Westbound Approach – 460 feet (p.m. peak)
- Freedom Park Drive / 11800 South
  - Northbound Approach – 410 feet (p.m. peak)
  - Westbound Approach – 445 feet (p.m. peak)
- 7300 West / Herriman Boulevard
  - Northbound Approach – 425 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Eastbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 565 feet (p.m. peak)
- 6400 West / Herriman Boulevard
  - Northbound Approach – 375 feet (p.m. peak)
- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – >1,000 feet (a.m. peak)
  - Southbound Approach – 460 feet (a.m. peak), 635 feet (p.m. peak)
  - Westbound Approach – 925 feet (a.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Northbound Approach – 990 feet (a.m. peak), 385 feet (p.m. peak)
  - Southbound Approach – >1,000 feet (a.m. peak), 780 feet (p.m. peak)
  - Eastbound Approach – 355 feet (a.m. peak), 605 feet (p.m. peak)
  - Westbound Approach – 765 feet (p.m. peak)
- 7300 West / Herriman Highway
  - Southbound Approach – 360 feet (a.m. peak)
  - Westbound Approach – 390 feet (p.m. peak)

- 6400 West / Main Street
  - Northbound Approach – 505 feet (p.m. peak)
  - Southbound Approach – 905 feet (p.m. peak)
  - Eastbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 750 feet (p.m. peak)
- 5600 West / Main Street
  - Northbound Approach – 610 feet (a.m. peak), 445 feet (p.m. peak)
  - Southbound Approach – 460 feet (p.m. peak)
- 6400 West / 13400 South
  - Northbound Approach – 765 feet (a.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 565 feet (p.m. peak)
- 5600 West / 13400 South
  - Westbound Approach – 815 feet (p.m. peak)
- 5000 West / 13400 South
  - Southbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Eastbound Approach – 395 feet (a.m. peak)
  - Westbound Approach – 720 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.


1 Bacchus / 11800 S.
200 275 195 105 425 60
2 7300 W. / 11800 S.
80 245 60 100 145 225 20 180 40 75 270 205
3 6400 W. / 11800 S.
510 115 45 85 545 25 510 710 150 150 60 20
4 6000 W. / 11800 S.
5 20 15 10 1,190 135 5 1150 5 5 60 240
5 Freedom Park / 11800 S.
15 30 75 10 745 260 30 1,080 260 380 65 315
6 FUTURE INTERSECTION
7 Bacchus / Bingham Canyon
10 35 5 5 5 5 5 5 5 5 180 5
8 6400 W. / Herriman Blvd
95 75 150 225 200 245 160 70 50 105 160 360
9 6000 W. / Herriman Blvd
15 10 165 375 1,000 120 20 860 5 10 15 320
10 Anthem Pk / Herriman Blvd
210 150 210 220 1,110 40 305 800 90 330 335 135
11 Main St. / Herriman Blvd
70 160 485 135 550 230 20 1,165 55 130 355 840
12 SB MVC / 12600 S.
70 160 385 670 255 2,060 160
13 NB MVC / 12600 S.
395 865 240 2,210 70 360 440
14 Bangerter Hwy / 12600 S.
180 70 40 570 15 670 1,390 365 250 20
15 6000 W. / Silver Sky Dr.
5 70 10 10 10 195
11800 South
Bacchus Hwy
6400 West
6000 West
Herriman Blvd
28
Herriman Hwy
7300 West
6400 West
13400 Sout
BK 10983 PG 4846



BK 10983 PG 4847

Table 19: Future (2042) Background Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	42.2	D	-
7300 West / 11800 South	Signal	-	-	-	19.8	B	-
6400 West / 11800 South	Signal	-	-	-	22.2	C	-
6000 West / 11800 South	Signal	-	-	-	15.1	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	28.5	C	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	4.4	A	-	-	-
7300 West / Herriman Boulevard	Signal	-	-	-	20.9	C	-
6400 West / Herriman Boulevard	Signal	-	-	-	16.8	B	-
6000 West / Herriman Boulevard	Signal	-	-	-	14.9	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	61.5	E	D (45.6)
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	75.0	E	C (34.7)
SB MVC / 12600 South	Signal	-	-	-	-	-	-
NB MVC / 12600 South	Signal	-	-	-	-	-	-
Bangerter Highway / 12600 South	Signal	-	-	-	-	-	-
Silver Sky Drive / 6000 West	EB Stop	EB	4.1	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	7.2	A	-	-	-
7300 West / Herriman Highway	Signal	-	-	-	21.0	C	-
6400 West / Main Street	Signal	-	-	-	27.0	C	-
5600 West / Main Street	Signal	-	-	-	22.6	C	-
6400 West / 13400 South	Signal	-	-	-	29.9	C	-
5600 West / 13400 South	Signal	-	-	-	26.7	C	-
5000 West / 13400 South	Signal	-	-	-	46.6	D	-
SB MVC / 13400 South	Signal	-	-	-	-	-	-
NB MVC / 13400 South	Signal	-	-	-	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

Table 20: Future (2042) Background Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	26.4	C	-
7300 West / 11800 South	Signal	-	-	-	45.2	D	-
6400 West / 11800 South	Signal	-	-	-	56.4	E	D (54.7)
6000 West / 11800 South	Signal	-	-	-	12.9	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	30.0	C	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	6.3	A	-	-	-
7300 West / Herriman Boulevard	Signal	-	-	-	>120.0	F	C (31.3)
6400 West / Herriman Boulevard	Signal	-	-	-	18.8	B	-
6000 West / Herriman Boulevard	Signal	-	-	-	13.8	B	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	32.4	C	-
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	66.8	E	C (30.7)
SB MVC / 12600 South	Signal	-	-	-	-	-	-
NB MVC / 12600 South	Signal	-	-	-	-	-	-
Bangerter Highway / 12600 South	Signal	-	-	-	-	-	-
Silver Sky Drive / 6000 West	EB Stop	EB	3.5	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	4.3	A	-	-	-
7300 West / Herriman Highway	Signal	-	-	-	22.8	C	-
6400 West / Main Street	Signal	-	-	-	>120.0	F	C (29.3)
5600 West / Main Street	Signal	-	-	-	21.6	C	-
6400 West / 13400 South	Signal	-	-	-	93.1	F	C (34.0)
5600 West / 13400 South	Signal	-	-	-	45.9	D	-
5000 West / 13400 South	Signal	-	-	-	43.7	D	-
SB MVC / 13400 South	Signal	-	-	-	-	-	-
NB MVC / 13400 South	Signal	-	-	-	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2019

F. Mitigation Measures

It is anticipated that additional capacity will be needed at the following intersections to accommodate the projected 2042 traffic conditions:

- 6400 West / 11800 South
- 7300 West / Herriman Boulevard
- Anthem Park Boulevard / Herriman Boulevard
- Main Street / Herriman Boulevard / 12600 South
- 6400 West / Main Street
- 6400 West / 13400 South

The following mitigation measures are recommended:

- 6400 West / 11800 South
  - Add right-turn lanes to the east- and westbound approaches
- 7300 West / Herriman Boulevard
  - Add right-turn lanes to all approaches
  - Install permissive/protected left-turn phasing on all approaches
- Anthem Park Boulevard / Herriman Boulevard
  - Add right-turn lanes to the east- and westbound approaches
- Main Street / Herriman Boulevard / 12600 South
  - Add second through lane to the northbound approach
  - Increase left-turn storage length on the southbound approach
  - Construct dual left-turn lanes on the westbound approach
- 6400 West / Main Street
  - Add right-turn lanes to the east- and westbound approaches
- 6400 West / 13400 South
  - Increase left-turn storage length on the southbound approach
  - Construct dual left-turn lanes on the westbound approach

Hales Engineering analyzed a mitigated scenario which assumed that these recommended mitigation measures had been implemented. Based on this analysis the recommended mitigation measures are anticipated to result in acceptable levels of service throughout the study area.

No additional mitigation measures are recommended.

XI. FUTURE (2042) PLUS PROJECT CONDITIONS

A. Purpose

The purpose of the future (2042) plus project analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions plus the net trips generated by the proposed development. This scenario provides valuable insight into the potential impacts of the proposed project on future background traffic conditions.

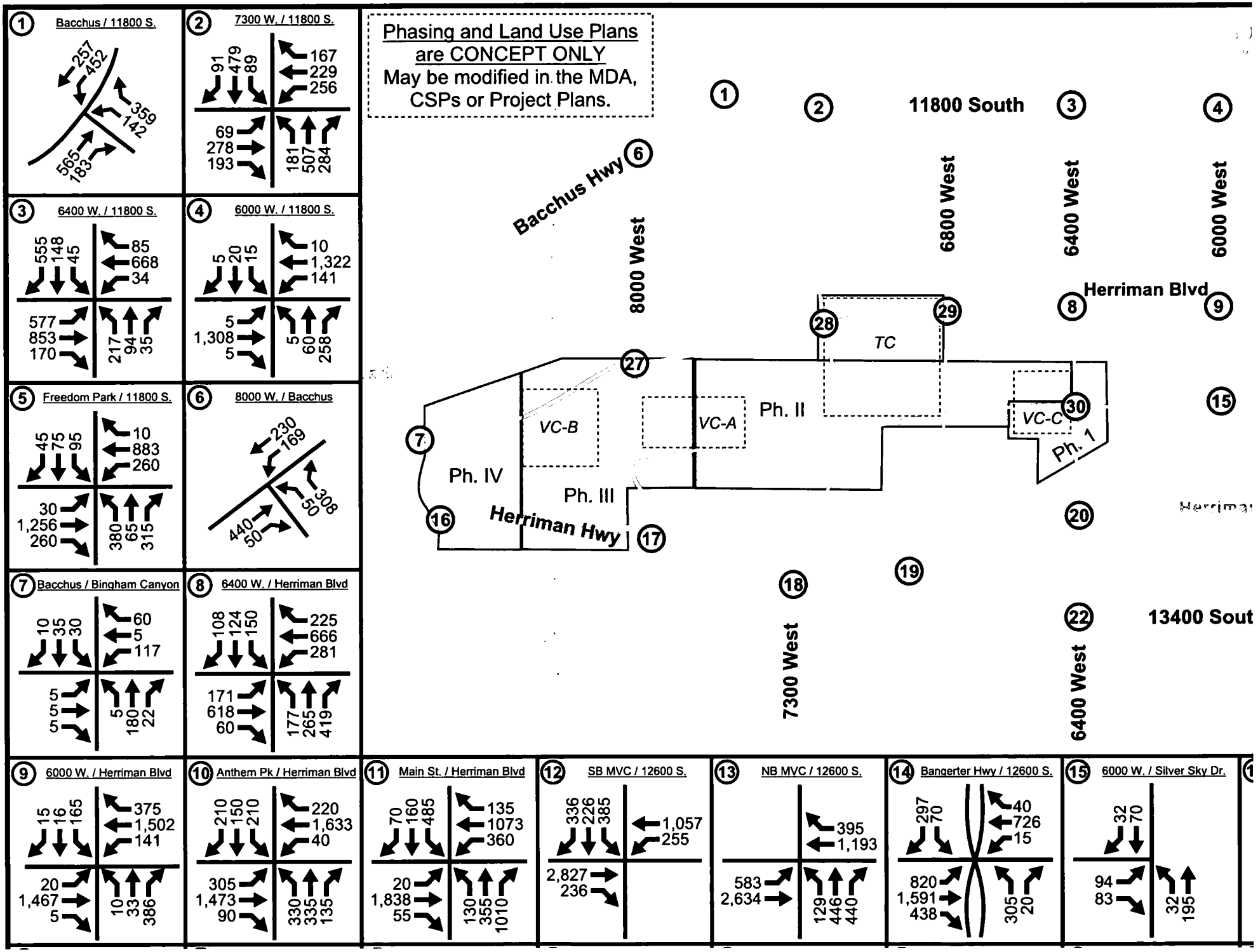
B. Traffic Volumes

Hales Engineering added the Phase IV project trips discussed in Chapter V to the future (2042) background traffic volumes to predict turning movement volumes for future (2042) plus project conditions. Additional turning movement volumes were added manually to new project roadways as well to match better with the volumes provided by Horrocks in the build travel demand models. Future (2042) plus project evening peak hour turning movement volumes are shown in Figure 30 and Figure 31.

C. Level of Service Analysis

Hales Engineering determined that the following intersections are anticipated to operate at levels of service E or F in future (2042) plus project conditions as shown in Table 21 and Table 22:

- 7300 West / 11800 South (Evening Peak)
- 6400 West / 11800 South (Evening Peak)
- 8000 West / Bacchus Highway (Evening Peak)
- Anthem Park Boulevard / Herriman Boulevard (Morning and Evening Peak)
- Main Street / Herriman Boulevard (Morning Peak)
- 8000 West / Herriman Highway (Evening Peak)
- 7300 West / Herriman Highway (Morning and Evening Peak)
- 6400 West / Main Street (Evening Peak)
- 5600 West / 13400 South (Evening Peak)
- 8000 West / Herriman Boulevard (Evening Peak)
- 7300 West / Herriman Boulevard (Evening Peak)



BK 10983 PG 4852

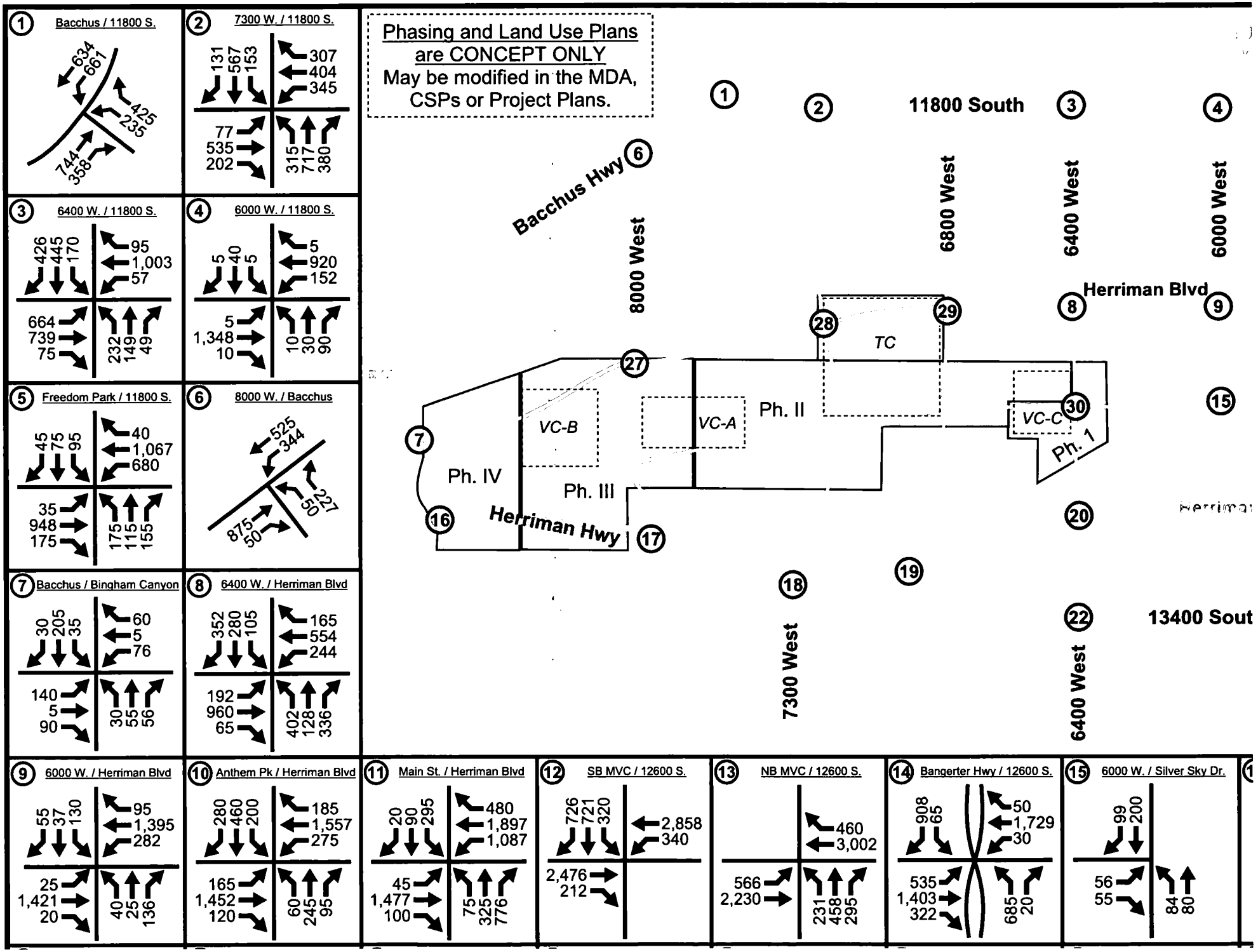

Phasing and Land Use Plans
are CONCEPT ONLY
May be modified in the MDA,
CSPs or Project Plans.
1 Bacchus / 11800 S.
634
661
425
235
744
358
2 7300 W. / 11800 S.
131
567
153
307
404
345
77
535
202
315
717
380
3 6400 W. / 11800 S.
426
445
170
95
1,003
57
664
739
75
232
149
49
4 6000 W. / 11800 S.
5
40
5
5
920
152
5
1,348
10
10
30
90
5 Freedom Park / 11800 S.
45
75
95
40
1,067
680
35
948
175
175
115
155
6 8000 W. / Bacchus
525
344
127
50
875
50
7 Bacchus / Bingham Canyon
30
205
35
60
5
76
140
5
90
30
55
56
8 6400 W. / Herriman Blvd
352
280
105
165
554
244
192
960
65
402
128
336
9 6000 W. / Herriman Blvd
55
37
130
95
1,395
282
25
1,421
20
40
25
136
10 Anthem Pk / Herriman Blvd
280
460
200
185
1,557
275
165
1,452
120
60
245
95
11 Main St. / Herriman Blvd
20
90
295
480
1,897
1,087
45
1,477
100
75
325
776
12 SB MVC / 12600 S.
726
721
320
2,858
340
2,476
212
13 NB MVC / 12600 S.
460
3,002
566
2,230
231
458
295
14 Bangerter Hwy / 12600 S.
908
65
50
1,729
30
535
1,403
322
685
20
15 6000 W. / Silver Sky Dr.
99
200
56
55
84
80
1
2
11800 South
3
4
Bacchus Hwy
6
8000 West
6800 West
6400 West
6000 West
Herriman Blvd
8
9
28
29
TC
27
VC-B
VC-A
Ph. II
VC-C
30
Ph. 1
15
7
Ph. IV
Ph. III
16
Herriman Hwy
17
20
19
18
7300 West
22
6400 West
13400 Sout

Table 21: Future (2042) Plus Project Morning Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	30.2	C	-
7300 West / 11800 South	Signal	-	-	-	27.3	C	-
6400 West / 11800 South	Signal	-	-	-	26.0	C	-
6000 West / 11800 South	Signal	-	-	-	16.3	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	29.7	C	-
8000 West / Bacchus Highway	NB Stop	NB	15.5	C	-	-	-
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	WB	4.9	A	-	-	-
6400 West / Herriman Boulevard	Signal	-	-	-	31.7	C	-
6000 West / Herriman Boulevard	Signal	-	-	-	42.8	D	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	102.7	F	D (39.3)
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	75.9	E	D (39.2)
Silver Sky Drive / 6000 West	EB Stop	EB	5.8	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	3.8	A	-	-	-
8000 West / Herriman Highway	SB Stop	SB	21.5	C	-	-	-
7300 West / Herriman Highway	Signal	-	-	-	82.3	F	C (33.5)
6800 West / Herriman Highway	Signal	-	-	-	21.5	C	-
6400 West / Main Street	Signal	-	-	-	41.9	D	-
5600 West / Main Street	Signal	-	-	-	22.2	C	-
6400 West / 13400 South	Signal	-	-	-	32.0	C	-
5600 West / 13400 South	Signal	-	-	-	33.0	C	-
5000 West / 13400 South	Signal	-	-	-	29.0	C	-
8000 West / Herriman Boulevard	NB/SB Stop	SB	16.0	C	-	-	-
7300 West / Herriman Boulevard	Signal	-	-	-	33.2	C	-
6800 West / Herriman Boulevard	Signal	-	-	-	37.6	D	-
Silver Sky Drive / 6400 West	EB/WB Stop	EB	29.1	D	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop (signalized) intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach etc.

Source: Hales Engineering, November 2019

Table 22: Future (2042) Plus Project Evening Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection		Mitigated
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]	LOS (Delay)
Bacchus Highway / 11800 South	Signal	-	-	-	32.2	C	-
7300 West / 11800 South	Signal	-	-	-	63.4	E	D (41.2)
6400 West / 11800 South	Signal	-	-	-	103.5	F	D (42.1)
6000 West / 11800 South	Signal	-	-	-	13.2	B	-
Freedom Park Drive / 11800 South	Signal	-	-	-	26.3	C	-
8000 West / Bacchus Highway	NB Stop	NB	>75	F	-	-	C (31.3)
Bingham Canyon Mine / Bacchus Highway	EB/WB Stop	EB	6.0	A	-	-	-
6400 West / Herriman Boulevard	Signal	-	-	-	37.5	D	-
6000 West / Herriman Boulevard	Signal	-	-	-	21.2	C	-
Anthem Park Boulevard / Herriman Boulevard	Signal	-	-	-	65.1	E	D (38.9)
Main Street / Herriman Boulevard / 12600 South	Signal	-	-	-	53.4	D	-
Silver Sky Drive / 6000 West	EB Stop	EB	6.1	A	-	-	-
Butterfield Canyon Road / Herriman Highway / Bacchus Highway	EB Stop	EB	3.9	A	-	-	-
8000 West / Herriman Highway	SB Stop	SB	>75	F	-	-	C (21.4)
7300 West / Herriman Highway	Signal	-	-	-	93.8	F	C (30.5)
6800 West / Herriman Highway	Signal	-	-	-	26.7	D	-
6400 West / Main Street	Signal	-	-	-	61.3	E	D (41.1)
5600 West / Main Street	Signal	-	-	-	34.1	C	-
6400 West / 13400 South	Signal	-	-	-	51.9	D	
5600 West / 13400 South	Signal	-	-	-	73.1	E	D (47.2)
5000 West / 13400 South	Signal	-	-	-	40.6	D	-
8000 West / Herriman Boulevard	NB/SB Stop	NB	>75	F	-	-	C (21.4)
7300 West / Herriman Boulevard	Signal	-	-	-	107.9	F	C (34.4)
6800 West / Herriman Boulevard	Signal	-	-	-	41.5	D	-
Silver Sky Drive / 6400 West	EB/WB Stop	EB	25.7	C	-	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach etc.

Source: Hales Engineering, November 2019

D. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. Notable 95th percentile queues are listed below:

- Bacchus Highway / 11800 South
  - Northbound Approach – 445 feet (a.m. peak), 625 feet (p.m. peak)
  - Southbound Approach – 400 feet (p.m. peak), 385 feet (p.m. peak)
- 7300 West / 11800 South
  - Northbound Approach – 370 feet (p.m. peak)
  - Southbound Approach – 390 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Eastbound Approach – 570 feet (p.m. peak)
  - Westbound Approach – 500 feet (p.m. peak)
- 6400 West / 11800 South
  - Northbound Approach – 385 feet (p.m. peak)
  - Southbound Approach – 815 feet (p.m. peak
  - Eastbound Approach – 535 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 6400 West / Herriman Boulevard
  - Northbound Approach – 490 feet (p.m. peak)
  - Southbound Approach – 485 feet (p.m. peak)
  - Eastbound Approach – 485 feet (p.m. peak)
- 6000 West / Herriman Boulevard
  - Northbound Approach – 575 feet (a.m. peak)
  - Eastbound Approach – >1,000 feet (a.m. peak)
  - Westbound Approach – 455 feet (a.m. peak)
- Freedom Park Drive / 11800 South
  - Northbound Approach – 360 feet (a.m. peak)
  - Westbound Approach – 390 feet (p.m. peak)
- 8000 West / Bacchus Highway
  - Northbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 6400 West / Herriman Boulevard
  - Northbound Approach – 490 feet (p.m. peak)
  - Southbound Approach – 485 feet (p.m. peak)
  - Eastbound Approach – 485 feet (p.m. peak)
- 6000 West / Herriman Boulevard
  - Northbound Approach – 575 feet (a.m. peak)
  - Eastbound Approach – >1,000 feet (a.m. peak)
  - Westbound Approach – 455 feet (a.m. peak)

- Anthem Park Boulevard / Herriman Boulevard
  - Northbound Approach – >1,000 feet (a.m. peak)
  - Southbound Approach – 730 feet (a.m. peak), 680 feet (p.m. peak)
  - Eastbound Approach – >1,000 feet (a.m. peak), 660 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (a.m. and p.m. peak)
- Main Street / Herriman Boulevard / 12600 South
  - Eastbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Westbound Approach – 365 feet (a.m. peak), 755 feet (p.m. peak)
- 8000 West / Herriman Highway
  - Southbound Approach – 735 feet (p.m. peak)
  - Eastbound Approach – 540 feet (p.m. peak)
- 7300 West / Herriman Highway
  - Southbound Approach – >1,000 feet (a.m. and p.m. peak)
  - Eastbound Approach – 450 feet (a.m. peak), 925 feet (p.m. peak)
  - Westbound Approach – 370 feet (a.m. peak), 525 feet (p.m. peak)
- 6800 West / Herriman Highway
  - Eastbound Approach – 605 feet (a.m. peak), 535 feet (p.m. peak)
  - Westbound Approach – 445 feet (a.m. peak), 600 feet (p.m. peak)
- 6400 West / Main Street
  - Northbound Approach – >1,000 feet (a.m. peak), 905 feet (p.m. peak)
  - Southbound Approach – 605 feet (a.m. peak), 960 feet (p.m. peak)
  - Eastbound Approach – >1,000 feet (p.m. peak)
  - Westbound Approach – 695 feet (p.m. peak)
- 5600 West / Main Street
  - Northbound Approach – 540 feet (a.m. peak), 810 feet (p.m. peak)
  - Southbound Approach – 610 feet (p.m. peak)
  - Westbound Approach – 370 feet (p.m. peak)
- 6400 West / 13400 South
  - Northbound Approach – 820 feet (a.m. peak)
  - Southbound Approach – >1,000 feet (p.m. peak)
- 5600 West / 13400 South
  - Eastbound Approach – 570 feet (a.m. peak), 620 feet (p.m. peak)
  - Westbound Approach – >1,000 feet (p.m. peak)
- 5000 West / 13400 South
  - Southbound Approach – 970 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Westbound Approach – 410 feet (p.m. peak)
- 7300 West / Herriman Boulevard
  - Northbound Approach – 375 feet (p.m. peak)
  - Southbound Approach – 480 feet (a.m. peak), >1,000 feet (p.m. peak)

  - Eastbound Approach – 390 feet (a.m. peak), >1,000 feet (p.m. peak)
  - Westbound Approach – 385 feet (a.m. peak), >1,000 feet (p.m. peak)
- 6800 West / Herriman Highway
  - Eastbound Approach – 605 feet (a.m. peak), 535 feet (p.m. peak)
  - Westbound Approach – 445 feet (a.m. peak), 600 feet (p.m. peak)

Detailed queueing reports are included in Appendix E.

E. Mitigation Measures

At the 7300 West / 11800 South intersection, it is recommended that dual left-turn lanes be installed on the north- and westbound approaches when warranted.

At the 6400 West / 11800 South intersection, it is recommended that a southbound right-turn overlap phase be used, that a southbound through lane be added, and that the northbound right-turn lane be converted into a shared through-right.

It is recommended that 6400 West be widened to a five-lane cross-section between 11800 South and Herriman Boulevard to provide needed capacity on the roadway and nearby intersections.

At the 8000 West / Bacchus Highway intersection, it is anticipated that the volumes will warrant a traffic signal with future (2042) plus project conditions. It is recommended that a signal be installed when warranted with turn pockets.

At the Anthem Park Boulevard / Herriman Boulevard intersection, it is recommended that dual left-turn lanes be installed on the north- and westbound approaches, that the northbound left-turn storage be extended, and that the northbound and southbound right-turn lanes be converted into shared through-right lanes.

At the Main Street / Herriman Boulevard intersection, it is recommended that the eastbound left-turn signal phase be changed to the lagging phase behind the westbound through phase. It is also recommended that a separate eastbound right-turn lane be added and that a westbound through lane be added.

It is recommended that Herriman Boulevard between Main Street and 6000 West be widened to a seven-lane cross-section to accommodate the high traffic volumes.

At the 8000 West / Herriman Highway intersection, it is anticipated that the volumes will warrant a traffic signal with future (2042) plus project conditions. It is recommended that a signal be installed when warranted with turn pockets.

At the 7300 West / Herriman Highway intersection, it is recommended that a southbound right-turn lane be added, that permissive-protected phasing be implemented on all approaches, and that dual left-turns be installed on the southbound approach.

At the 6400 West / Main Street intersection, it is recommended that dual left-turns be added on the northbound approach and that the eastbound right-turn be channelized.

At the 5600 West / 13400 South intersection, it is recommended that dual left-turns be added on the eastbound approach, that the eastbound and westbound through phases be assigned as lagging phases, and that the eastbound right-turn lane be converted into a shared through-right.

At the 8000 West / Herriman Boulevard intersection, it is anticipated that the volumes will warrant a traffic signal with future (2042) plus project conditions. It is recommended that a signal be installed when warranted with turn pockets.

At the 7300 West / Herriman Boulevard intersection, it is recommended that dual left-turns be added to the south-, east-, and westbound approaches, that the westbound right-turn be channelized, that a northbound and southbound lane be added, and that the eastbound right-turn lane be converted into a shared through-right lane.

It is recommended that Herriman Boulevard be widened to a five-lane cross-section between 7300 West and 6800 West to accommodate the high traffic volumes.

Hales Engineering completed a mitigated scenario with the proposed improvements. It is anticipated that all study intersections will operate at acceptable levels of service with the proposed improvements.

HALES ENGINEERING
innovative transportation solutions

APPENDIX A

Turning Movement Counts

HALES ENGINEERING
innovative transportation solutions

APPENDIX B

Project Phasing Plan

HALES ENGINEERING
innovative transportation solutions

APPENDIX C

Trip Generation

HALES ENGINEERING
innovative transportation solutions

APPENDIX D

LOS Reports

HALES ENGINEERING
innovative transportation solutions

APPENDIX E

95th Percentile Queue Length Reports

HALES ENGINEERING
innovative transportation solutions

APPENDIX F

Recommended Improvements

MEMORANDUM

Date: December 12, 2019

To: Salt Lake County

From: Hales Engineering

Subject: Salt Lake County – Olympia Hills TIS Addendum

UT19-1472

This memorandum discusses the trip generation for the proposed Olympia Hills development in Salt Lake County, Utah. This memorandum serves as an addendum to the traffic impact study (TIS) that was completed in December 2019.

Background

Since the TIS has been completed, additional details regarding land uses have been determined for the project. It was determined that the project will include more single-family housing than originally proposed and some senior housing. The TIS assumed that all multi-family would be low-rise housing (1 to 2 stories). However, with additional details provided, the multi-family housing was broken up into low-rise (1 to 2 stories) and mid-rise (3+ stories) as each generates different trip numbers according to the Institute of Transportation Engineering (ITE). A comparison of the land uses in the TIS with the refined land uses are shown in Table 1. As identified, the total number of dwelling units and the total square footage of office and retail was kept the same.

Table 1: Land Use Comparison

Land Use		Original TIS	Refined Land Uses	Δ
Residential	Single-family	950 DU	1,480 DU	+ 530 DU
	Multi-family (Low-Rise)	5,380 DU	862 DU	- 4,518 DU
	Multi-family (Mid-Rise)	-	3,269 DU	+ 3,269 DU
	Senior Housing – Detached	-	425 DU	+ 425 DU
	Senior Housing - Attached	-	294 DU	+ 294 DU
	TOTAL	6,330 DU	6,330 DU	-
Office		1,394,000 sf	1,394,000 sf	-
Retail		381,000 sf	381,000 sf	-

Trip Generation

Trip generation for the development was calculated using trip generation rates published in the ITE *Trip Generation (10th Edition, 2017)*. Detailed trip generation sheets for both the original TIS and the refined land uses are provided in Appendix A and Appendix B, respectively. Hales Engineering recalculated the internal capture rates for the Town Center and Village Centers based on the refined trip generation as well. Those sheets are also found in Appendix B.

The trip generation of the original TIS compared with the refined trip generation is shown in Table 2. As identified, the refined land uses have a lower daily trip generation than the uses in the original TIS; however, the peak hour trip generation is slightly higher with the refined land uses. Although the refined peak hour trips are a little higher when compared to the original TIS, it is not anticipated that the additional trips will impact the results and recommendations of the TIS.

Table 2: Trip Generation Comparison

Trip Generation	Original TIS	Refined LU	Δ
Weekday Daily	76,182	68,640	-7,542
Morning Peak Hour	4,472	4,535	63
Evening Peak Hour	5,775	6,009	234

Conclusions

The key findings are as follows:

- The Olympia Hills land uses were refined to a more realistic scenario for the project. More single-family homes were included in the refined land uses as well as some senior housing. The type of multi-family dwelling units was also refined.
- It is anticipated that the refined land uses will generate approximately 7,542 less daily trips, 63 additional morning peak hour trips, and 234 additional evening peak hour trips.
    - Although the refined peak hour trips are a little higher when compared to the original TIS, it is not anticipated that the additional trips will impact the results and recommendations of the TIS.

APPENDIX A

TIS Trip Generation

Salt Lake County - Olympia Hills TIS
Trip Generation - Phase 4 (2042)

Weekday Daily

Phase	Area	Land Use[1]	# of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Internal Capture[2]	Transit Reduction[3]	Net Trips Entering	Net Trips Exiting	Total Daily Trips
1 & 2	TC	Multifamily Housing (Low-Rise) (220)	795	Dwelling Units	5,970	50%	50%	2,985	2,985	0%	2.5%	2,910	2,910	5,820
1 & 2	TC	Single-Family Detached Housing (210)	119	Dwelling Units	1,222	50%	50%	611	611	0%	2.5%	596	596	1,192
1 & 2	TC	General Office Building (710)	1272	1,000 Sq. Ft. GFA	12,506	50%	50%	6,253	6,253	0%	2.5%	6,097	6,097	12,194
1 & 2	TC	Shopping Center (820)	258.8	1,000 Sq. Ft. GLA	9,770	50%	50%	4,885	4,885	0%	2.5%	4,763	4,763	9,526
1 & 2	VC-C	Multifamily Housing (Low-Rise) (220)	498	Dwelling Units	3,726	50%	50%	1,863	1,863	0%	2.5%	1,818	1,816	3,632
1 & 2	VC-C	Single-Family Detached Housing (210)	78	Dwelling Units	828	50%	50%	414	414	0%	2.5%	404	404	808
1 & 2	VC-C	General Office Building (710)	31.9	1,000 Sq. Ft. GFA	352	50%	50%	176	176	0%	2.5%	172	172	344
1 & 2	VC-C	Shopping Center (820)	36.3	1,000 Sq. Ft. GLA	1,372	50%	50%	686	686	0%	2.5%	669	669	1,338
1	Other	Multifamily Housing (Low-Rise) (220)	573	Dwelling Units	4,292	50%	50%	2,146	2,146	0%	2.5%	2,092	2,092	4,184
1	Other	Single-Family Detached Housing (210)	119	Dwelling Units	1,222	50%	50%	611	611	0%	2.5%	596	596	1,192
2 & 3	VC-A	Multifamily Housing (Low-Rise) (220)	570	Dwelling Units	4,270	50%	50%	2,135	2,135	0%	2.5%	2,082	2,082	4,164
2 & 3	VC-A	Single-Family Detached Housing (210)	60	Dwelling Units	650	50%	50%	325	325	0%	2.5%	317	317	634
2 & 3	VC-A	General Office Building (710)	90.1	1,000 Sq. Ft. GFA	960	50%	50%	480	480	0%	2.5%	468	468	936
2 & 3	VC-A	Shopping Center (820)	45.4	1,000 Sq. Ft. GLA	1,714	50%	50%	857	857	0%	2.5%	836	836	1,672
2	Other	Multifamily Housing (Low-Rise) (220)	486	Dwelling Units	3,634	50%	50%	1,817	1,817	0%	2.5%	1,772	1,772	3,544
2	Other	Single-Family Detached Housing (210)	369	Dwelling Units	3,458	50%	50%	1,729	1,729	0%	2.5%	1,686	1,686	3,372
3	VC-B	Multifamily Housing (Low-Rise) (220)	900	Dwelling Units	6,764	50%	50%	3,382	3,382	0%	2.5%	3,297	3,297	6,594
3	VC-B	Single-Family Detached Housing (210)	72	Dwelling Units	770	50%	50%	385	385	0%	2.5%	375	375	750
3	VC-B	Shopping Center (820)	40.5	1,000 Sq. Ft. GLA	1,530	50%	50%	765	765	0%	2.5%	746	746	1,492
3	Other	Multifamily Housing (Low-Rise) (220)	449	Dwelling Units	3,354	50%	50%	1,677	1,677	0%	2.5%	1,635	1,635	3,270
3	Other	Single-Family Detached Housing (210)	43	Dwelling Units	480	50%	50%	240	240	0%	2.5%	234	234	468
4	Other	Multifamily Housing (Low-Rise) (220)	1109	Dwelling Units	8,344	50%	50%	4,172	4,172	0%	2.5%	4,068	4,068	8,136
4	Other	Single-Family Detached Housing (210)	90	Dwelling Units	944	50%	50%	472	472	0%	2.5%	460	460	920
		Project Total Daily Trips			78,132			39,066	39,066			38,091	38,091	76,182

Morning Peak Hour

Phase	Area	Land Use[1]	# of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Internal Capture[2]	Transit Reduction[3]	Net Trips Entering	Net Trips Exiting	Total a.m. Trips
1 & 2	TC	Multifamily Housing (Low-Rise) (220)	795	Dwelling Units	342	23%	77%	79	263	9%	2.5%	70	233	303
1 & 2	TC	Single-Family Detached Housing (210)	119	Dwelling Units	90	25%	75%	23	68	9%	2.5%	20	60	80
1 & 2	TC	General Office Building (710)	1272	1,000 Sq. Ft. GFA	1,224	86%	14%	1,053	171	9%	2.5%	934	152	1,086
1 & 2	TC	Shopping Center (820)	258.8	1,000 Sq. Ft. GLA	244	62%	38%	151	93	9%	2.5%	134	83	217
1 & 2	VC-C	Multifamily Housing (Low-Rise) (220)	498	Dwelling Units	220	23%	77%	51	169	5%	2.5%	47	157	204
1 & 2	VC-C	Single-Family Detached Housing (210)	78	Dwelling Units	62	25%	75%	16	47	5%	2.5%	15	44	59
1 & 2	VC-C	General Office Building (710)	31.9	1,000 Sq. Ft. GFA	58	86%	14%	50	8	5%	2.5%	46	7	53
1 & 2	VC-C	Shopping Center (820)	36.3	1,000 Sq. Ft. GLA	36	62%	38%	22	14	5%	2.5%	20	13	33
1	Other	Multifamily Housing (Low-Rise) (220)	573	Dwelling Units	252	23%	77%	58	194	0%	2.5%	57	189	246
1	Other	Single-Family Detached Housing (210)	119	Dwelling Units	90	25%	75%	23	68	0%	2.5%	22	66	88
2 & 3	VC-A	Multifamily Housing (Low-Rise) (220)	570	Dwelling Units	250	23%	77%	58	193	7%	2.5%	53	175	228
2 & 3	VC-A	Single-Family Detached Housing (210)	60	Dwelling Units	48	25%	75%	12	36	7%	2.5%	11	33	44
2 & 3	VC-A	General Office Building (710)	90.1	1,000 Sq. Ft. GFA	112	86%	14%	96	16	7%	2.5%	87	15	102
2 & 3	VC-A	Shopping Center (820)	45.4	1,000 Sq. Ft. GLA	44	62%	38%	27	17	7%	2.5%	24	15	39
2	Other	Multifamily Housing (Low-Rise) (220)	486	Dwelling Units	216	23%	77%	50	166	0%	2.5%	49	162	211
2	Other	Single-Family Detached Housing (210)	369	Dwelling Units	268	25%	75%	67	201	0%	2.5%	65	196	261
3	VC-B	Multifamily Housing (Low-Rise) (220)	900	Dwelling Units	386	23%	77%	89	297	2%	2.5%	85	284	369
3	VC-B	Single-Family Detached Housing (210)	72	Dwelling Units	56	25%	75%	14	42	2%	2.5%	13	40	53
3	VC-B	Shopping Center (820)	40.5	1,000 Sq. Ft. GLA	40	62%	38%	25	15	2%	2.5%	24	14	38
3	Other	Multifamily Housing (Low-Rise) (220)	449	Dwelling Units	200	23%	77%	46	154	0%	2.5%	45	150	195
3	Other	Single-Family Detached Housing (210)	43	Dwelling Units	36	25%	75%	9	27	0%	2.5%	9	26	35
4	Other	Multifamily Housing (Low-Rise) (220)	1109	Dwelling Units	470	23%	77%	108	362	0%	2.5%	105	353	458
4	Other	Single-Family Detached Housing (210)	90	Dwelling Units	70	25%	75%	18	53	0%	2.5%	18	52	70
		Project Total a.m. Peak Hour Trips			4,814			2,145	2,674			1,953	2,519	4,472

Evening Peak Hour

Phase	Area	Land Use[1]	# of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Internal Capture[2]	Transit Reduction[3]	Net Trips Entering	Net Trips Exiting	Total p.m. Trips
1 & 2	TC	Multifamily Housing (Low-Rise) (220)	795	Dwelling Units	374	63%	37%	236	138	11%	2.5%	205	120	325
1 & 2	TC	Single-Family Detached Housing (210)	119	Dwelling Units	122	63%	37%	77	45	11%	2.5%	67	39	106
1 & 2	TC	General Office Building (710)	1272	1,000 Sq. Ft. GFA	1,276	16%	84%	204	1,072	11%	2.5%	177	930	1,107
1 & 2	TC	Shopping Center (820)	258.8	1,000 Sq. Ft. GLA	988	48%	52%	474	514	11%	2.5%	411	446	857
1 & 2	VC-C	Multifamily Housing (Low-Rise) (220)	498	Dwelling Units	248	63%	37%	156	92	13%	2.5%	132	78	210
1 & 2	VC-C	Single-Family Detached Housing (210)	78	Dwelling Units	82	63%	37%	52	30	13%	2.5%	44	25	69
1 & 2	VC-C	General Office Building (710)	31.9	1,000 Sq. Ft. GFA	40	16%	84%	6	34	13%	2.5%	5	29	34
1 & 2	VC-C	Shopping Center (820)	36.3	1,000 Sq. Ft. GLA	140	48%	52%	67	73	13%	2.5%	57	62	119
1	Other	Multifamily Housing (Low-Rise) (220)	573	Dwelling Units	280	63%	37%	176	104	0%	2.5%	172	101	273
1	Other	Single-Family Detached Housing (210)	119	Dwelling Units	122	63%	37%	77	45	0%	2.5%	75	44	119
2 & 3	VC-A	Multifamily Housing (Low-Rise) (220)	570	Dwelling Units	278	63%	37%	175	103	11%	2.5%	152	89	241
2 & 3	VC-A	Single-Family Detached Housing (210)	60	Dwelling Units	64	63%	37%	40	24	11%	2.5%	35	21	56
2 & 3	VC-A	General Office Building (710)	90.1	1,000 Sq. Ft. GFA	104	16%	84%	17	87	11%	2.5%	15	75	90
2 & 3	VC-A	Shopping Center (820)	45.4	1,000 Sq. Ft. GLA	174	48%	52%	84	90	11%	2.5%	73	78	151
2	Other	Multifamily Housing (Low-Rise) (220)	486	Dwelling Units	242	63%	37%	152	90	0%	2.5%	148	88	236
2	Other	Single-Family Detached Housing (210)	369	Dwelling Units	356	63%	37%	224	132	0%	2.5%	218	129	347
3	VC-B	Multifamily Housing (Low-Rise) (220)	900	Dwelling Units	418	63%	37%	263	155	7%	2.5%	238	141	379
3	VC-B	Single-Family Detached Housing (210)	72	Dwelling Units	76	63%	37%	48	28	7%	2.5%	44	25	69
3	VC-B	Shopping Center (820)	40.5	1,000 Sq. Ft. GLA	156	48%	52%	75	81	7%	2.5%	68	73	141
3	Other	Multifamily Housing (Low-Rise) (220)	449	Dwelling Units	226	63%	37%	142	84	0%	2.5%	138	82	220
3	Other	Single-Family Detached Housing (210)	43	Dwelling Units	46	63%	37%	29	17	0%	2.5%	28	17	45
4	Other	Multifamily Housing (Low-Rise) (220)	1109	Dwelling Units	504	63%	37%	318	186	0%	2.5%	310	181	491
4	Other	Single-Family Detached Housing (210)	90	Dwelling Units	92	63%	37%	58	34	0%	2.5%	57	33	90
		Project Total p.m. Peak Hour Trips			6,408			3,150	3,258			2,869	2,906	5,775

1. Land Use Code from the Institute of Transportation Engineers (ITE) *Trip Generation*, 10th Edition, 2017
2. Internal capture rates based on the NCHRP 684 Internal Trip Capture Estimation Tool, which follows ITE methodologies for internal capture
3. Transit reduction of 2.5%, based on the transit ridership of comparable nearby Riverton City, based on 2017 American Community Survey estimates. Assumes bus-only transit and no light-rail

SOURCE: Hales Engineering, December 2019

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Town Center Area	**Date:**	10/22/2019
Analysis Year:	2032	**Checked By:**	Scott Johnson
Analysis Period:	**AM Street Peak Hour**	**Date:**	10/22/2019

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	1,272	1,000 sq ft	1,224	1,053	171
Retail	820	258.8	1,000 sq ft	244	151	93
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	914	dwelling units	433	102	331
Hotel				0		
All Other Land Uses[2]				0		
				1,901	1,306	595

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.06	2.5%	0%	1.06	2.5%	0%
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		51	0	0	0	0
Retail	32		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	7	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	2,072	1,408	664
Internal Capture Percentage	9%	7%	14%
External Vehicle-Trips[5]	1,685	1,190	495
External Transit-Trips[6]	47	33	14
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	3%	28%
Retail	31%	31%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Town Center Area	**Date:**	10/22/2019
Analysis Year:	2032	**Checked By:**	Scott Johnson
Analysis Period:	**PM Street Peak Hour**	**Date:**	10/22/2019

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	1,272	1,000 sq ft	1,276	204	1,072
Retail	820	258.8	1,000 sq ft	988	474	514
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	914	dwelling units	496	313	183
Hotel				0		
All Other Land Uses[2]				0		
				2,760	991	1,769

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.11	2.5%	0%	1.11	2.5%	0%
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2000			2000	
Retail					2000	
Restaurant						
Cinema/Entertainment						
Residential		2000				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		15	0	0	14	0
Retail	12		0	0	102	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	8	18	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,182	1,160	2,022
Internal Capture Percentage	11%	15%	8%
External Vehicle-Trips[5]	2,409	824	1,585
External Transit-Trips[6]	72	25	47
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	9%	2%
Retail	6%	18%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	32%	12%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center A Area	**Date:**	10/22/2019
Analysis Year:	2037	**Checked By:**	Scott Johnson
Analysis Period:	**AM Street Peak Hour**	**Date:**	10/22/2019

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	90.1	1,000 sq ft	112	96	16
Retail	820	45.4	1,000 sq ft	44	27	17
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	630	dwelling units	299	70	229
Hotel				0		
All Other Land Uses[2]				0		
				455	193	262

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.06	2.5%	0%	1.06	2.5%	0%
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	4		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	3	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	509	213	296
Internal Capture Percentage	7%	8%	6%
External Vehicle-Trips[5]	416	174	242
External Transit-Trips[6]	11	5	6
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	29%
Retail	25%	30%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center A Area	**Date:**	10/22/2019
Analysis Year:	2037	**Checked By:**	Scott Johnson
Analysis Period:	**PM Street Peak Hour**	**Date:**	10/22/2019

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	90.1	1,000 sq ft	104	17	87
Retail	820	45.4	1,000 sq ft	174	84	90
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	630	dwelling units	342	215	127
Hotel				0		
All Other Land Uses[2]				0		
				620	316	304

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.11	2.5%	0%	1.11	2.5%	0%
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1750			1750	
Retail					1750	
Restaurant						
Cinema/Entertainment						
Residential		1750				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	1	0
Retail	2		0	0	20	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	6	5	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	720	368	352
Internal Capture Percentage	11%	10%	11%
External Vehicle-Trips[5]	542	276	266
External Transit-Trips[6]	15	8	7
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	42%	5%
Retail	9%	20%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	9%	8%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center B Area	**Date:**	10/22/2019
Analysis Year:	2037	**Checked By:**	Scott Johnson
Analysis Period:	**AM Street Peak Hour**	**Date:**	10/22/2019

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	40.5	1,000 sq ft	40	25	15
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	972	dwelling units	442	103	339
Hotel				0		
All Other Land Uses[2]				0		
				482	128	354

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	546	145	401
Internal Capture Percentage	2%	4%	1%
External Vehicle-Trips[5]	460	119	341
External Transit-Trips[6]	13	4	9
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	14%	11%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center B Area	**Date:**	10/22/2019
Analysis Year:	2037	**Checked By:**	Scott Johnson
Analysis Period:	**PM Street Peak Hour**	**Date:**	10/22/2019

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	40.5	1,000 sq ft	156	75	81
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	972	dwelling units	494	311	183
Hotel				0		
All Other Land Uses[2]				0		
				650	386	264

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					1500	
Restaurant						
Cinema/Entertainment						
Residential		1500				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	20	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	757	449	308
Internal Capture Percentage	7%	6%	8%
External Vehicle-Trips[5]	592	356	236
External Transit-Trips[6]	17	10	7
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	7%	20%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	6%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center C Area	**Date:**	10/22/2019
Analysis Year:	2032	**Checked By:**	Scott Johnson
Analysis Period:	**AM Street Peak Hour**	**Date:**	10/22/2019

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	31.9	1,000 sq ft	58	50	8
Retail	820	36.3	1,000 sq ft	36	22	14
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	576	dwelling units	283	67	216
Hotel				0		
All Other Land Uses[2]				0		
				377	139	238

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.06	2.5%	0%	1.06	2.5%	0%
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	2		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	423	155	268
Internal Capture Percentage	5%	6%	4%
External Vehicle-Trips[5]	350	127	223
External Transit-Trips[6]	10	4	6
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	8%	25%
Retail	15%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center C Area	**Date:**	10/22/2019
Analysis Year:	2032	**Checked By:**	Scott Johnson
Analysis Period:	**PM Street Peak Hour**	**Date:**	10/22/2019

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	31.9	1,000 sq ft	40	6	34
Retail	820	36.3	1,000 sq ft	140	67	73
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220	576	dwelling units	330	208	122
Hotel				0		
All Other Land Uses[2]				0		
				510	281	229

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.11	2.5%	0%	1.11	2.5%	0%
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1000			1000	
Retail					1000	
Restaurant						
Cinema/Entertainment						
Residential		1000				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	1	0
Retail	2		0	0	21	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	6	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	593	327	266
Internal Capture Percentage	13%	12%	15%
External Vehicle-Trips[5]	431	241	190
External Transit-Trips[6]	13	7	6
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	86%	16%
Retail	14%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	9%	7%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

APPENDIX B

Updated Land Use Trip Generation

Salt Lake County - Olympia Hills TIS
Trip Generation - Phase 4 (2042)

Weekday Daily														
1 & 2	TC	Multifamily Housing (Low-Rise) (220)	125	Dwelling Units	906	50%	50%	453	453	0%	2.5%	442	442	884
1 & 2	TC	Single-Family Detached Housing (210)	215	Dwelling Units	2,104	50%	50%	1,052	1,052	0%	2.5%	1,026	1,026	2,053
1 & 2	TC	General Office Building (710)	1272	1,000 Sq. Ft. GFA	12,906	50%	50%	6,253	6,253	0%	2.5%	6,097	6,097	12,194
1 & 2	TC	Shopping Center (820)	258.8	1,000 Sq. Ft. GLA	9,770	50%	50%	4,885	4,885	0%	2.5%	4,763	4,763	9,526
1 & 2	VC-C	Multifamily Housing (Low-Rise) (220)	75	Dwelling Units	529	50%	50%	264	264	0%	2.5%	257	257	514
1 & 2	VC-C	Single-Family Detached Housing (210)	137	Dwelling Units	1,350	50%	50%	675	675	0%	2.5%	678	678	1,356
1 & 2	VC-C	General Office Building (710)	31.9	1,000 Sq. Ft. GFA	352	50%	50%	176	176	0%	2.5%	172	172	344
1 & 2	VC-C	Shopping Center (820)	56.3	1,000 Sq. Ft. GLA	1,372	50%	50%	686	686	0%	2.5%	669	669	1,338
1	Other	Multifamily Housing (Low-Rise) (220)	95	Dwelling Units	676	50%	50%	338	338	0%	2.5%	331	331	662
1	Other	Single-Family Detached Housing (210)	162	Dwelling Units	1,622	50%	50%	811	811	0%	2.5%	791	791	1,582
2 & 3	VC-A	Multifamily Housing (Low-Rise) (220)	86	Dwelling Units	610	50%	50%	305	305	0%	2.5%	297	297	594
2 & 3	VC-A	Single-Family Detached Housing (210)	148	Dwelling Units	1,492	50%	50%	746	746	0%	2.5%	727	727	1,454
2 & 3	VC-A	General Office Building (710)	90.1	1,000 Sq. Ft. GFA	960	50%	50%	480	480	0%	2.5%	468	468	936
2 & 3	VC-A	Shopping Center (820)	45.4	1,000 Sq. Ft. GLA	1,714	50%	50%	857	857	0%	2.5%	836	836	1,672
2	Other	Multifamily Housing (Low-Rise) (220)	116	Dwelling Units	838	50%	50%	419	419	0%	2.5%	409	409	818
2	Other	Single-Family Detached Housing (210)	200	Dwelling Units	1,968	50%	50%	984	984	0%	2.5%	958	958	1,916
3	VC-B	Multifamily Housing (Low-Rise) (220)	133	Dwelling Units	966	50%	50%	483	483	0%	2.5%	471	471	942
3	VC-B	Single-Family Detached Housing (210)	237	Dwelling Units	2,212	50%	50%	1,106	1,106	0%	2.5%	1,078	1,078	2,156
3	VC-B	Shopping Center (820)	40.5	1,000 Sq. Ft. GLA	1,530	50%	50%	765	765	0%	2.5%	746	746	1,492
3	Other	Multifamily Housing (Low-Rise) (220)	67	Dwelling Units	486	50%	50%	243	243	0%	2.5%	237	237	474
3	Other	Single-Family Detached Housing (210)	115	Dwelling Units	1,164	50%	50%	582	582	0%	2.5%	577	577	1,154
4	Other	Multifamily Housing (Low-Rise) (220)	165	Dwelling Units	1,208	50%	50%	604	604	0%	2.5%	589	589	1,178
4	Other	Single-Family Detached Housing (210)	276	Dwelling Units	2,646	50%	50%	1,323	1,323	0%	2.5%	1,290	1,290	2,580
1 & 2	TC	Multifamily Housing (Mid-Rise) (221)	470	Dwelling Units	2,540	50%	50%	1,270	1,270	0%	2.5%	1,248	1,248	2,496
1 & 2	TC	Senior Adult Housing-Detached (251)	61	Dwelling Units	366	50%	50%	183	183	0%	2.5%	178	178	356
1 & 2	TC	Senior Adult Housing-Attached (252)	43	Dwelling Units	148	50%	50%	74	74	0%	2.5%	72	72	144
1 & 2	VC-C	Multifamily Housing (Mid-Rise) (221)	300	Dwelling Units	1,634	50%	50%	817	817	0%	2.5%	797	797	1,594
1 & 2	VC-C	Senior Adult Housing-Detached (251)	39	Dwelling Units	242	50%	50%	121	121	0%	2.5%	118	118	236
1 & 2	VC-C	Senior Adult Housing-Attached (252)	26	Dwelling Units	80	50%	50%	40	40	0%	2.5%	39	39	78
1	Other	Multifamily Housing (Mid-Rise) (221)	357	Dwelling Units	1,944	50%	50%	972	972	0%	2.5%	948	948	1,896
1	Other	Senior Adult Housing-Detached (251)	46	Dwelling Units	286	50%	50%	143	143	0%	2.5%	139	139	278
1	Other	Senior Adult Housing-Attached (252)	32	Dwelling Units	104	50%	50%	52	52	0%	2.5%	51	51	102
2 & 3	VC-A	Multifamily Housing (Mid-Rise) (221)	329	Dwelling Units	1,770	50%	50%	885	885	0%	2.5%	863	863	1,726
2 & 3	VC-A	Senior Adult Housing-Detached (251)	42	Dwelling Units	264	50%	50%	132	132	0%	2.5%	129	129	258
2 & 3	VC-A	Senior Adult Housing-Attached (252)	29	Dwelling Units	92	50%	50%	46	46	0%	2.5%	45	45	90
2	Other	Multifamily Housing (Mid-Rise) (221)	442	Dwelling Units	2,408	50%	50%	1,204	1,204	0%	2.5%	1,174	1,174	2,348
2	Other	Senior Adult Housing-Detached (251)	57	Dwelling Units	344	50%	50%	172	172	0%	2.5%	168	168	336
2	Other	Senior Adult Housing-Attached (252)	40	Dwelling Units	138	50%	50%	69	69	0%	2.5%	68	68	132
3	VC-B	Multifamily Housing (Mid-Rise) (221)	522	Dwelling Units	2,776	50%	50%	1,388	1,388	0%	2.5%	1,354	1,354	2,708
3	VC-B	Senior Adult Housing-Detached (251)	65	Dwelling Units	386	50%	50%	193	193	0%	2.5%	188	188	376
3	VC-B	Senior Adult Housing-Attached (252)	45	Dwelling Units	156	50%	50%	78	78	0%	2.5%	76	76	152
3	Other	Multifamily Housing (Mid-Rise) (221)	254	Dwelling Units	1,384	50%	50%	692	692	0%	2.5%	675	675	1,350
3	Other	Senior Adult Housing-Detached (251)	53	Dwelling Units	214	50%	50%	107	107	0%	2.5%	104	104	208
3	Other	Senior Adult Housing-Attached (252)	23	Dwelling Units	68	50%	50%	34	34	0%	2.5%	33	33	66
4	Other	Multifamily Housing (Mid-Rise) (221)	619	Dwelling Units	3,372	50%	50%	1,686	1,686	0%	2.5%	1,644	1,644	3,288
4	Other	Senior Adult Housing-Detached (251)	83	Dwelling Units	478	50%	50%	239	239	0%	2.5%	233	233	466
4	Other	Senior Adult Housing-Attached (252)	56	Dwelling Units	200	50%	50%	100	100	0%	2.5%	98	98	196
		Project Total Daily Trips			79,394			39,197	39,197			34,329	34,329	68,640

Morning Peak Hour														
1 & 2	TC	Multifamily Housing (Low-Rise) (220)	125	Dwelling Units	80	23%	77%	14	46	9%	2.5%	12	41	53
1 & 2	TC	Single-Family Detached Housing (210)	215	Dwelling Units	156	25%	75%	40	118	9%	2.5%	35	106	141
1 & 2	TC	General Office Building (710)	1272	1,000 Sq. Ft. GFA	1,224	86%	14%	1,053	171	9%	2.5%	934	152	1,086
1 & 2	TC	Shopping Center (820)	258.8	1,000 Sq. Ft. GLA	244	62%	38%	151	93	9%	2.5%	134	83	217
1 & 2	VC-C	Multifamily Housing (Low-Rise) (220)	75	Dwelling Units	38	23%	77%	9	29	5%	2.5%	8	27	35
1 & 2	VC-C	Single-Family Detached Housing (210)	137	Dwelling Units	104	25%	75%	26	78	5%	2.5%	24	72	96
1 & 2	VC-C	General Office Building (710)	31.9	1,000 Sq. Ft. GFA	58	88%	14%	50	8	5%	2.5%	46	7	53
1 & 2	VC-C	Shopping Center (820)	56.3	1,000 Sq. Ft. GLA	36	62%	38%	22	14	5%	2.5%	20	13	33
1	Other	Multifamily Housing (Low-Rise) (220)	95	Dwelling Units	46	23%	77%	11	35	6%	2.5%	11	34	45
1	Other	Single-Family Detached Housing (210)	162	Dwelling Units	120	25%	75%	30	90	6%	2.5%	29	88	117
2 & 3	VC-A	Multifamily Housing (Low-Rise) (220)	570	Dwelling Units	250	23%	77%	58	193	9%	2.5%	54	179	233
2 & 3	VC-A	Single-Family Detached Housing (210)	80	Dwelling Units	48	25%	75%	12	36	5%	2.5%	11	33	44
2 & 3	VC-A	General Office Building (710)	90.1	1,000 Sq. Ft. GFA	112	86%	14%	96	16	5%	2.5%	89	15	104
2 & 3	VC-A	Shopping Center (820)	45.4	1,000 Sq. Ft. GLA	44	62%	38%	27	17	5%	2.5%	25	16	41
2	Other	Multifamily Housing (Low-Rise) (220)	116	Dwelling Units	56	23%	77%	13	43	9%	2.5%	13	43	56
2	Other	Single-Family Detached Housing (210)	200	Dwelling Units	148	25%	75%	37	111	9%	2.5%	36	108	144
3	VC-B	Multifamily Housing (Low-Rise) (220)	133	Dwelling Units	64	23%	77%	15	49	3%	2.5%	14	46	60
3	VC-B	Single-Family Detached Housing (210)	237	Dwelling Units	166	25%	75%	42	125	3%	2.5%	40	118	158
3	VC-B	Shopping Center (820)	40.5	1,000 Sq. Ft. GLA	40	62%	38%	25	15	3%	2.5%	24	14	38
3	Other	Multifamily Housing (Low-Rise) (220)	67	Dwelling Units	34	23%	77%	8	26	9%	2.5%	8	25	33
3	Other	Single-Family Detached Housing (210)	115	Dwelling Units	68	25%	75%	22	68	9%	2.5%	21	66	85
4	Other	Multifamily Housing (Low-Rise) (220)	165	Dwelling Units	78	23%	77%	18	60	9%	2.5%	18	59	77
4	Other	Single-Family Detached Housing (210)	276	Dwelling Units	203	25%	75%	51	152	9%	2.5%	50	148	198
1 & 2	TC	Multifamily Housing (Mid-Rise) (221)	470	Dwelling Units	170	26%	74%	44	126	9%	2.5%	39	112	151
1 & 2	TC	Senior Adult Housing-Detached (251)	61	Dwelling Units	30	33%	67%	10	20	9%	2.5%	9	18	27
1 & 2	TC	Senior Adult Housing-Attached (252)	43	Dwelling Units	10	35%	65%	4	7	9%	2.5%	4	6	10
1 & 2	VC-C	Multifamily Housing (Mid-Rise) (221)	300	Dwelling Units	108	26%	74%	28	80	5%	2.5%	26	74	100
1 & 2	VC-C	Senior Adult Housing-Detached (251)	39	Dwelling Units	20	33%	67%	7	13	5%	2.5%	8	12	20
1 & 2	VC-C	Senior Adult Housing-Attached (252)	26	Dwelling Units	6	35%	65%	2	4	5%	2.5%	2	4	6
1	Other	Multifamily Housing (Mid-Rise) (221)	357	Dwelling Units	130	26%	74%	34	96	6%	2.5%	13	84	127
1	Other	Senior Adult Housing-Detached (251)	46	Dwelling Units	24	33%	67%	8	16	0%	2.5%	8	16	24
1	Other	Senior Adult Housing-Attached (252)	32	Dwelling Units	9	35%	65%	3	6	0%	2.5%	3	6	9
2 & 3	VC-A	Multifamily Housing (Mid-Rise) (221)	329	Dwelling Units	116	26%	74%	31	87	5%	2.5%	29	81	110
2 & 3	VC-A	Senior Adult Housing-Detached (251)	42	Dwelling Units	22	33%	67%	7	15	5%	2.5%	6	14	20
2 & 3	VC-A	Senior Adult Housing-Attached (252)	29	Dwelling Units	6	35%	65%	2	4	5%	2.5%	2	4	6
2	Other	Multifamily Housing (Mid-Rise) (221)	442	Dwelling Units	160	26%	74%	42	118	0%	2.5%	41	116	158
2	Other	Senior Adult Housing-Detached (251)	57	Dwelling Units	28	33%	67%	9	19	0%	2.5%	9	19	28
2	Other	Senior Adult Housing-Attached (252)	40	Dwelling Units	8	35%	65%	3	5	0%	2.5%	3	5	8
3	VC-B	Multifamily Housing (Mid-Rise) (221)	522	Dwelling Units	182	26%	74%	47	135	3%	2.5%	44	128	172
3	VC-B	Senior Adult Housing-Detached (251)	65	Dwelling Units	30	33%	67%	10	20	3%	2.5%	9	19	28
3	VC-B	Senior Adult Housing-Attached (252)	45	Dwelling Units	10	35%	65%	4	7	3%	2.5%	4	7	11
3	Other	Multifamily Housing (Mid-Rise) (221)	254	Dwelling Units	92	26%	74%	24	68	0%	2.5%	23	66	89
3	Other	Senior Adult Housing-Detached (251)	53	Dwelling Units	18	33%	67%	6	12	0%	2.5%	6	12	18
3	Other	Senior Adult Housing-Attached (252)	23	Dwelling Units	6	35%	65%	2	4	0%	2.5%	2	4	6
4	Other	Multifamily Housing (Mid-Rise) (221)	619	Dwelling Units	224	26%	74%	58	166	0%	2.5%	57	162	219
4	Other	Senior Adult Housing-Detached (251)	83	Dwelling Units	36	33%	67%	12	24	0%	2.5%	12	23	35
4	Other	Senior Adult Housing-Attached (252)	56	Dwelling Units	12	35%	65%	4	8	0%	2.5%	4	9	13
		Project Total a.m. Peak Hour Trips			4,878			2,231	2,651			2,037	2,498	4,535

Evening Peak Hour														
1 & 2	TC	Multifamily Housing (Low-Rise) (220)	125	Dwelling Units	74	63%	37%	47	27	11%	2.5%	41	23	64
1 & 2	TC	Single-Family Detached Housing (210)	215	Dwelling Units	212	63%	37%	134	78	11%	2.5%	116	68	184
1 & 2	TC	General Office Building (710)	1272	1,000 Sq. Ft. GFA	1,278	14%	86%	204	1,072	11%	2.5%	177	930	1,107
1 & 2	TC	Shopping Center (820)	258.8	1,000 Sq. Ft. GLA	988	48%	52%	474	514	11%	2.5%	411	446	857
1 & 2	VC-C	Multifamily Housing (Low-Rise) (220)	75	Dwelling Units	46	63%	37%	29	17	13%	2.5%	25	14	39
1 & 2	VC-C	Single-Family Detached Housing (210)	137	Dwelling Units	138	63%	37%	87	51	13%	2.5%	74	43	117
1 & 2	VC-C	General Office Building (710)	31.9	1,000 Sq. Ft. GFA	40	14%	86%	6	34	13%	2.5%	5	29	34
1 & 2	VC-C	Shopping Center (820)	56.3	1,000 Sq. Ft. GLA	148	48%	52%	67	73	13%	2.5%	57	62	119
1	Other	Multifamily Housing (Low-Rise) (220)	95	Dwelling Units	58	63%	37%	37	21	0%	2.5%	36	20	56
1	Other	Single-Family Detached Housing (210)	162	Dwelling Units	162	63%	37%	102	60	0%	2.5%	98	58	156
2 & 3	VC-A	Multifamily Housing (Low-Rise) (220)	86	Dwelling Units	52	63%	37%	33	19	10%	2.5%	29	17	46
2 & 3	VC-A	Single-Family Detached Housing (210)	148	Dwelling Units	150	63%	37%	95	56	10%	2.5%	83	49	132
2 & 3	VC-A	General Office Building (710)	90.1	1,000 Sq. Ft. GFA	104	16%	84%	17	87	10%	2.5%	15	76	91
2 & 3	VC-A	Shopping Center (820)	45.4	1,000 Sq. Ft. GLA	174	48%	52%	84	90	10%	2.5%	74	79	153
2	Other	Multifamily Housing (Low-Rise) (220)	116	Dwelling Units	68	63%	37%	43	25	9%	2.5%	42	24	66
2	Other	Single-Family Detached Housing (210)	200	Dwelling Units	198	63%	37%	125	73	9%	2.5%	122	71	193
3	VC-B	Multifamily Housing (Low-Rise) (220)	133	Dwelling Units	78	63%	37%	49	29	6%	2.5%	48	27	75
3	VC-B	Single-Family Detached Housing (210)	237	Dwelling Units	224	63%	37%	141	83	6%	2.5%	129	78	206
3	VC-B	Shopping Center (820)	40.5	1,000 Sq. Ft. GLA	156	48%	52%	75	81	6%	2.5%	69	74	143
3	Other	Multifamily Housing (Low-Rise) (220)	67	Dwelling Units	42	63%	37%	26	16	0%	2.5%	25	16	41
3	Other	Single-Family Detached Housing (210)	115	Dwelling Units	118	63%	37%	74	44	0%	2.5%	72	43	115
4	Other	Multifamily Housing (Low-Rise) (220)	165	Dwelling Units	94	63%	37%	59	35	0%	2.5%	58	34	92
4	Other	Single-Family Detached Housing (210)	276	Dwelling Units	270	63%	37%	170	100	0%	2.5%	166	98	264
1 & 2	TC	Multifamily Housing (Mid-Rise) (221)	470	Dwelling Units	208	61%	39%	127	81	11%	2.5%	113	70	183
1 & 2	TC	Senior Adult Housing-Detached (251)	61	Dwelling Units	34	61%	39%	21	13	11%	2.5%	18	11	29
1 & 2	TC	Senior Adult Housing-Attached (252)	43	Dwelling Units	14	55%	45%	8	6	11%	2.5%	7	5	12
1 & 2	VC-C	Multifamily Housing (Mid-Rise) (221)	300	Dwelling Units	132	61%	39%	81	51	13%	2.5%	69	43	112
1 & 2	VC-C	Senior Adult Housing-Detached (251)	39	Dwelling Units	24	61%	39%	15	9	13%	2.5%	13	8	21
1 & 2	VC-C	Senior Adult Housing-Attached (252)	26	Dwelling Units	10	55%	45%	6	5	13%	2.5%	5	4	9
1	Other	Multifamily Housing (Mid-Rise) (221)	357	Dwelling Units	158	61%	39%	96	62	0%	2.5%	94	60	154
1	Other	Senior Adult Housing-Detached (251)	46	Dwelling Units	28	61%	39%	17	11	0%	2.5%	17	11	28
1	Other	Senior Adult Housing-Attached (252)	32	Dwelling Units	10	55%	45%	6	5	0%	2.5%	6	5	11
2 & 3	VC-A	Multifamily Housing (Mid-Rise) (221)	329	Dwelling Units	144	61%	39%	88	56	10%	2.5%	77	48	125
2 & 3	VC-A	Senior Adult Housing-Detached (251)	42	Dwelling Units	26	61%	39%	16	10	10%	2.5%	14	9	23
2 & 3	VC-A	Senior Adult Housing-Attached (252)	29	Dwelling Units	10	55%	45%	6	5	10%	2.5%	5	4	9
2	Other	Multifamily Housing (Mid-Rise) (221)	442	Dwelling Units	198	61%	39%	120	78	0%	2.5%	117	74	191
2	Other	Senior Adult Housing-Detached (251)	57	Dwelling Units	32	61%	39%	20	12	0%	2.5%	20	12	32
2	Other	Senior Adult Housing-Attached (252)	40	Dwelling Units	12	55%	45%	7	5	0%	2.5%	7	5	12
3	VC-B	Multifamily Housing (Mid-Rise) (221)	522	Dwelling Units	222	61%	39%	135	87	6%	2.5%	134	80	214
3	VC-B	Senior Adult Housing-Detached (251)	65	Dwelling Units	36	61%	39%	22	14	6%	2.5%	20	13	33
3	VC-B	Senior Adult Housing-Attached (252)	45	Dwelling Units	14	55%	45%	8	6	6%	2.5%	7	6	13
3	Other	Multifamily Housing (Mid-Rise) (221)	254	Dwelling Units	112	61%	39%	68	44	0%	2.5%	66	43	109
3	Other	Senior Adult Housing-Detached (251)	53	Dwelling Units	23	61%	39%	13	9	0%	2.5%	13	9	22
3	Other	Senior Adult Housing-Attached (252)	23	Dwelling Units	8	55%	45%	4	4	0%	2.5%	4	4	8
4	Other	Multifamily Housing (Mid-Rise) (221)	619	Dwelling Units	274	61%	39%	167	107	0%	2.5%	163	104	267
4	Other	Senior Adult Housing-Detached (251)	83	Dwelling Units	42	61%	39%	26	16	0%	2.5%	25	16	41
4	Other	Senior Adult Housing-Attached (252)	56	Dwelling Units	16	55%	45%	9	7	0%	2.5%	9	7	16
		Project Total p.m. Peak Hour Trips			6,648			3,264	3,384			2,989	3,029	6,009

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Town Center Area	**Date:**	12/6/2019
Analysis Year:	2042	**Checked By:**	
Analysis Period:	AM Street Peak Hour	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	1,272	1,000 sq ft	1,224	1,053	171
Retail	820	258.8	1,000 sq ft	244	151	93
Restaurant				0		
Cinema/Entertainment				0		
Residential	),220,221,251,	914	dwelling units	430	112	318
Hotel				0		
All Other Land Uses[2]				0		
				1,898	1,316	582

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.06	2.5%	0%	1.06	2.5%	0%
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		51	0	0	0	0
Retail	32		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	7	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	2,069	1,420	649
Internal Capture Percentage	9%	7%	15%
External Vehicle-Trips[5]	1,682	1,200	482
External Transit-Trips[6]	47	33	14
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	3%	28%
Retail	31%	32%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Town Center Area	**Date:**	12/6/2019
Analysis Year:	2042	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	1,272	1,000 sq ft	1,276	204	1,072
Retail	820	258.8	1,000 sq ft	988	474	514
Restaurant				0		
Cinema/Entertainment				0		
Residential	,220,221,251,	914	dwelling units	542	337	205
Hotel				0		
All Other Land Uses[2]				0		
				2,806	1,015	1,791

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.11	2.5%	0%	1.11	2.5%	0%
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2000			2000	
Retail					2000	
Restaurant						
Cinema/Entertainment						
Residential		2000				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		15	0	0	15	0
Retail	12		0	0	102	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	9	18	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,236	1,188	2,048
Internal Capture Percentage	11%	14%	8%
External Vehicle-Trips[5]	2,451	846	1,605
External Transit-Trips[6]	73	26	47
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	9%	3%
Retail	6%	18%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	30%	11%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center A Area	**Date:**	12/6/2019
Analysis Year:	2042	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	90.1	1,000 sq ft	112	96	16
Retail	820	45.4	1,000 sq ft	44	27	17
Restaurant				0		
Cinema/Entertainment				0		
Residential	),220,221,251,	630	dwelling units	445	110	335
Hotel				0		
All Other Land Uses[2]				0		
				601	233	368

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.06	2.5%	0%	1.06	2.5%	0%
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	4		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	674	258	416
Internal Capture Percentage	5%	7%	4%
External Vehicle-Trips[5]	556	212	344
External Transit-Trips[6]	15	6	9
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	29%
Retail	28%	30%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center A Area	**Date:**	10/22/2019
Analysis Year:	2042	**Checked By:**	Scott Johnson
Analysis Period:	**PM Street Peak Hour**	**Date:**	10/22/2019

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	90.1	1,000 sq ft	104	17	87
Retail	820	45.4	1,000 sq ft	174	84	90
Restaurant				0		
Cinema/Entertainment				0		
Residential	,220,221,251,	630	dwelling units	384	238	146
Hotel				0		
All Other Land Uses[2]				0		
				662	339	323

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.11	2.5%	0%	1.11	2.5%	0%
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1750			1750	
Retail					1750	
Restaurant						
Cinema/Entertainment						
Residential		1750				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	1	0
Retail	2		0	0	20	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	7	5	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	769	395	374
Internal Capture Percentage	10%	10%	10%
External Vehicle-Trips[5]	582	299	283
External Transit-Trips[6]	16	8	8
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	47%	5%
Retail	9%	20%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	8%	7%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center B Area	**Date:**	12/6/2019
Analysis Year:	2042	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	40.5	1,000 sq ft	40	25	15
Restaurant				0		
Cinema/Entertainment				0		
Residential	),220,221,251,	972	dwelling units	454	118	336
Hotel				0		
All Other Land Uses[2]				0		
				494	143	351

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	560	162	398
Internal Capture Percentage	3%	4%	2%
External Vehicle-Trips[5]	471	133	338
External Transit-Trips[6]	13	4	9
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	14%	17%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center B Area	**Date:**	12/6/2019
Analysis Year:	2042	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	40.5	1,000 sq ft	156	75	81
Restaurant				0		
Cinema/Entertainment				0		
Residential	,220,221,251,	972	dwelling units	574	355	219
Hotel				0		
All Other Land Uses[2]				0		
				730	430	300

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					1500	
Restaurant						
Cinema/Entertainment						
Residential		1500				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	20	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	849	499	350
Internal Capture Percentage	6%	5%	7%
External Vehicle-Trips[5]	670	398	272
External Transit-Trips[6]	20	12	8
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	7%	20%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	5%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center C Area	**Date:**	12/6/2019
Analysis Year:	2042	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	31.9	1,000 sq ft	58	50	8
Retail	820	36.3	1,000 sq ft	36	22	14
Restaurant				0		
Cinema/Entertainment				0		
Residential	),220,221,251,	576	dwelling units	276	72	204
Hotel				0		
All Other Land Uses[2]				0		
				370	144	226

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.06	2.5%	0%	1.06	2.5%	0%
Retail	1.17	2.5%	0%	1.17	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	2.5%	0%	1.13	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	2		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	415	160	255
Internal Capture Percentage	5%	6%	4%
External Vehicle-Trips[5]	343	131	212
External Transit-Trips[6]	10	4	6
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	8%	25%
Retail	15%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Olympia Hills	**Organization:**	Hales Engineering
Project Location:	Salt Lake County	**Performed By:**	Josh Gibbons
Scenario Description:	Village Center C Area	**Date:**	12/6/2019
Analysis Year:	2042	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	31.9	1,000 sq ft	40	6	34
Retail	820	36.3	1,000 sq ft	140	67	73
Restaurant				0		
Cinema/Entertainment				0		
Residential	,220,221,251,	576	dwelling units	351	218	133
Hotel				0		
All Other Land Uses[2]				0		
				531	291	240

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.11	2.5%	0%	1.11	2.5%	0%
Retail	1.21	2.5%	0%	1.21	2.5%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.15	2.5%	0%	1.15	2.5%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1000			1000	
Retail					1000	
Restaurant						
Cinema/Entertainment						
Residential		1000				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	1	0
Retail	2		0	0	21	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	6	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	618	339	279
Internal Capture Percentage	13%	12%	14%
External Vehicle-Trips[5]	452	251	201
External Transit-Trips[6]	15	8	7
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	86%	16%
Retail	14%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	9%	7%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Exhibit "E"

Regional Compatibility Plan and Guidelines

1.1. Master Developer and the County have, through the zoning of the Planned Community and the adoption of this MDA have intended to respect existing communities and neighborhoods. Through the subsequent adoptions of CSPs, Project Plans, Site Plans, and subdivision plats, the Parties shall further respect existing communities and neighborhoods. This shall be achieved by acknowledging important components of these areas in the planning and design of Planned Community (e.g., their history, established direction, significant places/features and views, and relationship to other communities).

1.2. Master Developer in future CSPs, Project Plans, Site Plans, and subdivision plats shall understand existing conditions in neighboring cities and developments and be a part of collaborative solutions for features that commonly link one community/neighborhood with another, such as transportation, parks, trails, utilities, etc.

1.3. Master Developer and the County shall work together to make all future Project Plans/Subdivision Plats/Site Plans compatible with the General Plan as modified by the P-C Zoning, this MDA and any future CSPs.

1.4. Community Structure Plan(s) and Project Plan(s)/Subdivision Plats/Site Plans shall be consistent with the General Plan, and WFRC's current Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP).

Exhibit "F"

Parking Authority and Parking Policies

1.1 A Parking Authority Management Plan shall be required as part of a CSP for a Town Center, Commercial Center, and Village Center, but not for a Neighborhood (as those terms are used in Exhibit C of this MDA).

1.2 The CSP shall provide provisions for the governance of the Parking Authority. The Parking Authority shall be a public private partnership. The Developer representation of the Parking Authority shall manage off street parking and the County representation shall manage on street parking.

1.3 Subject to any modification in a future CSP, the following parking policies apply to the development and shall be part of the Parking Authority Management Plan

1.3.1 On-street parking, which generally reduces traffic speeds and provides easy access for quick-stop shopping, shall be provided according to MDA or CSP Design Standards in all centers and destinations.

1.3.2 Although surface parking lots are permitted in Town and Village Centers, structured parking and subterranean or semi-depressed garages are encouraged wherever economically practicable. Community Structure Plan(s) shall implement Design Standards relating to surface parking lots, by, among other design elements, determining when some or all buildings should front the street with doors facing the street and parking located behind or between buildings and occupying only a limited portion of the street frontage.

1.3.3 Shared parking strategies shall be used when there are adjoining land uses with different periods of peak activity in order to accommodate parking demand.

1.3.4 The location and design of off-street parking facilities in residential districts shall mitigate visual intrusion into the public right-of-way and community spaces. Parking for multi-family, civic, and commercial buildings shall generally be located in structures, underground facilities, or in locations obscured from street view by buildings or landscaping. Local streets may include on-street parking to accommodate visitors and serve as a buffer between street and sidewalk.

1.3.5 The design of surfaced and structured parking shall be according to MDA or CSP Design Standards and shall be well-landscaped, incorporating shade trees, shrubs, perennials and other plants and treatments to reduce the negative impacts of the surface lots and structured parking areas.

1.3.6 The design of surfaced and structured parking shall accommodate and prioritize alternative transportation modalities such as ride-sharing, transportation network company (TNC) drop-off and pick-up zones, EV-charging and mass transit.

1.3.7 CSP(s) shall implement Design Standards intended to accomplish the following: the location and design of off-street parking facilities in

residential districts shall minimize visual intrusion into the public right-of-way and community spaces; parking for multi-family, civic, and commercial buildings shall be located in structures, underground facilities, or in locations obscured from street view by buildings or landscaping; and local streets may include on-street parking to accommodate visitors and serve as a buffer between street and sidewalk.

Exhibit "G"

County's Vested Laws

Exhibit "H"

Affordable/Workforce Housing Plan

1.1 Olympia Hills shall use an inclusionary approach that allows for a mixture of housing types and prices distributed throughout the communities of Olympia Hills, as well as near employment centers, recognizing that housing affordability is integral to the long-term success of Olympia Hills and the region. Olympia Hills is committed to helping ease the affordable housing problem including by using the economic and planning advantages of being a master-planned community.

1.2 Both attached and detached Accessory Dwelling Units (ADUs) are allowed; being secondary or ancillary units, ADUs must be compatible in architectural style to the single-family home they accompany. ADUs will be subject to future ADU ordinances, which shall include design standards for ADUs. Building typologies for ADUs shall be determined at the CSP.

1.3 Affordable housing units in various types of housing stock shall be provided through incentive programs and/or partnerships with a range of entities, including home builders, developers, non-profit organizations, and public agencies (such as the Olene Walker Fund and tax credits).

1.4 Developer shall encourage major employers locating within Olympia Hills to develop employer-assisted housing programs for lower income employees.

1.5 A minimum of 10% of the total number of approved housing units shall be Affordable Units reserved for households earning between 0% and 80% of the Area Median Income (AMI) as determined by the annual updated HUD level incomes. The average income limit for all Affordable Units for rent (per phase) shall not exceed 60% AMI. Notwithstanding the previous restrictions, any RDU that meets the requirements of IRC Section 42 and is eligible for low income housing credits (LIHTCs) shall automatically qualify as an Affordable Unit. Each Affordable Unit for rent shall be subject to the same income restrictions for a period of 30 years, or for a term determined by the Utah State tax credit administrative agency or other applicable low-income housing program sponsor, whichever is longer.

1.5.1 Affordable Units shall be developed roughly proportionate with market units and interspersed at each phase. The Planned Community shall have a mix of Affordable Units for rent (minimum of 30%) and for sale (minimum of 30%). Affordable Units for sale need only comply with the 0%-80% AMI requirement in section 1.5 and no average AMI is required. Affordable Units for sale are not subject to a deed restriction, but initial purchasers' incomes must comply with the 0%-80% AMI requirements. Affordable Units for sale shall be individually platted and may include condominiums, townhomes, single family homes, or other types of for-sale units.

1.6 5% of the total number of approved housing units shall be reserved for Workforce Units for households earning between 80% and 120% of the Area Median Income (AMI) as determined by HUD. Workforce Units can be for rent or for sale. Workforce Units shall be developed roughly proportionate with market units and interspersed at each phase. Developer is encouraged to work with employers and builders to facilitate community-based housing within Olympia Hills.

1.7 Developer shall implement strategies as part of CSPs or Project Plans to encourage and/or require the levels of Affordable Housing specified herein. The results of these strategies, as well as methods of ensuring that Affordable Housing remains affordable while recognizing the desires and needs of homeowners to build equity, will produce the results outlined in this Exhibit. Developer shall submit an Affordable Housing report and proposed plan for how the requirements of this Exhibit will be accomplished, and shall submit that report and plan with a Community Structure Plan.