CITY OF
SEQUIM

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MITIGATED DETERMINATION OF NONSIGNIFICANCE (MDNS)- WAC 197-11-970
JAMESTOWN S'KLALLAM TRIBE OUTPATIENT CLINIC APPLICATION FILE NO. CDR 20-001

Description of proposal: A proposal to develop the northwest 3.3 acres of the 18.19-acre subject parcel. The project includes the construction of a 16,720 SF medical clinic that will be made up of medication assisted treatment program which offers FDA approved dosing, primary care services, consulting services, dental health services and childcare services while clients are seen.

PROPERTY OWNER: Jamestown S'Klallam Tribe.

PROJECT REPRESENTATIVE: Suzanne G. Pontecorvo, Project Manager

Location of Proposal: The project site consists of the northwest 3.3 acres of an 18.19-acre parcel of land located adjacent to the east side of the South 9th Avenue extension, situated in the Southeast ¼ of the Southwest ¼ of the Southwest ¼ of Section 19, Township 30 North, Range 3 West, W.M., Clallam County, Washington; Assessor's Parcel No. 033019-330000.

Lead Agency: City of Sequim

The lead agency for this proposal has determined that it does not pose a probable significant adverse environmental impact. Therefore, an environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information submitted by the applicant and on file with the lead agency. This information is available to the public upon request.

This **MDNS** is issued under WAC 197-11-350. **Comments** on the **MDNS** for this proposal will be accepted no later than April 8, 2020 and shall be as specific as possible and may address either the adequacy of the environmental document or the merits of the alternatives discussed or both.

Responsible Official: Barry A. Berezowsky
Address: City of Sequim, 152 W. Cedar Street, Sequim, WA 98382
Phone: 360-681-3435

Issued: March 25, 2020 Signature: Tim Woolett (Tim Woolett)
For: Barry A. Berezowsky, SEPA Responsible Official

You may appeal this determination in writing to the responsible official listed above no later than 21 calendar days after the date of the decision of the matter being appealed became final.

You should be prepared to make specific factual objections. Contact the responsible official to read or ask about procedures for SEPA appeals.

CITY OF SEQUIM
ENVIRONMENTAL REVIEW AND THRESHOLD DETERMINATION

DATE: March 23, 2020

PROPOSAL: A proposal to develop the northwest 3.3 acres of the 18.19-acre subject parcel. The project includes the construction of a 16,720 SF medical clinic that will be made up of medication assisted treatment program which offers FDA approved dosing, primary care services, consulting services, dental health services and childcare services while clients are seen.

LOCATION: The project site consists of the northwest 3.3 acres of an 18.19-acre parcel of land located adjacent to the east side of the South 9th Avenue extension, situated in the Southeast ¼ of the Southwest ¼ of the Southwest ¼ of Section 19, Township 30 North, Range 3 West, W.M., Clallam County, Washington; Assessor's Parcel No. 033019-330000.

PROPONENT: Jamestown S'Klallam Tribe
Contact: Suzanne G. Pontecorvo, Project Manager

FILE REFERENCE: CDR 20-001

RESPONSIBLE OFFICIAL: Barry Berezowsky
City of Sequim

STAFF CONTACT: Tim Woolett, Senior Planner (360) 582-2476

THRESHOLD DETERMINATION: This is a Mitigated Determination of Non-Significance (MDNS).

TO: All Permit and Review Authorities

ENVIRONMENTAL RECORD

The environmental review consisted of analysis based on the following documents included in the environmental record.

- Environmental Checklist dated January 10, 2020.
- Commercial Design Review Application No. CDR 20-001.
- Geotechnical Engineering Investigation, Project No. 102-19020, prepared October 24, 2019.
- Technical Information Report prepared by Coffman Engineers, Inc, January 10, 2020.
- Jamestown Clinic, Sequim, WA, Traffic Impact Analysis, January 9, 2021 [*sic*]; prepared by Transportation Engineering Northwest.

- Jamestown S'Klallam Tribe Preliminary Medical Outpatient Clinic and Community Response Plan. *"As of January 13, 2020."*

The following documents are included in the environmental record by reference.

- City of Sequim Comprehensive Plan
- City of Sequim Municipal Code - Title 18 SMC
- City of Sequim Environmental Policy – Chapter 16.04 SMC

Unless otherwise noted, the above information is available for review between the hours of 7:30 AM and 4:00 PM Monday through Friday at the Civic Center, 152 West Cedar Street, Sequim, WA 98362, or online at https://www.sequimwa.gov/471/Current-Projects.

STAFF AMENDMENTS TO THE ENVIRONMENTAL CHECKLIST

THE FOLLOWING SECTIONS CORRESPOND WITH RELATED CATEGORIES OF THE ENVIRONMENTAL CHECKLIST SUBMITTED FOR THE PROPOSAL, AND CLARIFY, AMEND, OR ADD TO THAT DOCUMENT.

I. PROPOSAL DESCRIPTION:

The checklist description is thorough and accurate.

II. PERMITS/APPROVALS REQUIRED:

- Design Review
- Site construction Permit
- Right-of-Way Permit
- Drainage Permit
- Side Sewer Permit
- Building Permit

III. ENVIRONMENTAL ELEMENTS (CHECKLIST PART B)

1. EARTH

The Checklist description is accurate. Any potential for adverse environmental impacts due to clearing, grading, or filling can be mitigated through the City of Sequim's clearing and grading requirements applied through the Site Construction Permit. As part of the design review and site construction permit requirements, a geotechnical report has been submitted that includes recommendations for earthwork, reuse of existing soils, compaction, temporary and permanent slopes, utility construction, stormwater infiltration capabilities, erosion and sediment control, wet weather work, hazardous material studies, and a level of risk for seismic-induced liquefaction. These permits will be conditioned to mitigate the potential for adverse impacts due to site disturbing activities. Based on the submitted Geotechnical Report, the potential for adverse environmental impacts to "earth" can be adequately mitigated through application of the conditions and recommendations of the submitted Geotechnical Report. Additionally, any anticipated

impacts due to erosion can be mitigated through the City of Sequim's requirement for a Stormwater Pollution Prevention Plan (SWPPP) and Temporary Erosion and Sedimentation Plan meeting the requirements of the Department of Ecology (DOE) Stormwater Management Manual for Western Washington, 2012, updated 2014.

2. AIR

Staff concurs with the checklist description. There is always the potential for adverse environmental impacts due to dust emissions during construction. To mitigate this potential, the project proponent and/or their contractor will be required through the site construction permit to control dust emissions during construction with watering or an equally effective non-chemical method that has been approved by the City of Sequim. Watering is the most used alternative, due to its low cost of implementation and excellent results. Water should be applied at least three times a day or more, depending on the atmospheric conditions. Watering should be done in a manner that does not cause erosion problems. This is typically accomplished using a mobile water tanker driven on site spraying water over the affected areas preventing dust from becoming airborne.

During dry periods the proponent will be required to employ the use of watering all dust generating surfaces a minimum of three times daily or more as needed during construction phase of the project. Alternative non-chemical methods may be considered for approval by the City of Sequim.

3. WATER

a. Surface Water: Staff concurs with the checklist description.

b. Ground Water: Staff concurs with the checklist description. Because the City of Sequim has no stormwater system, all proposals must treat and/or infiltrate stormwater runoff on site. Methods include, but are not limited to, individual on-site infiltration trenches or drywells, raingardens, and stormwater infiltration/retention ponds.

c. Water Runoff: Staff concurs with the checklist description. As provided above, City of Sequim standards require that all proposals treat and/or infiltrate stormwater runoff on site consistent with the DOE Stormwater Management Manual for Western Washington, 2012, updated 2014.

4. PLANTS

Staff concurs with the checklist description.

5. ANIMALS

Staff concurs with the checklist description.

6. ENERGY AND NATURAL RESOURCES

Staff concurs with the checklist description.

7. ENVIRONMENTAL HEALTH

Staff concurs with the checklist description. The potential for adverse impacts due to noise from construction activities, functioning mufflers will be required on construction equipment, and hours of construction will be limited to between 7:00 am to 6:00 pm, Monday through Saturday. When not in use, vehicles will not be left idling for more than fifteen minutes.

8. LAND AND SHORELINE USE

Staff concurs with the checklist description with the following comments. The zoning designations listed in the checklist are outdated. The current City of Sequim zoning designation of the property is River Road Economic Opportunity Area (EOA), which is consistent with the Sequim Comprehensive Plan's "*Economic Opportunity Area"* land use designation. The proposed development would create a 16,720 SF medical clinic that will be made up of medication assisted treatment program which offers FDA approved dosing, primary care services, consulting services, dental health services and childcare services while clients are receiving treatment.

The property is not within 200 feet of the ordinary high-water mark of the Dungeness River, and is not within 200 feet of any 100-year floodplain; therefore, the project is not within the jurisdiction of the Sequim Shoreline Master Program.

City approval of the application for Design Review would ensure the proposed development's compatibility with existing and projected land uses and plans.

9. HOUSING

Staff concurs with the checklist description.

10. AESTHETICS

Staff concurs with the checklist description.

11. LIGHT AND GLARE

Staff concurs with the checklist description. All lighting will be consistent with the lighting standards of Section 18.24.170 of the Sequim Municipal Code, "*Lighting and glare*."

12. RECREATION

Staff concurs with the checklist description.

13. HISTORICAL AND CULTURAL PRESERVATION

Staff concurs with the checklist description. As with all land use permits in Sequim, project proponent and/or their contractors are required to stop work and immediately notify the City of Sequim, the S'Klallam Tribe, and the Washington State Office of Archaeology and Historic Preservation if any historical or archaeological artifacts are uncovered during development. A request for comment was forwarded to the

Washington State Department of Archaeology and Historic Preservation with no response as of the date of this review. To ensure against any potential for adverse environmental impacts to historical and cultural resources, the proponent shall work with the Jamestown S'Klallam Tribe and the Washington State DAHP to determine the need for a cultural survey. Prior to authorization of any site construction activities a cultural survey shall be performed unless expressly waived by the Washington State DAHP.

14. TRANSPORTATION

Staff concurs with the checklist description. Transportation impacts are more fully described and detailed in the Transportation Impact Analysis technical report prepared in support of the checklist.

The parking lot layout and circulation will be required to satisfy the standards of the Sequim Municipal Code and the requirement of Eastside Fire and Rescue for emergency vehicle accommodations. Prior to building permit approval, the Building Official and Fire Marshal will ensure all parking, fire safety, and ADA requirements have been satisfied. Prior to Design Review approval, the City of Sequim Public Works Department/City Engineer will review any street or street frontages for consistency with the current city street standards.

15. PUBLIC SERVICES

Staff concurs with the checklist description. The City forwarded the proposal to the Sequim Police Department, Clallam County Sheriff's Department, and Clallam County Fire District #3 for comment. No response or comment was received from the Sheriff's Department or Fire District #3. The City of Sequim Police Department has reviewed the checklist and provides the following:

Police Dept. Comment:
In addition to the review of the physical layout, location and facility design elements, the Community Response Plan provides some details informing an analysis of potential public safety impacts. Further and more detailed comment on the Community Response Plan will occur deeper in this document.

A review of calls for service for the current Jamestown Medical Clinic located on 5th Avenue was completed. The Jamestown clinic has provided OUD, (Opioid Use Disorder) treatment services at that location since 2017. They have averaged around 130 patients per year since 2017. Patient visits at their current Clinic appear to average between 60 and 100 visits per month.

Calls for Service for any reason received by the Police Department at that address average 25 per year, 2017-2019. Calls for Service for any reason since the Clinic began operations average just over 23 per year, 2010-2019. Accordingly, there has been no appreciable increase in call load since OUD treatment began. Calls to the Clinic were primarily for false alarm calls. Calls for Service that resulted in some type of Police report average 1.7 per year, from 2010-2019. Three reports in 2017, two reports in 2018 and three Reports in 2019. For example, those reports included Theft, Malicious Mischief (damage to property), and Found Property. These numbers reflect such a de

minimis volume of calls for service to even consider them an impact to our workload. This information does help inform our analysis for impact of this new clinic.

16. UTILITIES

The checklist adequately addresses the issues of this section.

CONCLUSIONS AND SUBSTANTIVE AUTHORITY

The environmental review indicates that there may be a potential for adverse environmental impacts from the proposal which may not be mitigated through conditions imposed by authority of existing City of Sequim land use regulations. Therefore, a Mitigated Determination of Non-Significance should be required.

This authority is pursuant to Section *16.04.180 B. SMC - Substantive authority—The city may attach conditions to a permit or approval, or deny a permit or approval for a proposal on the basis of SEPA so long as the city has complied with the provisions contained in WAC 197-11-660, which section is adopted by reference and incorporated as if set forth fully in this chapter.*

Potential Significant Environmental Impacts:

Based on review of the Environmental Checklist and other available material provided on the subject proposal, the Responsible Official for the City of Sequim has considered the following as potential significant adverse environmental impacts as a result of the subject development proposal. These impacts cannot be decisively mitigated under the standards in the Sequim Municipal Code and must be mitigated under the substantive authority of SEPA:

- The potential for adverse environmental impacts to air quality due to dust emissions.
- The potential for adverse environmental impacts to cultural resources due to site disturbance.
- The potential for adverse environmental impact to public services due to the possibility of increased law enforcement and emergency services.

Proposed Mitigation Measures:

The following mitigation measures have been proposed by Development Review Division staff for consideration by the Responsible Official. They are intended to address and mitigate to a point of non-significance the environmental impacts listed above.

1. To mitigate the potential for adverse impacts to air quality due to dust emissions during construction, the proponent shall employ the use of watering all dust generating surfaces a minimum of three times daily or more as needed during construction phase of the project. Alternative non-chemical methods may be considered for approval by the City of Sequim.

2. To mitigate the potential for adverse environmental impacts to cultural resources, the proponent shall work with the Jamestown S'Klallam Tribe and the Washington State DAHP to determine the need for a cultural survey prior to site disturbing work. In any case, as required by the Sequim Municipal Code, the project proponent and/or their contractors shall stop work and immediately notify the City of Sequim, the Jamestown S'Klallam Tribe, and the Washington State Office of Archaeology and Historic Preservation if any historical or archaeological artifacts are uncovered during development.

3. To mitigate the potential for adverse environmental impacts to public services and land use, the proponent shall follow the procedures and recommendations of the submitted Jamestown S'Klallam Tribe Preliminary Medical Outpatient Clinic and Community Response Plan as conditions of operation for the proposed outpatient clinic.

4. To mitigate the potential for adverse environmental impacts to public services,

   a. Prior to occupancy, a monitoring and evaluation program will be developed by a Community Advisory Committee (committee) made up of, but not limited to, health professionals, community-based organizations, elected leaders, and public safety officials as provided in the Jamestown S'Klallam Tribe Preliminary Medical Outpatient Clinic and Community Response Plan. Committee membership to be determined by mutual agreement between City and Tribal representatives. will meet monthly for first year and then the committee can decide on meeting schedule. Recommended committee consists of no more than seven members.

   b. Prior to occupancy, the "committee" will develop a contingency plan that fully identifies potential courses of action and any corrective measures to be taken when monitoring or evaluation indicates expectation and standards are not being met.

   c. Prior to occupancy, the Tribe shall post a bond in the amount of $250,000 to guarantee public safety services can be made immediately available if necessary (City Police, Fire District 3 EMT services, for example). This bond will be in effect for a term of 5-years and may be extended by agreement of the parties.

   d. Tribe agrees to reimburse City for all lost tax revenue if, and when, the property is taken off County tax roll. If it is determined that additional public safety staff, such as police, EMTs or fire officers, are needed due to activity resulting directly from the clinic's operation. The Tribe agrees to fund these public safety (EMT, Fire & Police) positions for as long as they are necessary.

   e. Prior to occupancy, the Tribe will enter into a "Good Neighbor" agreement with the City (see attached example and be aware that some of these items would be included in that agreement, such as no loitering).

   f. Prior to occupancy, a Navigator will be funded by Tribe to provide social service assistance to patients and other persons in need of Substance Use Disorder (SUD) and mental health assistance within the City of Sequim.

g. Prior to occupancy, the Tribe will agree to bring the clinic on-line by increasing patient load over time by slowly increasing the number of patients accommodated per month over first year.

h. Patients who chose to leave the clinic program will be immediately reported to the Navigator for possible intervention and/or assistance in transitioning to another program or returned to their place of residence or location where they spent the previous evening.

i. Patients who chose to leave the clinic program and do not have personal or pre-arranged transportation will be provided transportation by the clinic to their place of residence or location where they spent the previous evening.

j. Tribe agrees to notify the City 1-year prior to applying to place the land upon which the clinic is built into Tribal Trust land. The Tribe agrees to only place the developed property into trust by short platting out the undeveloped portion of the property.

k. The Tribe agrees to execute & file with city limited waiver of sovereign immunity to allow enforcement of the City's nuisance ordinance if any portion of the subject property is placed into Tribal Trust.

l. The clinic will only treat patients who have gone through the pre-treatment screening process.

m. All patients must be accommodated within the building, and there will be no outdoor line ups or congregating of patients outside of designated areas.

n. The Tribe will strictly enforce a no loitering policy through on-site security.

o. Prior to occupancy the tribe will secure fulltime on-site security to maintain order on-site. With neighboring property owner permission on-site clinic security will also make sweeps through neighboring commercial properties on a schedule determined cooperatively between the clinic and adjacent property owners. Sweeps of adjacent residential neighborhoods will also occur on a regularly scheduled basis.

p. Prior to occupancy, the Tribe will distribute direct access information/complaint line provided to all adjacent property owners within 300 feet of the subject property.

q. JST will ensure no graffiti on the JST Healing Center site, and JST will immediately report any such vandalism to the city if any occurs on nearby properties. JST will take steps to immediately remediate the graffiti on their property.

r. The Tribe will prohibit camping, overnight sleeping or overnight parking on the property of the Healing Center.

s. Prior to occupancy the Tribe will have installed a fence at a mutually agreeable location and out of mutually agreeable materials between the clinic property and the Shaw family farm.

Supporting Policies:

1. City policies which address the aforementioned probable impacts are contained in the specific policies outlined in the City of Sequim SEPA Ordinance under *Section 16.04.180 C.1. a – g SMC* are as follows:

   a. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
   b. Assure for all people of Washington a safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
   c. Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
   d. Preserve important historic, cultural, and natural aspects of our national heritage;
   e. Maintain, wherever possible, an environment which supports diversity and variety of individual choices;
   f. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
   g. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

2. Specific goals and policies which address the aforementioned probable impacts are contained in the City Comprehensive Plan are as follows:

   a. CFU GOAL 5.7 Safe Community: Protect and serve the community and the urban growth area through quality public safety initiatives and partnerships.
   b. CFU 5.7.1 Coordinated Protection Services: Deliver high-quality public safety services to city residents and businesses by maintaining coordination among the three public safety entities that protect city residents, properties and businesses.
   c. CFU 5.7.2 Police Level of Service: Provide emergency response times within the total city for high priority calls for service within four minutes or less response time; maintain responsiveness for all other services provided at a level consistent with the mandates of the comprehensive plan to meet the goals of contributing to our community being "friendly, lifestyles, "small-town" convenience, and overall high quality of life."
   d. HCR GOAL 10.1 Preservation of Place: Preserve the history of Sequim and the Sequim-Dungeness Valley by protecting the features and artifacts that help to identify 12,000 years of culture and heritage.
   e. HCR 10.1.1 Growth/Preservation Balance: Identify and support the preservation of sites and structures in the City and its Urban Growth Area that have archeological, cultural or historic significance, while accommodating the requirements for growth that is inevitable in attractive communities.
   f. HRC 10.3.1 Community Heritage: Protect significant Native sites and cultural resources as an integral part of the heritage of the Sequim community.

The City of Sequim has reviewed and considered the referenced proposal, the environmental checklist, agency comments, and other available material. The environmental review indicates any potential adverse environmental impacts from the proposal would not be adequately mitigated through conditions imposed by authority of existing applicable City of Sequim land use regulations. Therefore, a ***Mitigated Determination of Non-Significance*** will be issued for the proposal described herein.

Tim Woolett

Tim W for: 3-23-2020

Barry Berezowsky, Responsible Official — Date

City of Sequim

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1. Name of proposed project, if applicable:
   Jamestown S'Klallam Tribe Outpatient Clinic
2. Name of applicant:
   Jamestown S'Klallam Tribe Outpatient Clinic
3. Address and phone number of applicant and contact person:

Suzanne Pontecorvo
Rice Fergus Miller
275 Fifth Street, Suite 100, Bremerton WA 98337
360-377-8773

4. Date checklist prepared:
   1/10/2020
5. Agency requesting checklist:
   City of Sequim
6. Proposed timing or schedule (including phasing, if applicable):
   June 2020 to December 2021
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
   This project is a standalone development, although in the future facility expansion or additional services may be added to the residual site, if the needs arise. Currently, there are no plans to expand or seek future facilities.
8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
   Geotechnical Report
9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
   None known
10. List any government approvals or permits that will be needed for your proposal, if known.
   City of Sequim Design Review, City of Sequim Building Permits, City of Sequim Public Works Permits
11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)
   This project proposes to develop the northwest 3.3 acres of the 18.19-acre subject parcel. The project includes the construction of a 16,720 SF medical clinic that will be made up of medication assisted treatment program which offers FDA approved dosing, primary care services, consulting services, dental health services and childcare services while clients are seen.
12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.
   The site consists of one parcel covering an area of approximately 18.19 acres. The site is located between South 7th Avenue and South 9th Avenue, immediately east of the proposed South 9th Avenue extension in Sequim, Washington. The property is currently cleared and undeveloped. The property is mainly vegetated with grasses and there is a row of trees that runs through the middle of the property, which border an existing open irrigation ditch. The

ditch is regulated by the Sequim Prairie Tri-Irrigation District. There is a small, abandoned outbuilding in the central northern portion of the property, about 4 feet x 4 feet in size. The site is bordered by scattered single family residences to the north, a residential development to the east, State Highway 101 to the south, and the proposed South 9th Avenue extension to the west with scattered single-family residences beyond.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site:

(circle one): **Flat**, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?
The steepest slope is approximately 5%.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.
Per the Geotechnical Report, the site is made up of Carlsborg gravelly sandy loam. Carlsborg gravelly sandy loam is classified by NRCS as Hydrologic Group A with low potential for erosion in a disturbed state.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.
No unstable soils are known to exist on the site.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.
The project area is approximately 3.3 acres with a cut of approximately 3,000 cyd and fill of approximately 11,500 cyd, for a NET FILL of 8,500 cyd. The purpose of the fill is generally to raise the grade at the building location for positive drainage away from the structure and form berms to screen the building from West Hammond Street (both visual and noise dampening). The source of the fill is unknown at this time but will likely be locally sourced and made up of clean fill dirt and topsoil.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
Erosion could occur as a result of construction. To mitigate the impacts of erosion, erosion and sediment control will be implemented during construction.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 14.63% of the site will be covered with impervious surfaces after project construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

In order to reduce and control erosion, the soil, foundation, and utility work requiring excavation will be phased to take place during the dry season (generally May through September), all site work will be completed and stabilized as quickly as possible, additional perimeter erosion and sediment control features may be used to reduce the possibility of sediment entering the surface water, and any runoff generated by dewatering discharge will be treated through appropriate filtration methods.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Air emissions are limited to minimal dust and automobile emissions from equipment during construction. Excessive emissions are not anticipated during the operation and maintenance of the project in the long term.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None known.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

The site will be stabilized during construction with watering exposed soils, as needed, in accordance with the SWPPP. Solid waste from the site will be removed and/or recycled as needed through the project.

3. Water [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There is a small irrigation ditch on the site. This ditch eventually flows into the Dungeness River after meandering through the City of Sequim.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The project will require work adjacent to and within the irrigation ditch. The irrigation ditch will be hard-piped and buried within the proposed easement, which will bisect the site.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.
Not applicable

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.
None anticipated.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.
The proposal does not lie within a 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.
The proposal does not involve any discharges of waste materials to surface waters.

b. Ground Water: [help]

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.
MP rotator type irrigation will be used. Irrigation quantities will be approximately 420,000 gallons from April-October, assuming medium water use plants.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
None

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.
Bioswales, filter strips, and onsite infiltration will be used to collect and dispose of runoff. Runoff will be treated on site and will not flow offsite. The downstream irrigation ditch will only be used for runoff in the event of an emergency overflow, in which case the water will eventually flow into the Dungeness River.

2) Could waste materials enter ground or surface waters? If so, generally describe.
None.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
There is no anticipated impact on drainage patterns in the vicinity of the site. Stormwater will be treated onsite, and emergency overflow will flow into the existing irrigation ditch, which

eventually flows into the Dungeness River.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Proposed measures to reduce surface, ground, and runoff water, and drainage pattern impacts are the use of bioswales and filter strips.

4. Plants [help]

a. Check the types of vegetation found on the site:

__X_deciduous tree: alder, maple, aspen, other (approximately 40)
__X_evergreen tree: fir, cedar, pine, other (less than 10)
____shrubs
__X_grass (predominant)
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Vegetation to be removed is primarily meadow grass that has been managed as such long-term. It is likely a mix of native and non-native species. Trees will need to be removed for the construction of West Hammond Street and the relocation of the irrigation canal from the ditch to a pipe. The single Garry Oak and a few Douglas Firs will be retained along the canal but most of the Alders (most of which are in poor condition or multi-trunk suckers off of stumps) will be removed along the Himalayan blackberry understory. Approximately 5.3 acres of existing meadow will be disturbed as the site is developed.

c. List threatened and endangered species known to be on or near the site.

None known

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Planting will include the use of both native species and regionally adapted species of trees, shrubs, groundcovers, perennials and grasses. A small amount of turf lawn (less than 0.2 acres) is proposed. Native species of trees and larger shrubs will enhance the a few trees that will be retained along the canal to provide screening of the neighborhood to the east. Landscape buffers on the north and west sides of the development, between the building or parking and the adjacent roads, will be a mix of coniferous and deciduous trees and large shrubs that will be both native and regionally adapted. Parking lot trees will be regionally adapted deciduous trees and the shrubs and ground covers will be a mix of native species

and regionally adapted species. The large open space to the south of the new building will consist of low shrubs, perennials and grasses (both native and ornamental) to preserve existing views to the Olympic Mountains to the south. Several acres of the existing meadow will be maintained as such. Street trees will be regionally adapted deciduous trees that are approved by City code as appropriate for streetscape conditions. Primarily native species of grasses and shrubs are proposed for rain gardens within the parking area that will be treating stormwater.

e. List all noxious weeds and invasive species known to be on or near the site.

Himalayan blackberry is growing along the existing canal running south to north through the site. This is proposed to be removed as part of this project.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.
Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Per the DOE, Northern Spotted Owl, Winter Steelhead, Coho, and Pink Salmon Odd Year inhabit the site. However, the irrigation ditch is used for irrigation purposes and does not have fish.

b. List any threatened and endangered species known to be on or near the site.

Northern Spotted Owl, Coho

c. Is the site part of a migration route? If so, explain.

The site is part of the migration route for the winter steelhead, coho, and pink salmon odd year.

d. Proposed measures to preserve or enhance wildlife, if any:

None, however, this project will only be developing a small portion of the land. The majority of the land will remain in its natural prairie state, undisturbed.

e. List any invasive animal species known to be on or near the site.

None known.

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

A propane powered backup generator will be used. It will be powered by an underground propane unit.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, the project does not limit solar use by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Energy efficient LED lighting will have daylight harvesting, occupancy/vacancy sensors, and timed controls to reduce energy consumption. Controlled receptacles will be installed in offices, work rooms, and break rooms to turn off devices when there is no occupant in room.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

1) Describe any known or possible contamination at the site from present or past uses.

None known.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None known

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

There will be a medical storage room sized at approximately 23 square feet containing medical gas tanks. For dental use, there will be three Nitro Size J tanks and four Oxygen Size J tanks. Two of each tank type will be hooked up, and the rest will serve as backups. For medical use, it is anticipated that there will be one to two mobile oxygen 10 liter bottles and one small Nitro bottle less than ten liters.

4) Describe special emergency services that might be required.

None.

5) Proposed measures to reduce or control environmental health hazards, if any:

None known.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

No adverse noise is anticipated as a result of this project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

No adverse noise is anticipated in the long term. Noise common for construction can be anticipated in the short term with hours of construction Sequim requirements as determined during the preconstruction meeting.

3) Proposed measures to reduce or control noise impacts, if any:
During construction, equipment use will be limited to approved hours. No adverse long-term noise is anticipated.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.
The site is currently undeveloped. Adjacent properties consist of commercial properties and residential homes.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?
Past buildings on this property consist of a small single-family home (destroyed by fire) and a barn (demolished). Basic on historic aerial photos and records available, no evidence of working farmland has been found since (at least) 1994. Prior to 1994, the use of the land is unknown. There is no evidence that this parcel was used as working forest land. It is the applicants understanding that this property will have no impact to farmland or forest land considerations.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:
Not anticipated.

c. Describe any structures on the site.
There is a small outbuilding on the site.

d. Will any structures be demolished? If so, what?
Yes, the small outbuilding will be demolished.

e. What is the current zoning classification of the site?
The site is zoned as an Economic Opportunity Area.

f. What is the current comprehensive plan designation of the site?
Economic Opportunity Area

g. If applicable, what is the current shoreline master program designation of the site?
N/A

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.
The site is classified as part of the Dungeness Water Rule Area.

i. Approximately how many people would reside or work in the completed project?
It is anticipated that the clinic will be operating at a full case load in approximately two years after opening. The project will employee 40 staff members and have a 200-250 patient case load.

j. Approximately how many people would the completed project displace?
Zero

k. Proposed measures to avoid or reduce displacement impacts, if any:
N/A

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
N/A

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:
Converting the open irrigation ditch to a hard-pipe will help preserve irrigation waters from infiltrating into ground and will also provide more resources for farmlands downstream.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
Not applicable.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
Not applicable.

c. Proposed measures to reduce or control housing impacts, if any:
Not applicable.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?
The tallest point of the proposed building is 27’0” from Level 1 finish floor. Principal exterior buildings include horizontal cedar siding and fiber cement panel.

b. What views in the immediate vicinity would be altered or obstructed?

The building takes advantage of the southern view corridor to the Olympic Mountains. Because of the lack of development on surrounding property the proposed building will NOT obstruct any views from neighboring properties.

b. Proposed measures to reduce or control aesthetic impacts, if any:
A neutral exterior material pallet and the integration of traditional tribal artwork allow the building to blend into its surroundings.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Exterior lighting will use LED lamps. Parking lot lighting will be Dark Sky Compliant. Lighting will mainly turn on at night via lighting control panel with timeclock and photocell.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
Lighting should not be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal?
Existing sources of light should not affect proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:
Reduce light spill to adjacent properties to below 0.3fc or lower. Parking lot pole mounted fixtures will be Dark Sky compliant and have reduced height to reduce potential glare angles.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?
N/A

b. Would the proposed project displace any existing recreational uses? If so, describe.
N/A

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
N/A

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.
No.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts,

or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.
None known.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.
Methods used to assess the potential impacts to cultural and historic resources on the project site include representing the Jamestown S'Klallam Tribe and working closely with the Jamestown S'Klallam Tribe to incorporate elements of cultural significance into the project.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.
N/A

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.
The site is served by South 9th Avenue. State Highway US-101 runs adjacent to the south side of the site, but there is an existing berm to separate the sight visually and dampen noise. The project also includes an extension of South 9th Avenue to the project driveway and a new section of West Hammond Street along the north side of the property. Currently, there are no plans to connect the new portion of West Hammond Street with the existing portion, east of the site. Any future connection will be at the discretion of the City of Sequim.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?
The affected geographic area is currently served by public transit. The closest bus stop is located approximately 2000 feet from the site, and services the 30 and 40 bus routes.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?
The project will have 84 parking spaces. No parking spaces will be eliminated.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).
It is not expected that the traffic generated by this project is considered significant enough to warrant upgrades to the surround roads or intersections. The project does propose to extend South 9th Avenue to the project driveway and build a full right-of-way along the northern portion of the site to access the back-of-house services.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
No.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The project is expecting 369 daily trips (this includes both arrival and departure), with 20 trips occurring during the AM peak hour and 15 trips during the PM peak hour. We are also considering the noon peak hour, which is estimated to introduce 25 trips during that time period. The clinic's peak volume is anticipated to be 48 trips from 2:00-3:00pm. The analysis consists of staff, patient, and small regional shuttles of group transport arrivals/departures, as well as mass transit users.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

Not anticipated.

h. Proposed measures to reduce or control transportation impacts, if any:

The project proposes the use of shuttles, owned and operated by the Jamestown S'Klallam Tribe outpatient clinic, to transport patients to and from the facility. The shuttles will produce about 24 round trips daily, serving approximately 100 patients.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The project anticipates very little need from police, fire, and EMT services, no more than any other commercial or healthcare clinic provider would anticipate. There may be a small amount of staff or patients that would utilize public mass transit to travel to the site.

b. Proposed measures to reduce or control direct impacts on public services, if any.

There will be a primary care provider onsite as well as full-time security on-site both in the building and on the property. In addition, there will be a comprehensive security camera system and monitoring room.

16. Utilities [help]

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other Propane, irrigation water

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Proposed utilities include electricity, telephone, sanitary sewer, water, refuse service, and stormwater emergency overflow.

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee SUZANNE PONTECORVO

Position and Agency/Organization PRINCIPAL/RICE FERGUS MILLER ARCHITECTS

Date Submitted: 1-10-2020

D. Supplemental sheet for nonproject actions [HELP]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?
   Stormwater runoff will be treated and infiltrated on site. Emissions to air and noise are limited to temporary construction equipment, with minimal long-term vehicle emissions/noise common for this type of project. Toxic and hazardous substances are not anticipated.

   Proposed measures to avoid or reduce such increases are:
   Disposing of stormwater runoff 100% on site for frequent storms exceeded the WA DOE flow control requirements. The clinic will implement a small group shuttle service for patients that need transportation assistance, reducing the amount of vehicle emissions.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?
   Very little to no effect on plants, animals, fish or marine life is expected. Much of the prairie lands will remain intact and invasive plant life will be removed from the site.

   Proposed measures to protect or conserve plants, animals, fish, or marine life are:
   Desirable, health trees will be preserved to the greatest extend feasible while invasive species will be cleared, helping desirable plant life to thrive. There is one Garry Oak tree identified within the project site, which will be protected and preserved.

3. How would the proposal be likely to deplete energy or natural resources?
   None known.

Proposed measures to protect or conserve energy and natural resources are:
The existing open irrigation ditch is proposed to be hard-piped, protecting this resource from infiltrating as is passes through the subject site and retaining more irrigation resources for downstream use.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?
N/A

Proposed measures to protect such resources or to avoid or reduce impacts are:
N/A

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?
The proposed project fits within the zoning code uses and the City's Master Plan.

Proposed measures to avoid or reduce shoreline and land use impacts are:
N/A

6. How would the proposal be likely to increase demands on transportation or public services and utilities?
The proposed clinic may be accessed by public mass transit, but it is anticipated that will be a low number of users, given the closest transit stop is approximately a half-mile from the site. Public services (police, fire, EMT, etc.) are expected to be low, if any annually. The utility usage will be normal for a healthcare clinic of this size.

Proposed measures to reduce or respond to such demand(s) are:
A security guard will be stationed within the facility during hours of operation, reducing the need for police response. A clinic shuttle is planned to assist with patient transit.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.
None known.

Kent Treatment Solutions

21851 84th Ave South, Kent WA 98032

Neighborhood Partnership Agreement with

The City of Kent

1.0 Formation of the Partnership

This Neighborhood Partnership Agreement (the "Agreement") is made and entered into by and between the City of Kent, a Washington municipal corporation ("City"), and Acadia Management Company, LLC, a Delaware Limited Liability company, d/b/a Kent Treatment Solutions ("KTS") (each individually a "Party" and collectively the "Parties"), for the purposes set forth below.

The following are specific issues that have been discussed by KTS and the City concerning the operation of an opiate substitution treatment clinic "("Clinic") by KTS at 21851 84th Ave South, Kent, WA 98032.

This Agreement does not establish any legal obligations on the part of either Party; however, the Parties believe that this good faith Agreement is a step to ensure a healthy coexistence between local businesses and the Clinic by addressing safety concerns and the physical environment along 84th Ave South in the city of Kent, along with all cross streets in the vicinity of the Clinic. Furthermore, the Parties recognize the legal limitations as to confidentiality that bind the Clinic staff, and all Parties agree to use their best efforts to work together to remediate any existing or future problems.

2.0 Duration

This Agreement shall begin on ^ _____, 2016 and shall remain in effect until all Parties mutually agree in writing to dissolve the Agreement; provided, however, that if KTS ceases operation of the Clinic for any reason, this Agreement shall immediately terminate.

3.0 Goals

To have good communication and cooperation between local businesses, the City, KTS and the Clinic, located at 21851 84th Ave South, Kent.

To improve the quality of life for neighbors, businesses and the Clinic through identification of concerns, and adoption of policies to alleviate those concerns.

4.0 Statement of business goals

4.1 No loitering in the neighborhood of the Clinic.

4.2 No graffiti in the neighborhood of the Clinic.

4.3 Clean bus stops in the neighborhood of the Clinic.

4.4 No camping or outdoor overnight sleeping in the neighborhood of the Clinic.

4.5 Good communication between the City and local businesses, including the Clinic.

4.6 Appropriate authorities are called when a criminal act occurs, or when there is an imminent threat to public health, safety or welfare in the neighborhood of the Clinic.

5.0 Clinic **practices**

Kent Treatment Solutions is a conscientious member of the community. KTS works hard to be a good neighbor and community member. The following list, while not all-inclusive, describes some of the things KTS undertakes to ensure it has a positive impact in the community around the Clinic:

- **Loitering Prevention:**

1. Loitering Monitor - Clinic has a full-time staff dedicated to security and janitorial services.

   The loitering monitor works 5 days per week. During patient hours, Clinic security staff patrols a 2 block radius to ensure that Clinic patients are not loitering. In addition, all staff supports the no loitering policy. Staff members regularly walk around outside the Clinic to clear patients who remain in the neighborhood after their appointments.

2. Patient Messaging - All new patients agree to abide by Clinic rules at intake. In the Patient Agreement, patients are informed they cannot remain anywhere within a 2 block radius after their appointments. Patients may patronize businesses within the radius, but all food and beverage needs to be carry-out. Patients are not permitted to sit at coffee shops or restaurants within this 2 block vicinity. All new patients are required to attend an 8 week orientation group. In this group, Clinic rules and expectations are explained.

3. Posted No Loitering Map - A large framed map of the area has the No Loitering Boundary highlighted.

4. Patients identified by Clinic staff as having violated the no loitering rule can be placed on a Behavior Contract. If the patient continues to loiter, the patient will be placed on a Last Chance Contract. If the patient violates the contract, the patient can and likely will be discharged from the Clinic. The Clinic also places patients who demonstrate inappropriate behavior in the neighborhood on Behavior Contracts.

■ Presentable **Business:**

1. The sidewalks outside of the Clinic entrances are regularly cleaned by Clinic Staff.
2. The Clinic provides and maintains a garbage can outside of the main Clinic entrance that is emptied by Clinic Staff a minimum of once daily.
3. Graffiti is cleaned on a regular basis by Clinic Staff.
4. The Clinic contracts and pays for monthly landscaping services that trim shrubbery outside of the Clinic and the parking lot.

6.0 City of Kent and Kent Police

All City staff, members of the Kent Police Department, and area businesses will communicate with the Clinic whenever they notice inappropriate activity occurring on 84th Ave South and the area in and around the Clinic, along with bus stops and into the neighborhood, which could be due to Clinic clients.

7.0 City of Kent Neighborhood Response Team ("NRT") services

City of Kent NRT staff will:

- Maintain copies of the Agreement, and will provide copies to Parties upon request.
- Coordinate review of the Agreement as needed, providing adequate notification to all Parties.
- Provide training as needed.

8.0 Follow-up

The Parties to this Agreement shall meet as needed after this Agreement takes effect to resolve any unforeseen problems or issues. NRT staff is available to facilitate future meetings.

Kent Treatment Solutions
Acadia Healthcare
9500 Front Street, Suite 100
Lakewood, WA 98499 253-278-4068
dcummins@crchealth.com

Date 3/10/2016

IvDJA'
Bv: Deb Cummins
Its: Regional Director

City of Kent
Chief Administrative Officer
220 Fourth Avenue South Kent, WA
98032 253-856-5100
dmatheson@kentwa.oov

By: Derek Matheson
Its: Chief Administrative Officer
Date: ... .-

MEMORANDUM OF UNDERSTANDING

Between

Evergreen Treatment Services and City of Renton

1.0 Stakeholders

This Memorandum of Understanding (MOU) is made between Evergreen Treatment Services – South King County Clinic (ETS-SKC), located at 1412 SW 43rd, Suite 140, Renton, WA and the City of Renton.

The Memorandum represents a good faith agreement between the two parties and is intended as the foundation of a healthy relationship between the business and the city. By targeting mutually agreeable standards, this MOU will formalize the mutual desire for healthy coexistence between ETS-SKC and local businesses, and between ETS-SKC and the city. Both good communication and mutual respect will be used to address potential negative by-products of ETS-SKC operating in its chosen business location at the address above.

The two parties recognize the legal limitations of patient confidentiality (42 CFR Part 2) that bind the ETS-SKC staff discussing specific patient behavior. However, all parties agree to work collaboratively to remediate existing or future problems within the confines of these confidentiality regulations.

2.0 Duration

This Partnership Agreement shall begin on mm dd, 2016 and shall be renewed on a biannual basis until all partners agree to dissolve this Memorandum.

3.0 Goals

- To have good communication and cooperation between local businesses, the City of Renton and ETS-SKC located at 1412 SW 43rd, Suite 140, Renton, WA 98057.
- To address quality of life concerns of neighbors, businesses and ETS-SKC through the adoption of policies and procedures designed to alleviate these concerns.

4.0 Statement of ETS-SKC business goals

4.1 No loitering in the IDC Medical Building Plaza and assistance with the city if loitering occurs in adjacent properties

4.2 No graffiti in or near the IDC Medical Building Plaza and reporting to the city if any occurs on nearby properties

4.3 A clean bus stop

4.4 No camping or overnight sleeping in the IDC Medical Building Plaza or the nearby greenbelt

4.5 Good communication between the City of Renton, ETS-SKC and local businesses.

4.6 Appropriate authorities are called when a criminal act occurs in or near the IDC Medical Building Plaza.

5.0 ETS-SKC Business Practices

Evergreen Treatment Services is a conscientious business that strives to be an asset for the community.

- **Patient Code of Conduct:**
  - All patients at ETS-SKC are required to sign a Patient Code of Conduct which we have customized for this location. The Code is signed at admission and annually thereafter, and is posted throughout the clinic. This ensures that patients understand the behavioral expectations associated with being a patient at ETS-SKC.
  - The Code of Conduct articulates do's and don'ts of client behavior and the consequences associated with the don'ts.
  - A copy of the Code of Conduct is attached to this MOU.
- **Public Safety Monitors:**
  - ETS-SKC employs Public Safety staff who are responsible for monitoring the inside and outside of the IDC Medical Building. At least two staff will be on duty at all times that the dispensary is open. They will wear brightly colored clothing that clearly identifies them as ETS Public Safety staff.
  - Public Safety staff develop relationships with our patients and work closely with the clinical team if infractions to the Code of Conduct occur. When necessary, they will work with the clinical staff to impose behavioral restrictions which can range from behavioral contracts, up to and including discharge from treatment.
  - All nearby businesses will be provided access to the ETS-SKC Public Safety staff phone number.
  - Public Safety staff will conduct monthly check-ins with neighboring businesses in order to assess areas of strength and opportunities for improvement in our functioning as a business neighbor. These monthly reports are circulated to the ETS Public Safety Manager, the ETS-SKC Clinic Manager, the Director of Operations, the Director of Clinical Operations and the Executive Director.
- **Loitering Prevention:**
  - All new patients must sign an agreement to abide by the clinic rules during their admission interview. At this time, patients are informed that they are expected to come to the clinic to conduct their business and then leave the area. Loitering in the vicinity is not permitted. While patients may patronize nearby businesses, their visits are expected to be time limited and not disruptive. Businesses that experience disruption from ETS patients should report this to the ETS Public Safety staff for follow up.
- **Presentable Business:**
  - The IDC Medical Building is a well maintained business environment. ETS Housekeeping Staff will assist with ensuring that the sidewalks and landscaping on and adjacent to the property are regularly cleaned.
  - A trash can will provided outside of the main clinic entrance and will be emptied daily.
- **Communication with the City:**

- ETS will be available to regularly communicate and provide training for Renton city officials and community stakeholders.

6.0 City of Renton and Renton police

The city of Renton, the Renton police and area businesses will communicate with ETS-SKC when inappropriate activity may occur near the IDC Medical Building and the surrounding area if there is concern that the activity may be related to patients at the ETS-SKC clinic.

City of Renton police will be informed about 42 CFR Part 2 and the restrictions placed on ETS-SKC staff regarding identifying patients. Under these regulations, ETS-SKC staff have an obligation to adhere with the limited circumstances that allow unauthorized disclosure of patient identifying information. ETS-SKC staff and City of Renton police will work closely together to ensure mutual understanding of these regulations and the federal restrictions surrounding authorized and unauthorized law enforcement entrance into the clinic.

7.0 Stakeholder Meetings

City of Renton officials and ETS-SKC staff will meet on a quarterly basis through the first year of operations and no less frequently than annually thereafter. It is understood that both parties may request more frequently meetings if desired and, adhering to the framework of this MOU, that these meetings will be collaborative and solution-focused.

The City of Renton Human Services Division will:

- Maintain copies of the MOU, and will provide copies to interested stakeholders upon request
- Coordinate review of the agreement, providing notification to all parties
- Coordinate and provide training as needed

_____ _____

Name, City of Renton Name, Evergreen Treatment Services

CITY OF SEQUIM

152 W. Cedar Street, Sequim, WA 98382
PH (360) 683-4908 FAX (360) 681-0552

CITY OF SEQUIM NOTICE OF SEPA
MITIGATED DETERMINATION OF NON-SIGNIFICANCE

PROJECT NAME: JAMESTOWN S'KLALLAM TRIBE OUTPATIENT CLINIC.

FILE REF: CDR 20-001.

LOCATION: The project site consists of the northwest 3.3 acres of an 18.19-acre parcel of land located adjacent to the east side of the South 9th Avenue extension, situated in the Southeast ¼ of the Southwest ¼ of the Southwest ¼ of Section 19, Township 30 North, Range 3 West, W.M., Clallam County, Washington; Assessor's Parcel No. 033019-330000.

SEPA ISSUANCE DATE: **March 25, 2020**

SEPA COMMENT PERIOD ENDS: **April 8, 2020**

PROPERTY OWNER: Jamestown S'Klallam Tribe

PROJECT LEAD / DESIGNATED CONTACT: Suzanne Pontecorvo, Rice Fergus Miller, 275 Fifth Street, Suite 100, Bremerton WA 98337.

PROJECT DESCRIPTION: This project is a proposal to develop the northwest 3.3 acres of the 18.19-acre subject parcel. The project includes the construction of a 16,720 SF medical clinic that will be made up of medication assisted treatment program which offers FDA approved dosing, primary care services, consulting services, dental health services and childcare services while clients are seen. The application and supporting materials are available for review at the City of Sequim Civic Center, 152 West Cedar Street, Sequim, WA 98362, or online at https://www.sequimwa.gov/471/Current-Projects.

CONSISTENCY W/APPLICABLE CITY OF SEQUIM PLANS & REGULATIONS: The proposal will be reviewed for compliance with all applicable codes and standards, including the Comprehensive Plan & Sequim Municipal Code. "Ambulatory and outpatient care services (physicians, outpatient clinics, dentists)" are listed as a permitted use in the underlying EOA zoning district, subject to the requirement for design review approval pursuant to SMC 18.24.031, and processed as a Type A-2 permit in accordance with SMC 18.24.033 and SMC 20.01.090.

ENVIRONMENTAL REVIEW: A SEPA threshold Mitigated Determination of Non-Significance (MDNS) pursuant to WAC 197-11-350 is issued effective March 25, 2020, with a 14-day comment period ending April 8, 2020.

COMMENTS: The decision on this application will be made no sooner than fourteen (14) days from the issuance of this notice of SEPA threshold determination, April 8, 2020, and no later than May 26, 2020. This notice is

issued effective March 25, 2019 with publication in the Peninsula Daily News, and the comment period shall run fourteen (14) calendar days from that date; Therefore, comments on the MDNS for this proposal will be accepted no later than April 8, 2020 and shall be as specific as possible and may address either the adequacy of the environmental document or the merits of the alternatives discussed or both. Commenters shall briefly describe the nature of any documents referenced in their comments, indicating the material's relevance, and should indicate where the material can be reviewed or obtained. Members of the public shall make their comments as specific as possible and are encouraged to comment on methodology needed, additional information, and mitigation measures in the manner indicated in this section.

Persons wishing to comment on the MDNS should submit written comments no later than 4:00 PM on **April 8, 2020** to the City of Sequim, Department of Community Development (DCD), c/o Tim Woolett, 152 West Cedar Street, Sequim, WA – twoolett@sequimwa.gov.

A final decision on the application will be made by the Community Development Director within 120 calendar days of the date of the determination of completeness (January 27, 2020), per SMC 20.01.230 and RCW 36.70B.080(1).

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

February 24, 2020

Tim Woolett, SEPA Contact
City of Sequim
Department of Community Development
152 West Cedar Street
Sequim, WA 98382-3317

Dear Tim Woolett:

Thank you for the opportunity to comment on the Jamestown S'Klallam Tribe Outpatient Clinic Project (CDR 20-001) as proposed by Jamestown S'Klallam Tribe. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

SOLID WASTE MANAGEMENT: Derek Rockett (360) 407-6287

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from the local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department for proper management of these materials.

WATER QUALITY/WATERSHED RESOURCES UNIT:
Chris Montague-Breakwell (360) 407-6364

Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent stormwater runoff from carrying soil and other pollutants into surface water or stormdrains that lead to waters of the state. Sand, silt, clay particles, and soil will damage aquatic habitat and are considered to be pollutants.

Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW, Water Pollution Control, and WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action.

<u>Construction Stormwater General Permit:</u>
The following construction activities require coverage under the Construction Stormwater General Permit:

1. Clearing, grading and/or excavation that results in the disturbance of one or more acres **and** discharges stormwater to surface waters of the State; and

2. Clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more **and** discharge stormwater to surface waters of the State.
   a) This includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, **and** discharge to surface waters of the State; and
3. Any size construction activity discharging stormwater to waters of the State that Ecology:
   a) Determines to be a significant contributor of pollutants to waters of the State of Washington.
   b) Reasonably expects to cause a violation of any water quality standard.

If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) will be required to be submitted.

You may apply online or obtain an application from Ecology's website at: http://www.ecy.wa.gov/programs/wq/stormwater/construction/ - Application. Construction site operators must apply for a permit at least 60 days prior to discharging stormwater from construction activities and must submit it on or before the date of the first public notice.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(GMP:202000622)

cc: Derek Rockett, SWM
Chris Montague-Breakwell, WQ

PROJECT NAME: JAMESTOWN S'KLALLAM TRIBE OUTPATIENT CLINIC

Notice of Application, Page 1
PROJECT DESCRIPTION: This project is a proposal to develop the northwest 3.3 acres of the 18.19-acre subject parcel. The project includes the construction of a 16,720 SF medical clinic that will be made up of medication assisted treatment program which offers FDA approved dosing, primary care services, consulting services, dental health services and childcare services while clients are seen.

Police Dept. Comment:
All plans, submittals, and public comments were reviewed. Overall, the proposed plans adequately address issues such as site security (lights, visibility, access,), landscaping (fits adequately with the concepts of CPTED - Crime Prevent Through Environmental Design), traffic flow, and impacts such as parking.

See further comment below on issues surrounding public safety and impacts to public safety.

SEPA Checklist, Page 13
15. Public Services [help]
a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.
The project anticipates very little need from police, fire, and EMT services, no more than any other commercial or healthcare clinic provider would anticipate. There may be a small amount of staff or patients that would utilize public mass transit to travel to the site.
b. Proposed measures to reduce or control direct impacts on public services, if any.
There will be a primary care provider onsite as well as full-time security on-site both in the building and on the property. In addition, there will be a comprehensive security camera system and monitoring room.

Police Dept. Comment:
In addition to the review of the physical layout, location and facility design elements, the Community Response Plan provides some details informing an analysis of potential public safety impacts. Further and more detailed comment on the Community Response Plan will occur deeper in this document.

A review of calls for service for the current Jamestown Medical Clinic located on 5th Avenue was completed. The Jamestown clinic has provided OUD, (Opioid Use Disorder) treatment services at that location since 2017. They have averaged around 130 patients per year since 2017. Patient visits at their current Clinic appear to average between 60 and 100 visits per month.

Calls for Service for any reason received by the Police Department at that address average 25 per year, 2017-2019. Calls for Service for any reason since the Clinic began operations average just over 23 per year, 2010-2019. Accordingly, there has been no appreciable increase in call load since OUD treatment began. Calls to the Clinic were primarily for false alarm calls. Calls for Service that resulted in some type of Police report average 1.7 per year, from 2010-2019. Three reports in 2017, two reports in 2018 and three Reports in 2019. For example, those reports included Theft, Malicious Mischief (damage to property), and Found Property. These numbers reflect such a de minimis volume of calls for service to even consider them an impact to our workload. This information does help inform our analysis for impact of this new clinic.

SEPA Checklist: D – Supplemental, Page 15

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

The proposed clinic may be accessed by public mass transit, but it is anticipated that will be a low number of users, given the closest transit stop is approximately a half-mile from the site. Public services (police, fire, EMT, etc.) are expected to be low, if any annually. The utility usage will be normal for a healthcare clinic of this size.

Proposed measures to reduce or respond to such demand(s) are:

A security guard will be stationed within the facility during hours of operation, reducing the need for police response. A clinic shuttle is planned to assist with patient transit.

Police Dept. Comment:

The plans talk about using transportation services to transport most clinic patients. That in conjunction with their operational plan for patient services and the presence of security on site should result in minimal impact to public transportation or the need to use local public buses or bus stops. Prioritizing providing transportation for those that would use public transit (Clallam Transit) or otherwise struggle with transportation or might be inclined to drive without a valid license would be recommended.

Community Response Plan
Summary of Clinic Services, Page 3:

Police Dept. Comment: The description of clinic services is described as patients having structured appointments and expectations. Contrary to some other dose-and-go type clinics in more urban areas such as Seattle, where large numbers may come to a treatment site overwhelming the site and staff causing lines form outside the building for example, the description of process for patient flow should be adequate to program patient arrivals so that the proposed facility and staffing could handle the patient flow without disturbance to the neighborhood. SAMSHA region 10 Region Administrator was able to speak to this concern. A site visit to Didgwalic demonstrated a concerted effort to structure patient arrivals and flow within the clinic reducing impacts to the surrounding neighbors.

Shuttle Transportation Services, Page 6:

Police Dept. Comment: Transportation, or the lack thereof, was a concern to several Chiefs regarding Clinic's in their jurisdiction. Specifically, Chief Small spoke to a last stage gap from a drop off site at a bus stop causing patients to walk a small distance to arrive at the clinic. While this causes no notable crime or behavior issues that his Agency responds to, it does occasionally garner concern for citizens who call those patients in as a suspicious concern. The proposed plan seems to address those issues sufficiently. All attempts should be made to ensure those lacking reliable transportation or lacking driver's licenses should have transportation to the facility.

Community Response Plan, Page 6-7:

Police Dept. Comment: The described efforts and intentions documented in this section of the Community Response Plan regarding Property Security Plans and Patient Education and Conduct Contracts address a number of potential public safety or security concerns.

Clinic Social Navigator/Community Health Network, Page 8-9:

Police Dept. Comment: It is considered best practices within most Health and Human Service providers (shelter providers, community health care, mental health treatment, etc.) to have some version of a Navigator. The Navigators of the various providers then communicate and collaborate to increase successful patient outcomes and efficient delivery of services. This is possibly even more important in the case of services occurring in Sequim that need to be coordinated with services often originating in Port Angeles. This proposal identifies a proposed Navigator and suggests possible future communication and collaboration solutions. In this regard, the provision of a Navigator will provide benefits that may also alleviate potential negative outcomes that might have otherwise occurred.

Community Response Audit, Page 9-10 – Monthly/Quarterly Review Committee:

Police Dept. Comment: The suggested reviews are a good idea and proposal. At least three communities I've heard of, have codified such a process. With the significant public concern regarding safety and security, public trust can really only be recovered through transparency, effort, and time; an agreement may be a good first step in that effort. The agreements I reference are called Neighborhood Partnership Agreements. I attach two sample agreements from the City of Kent and the City of Kelso.

Research

In addition to reviewing the documents provided by Jamestown in their application package, I also spent considerable time and effort in researching possible public safety impacts from an Opioid treatment clinic. I visited the Didgwalic clinic due to Jamestown referencing that clinic

as the model for their proposed clinic. Additionally, I spoke with several Police Chiefs in towns similar to ours, rural and small, that have had a treatment facility move into their towns. I also spoke with the Region 10, SAMHSA, Regional Administrator (Substance Abuse & Mental Health Services Administration).

The Didgwalic clinic was impressive. Every step of their Clinic facility was done with intention; their operational plan and patient flow worked to both improve patient results but also addressed many public safety concerns. Their transportation plan also worked in a way to alleviate many public safety concerns. The Police Chief of Anacortes was able to confirm that they have had negligible impacts from the Clinic's presence.

Please see the below summaries of each of the conversations.

Didgwalic Wellness Center/Anacortes site visit
Their operations seem to run similar to how the Jamestown application has outlined in their Community Response Plan. Their methodology seems conducive to result in low impacts to the surrounding neighbors. Specifically, most activity with patients at the clinic start at 6am and end around noon. The transport process used also reduces impacts such as traffic volume, loitering, and folks staying in the area instead of returning to their home. Didgwalic does bring in patients outside of the Anacortes area and has childcare on site. The building provides security, process, and interior accommodations that lessen or discourage the need for patients to loiter outside the facility. **The Jamestown Clinic proposed floor plans and operational plan provide for similar security, similar process flow of patients and similar interior accommodations.**

Interview with David Dickinson, SAMHSA Regional Administrator (Substance Abuse & Mental Health Services Administration), Region 10 (AK, ID, OR, WA), Seattle, WA
Mr. Dickinson has over 30 years of experience in the treatment field. He is familiar with Didgwalic Wellness Center and the latest in treatment best practices for Opioid substance abuse treatment methods. He called the Didgwalic Wellness Center a "state of the art operation" that is a comprehensive, continuum of care, holistic/inclusive model for a MAT clinic. Specific to public safety concerns, he felt staff and security of the clinic develop relationships with patients so that they are in a position to handle or address potential issues before they become problematic. He was able to articulate why some clinics have bad reputations or result in negative public impacts and others don't. He suggested it requires a good site location, good building and site design, the development of good relationships with neighbors, and a good model of implementation (business model). He suggested that transportation was often a problem with this population and by providing both a local resource and transportation, patients had a higher likelihood of successful participation in the program and a more supportive environment while doing it.

Kelso
Police Chief Darr Kirk was familiar with the clinic since it's beginning in early 2018. Kirk said the clinic draws patients from five counties; Lewis, Wahkiakum, Pacific, Cowlitz, and Clark. The Police Department has seen no negative impacts since it's opening. Kirk stated he has also

not seen any issues with patients being bussed in and staying. Kirk said that the City of Kelso and the clinic entered into a Good Neighbors Agreement and worked together in the beginning to address any problems or areas of concerns. That has had positive results and there are no issues of note from his perspective.

Hoquiam
Police Chief Jeff Myers was familiar with the clinic and added that the clinic has recently closed its doors due to financial issues. In regard to public safety impact, Myers said that his Agency saw no negative impact and no negligible increase in calls for service. Like Chief Kirk, his Agency was intimately involved during the plan review and approval process to address any concerns or issues. He also referenced strict DEA licensing processes that help aid in addressing potential areas of concern.

Arlington
Police Chief Jonathon Ventura was familiar with Island Crossing run by the Stillaguamish Tribe. Chief Ventura said that the clinic has been open for approximately 2 years. Initially, he and community members had concerns about potential negative impacts. They have not experienced any of them. He stated that there has not been any notable or discernable increase in criminal activity or poor behavior (panhandling, disturbances, etc.) by clinic patients. He has done analysis on the suggestion that busing of patients from out of the area would be a problem. His numbers suggest over 60% of their homeless population are locals. He also said the out of area numbers for homeless have not really altered, as in there is not notable trend suggesting that there is a busing in and staying there problem of homeless, etc. that can be pointed to the presence of the clinic. Changes in homeless counts, etc. seem to follow normal fluctuations and patterns.

East Wenatchee

Interim Police Chief Tom Robbins is the recently retired Wenatchee Police Department Police Chief standing in while East Wenatchee hires a new Chief. The clinic in East Wenatchee opened just a year ago. Chief Robbins was not aware of the clinic so he had his office research police responses concerning the facility and spoke with the Assistance Police Chief. Chief Robbins said there were no calls for service at that location and the Assistant Police Chief said there has been no negative impacts.

Anacortes
Police Chief John Small was familiar with the Didgwalic Wellness Center by Swinomish Tribe. Chief Small said that he initially had concerns when the Clinic was first proposed but those concerns have not been realized. He has been pleasantly surprised that there are very few calls for service, certainly less activity associated or generated by the Clinic than he had anticipated. The Center recently went through another City process to get approval for their Clinic expansion and Chief Small was not aware of any negative comments or concerns expressed. He knows he had none to offer. Chief Small said the Clinic's transportation plan seems to work well and

likely reduces calls to his Agency. He also said that there has been no upsurge in Homeless related issues such as vagrants, loitering, panhandling, tent/camping in the community that can be attributed to the Clinic's presence. Their community does have homeless issues just like most communities.

Chief Small suggested I also speak to their imbedded Social Worker, Brittany Sutton. Sutton's job for the Police Department is to collaborate with Police Officers and contact those that Officer's are in contact with in the field with homelessness, mental health or substance abuse issues. That program is comparable to our local ReDiscovery program, based out of Port Angeles.

Sutton said there are no increases in homeless numbers, thefts, or other behavioral or criminal activity related issues as a result of the Clinic. She says that they have a great working relationship with the Clinic, and they collaborate to provide services with some of the problematic clients she deals with in the field. That is a benefit to their community.

Conclusion

Overall, after review of the proposal and further research, I conclude that there will most likely be negligible impacts from the Jamestown clinic. Staffing, on site security, physical layout and the proposed Operational Plan for this new facility should provide similar, if not improved capabilities (with the Didgwalic clinic as a model and the current Jamestown medical site) sufficient to address the increase in patient visits and patient load proposed for the new Outpatient Clinic. However, as referenced in the Community Response Plan, a review committee, and a Neighborhood Partnership Agreement would ease all parties concerns regarding potential impacts that are not visible at this time.

Tim Woolett

From: Bill Staeger <bill.staeger@gmail.com>
Sent: Monday, February 24, 2020 11:20 AM
To: Tim Woolett
Subject: Comments on the Environmental Checklist for the Proposed MAT Clinic

Mr. Woolett:

I am providing comments on the environmental checklist dated January 1, 2020 that was submitted to the city by Rice Fergus Miller for the proposed Medical Assisted Treatment Clinic. I have a home in Happy Valley and was drawn to the proposed project by the intense public reaction from area residents. My interest is related to the environmental information presented in the checklist as described below. I have been preparing and managing environmental impact statements and environmental permit applications for major projects for over 40 years, including residential developments, shopping centers, oil and natural gas pipelines, oil ports and LNG facilities, and electrical transmission lines.

The proposed project would be relatively small and generally would not be expected to result in unacceptable impacts. The checklist provides much of the basic information on the project, the existing environment, and project-related changes that could result in environmental impacts. However, some of the responses are insufficient in depth to fully understand the potential impacts and some responses contradict others. My comments are presented below regarding the specific issues that I believe require clarification or additional information to allow the city to fully assess the potential impacts of the project and to identify the potential costs of the project to the city.

W.H. Staeger Comments on
SEP Environmental Checklist
Proposed MAT Clinic

3. Water

Comment: In addition to a driveway, the project would include 84 parking spaces (as stated in Section 14c of the checklist). Section 3c states the following:

> *"Bioswales, filter strips, and onsite infiltration will be used to collect and dispose of runoff. Runoff will be treated on site and will not flow offsite. The downstream irrigation ditch will only be used for runoff in the event of an emergency overflow, in which case the water will eventually flow into the Dungeness River."*

If these methods of runoff control are planned for use during project operation, the applicant should provide additional relevant information, such as a description of the proposed surface of the driveway and parking area (e.g., gravel, asphalt, concrete, or another type of surface), calculated volume of runoff/infiltration, the capacity of "filter strips," and other key data.

Section 3.c3) includes the following statement:

> *"Stormwater will be treated onsite, and emergency overflow will flow into the existing irrigation ditch, which eventually flows into the Dungeness River."*

Since much of the irrigation ditch will be changed to a culvert/pipe, it is not clear how "emergency overflow" runoff would reach the remaining unaltered onsite portions of the ditch. The applicant should provide a clear statement about

where runoff from the driveway and parking area would be directed during both normal runoff periods and during periods of heavier rainfall.

With 84 parking spaces and a driveway that will experience an estimated 370 trips per day, there would be a potential for petrochemical contaminants in the runoff. If the city determines that an impermeable surface is needed to avoid groundwater contamination, oil water separators and/or other mitigation measures may need to be incorporated into the project to minimize downstream contamination.

5. Animals

Comment: There are conflicting statements in this section. The response to Section 5a states the following:

> *"Northern Spotted Owl, Winter Steelhead, Coho, and Pink Salmon Odd Year inhabit the site. However, the irrigation ditch is used for irrigation purposes and does not have fish."*

The response to Section 5c states the following:

> *"The site is part of the migration route for the winter steelhead, coho, and pink salmon odd year."*

If the northern spotted owl, winter steelhead, coho, and pink salmon inhabit or use the site, the applicant needs to provide mitigation measures to avoid or minimize impacts. It seems unlikely that salmon use the irrigation ditch as part of their migration routes, but if they do, the applicant will likely be required to provide mitigation measures since the ditch will be converted to a culvert/pipeline. It appears more likely that information was cut from another document and pasted into this section. Further information regarding this issue seems warranted.

6. Energy and Natural Resources

Comment: The applicant did not answer the question of "what kinds of energy would be used to meet the completed project's energy needs" and did not "Describe whether it will be used for heating, manufacturing, etc." The response only addressed backup power generation.

13. Historic and cultural preservation

Comment: There is no indication in the checklist that the applicant consulted with the State Historic Preservation Office or any of the tribes that may have concerns about the site and surrounding area. The response to Section 13b ("None known") may indicate that the applicant is not aware of any "professional studies conducted at the site to identify such resources," which suggests the applicant should consult with the SHPO and tribes to determine whether or not they have relevant information related to the site and surrounding area.

The response in Section 13c provides information on what culturally significant elements would be incorporated into the project, but does not provide an acceptable response to the request:

> *"Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc."*

The applicant did not provide any information regarding how they assessed the cultural significance of the site or the potential for cultural resources at the site. Based on the location of the site, the probability of impacts on cultural resources is low, but there is not evidence that this issue was investigated.

14. Transportation

Comment: The responses to questions in this section of the checklist are based on the information provided in the Traffic Impact Analysis (TIA) dated January 9, 2021 (sic) and prepared by Transportation Engineering NorthWest. Although the increase in traffic due to operation of the project apparently would not be substantial, the analysis presented in the Project Trip Generation Summary (Appendix C of the TIA) needs clarification to be certain the city will not experience an unacceptable change in the levels of service at the intersections studied.

The TIA does not provide information on the basis for the selected number of vehicle trips other than state that "Based on information provided by the applicant, the proposed Jamestown Clinic is estimated to generate a total of 370 daily trips . . . ." There is no information regarding how many employees or patients were assumed to be in each type of vehicle to determine whether or not the analysis examined the worst-case traffic condition.

The assumption of having only 1 person per vehicle trip for the employee and patient categories in the Appendix C table (Trip Generation Estimate – Average Weekday) would result in the maximum traffic associated with those two categories. This would provide transportation for 161 people out of the maximum total of 290 people (40 employees and a maximum of 250 patients per day for Phase I of the project according to the response to Section 8i of the checklist). That would leave the need to transport 129 patients in the minivans each day, or an average of 5.3 people per van per day (24 minivans arriving and departing the facility according to the estimates in Appendix C of the TIA). However, in Section 14h of the checklist, the applicant states the following: "The shuttles will produce about 24 round trips daily, serving approximately 100 patients." (Presumably the "shuttles" referred to in that statement and the "Minivan" column in Appendix C of the TIA are identical.) Further clarification of the assumptions made in the analysis is needed to determine if a worst-cast analysis was conducted, or at least an analysis that is acceptable to the city.

In addition, the data in the column for "Patient Trips - Jamestown Minivan" may need clarification. The first two columns list vehicle trips per day for employees and patients. That column indicates that there would be multiple minivan trips within some one-half hour periods. For example, the table lists three minivan "entries" to the facility between 8:00 and 8:30 am. If the applicant has a fleet of minivans that would provide this level of service to the patients, the data in the column are likely fine. But if the applicant would not have sufficient vehicles to have three minivans arrive at the facility within that period of time, the table will need clarification and perhaps revision.

15. Public Services

Comment: Allison Upthank, in her July 30 2019 email to Mark Ozias (which was included in her July 31, 2019 email to Bob Lake) provided an excellent summary of key medical-related issues of concern raised by the public. She also addressed the issue of crime associated with such facilities, including the following statement:

> *"Multiple studies have shown large scale reductions in crime with initiation of MAT, decreasing property and violent crime by up to 80%."*

She also included several links to the reports of relevant studies. Those studies identified reductions in crime within large areas, a situation that could occur if the proposed MAT clinic were approved and operated. However, there could also be an increase in local disturbances, crimes, and other activities that require additional police, emergency medical services, or other services provided by the city. The presence of "full-time security on site both in the building and on the property" (Section 15b Public Services) would mitigate such issues but would likely not eliminate them.

16. Utilities

Comment: The applicant did provide the information required in Section 16b beyond stating what utilities would be used during operation. It is unlikely that a facility the size of the MAT clinic would put a strain on the utilities, but without identifying who is providing what, it is not possible to do even a cursory assessment of potential impacts.

Received by City of Sequim
DCD / PUBLIC WORKS
1-10-2020

Department of Community Development
152 W Cedar Street
Sequim, WA 98382
Phone: (360) 683-4908
Fax: (360) 681-0552
www.sequimwa.gov

DESIGN REVIEW APPLICATION

For Department Use Only:

Application Fee _____

Receipt Number:

Date:

Clerk:

Application Number: CDR20-001

Associated Applications: _____

APPLICANT INFORMATION

Owner's Name: D. Brent Simcosky

Owner's E-mail Address: bsimcosky@jamestowntribe.org

Owner's Mailing Address: 808 North 5th Ave,Sequim, WA 98382

Owner's Telephone: (360) 582-4870 Business Telephone: (360) 683-1109

Representative's Name: Suzanne Pontecorvo

Representative's E-mail Address: SPontecorvo@rfmarch.com

Representative's Mailing Address: 275 Fifth Street, Suite 100, Bremerton, WA 98337

Representative's Telephone: (360)362-1433

Are there any critical areas; such as wetlands, critical wildlife habitat, steep slopes (greater than 15%), frequently flooded areas, irrigation ditches, streams and stream corridors? ☑ No ☐ Yes

If yes, attach the appropriate environmental analysis.

This project includes? ☐ Residential Development (2 or more dwelling units) ☑ Commercial ☐ Mixed Use

Please provide the existing Address, Legal Description and/or Parcel Number(s)?
Use and attach additional pages if necessary.

Parcel#: 033019330000
Address: 526 S. Ninth Avenue, Sequim, WA 98382
Legal Description: N2SWSW SURV V64 P78

Received by City of Sequim
DCD / PUBLIC WORKS
1-10-2020

Design Review Application Submittal Requirements Checklist

******It is the responsibility of the applicant to ensure that all submittal requirements listed below are turned in as part of this application. Incomplete applications will not be accepted by the City of Sequim Department of Community Development. ******

- ☑ A Pre-Application meeting shall take place prior to formal submittal of the Design Review application).
- ☑ A completed project permit application form, including SEPA checklist for non-exempt projects submitted pursuant to Chapter 16.04 SMC as amended [SMC 20.01.120(B)(1)].
- ☑ A Site Plan/Layout drawn to scale no smaller than one-inch equals 30 feet, showing location and size of all structures, critical areas, required buffer areas, landscape areas, open spaces, common areas or plazas, walkways, preliminary stormwater retention/detention facilities, parking lot layout and vehicle circulation. The site plan should also identify all easements or other encumbrances restricting the use of the property [SMC 18.24.032(C)(1) & SMC 20.01.120(B)(5).
- ☑ A verified statement by the applicant that the property affected by the application is in the exclusive ownership of the applicant, or that the applicant has submitted the application with the written consent of all owners of the affected property. A photocopy of the property deeds shall be provided [SMC 20.01.120(B)(2)].
- ☑ A property and/or legal description of the site, as required by the applicable development regulations [SMC 20.01.120(B)(3)].
- ☑ Assessor's map and a list of tax parcels and their owners for all properties within 300 feet of the property and properties to which public notice must be sent as provided in SMC 20.01.190 [SMC 20.01.120(B)(6)].
- ☑ Preliminary Landscape Plan showing the species, size and location of all existing indigenous and native trees eight inches in diameter or larger, and other significant shrubs, groundcovers, and ornamental grasses within the property subject to the application. This plan must also include all proposed new landscaping, and whether it is associated with stormwater management [SMC 18.24.032(C)(2)].
- ☑ Stormwater Site Plan showing all proposed best management practices to be used in the site design. The plan, defined in Chapter 13.104 SMC, shall identify and describe the type of stormwater management technique(s) being used and applicable calculations (e.g., size, capacity, etc.) [SMC 18.24.032(C)(3)].
- ☑ Preliminary Grading Plan providing an accurate topographic map of the property, delineating contours, existing and proposed, at no greater than five-foot intervals. The plan shall indicate all proposed cuts, fills and retaining wall heights and include areas of disturbance necessary to construct all retaining walls, structures and impervious surfaces [SMC 18.24.032(C)(5)].
- ☑ Preliminary Utilities Plan showing the location and type of any proposed utilities [SMC 18.24.032(C)(6)].
- ☑ Colored Elevation Drawings of all buildings showing dimensions and proposed materials including roofing, siding, windows and trim. Drawings shall include conceptual trim and cornice design and roof pitch. If landscaping is proposed to soften or mitigate architectural modulation or details, additional elevation drawings showing proposed landscaping shall be provided [SMC 18.24.032(C)(7)].

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- [x] A description of how all mechanical and utility equipment will be screened [SMC 18.24.032(C)(8)].
- [x] The proposed schematic color and material palette for all elements open to exterior view including but not limited to exterior siding, trim, cornice, windows and roofing shall be presented graphically [SMC 18.24.032(C)(9)].
- [x] The location and description of any proposed fencing shall be shown on the landscaping plan [SMC 18.24.032(C)(10)].
- [x] Lighting and Signage. A photometric plan identifying the location and height of proposed parking lot, pedestrian and/or building security light structures and poles. Sign type and location shall be identified. A separate city of Sequim sign application will be required for additional sign information [SMC 18.24.032(C)(11)].
- [x] The location of all outdoor furniture, trash receptacles, recycling areas, bicycle racks and other accessories [SMC 18.24.032(C)(12)].
- [ ] Any supplemental information or special studies identified by the DCD Director or project planner [SMC 20.01.120(B)(7)].
- [x] The applicable fee [SMC 20.01.120(B)(4) & SMC 18.24.032(C)(13)].

******The City of Sequim Department of Community Development may require additional information necessary for decision making purposes. ******

I certify that the above information is true and correct to the best of my knowledge and accept responsibility for all claims and damages which may be occasioned to any other land or persons by actions authorized by the City of Sequim in relation to this designed Site Plan under review.

D. Brent Sundby — 1-9-2020

Owner(s) — Date

1.9.2020

Representative(s) — Date

* = May not be required to be submitted in conformance with WAC197-11-800 (Categorical Exemptions)

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JAMESTOWN S'KLALLAM TRIBE

OUTPAITENT CLINIC

PROJECT ADDRESS
526 S 9TH AVE
SEQUIM, WA 98382

RICEfergusMILLER
ARCHITECTURE INTERIORS PLANNING VIZLAB
275 Fifth Street, Suite 100
Bremerton, WA 98337
360-377-8773

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PROJECT INFORMATION

ADDRESS

Jamestown S'klallam Tribe Outpatient Clinic
526 s 9th Ave
Sequim, WA 98382

PARCELS

03-30-19-33-0000

DPD PROJECT #

OWNER

Jamestown S'klallam Tribe
1033 Old Blyn Highway
Sequim, WA 98382
360-582-4870

ARCHITECT

Rice Fergus Miller
275 Fifth Street, Suite 100
Bremerton, WA 98337
360-377-8773

LANDSCAPE DESIGN

Fisher Bouma Partnership
310 Madison Ave South, Suite A
Bainbridge Island, WA 98110
206-780-5651

PROJECT DATA

SITE DATA:
Parcel #03-30-1933-0000
Legal Description: N2SWSW SURV V64 P78

PARKING
(84) Required - (96) Provided

BUILDING DATA
Gross Building Area: 16,953 GSF

BUILDING HEIGHT
Max Building Hiehgt: 26'-8"

PROJECT DESCRIPTION

Concerned about the staggering statistics of opioid and other related addictions in Clallam and Jefferson Counties, the Jamestown S'Klallam Tribe is proposing this new 17,000 square foot Outpatient Clinic that will provide wraparound services to help heal patients both physically and emotionally. These wraparound services will include medication assisted treatment, primary care health services, dental care, and counseling services. Additionally, child drop-off during visits and social services will be offered to patients in order to help further facilitate their recovery by providing amenities for the patient and their families who depend on them. The project is located on South 9th Avenue between highway 101 and W Washington Street in Sequim, WA.

The Dungeness River is a key natural feature around which the Jamestown S'Klallam Tribe developed, and subsequently the community of Sequim, binding the community to the nature around them. The river also serves as a source of inspiration for the design acting as a metaphor of the journey a patient might go through in their battle against addiction. The building is oriented to face the location of the head waters where the Dungeness originates; the river gathers more water as it tumbles down the mountains, building momentum and becoming the roaring river that represents the turmoil someone might experience as they lose control to the powers of addiction. The middle of the river slows and stabilizes as it moves through the valley and forests, collecting small tributaries along the way; symbolic of someone finding the resources, support, and treatment they need to center their life. As the river spreads out again in the delta before it reaches the ocean it is representational of the different paths, accomplishments and success stories people will experience after they complete treatment and overcome their personal battle with addiction.

The aesthetic of the building is heavily inspired by forms found in traditional Pacific Northwest Native American architecture and the geometries and materials used are meant to reflect a modern interpretation of these culturally significant designs. Long planar elements and shallow sloped roofs with deep overhangs are used, reminiscent of the structures once built by the native tribes of the region. These are rhythmically broken by arcades of natural log columns (symbolic of the forests of the Dungeness valley), artistic metal screening elements, and large storefront windows protected by deep overhangs that give the building an appropriate human scale. Cedar wood cladding is the primary exterior material on the building, and it is oriented horizontally with two distinct widths and depths as a modern interpretation of this local material used in the original architecture of the native people. Charcoal grey fiber cement panels are used to break up the materials at key locations on the elevations of the structure and act as a backdrop to native art installations. In a few specific areas, panels in a burnt sienna red, an important color in native art, are added for variety and visual interest. All the exterior columns are natural logs containing visible knots and grains with stained glulam beams spanning them, and the roof planes are periodically interrupted by series of open wood trellises representational of both the forest tree canopy and the strong framing patterns found in early tribal structures. A local artist has been commissioned to create traditional tribal art patterns that will be carved into the large timber columns and glulam beam enhancing the visual character and framing the main entry. The roof form at the entrance to the building slopes up to the highest point of the structure and opens to the south in a symbolic gesture to open the building to the community while filling the public lobby with natural light.

Overall the design creates a place for healing inspired by the metaphorical journey of a river's path to the ocean within an envelope that is intended to reflect the traditional structures and materials of the native people of the area. The building maintains an aesthetic that is consistent and coherent with Sequim's local architecture while being reflective of the town's past and present culture.

DRAWING LIST

SITE OVERVIEW

MATERIALS

ELEVATIONS

ARCHITECTURAL SITE PLAN

OVERALL SITE PLAN

TOPOGRAPHIC SURVEY

GRADING & STORMWATER PLANS

SITE CROSS SECTIONS

ENLARGED SITE PLANS

UTILITY PLANS

CIRCULATION PLAN

TREE RETENTION PLAN

LANDSCAPE MATERIALS & LANDSCAPE PLANS

PLANT SCHEDULE & PLANTING PLANS

PHOTOMETRIC PLAN

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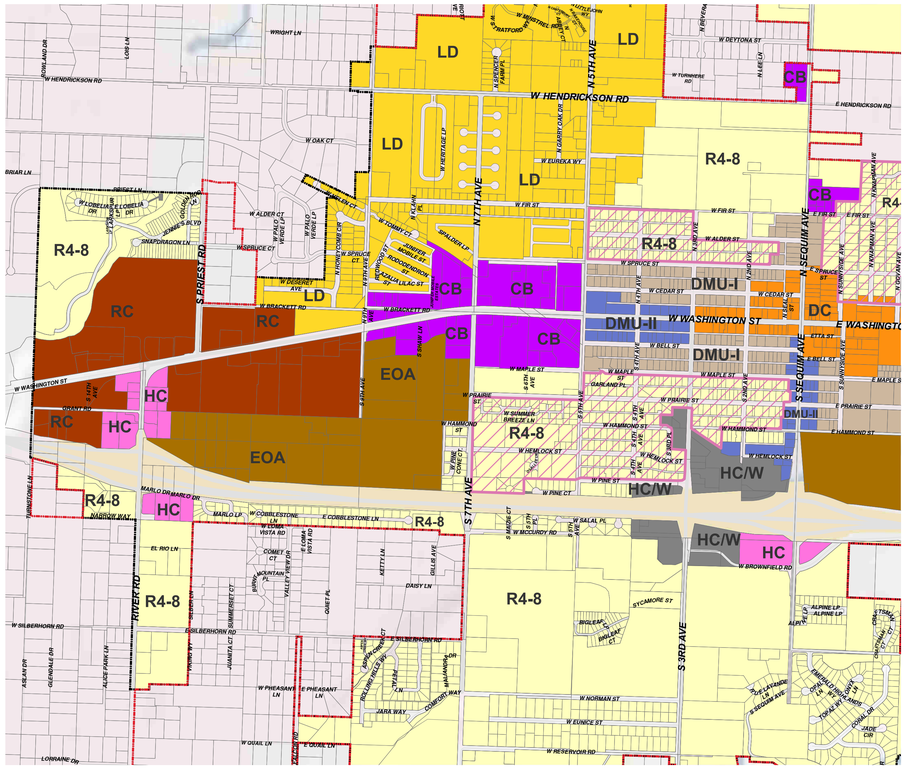
SITE OVERVIEW

Project Zoning

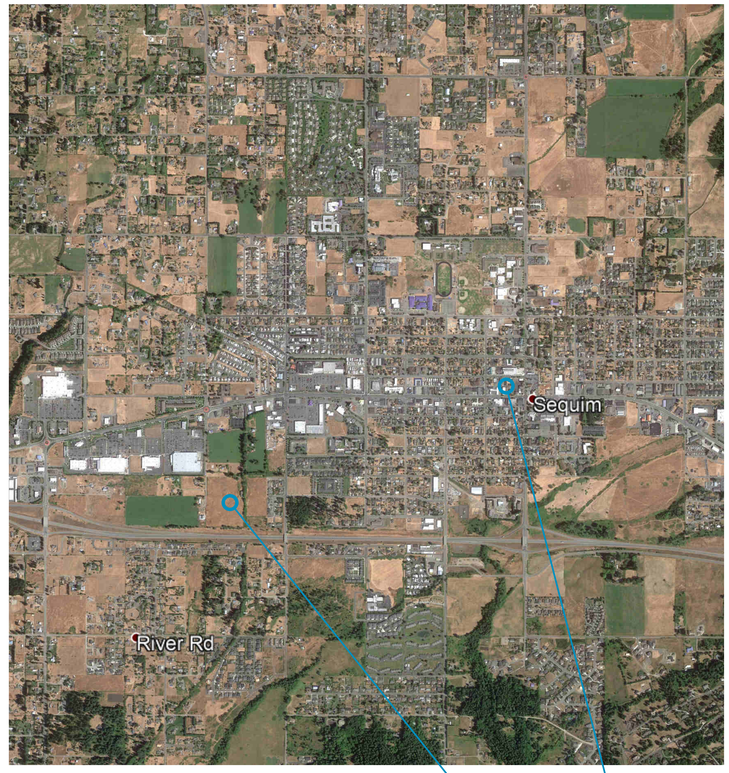


SCALE: 1" = 750'

LEGEND

- AG —AGRICULTURAL CONSERVANCY
- CB —COMMUNITY BUSINESS
- DC —DOWNTOWN CORE
- DMU-I —DOWNTOWN MIX USE I
- DMU-II —DOWNTOWN MIX USE II
- NB —NEIGHBORHOOD BUSINESS
- EOA —ECONOMIC OPPORTUNITY AREA
- HC —HIGHWAY COMMERCIAL
- HC/W —HEAVY COMMERCIAL/WAREHOUSE
- HTLI —HIGH TECH. LIGHT INDUSTRIAL
- LD —LIFESTYLE DISTRICT
- PRC —PLANNED RESORT COMMUNITY
- R4-8 —SINGLE FAMILY RESIDENTIAL
- RC —REGIONAL COMMERCIAL
- CITY LIMIT
- UGA
- SFR 18' MAX. HEIGHT DISTRICT

Project Location



SCALE: 1" = 1000'

Project Site

SCALE: 1" = 300'

LEGEND

1. Project Site
2. Downtown Sequim

VICINITY MAPS

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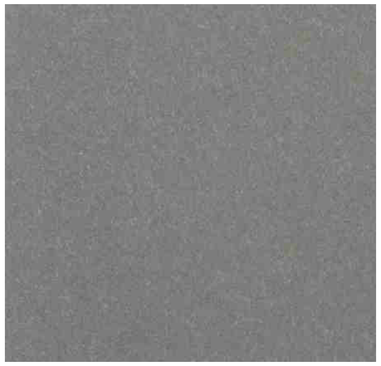
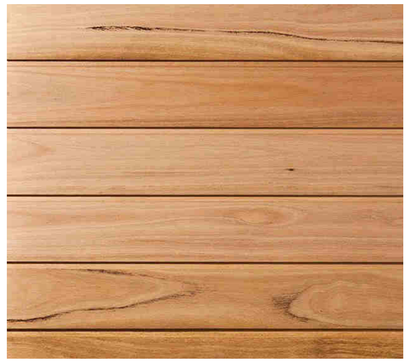
MATERIALS



1. FIBER CEMENT PANEL
(Light Gray)

1. FIBER CEMENT PANEL
(Dark Red)

2. WOOD CLADDING - WIDE
(10" Stained Cedar)

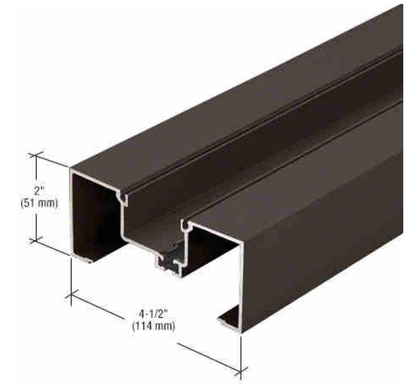


3. WOOD CLADDING - THIN
(4" Stained Cedar)

4. LOG COLUMN
(Natural Finish)

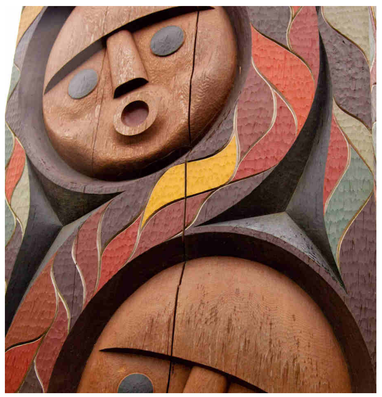
5. METAL FASCIA
(Dark Gray or Black)

6. METAL STANDING SEAM
(Gray)



7. ALUM. STOREFRONT
(Dark Gray or Black)

8. CEDAR PANEL SOFFIT



9. WOOD CARVED ART
(Final Color & Design By Local Artist)

10. GLULAM BEAM

LEGEND

1. Fiber Cement Panel
2. 10" Ceder Cladding
3. 4" Cedar Cladding
4. Log Column
5. Metal Fascia
6. Standing Seam Metal Roof
7. Aluminum Storefront
8. Cedar Panel Soffit
9. Carved Timber Art

SCREENING ELEMENTS

SLATTED CEDAR FENCE

LASER CUT METAL PANEL

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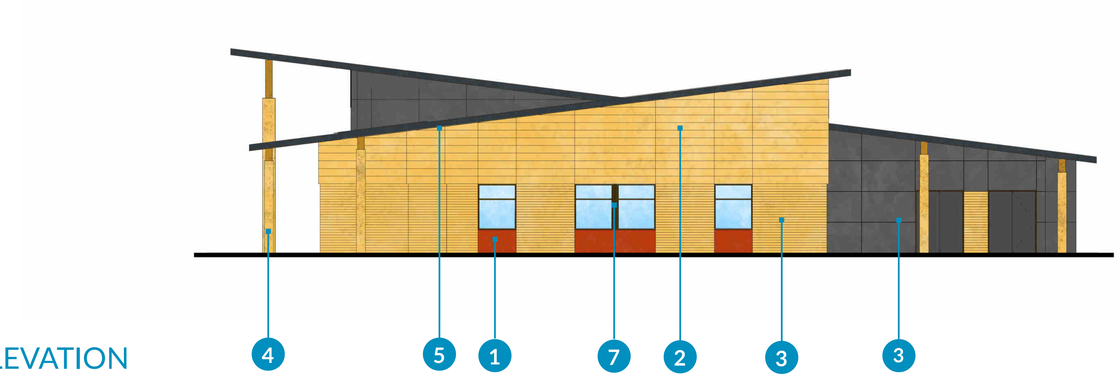
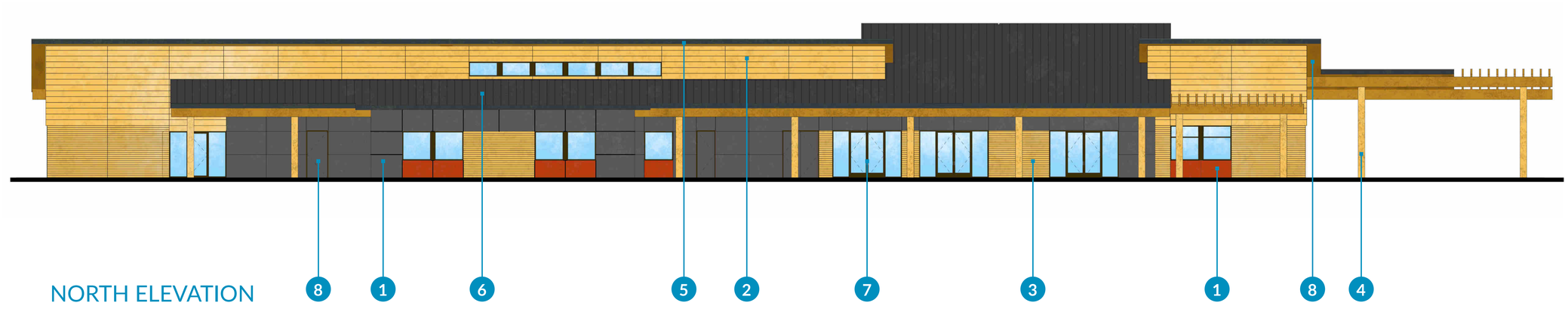
ELEVATIONS



EAST ELEVATION



NORTH ELEVATION

LEGEND

1. Fiber Cement Panel
2. 10" Ceder Cladding
3. 4" Cedar Cladding
4. Log Column
5. Metal Fascia
6. Standing Seam Metal Roof
7. Aluminum Storefront
8. Cedar Panel Soffit
9. Carved Timber Art

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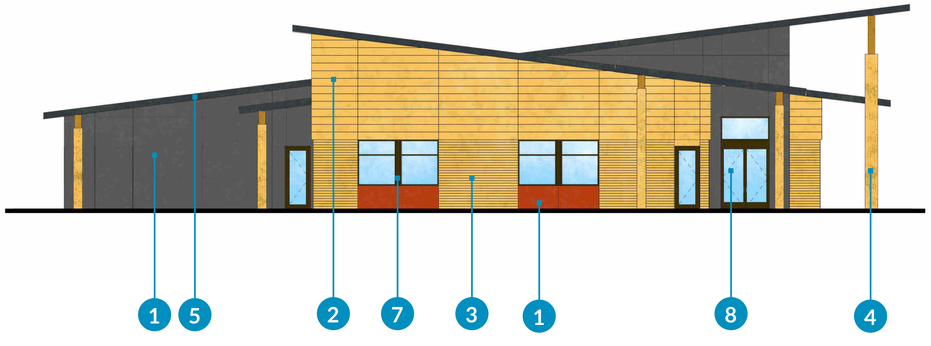
ELEVATIONS



WEST ELEVATION

SOUTH ELEVATION

LEGEND

1. Fiber Cement Panel
2. 10" Ceder Cladding
3. 4" Cedar Cladding
4. Log Column
5. Metal Fascia
6. Standing Seam Metal Roof
7. Aluminum Storefront
8. Cedar Panel Soffit
9. Carved Timber Art

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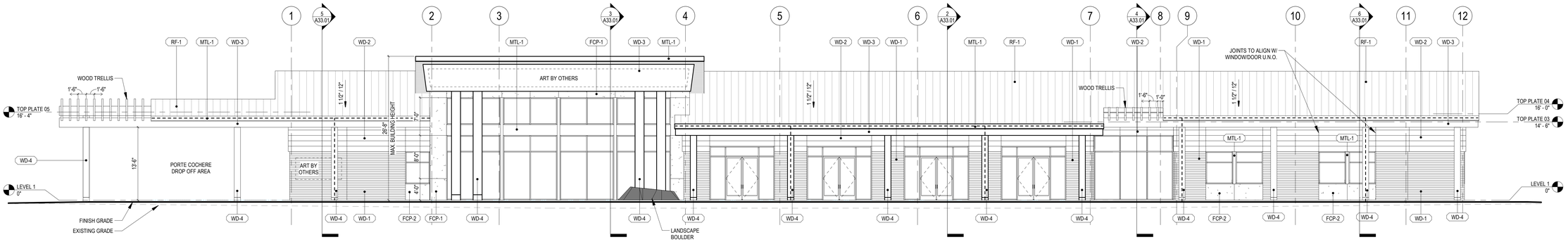
RFMARCH.COM

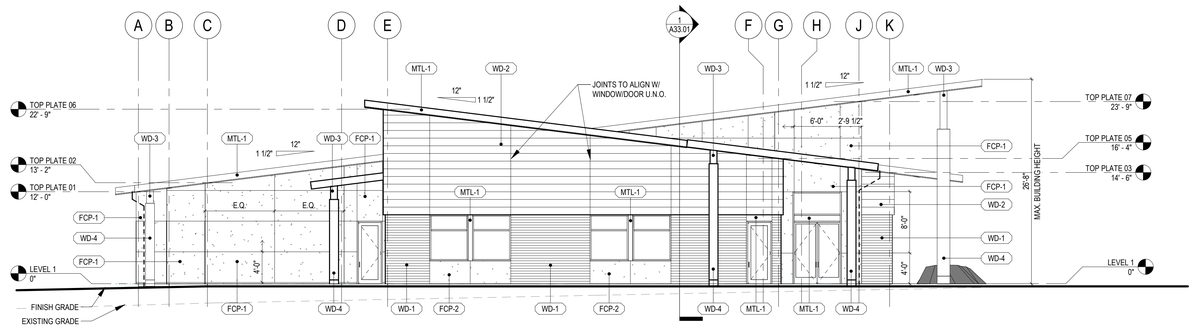
EXTERIOR MATERIAL LEGEND

WD-1	WOOD: 1X4 BUTT JOINT HORIZONTAL CEDAR SIDING, COLOR: STAIN NATURAL BROWN	FCP-1	FIBER CEMENT PANEL: SWISS PEARL COLOR: LIGHT GRAY
WD-2	WOOD: 1X12 BUTT JOINT HORIZONTAL CEDAR SIDING, COLOR: STAIN NATURAL BROWN	FCP-2	FIBER CEMENT PANEL: SWISS PEARL COLOR: DARK RED
WD-3	WOOD: GLULAM TIMBER BEAM, RE: STR. FOR SIZING COLOR: STAIN LIGHT BROWN	MTL-1	METAL: METAL PANEL, TRIM, OR FLASHING COLOR: DARK GRAY OR BLACK
WD-4	WOOD: PEELED LOG COLUMN, RE: STR. FOR SIZING COLOR: N.A. - LEAVE NATURAL	RF-1	ROOFING: PRE-FINISHED METAL STANDING SEAM 1.5" RIB MECH LOCK, 16" RIB SPACING COLOR: GRAY

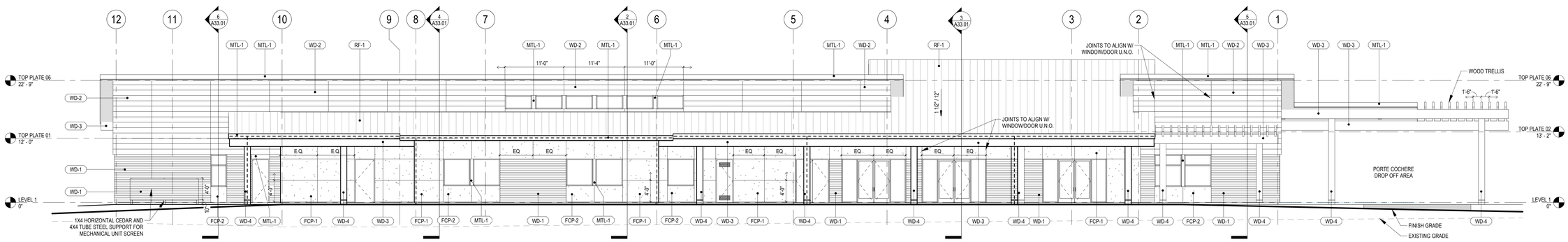
METAL GUTTER & DOWNSPOUT PAINTED TO MATCH FASCIA, RE: ROOF PLAN FOR LOCATION



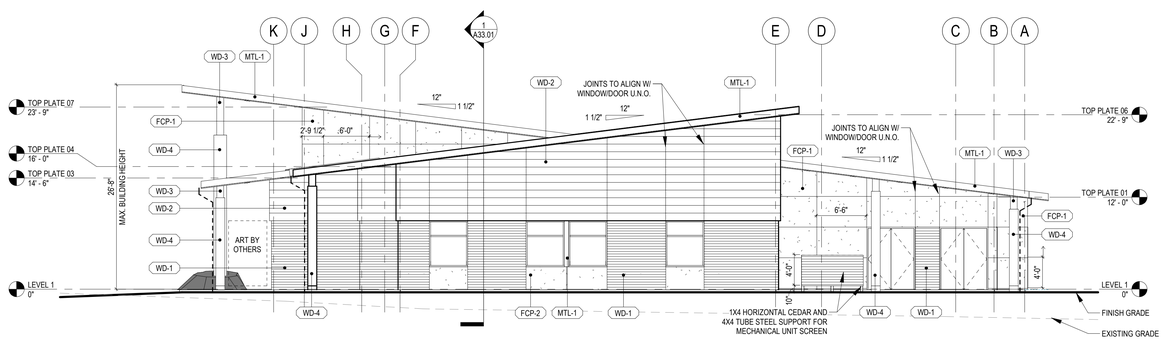
4 EXTERIOR ELEVATION - SOUTH
1/8" = 1'-0"



3 EXTERIOR ELEVATION - WEST
1/8" = 1'-0"



2 EXTERIOR ELEVATION - NORTH
1/8" = 1'-0"



1 EXTERIOR ELEVATION - EAST
1/8" = 1'-0"

REGISTERED ARCHITECT
6324
GREGORY A. BELDING
STATE OF WASHINGTON

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
SEQUIM, WA 98382

PROJECT # 2018136.01

PERMIT SET

ISSUE DATE JAN. 10, 2020

REVISION SCHEDULE

EXTERIOR ELEVATIONS

SHEET #
A31.01

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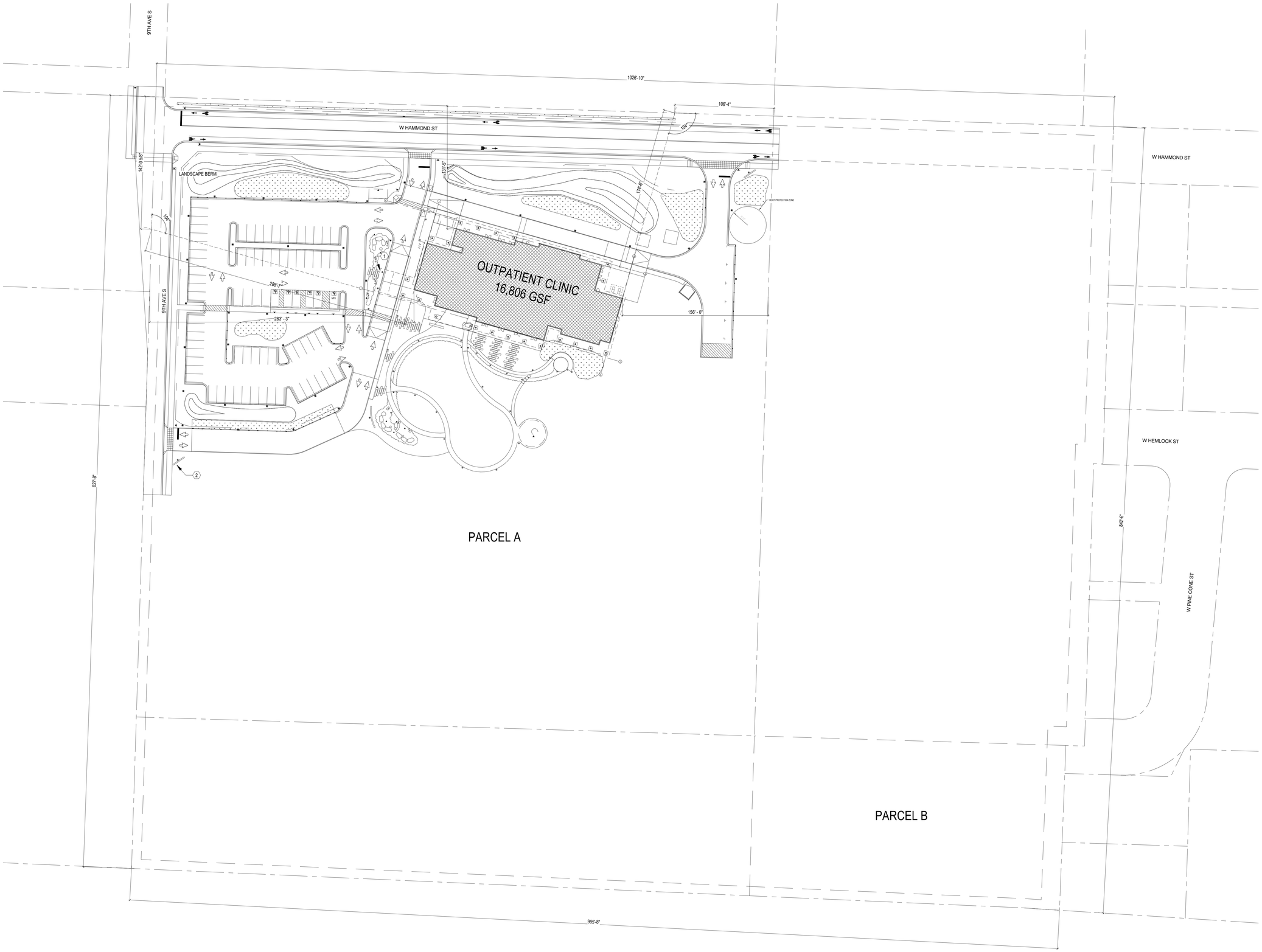

N 1 ARCHITECTURAL PROPERTY PLAN
1" = 40'-0"

DRAFT
NOT FOR CONSTRUCTION

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
SEQUIM, WA 98382

PROJECT #	2018136.01
PERMIT SET	
ISSUE DATE	JAN. 10, 2020

REVISION SCHEDULE

ARCHITECTURAL
PROPERTY PLAN

SHEET #
A10.01

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NOTES & LEGEND - SITE PLAN

1. REFERENCE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
2. GSF (GROSS SQUARE FOOT) NUMBER IS BASED ON SEQUIM MUNICIPAL CODE (SMC) SECTION 18.08 "FLOOR AREA, GROSS" DEFINITION. ACCESSORY AREAS NOT INTENDED FOR HUMAN OCCUPANCY SUCH AS MED GAS, FIRE SPRINKLER, ELECTRICAL, AND MECHANICAL ROOMS ARE EXCLUDED FROM THE GSF.
3. REQUIRED NUMBER OF PARKING STALL [PER SMC 18.48.050] = 72 STALLS
   - *16,806 GSF X 85% = 14,285 NSF*
   - *14,285 NSF / 200 NSF* = 71.4 = 72 STALLS (* FOR MEDICAL OFFICE: 1 PER 200 NSF)*

   PROPOSED NUMBER OF PARKING STALLS = 84 STALLS

LANDSCAPING
DRIVEWAY/ SIDEWALK, CONTROL JOINTS PER PLAN
PAVERS
DETECTABLE WARNING SURFACE
FENCING
PROPERTY LINE
PROPERTY SETBACK
BUILDING OUTLINE

KEY NOTES - SITE PLAN

#	NOTE DESCRIPTION
1	CANOPY OVER MAIN ENTRY
2	NEW MONUMENT SIGN
1	CANOPY OVER MAIN ENTRY
2	NEW MONUMENT SIGN
1	CANOPY OVER MAIN ENTRY
2	NEW MONUMENT SIGN

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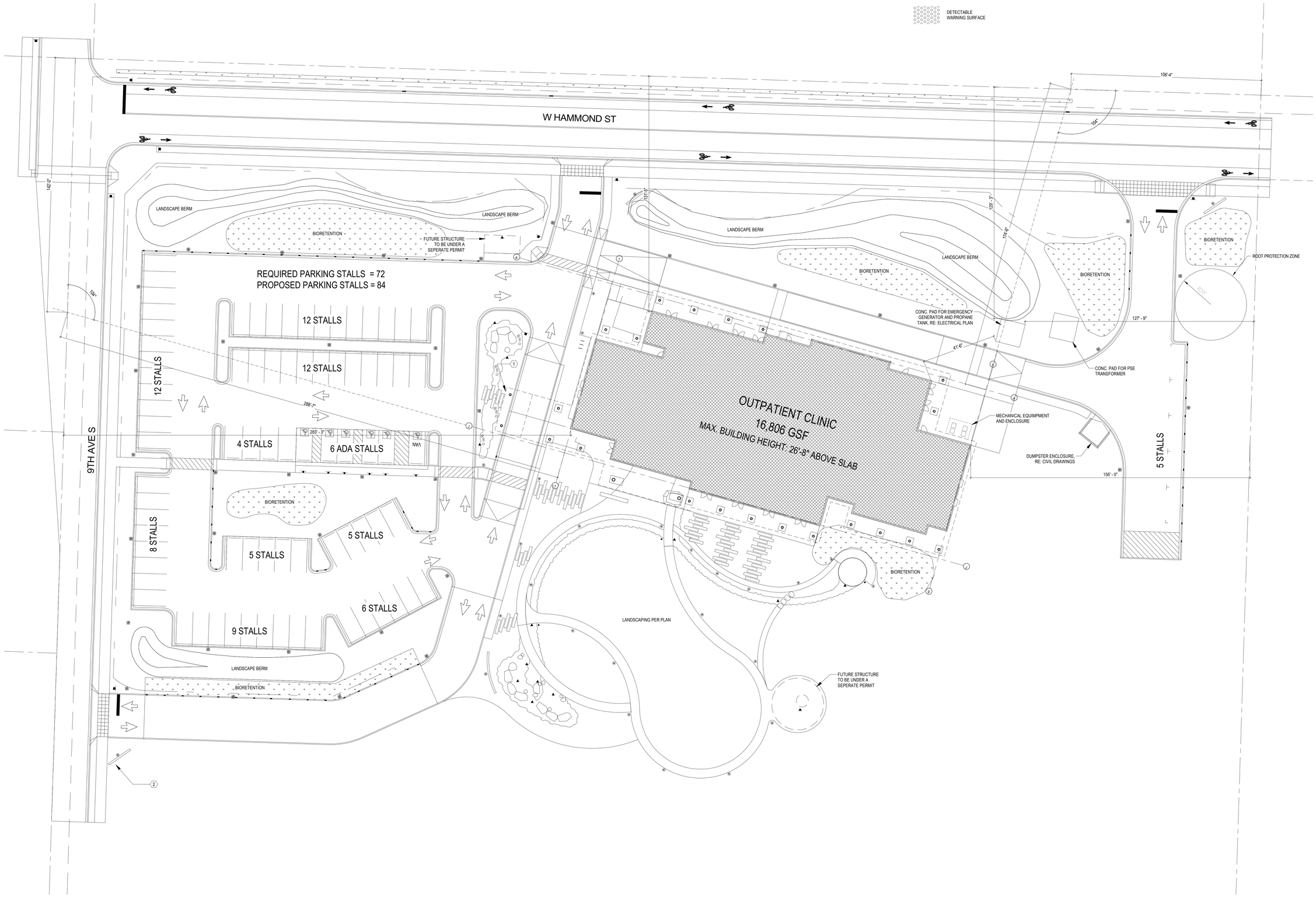

1 ARCHITECTURAL SITE PLAN
1" = 20'-0"

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
SEQUIM, WA 98382

PROJECT #	2018136.01
PERMIT SET	
ISSUE DATE	JAN. 10, 2020

REVISION SCHEDULE

ARCHITECTURAL SITE PLAN

SHEET #
A10.02

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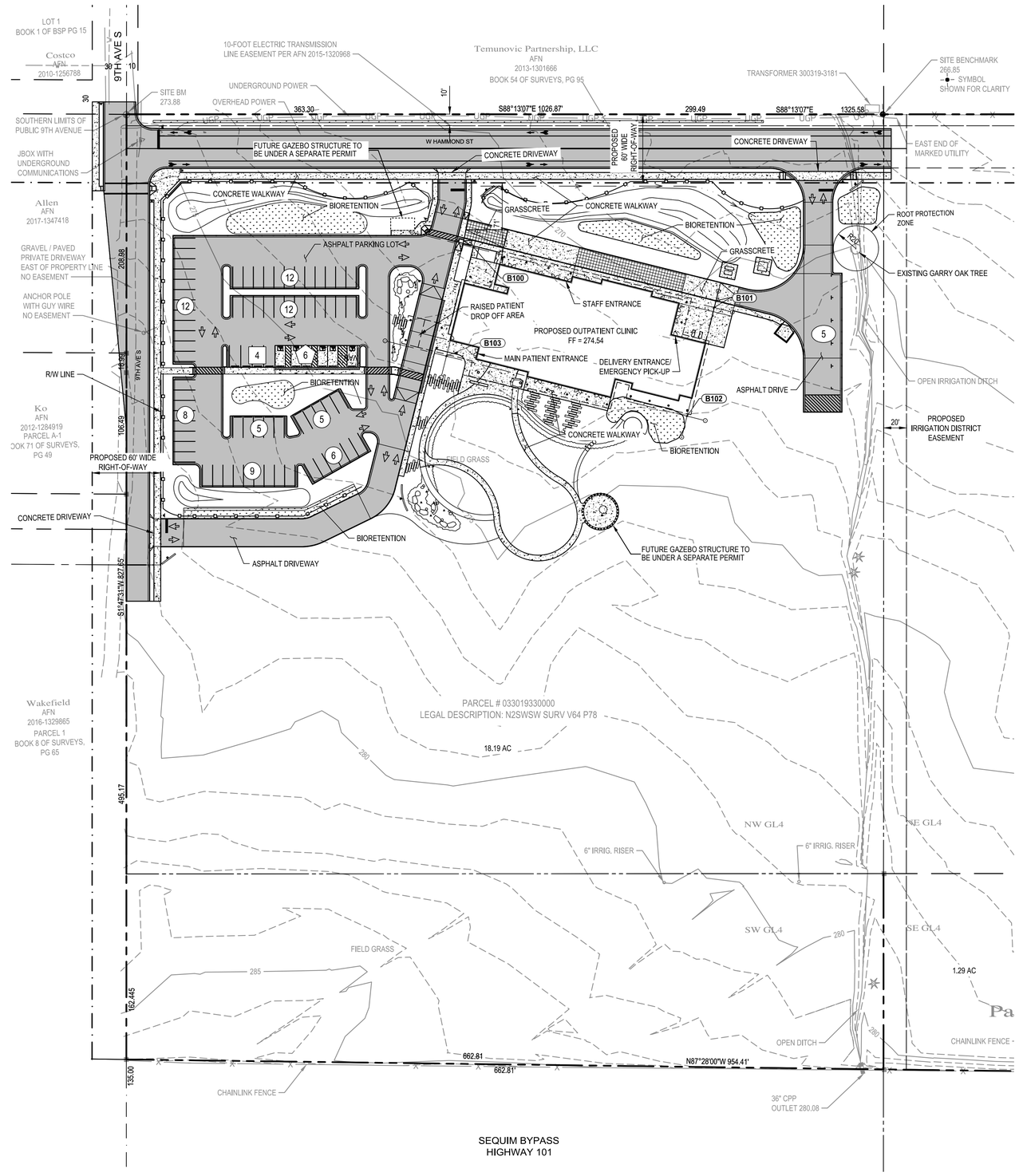
1-10-2020

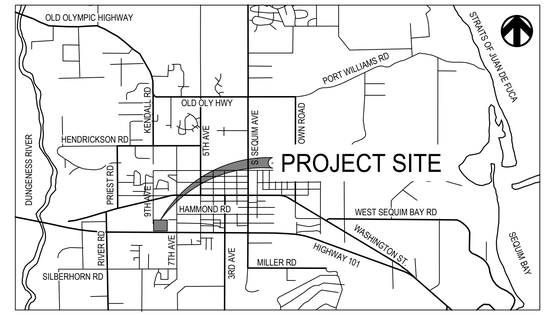
JAMESTOWN S'KLALLAM TRIBE

OUTPATIENT CLINIC

526 S. 9TH AVENUE

SEQUIM, WASHINGTON, CLALLAM COUNTY, USA





LOCATION MAP

NTS

GENERAL NOTES

1. SEE ENLARGED SITE PLAN SHEETS C4.0 AND C4.1 FOR HORIZONTAL CONTROL.
2. SEE UTILITY PLAN SHEETS C5.1 AND C5.2 FOR ALL ABOVE AND BELOW GRADE UTILITIES.

SHEET LIST

SHEET NO	SHEET TITLE
C1.0	OVERALL SITE PLAN
C3.0	OVERALL GRADING AND STORMWATER DRAINAGE PLAN
C3.1	ENLARGED GRADING AND STORMWATER DRAINAGE PLAN - WEST
C3.2	ENLARGED GRADING AND STORMWATER DRAINAGE PLAN - EAST
C3.3	SITE CROSS SECTIONS
C4.0	ENLARGED SITE PLAN - WEST
C4.1	ENLARGED SITE PLAN -EAST
C5.0	OVERALL UTILITY PLAN
C5.1	ENLARGED UTILITY PLAN - WEST
C5.2	ENLARGED UTILITY PLAN - EAST
C7.0	CIRCULATION PLAN

PARKING DATA

PARKING REQUIRED:

TOTAL STALLS: 1 STALL/200 NET SF = 14,285 NET SF/200SF = 71.4 = 72 STALLS

ADA STALLS: 1 ADA STALL/25 STALLS = 72 STALLS/25 STALLS = 2.88 = 3 STALLS

PARKING PROVIDED:

SYMBOL	DESCRIPTION	COUNT
#	OVERSIZED STALLS (10'x19') =	4
#	STANDARD STALLS (9'x19') =	69
#	ADA STALLS (INCLUDING 1 VAN STALL) =	6
#	PARALLEL PARKING STALLS (9'x20')=	5
	TOTAL STALLS =	84

BUILDING GRID COORDINATE TABLE

POINT ID	NORTHING	EASTING
B100	400712.28	1080820.65
B101	400653.26	1081029.47
B102	400558.95	1081002.81
B103	400617.97	1080793.99

LEGEND

PROPERTY LINE

SECTION LINE

EASEMENT LINE

50 25 0 50 100

SCALE: 1 INCH = 50 FEET

811 Know what's below. Call before you dig.

COFFMAN ENGINEERS
1101 2nd Avenue, Suite 400
Seattle, WA 98101
ph 206.623.0717
www.coffman.com

ALLISON L. HUNT
STATE OF WASHINGTON
45458
REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO. 191652

DRAWN KB

CHECKED ALH

DATE JAN 10, 2020

© COFFMAN ENGINEERS INC.

SHEET TITLE:

OVERALL SITE PLAN

SHEET NO:

C1.0

SHEET OF

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1-10-2020

Jamestown S'Klallam Tribe Topographic Survey

located in Section 19, Township 30 North, Range 3 West, W.M.
Clallam County, Washington
July, 2019

LEGEND

- 05/03/2019, FOUND 5/8-INCH REBAR WITH CAP "CLALLAM PUD PLS 23603" AT N58°51'W, 0.60. SEE DNR PERMIT TO DESTROY MONUMENT NO. 5720
- MAY 2-7, 2019, FOUND 1/2-INCH REBAR WITH PLASTIC CAP STAMPED "DC&A LS 22329" OR "CUMMINS LS 22329" PER SURVEYS LISTED HEREON
- MAY 7, 2019, FOUND 5/8-INCH REBAR WITH PLASTIC CAP STAMPED "CLARK 12223" PER BOOK 13 OF PLATS, PAGES 20-21
- MAY 2, 2019, FOUND 3/8-INCH REBAR IN PAVEMENT
- AFN — CLALLAM COUNTY AUDITOR'S FILE NUMBER OF RECORD LEGAL DESCRIPTION
- HES — HIGHWAY ENGINEERS STATION
- BARBED WIRE FENCE, U.N.O.
- EDGE OF PAVEMENT
- OPEN DITCH

DATUM

HORIZONTAL
– NORTH AMERICAN DATUM OF 1983, 1991 ADJUSTMENT, NAD 83(91)

VERTICAL
– NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD 88

SITE BENCHMARKS AS NOTED

NOTES

1. THIS SURVEY USES THE SECTION SUBDIVISION AS SHOWN ON BOOK 61 OF SURVEYS, PAGE 13 AND BOOK 39 OF SURVEYS, PAGE 86 AND IS BASED ON THE WASHINGTON COORDINATE SYSTEM GRID, NORTH ZONE, NAD 83(91) PER TIES TO GEOMPT NUMBERS 03301931, 03303021 AND 04302441. ALL BEARINGS ARE RELATIVE TO SAID GRID. ALL DISTANCES ARE REDUCED TO SAID GRID USING A COMBINED SCALE FACTOR OF 0.9999328. TO OBTAIN GROUND DISTANCES, MULTIPLY DISTANCES SHOWN HEREON BY 1.0000672.

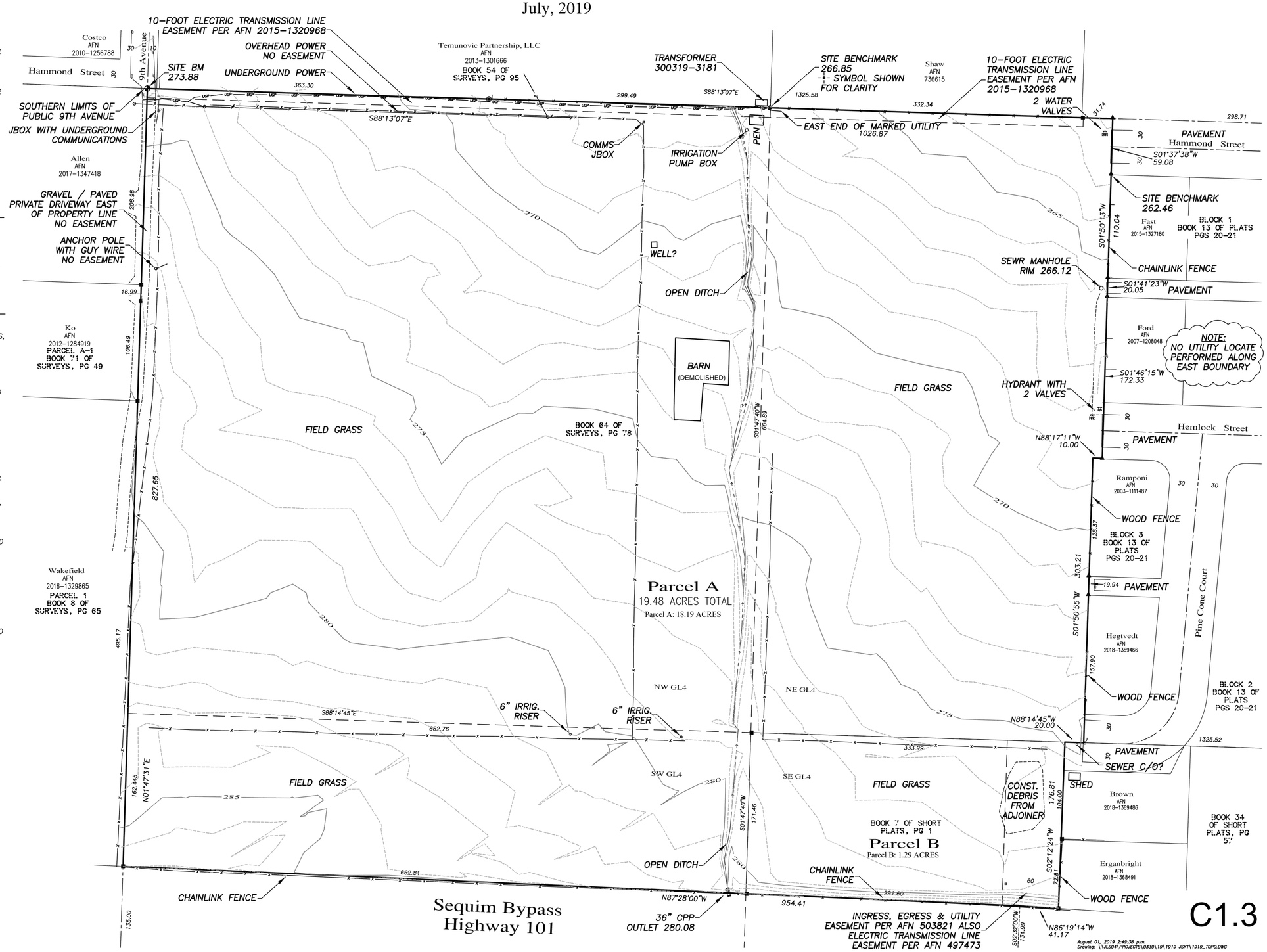
2. FOR LEGAL DESCRIPTION AND EASEMENTS, SEE AFN 2019-1379179 AND OLD REPUBLIC TITLE REPORT ORDER NO. 114860-DF, DATED 03/26/2019.

3. THIS SURVEY COMPLIES WITH W.A.C. 332-130-100 AND WAS ACCOMPLISHED IN MAY-JULY, 2019 BY FIELD TRAVERSE METHODS USING A TOPCON GPT 9001A 1-SECOND ROBOTIC TOTAL STATION CALIBRATED AT THE CLALLAM COUNTY BASELINE ON SEPTEMBER 17, 2015. SOME DISTANCES MEASURED WITH A STEEL TAPE.

4. THIS SURVEY WAS PERFORMED ACCORDING TO W.A.C. 332-130-090 STANDARDS FOR LAND BOUNDARY SURVEYS. THIS SURVEY WAS NOT PERFORMED OR CERTIFIED TO MEET THE CURRENT "MINIMUM STANDARD DETAIL REQUIREMENTS" OR "ACCURACY STANDARDS" FOR ALTA/ACSM LAND TITLE SURVEYS. THEREFORE, USE OF THIS MAP FOR THE ISSUANCE OF AN ALTA/ACSM OWNER'S EXTENDED COVERAGE POLICY IS STRICTLY PROHIBITED.

5. THE SURVEYED PARCEL MAY BE SUBJECT TO EASEMENTS OR OTHER ENCUMBRANCES EITHER RECORDED OR UNRECORDED NOT SHOWN HEREON. THIS SURVEY HAS NOT DETERMINED THE EXISTENCE OF ALL SUCH EASEMENTS OR ENCUMBRANCES OR THEIR EFFECT ON THE SURVEYED PARCEL EXCEPT AS SPECIFICALLY SHOWN HEREON.

6. THE UTILITIES SHOWN HEREON ARE BASED ON AND UTILITY LOCATE NO. 193200557 AND ABOVE GROUND OBSERVATIONS. THESE LOCATIONS SHOULD BE CONSIDERED APPROXIMATE AND POSSIBLY INCOMPLETE.



0 50 100
SCALE IN FEET
1-FOOT CONTOUR INTERVAL

JOHNSTON Land Surveying
540 W. Eighth Street, Port Angeles, WA 98362
360.452.0237 office, 360.452.0238 fax
www.johnstonlandsurveying.com

19(30-3)

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR LICENSED TO PRACTICE IN THE STATE OF WASHINGTON AND DECLARE THAT THIS MAP CORRECTLY REPRESENTS A SURVEY PERFORMED UNDER MY SUPERVISION AT THE REQUEST OF THE JAMESTOWN S'KLALLAM TRIBE IN MAY, 2019.

08/01/2019
ROB JOHNSTON PLS 37531

A SURVEY IN GOVERNMENT LOT 4, SECTION 19
TOWNSHIP 30 NORTH, RANGE 4 WEST, W.M.
CLALLAM COUNTY, WASHINGTON

Former "Dawley Property"
Proposed MAT Facilty
Topographic Survey, July 2019

DATE: 1/30/2018	
SCALE: 1"=50'	
DRAWN BY: RHJ	
PLAT CHECKED BY: RHJ	
SHEET 1 OF 1	

Received by City of Sequim
DCD / [illegible]
1-10-2020

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Seattle, WA 98101
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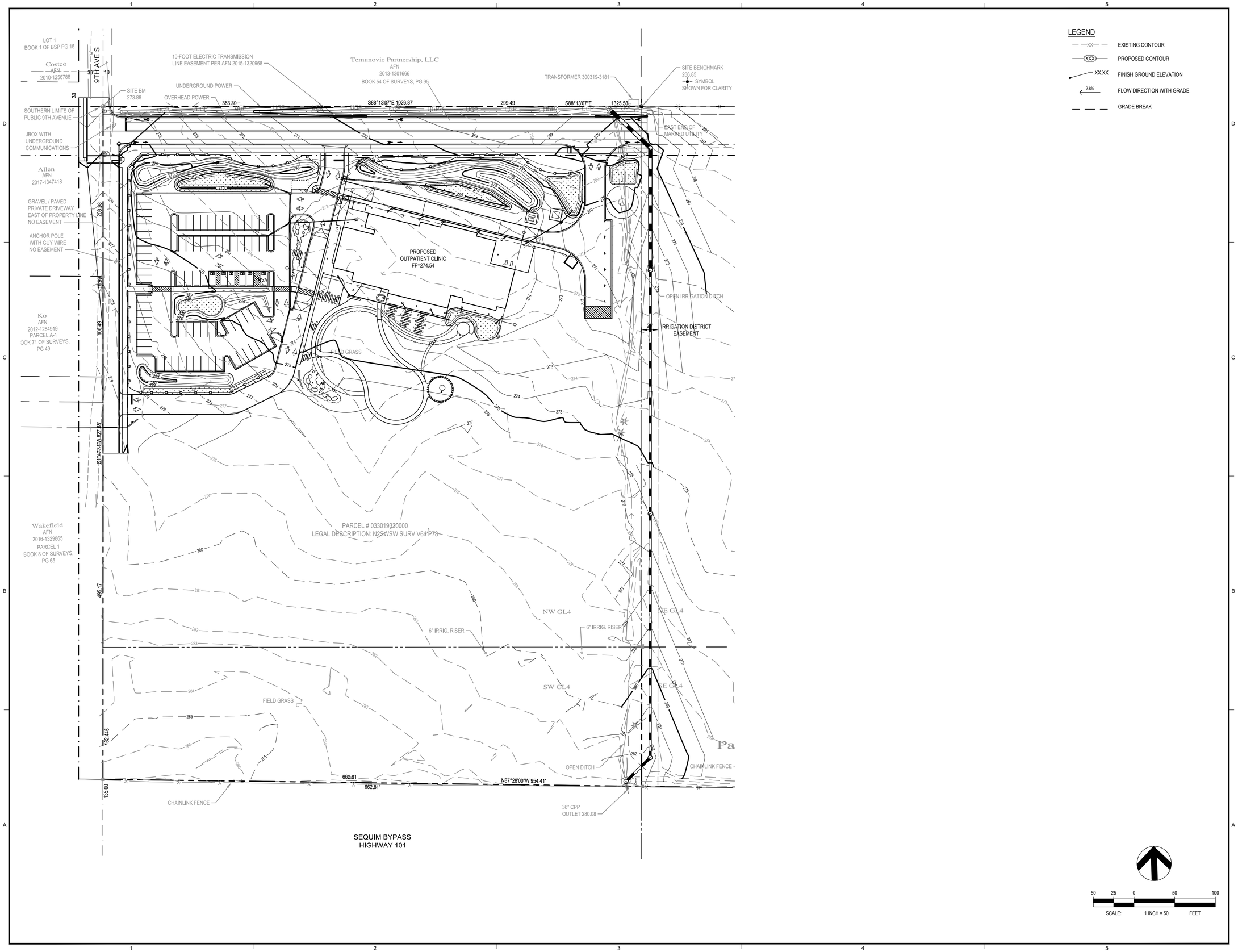

PRELIMINARY

JAMESTOWN S'KLALLAM
TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW
APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	MG
CHECKED	ALH
DATE	JAN 10, 2020

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SHEET TITLE:

OVERALL
GRADING
AND
STORMWATER
DRAINAGE
PLAN

SHEET NO:

C3.0

SHEET OF

Received by City of Sequim
DCD / PCR Services
1-10-2020

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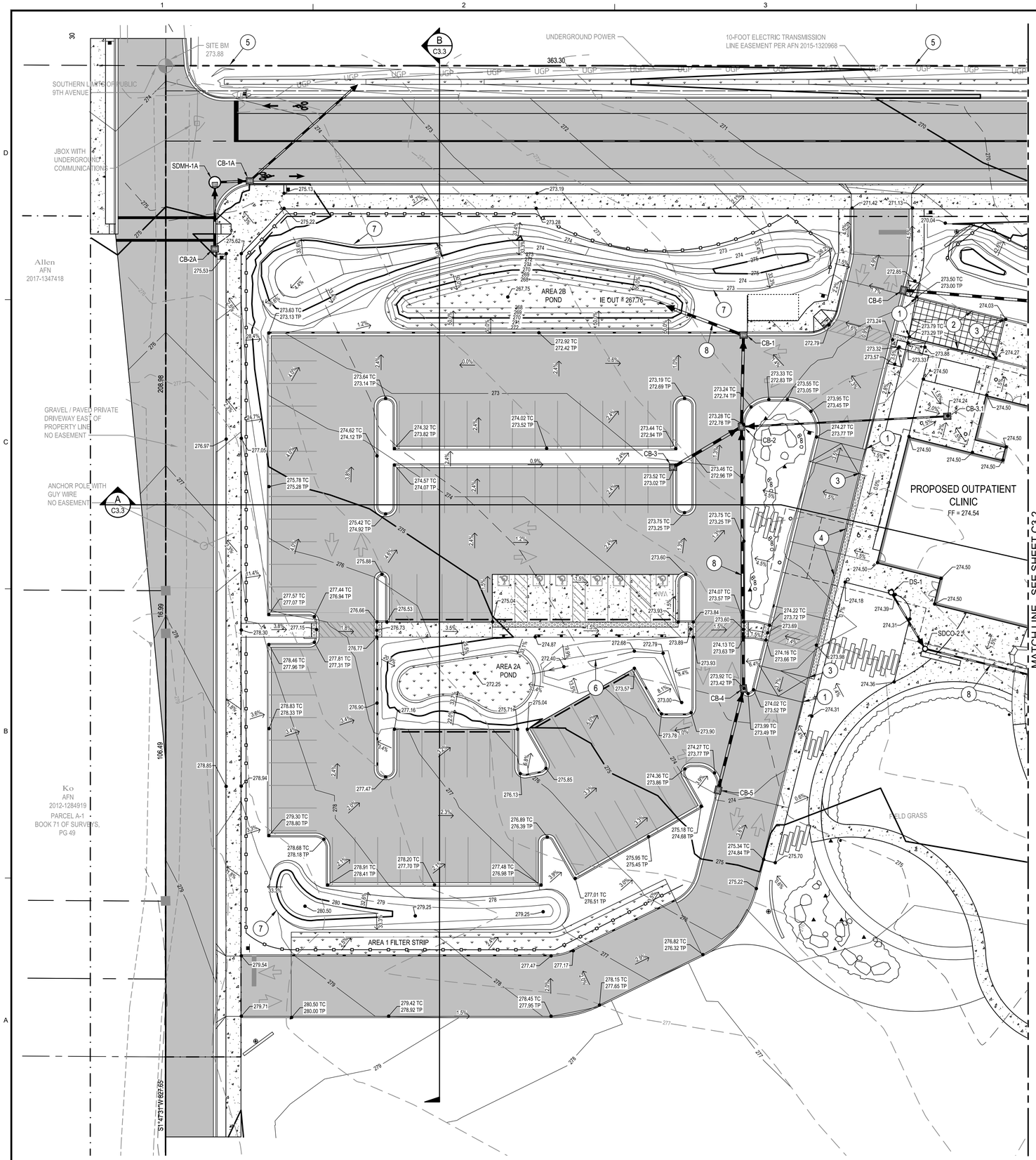
ALLISON L. HAY
STATE OF WASHINGTON
45458
REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY



LEGEND

—XX—	EXISTING CONTOUR
—(XXX)—	PROPOSED CONTOUR
XX.XX	FINISH GROUND ELEVATION
2.8%	FLOW DIRECTION WITH GRADE
— — —	GRADE BREAK

GRADING NOTES

1. BEGIN 6" CURB
2. TRANSITION FROM 6" CURB TO FLUSH CURB
3. BEGIN FLUSH CURB
4. SIDEWALK FLUSH WITH PAVEMENT
5. MATCH EXISTING GRADE
6. SWALE
7. BERM, PER LANDSCAPE ARCHITECT'S PLANS
8. STORM SYSTEM, REFER TO C5.1 & C5.2
9. HAND GRADING ONLY WITHIN DRIPLINE OF EXISTING TREE

SCALE: 1 INCH = 20 FEET

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	MG
CHECKED	ALH
DATE	JAN 10, 2020

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SHEET TITLE:

ENLARGED GRADING AND STORMWATER DRAINAGE PLAN - WEST

SHEET NO:

C3.1

SHEET OF

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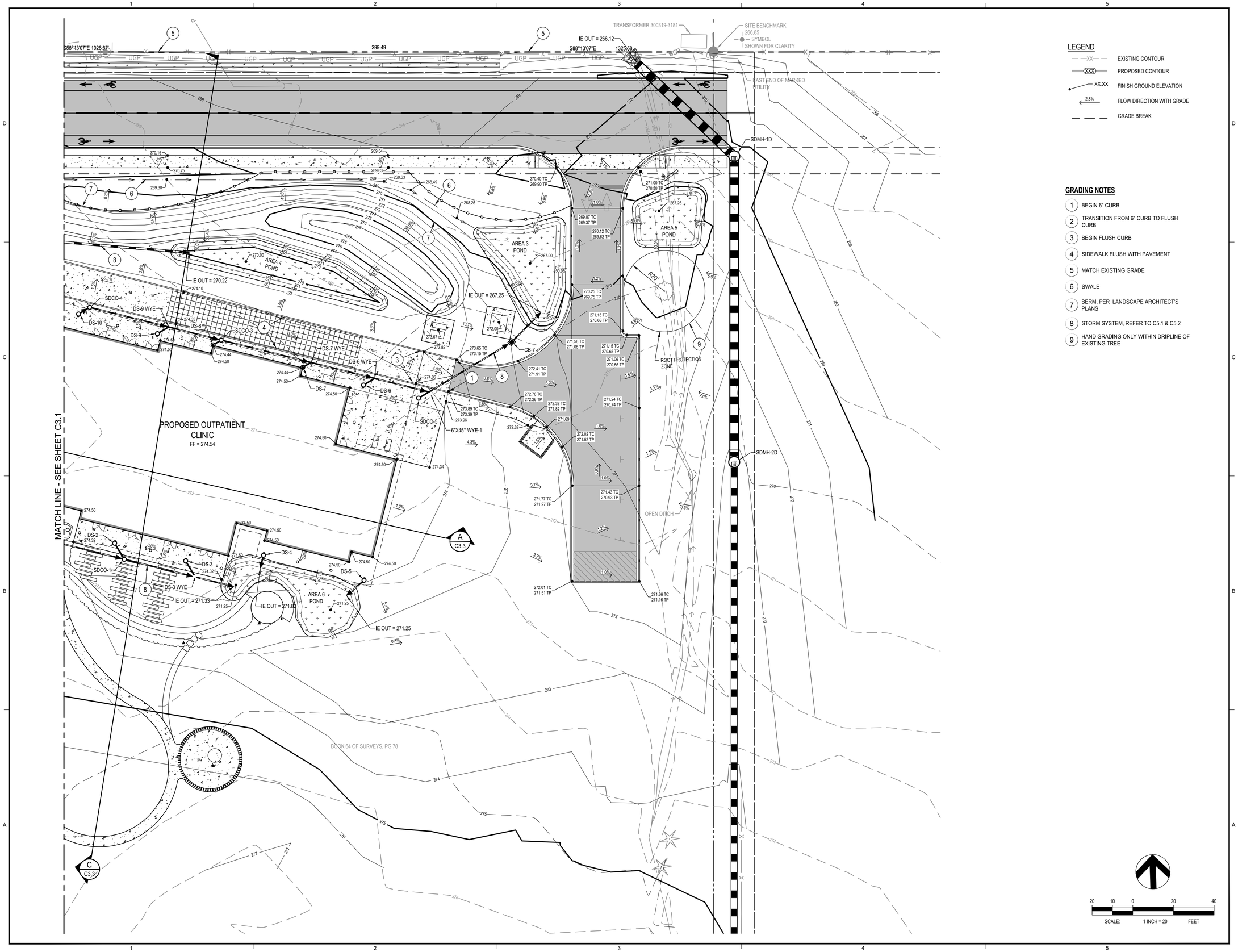

LEGEND

—XX—	EXISTING CONTOUR
—(XXX)—	PROPOSED CONTOUR
XX.XX	FINISH GROUND ELEVATION
2.8%	FLOW DIRECTION WITH GRADE
— — —	GRADE BREAK

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ALLISON L. HAY
STATE OF WASHINGTON
45458
REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

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CHECKED	ALH
DATE	JAN 10, 2020

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SHEET TITLE:

ENLARGED GRADING AND STORMWATER DRAINAGE PLAN - EAST

SHEET NO:

C3.2

SHEET OF

Received by City of Seguim
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STATE OF WASHINGTON
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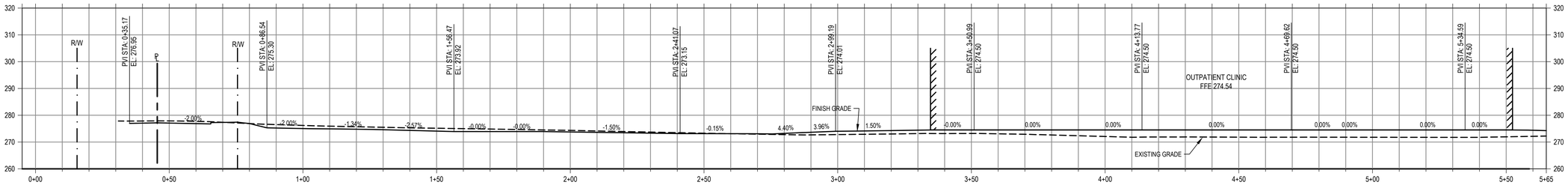
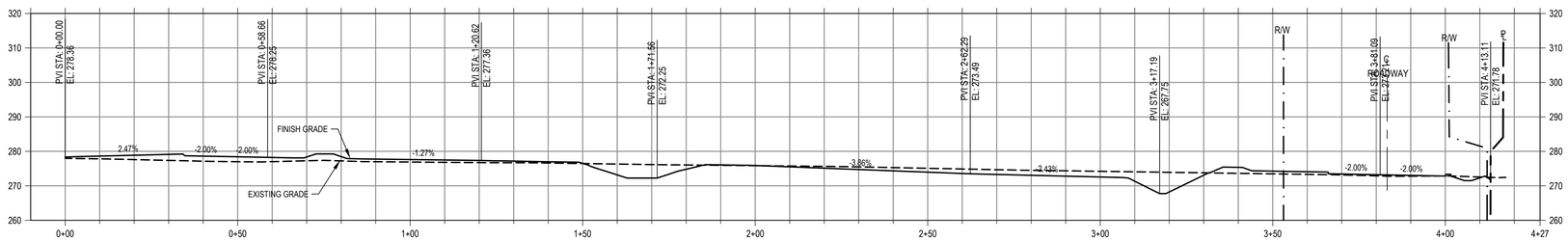
01/10/2020

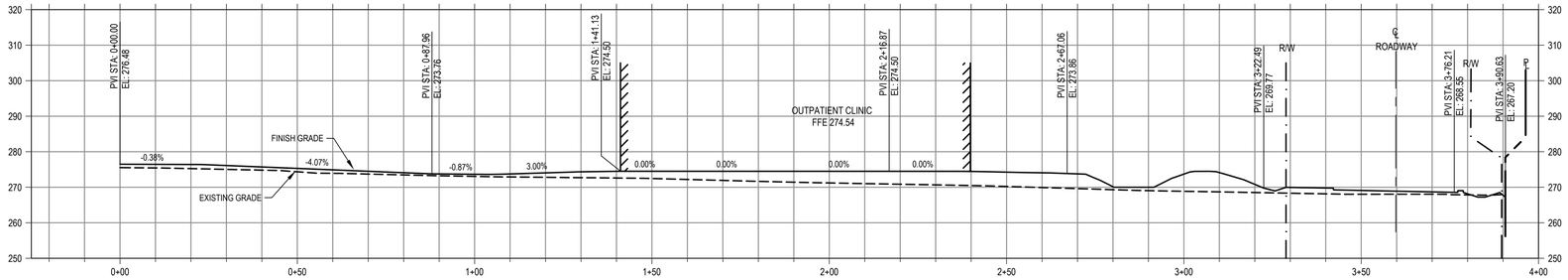
PRELIMINARY



A / C3.0 SITE - SECTION A
SCALE: 1" = 20' HORIZ & VERT



B / C3.1 SITE - SECTION B
SCALE: 1" = 20' HORIZ & VERT



C / C3.2 SITE - SECTION C
SCALE: 1" = 20' HORIZ & VERT

50 25 0 50 100
SCALE: 1 INCH = 50 FEET

811 Know what's below. Call before you dig.

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	XXX
CHECKED	XXM
DATE	JAN 10, 2020

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SHEET TITLE:
SITE CROSS SECTIONS

SHEET NO:
C3.3

SHEET OF

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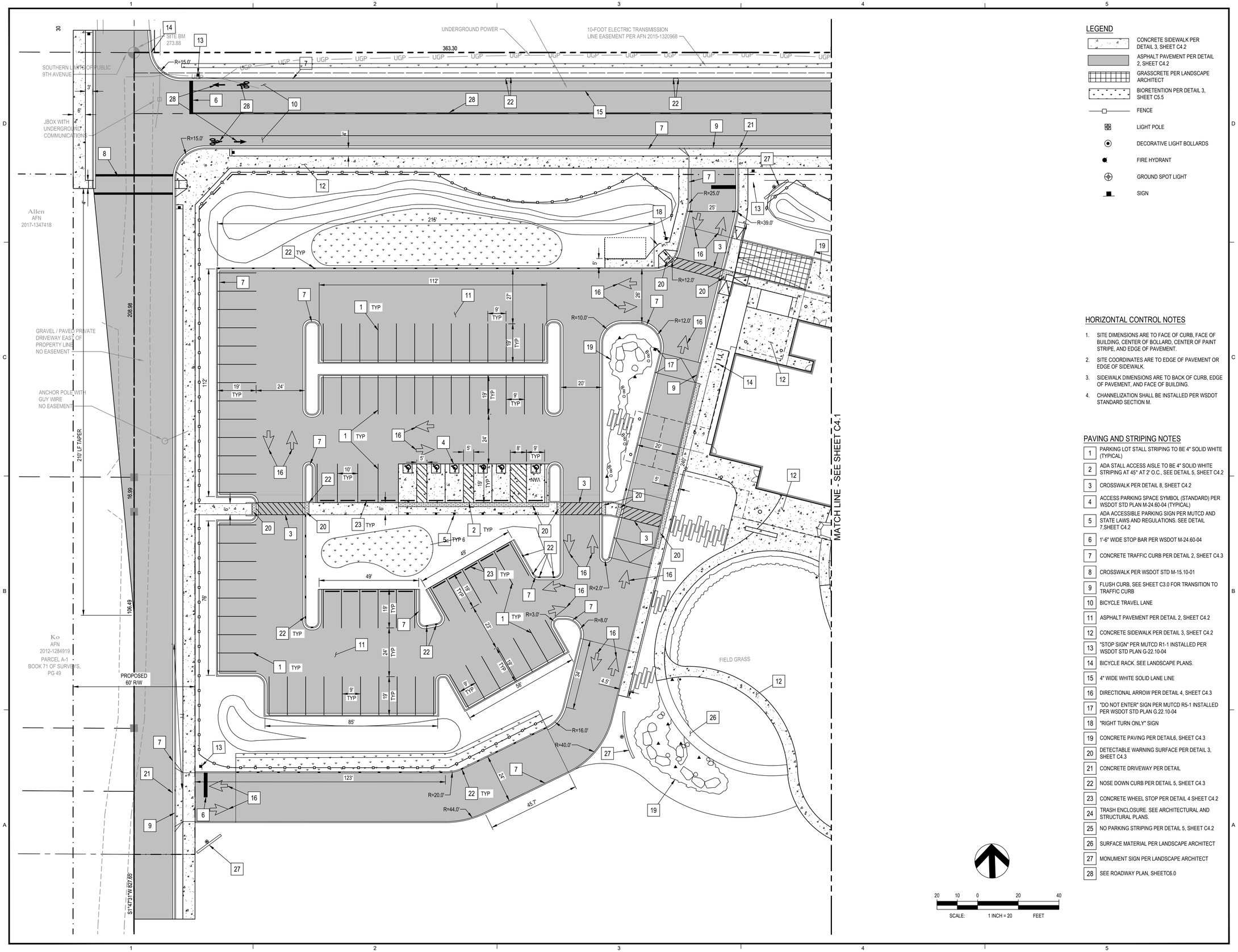

LEGEND

- CONCRETE SIDEWALK PER DETAIL 3, SHEET C4.2
- ASPHALT PAVEMENT PER DETAIL 2, SHEET C4.2
- GRASSCRETE PER LANDSCAPE ARCHITECT
- BIORETENTION PER DETAIL 3, SHEET C5.5
- FENCE
- LIGHT POLE
- DECORATIVE LIGHT BOLLARDS
- FIRE HYDRANT
- GROUND SPOT LIGHT
- SIGN

HORIZONTAL CONTROL NOTES

1. SITE DIMENSIONS ARE TO FACE OF CURB, FACE OF BUILDING, CENTER OF BOLLARD, CENTER OF PAINT STRIPE, AND EDGE OF PAVEMENT.
2. SITE COORDINATES ARE TO EDGE OF PAVEMENT OR EDGE OF SIDEWALK.
3. SIDEWALK DIMENSIONS ARE TO BACK OF CURB, EDGE OF PAVEMENT, AND FACE OF BUILDING.
4. CHANNELIZATION SHALL BE INSTALLED PER WSDOT STANDARD SECTION M.

PAVING AND STRIPING NOTES

1	PARKING LOT STALL STRIPING TO BE 4" SOLID WHITE (TYPICAL)
2	ADA STALL ACCESS AISLE TO BE 4" SOLID WHITE STRIPING AT 45° AT 2' O.C., SEE DETAIL 5, SHEET C4.2
3	CROSSWALK PER DETAIL 8, SHEET C4.2
4	ACCESS PARKING SPACE SYMBOL (STANDARD) PER WSDOT STD PLAN M-24.60-04 (TYPICAL)
5	ADA ACCESSIBLE PARKING SIGN PER MUTCD AND STATE LAWS AND REGULATIONS. SEE DETAIL 7,SHEET C4.2
6	1'-6" WIDE STOP BAR PER WSDOT M-24.60-04
7	CONCRETE TRAFFIC CURB PER DETAIL 2, SHEET C4.3
8	CROSSWALK PER WSDOT STD M-15.10-01
9	FLUSH CURB. SEE SHEET C3.0 FOR TRANSITION TO TRAFFIC CURB
10	BICYCLE TRAVEL LANE
11	ASPHALT PAVEMENT PER DETAIL 2, SHEET C4.2
12	CONCRETE SIDEWALK PER DETAIL 3, SHEET C4.2
13	"STOP SIGN" PER MUTCD R1-1 INSTALLED PER WSDOT STD PLAN G-22.10-04
14	BICYCLE RACK. SEE LANDSCAPE PLANS.
15	4" WIDE WHITE SOLID LANE LINE
16	DIRECTIONAL ARROW PER DETAIL 4, SHEET C4.3
17	"DO NOT ENTER" SIGN PER MUTCD R5-1 INSTALLED PER WSDOT STD PLAN G.22.10-04
18	"RIGHT TURN ONLY" SIGN
19	CONCRETE PAVING PER DETAIL6, SHEET C4.3
20	DETECTABLE WARNING SURFACE PER DETAIL 3, SHEET C4.3
21	CONCRETE DRIVEWAY PER DETAIL
22	NOSE DOWN CURB PER DETAIL 5, SHEET C4.3
23	CONCRETE WHEEL STOP PER DETAIL 4 SHEET C4.2
24	TRASH ENCLOSURE. SEE ARCHITECTURAL AND STRUCTURAL PLANS.
25	NO PARKING STRIPING PER DETAIL 5, SHEET C4.2
26	SURFACE MATERIAL PER LANDSCAPE ARCHITECT
27	MONUMENT SIGN PER LANDSCAPE ARCHITECT
28	SEE ROADWAY PLAN, SHEETC6.0

20 10 0 20 40
SCALE: 1 INCH = 20 FEET

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ALLISON L. HAY — STATE OF WASHINGTON — 45458 — REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

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SHEET TITLE:

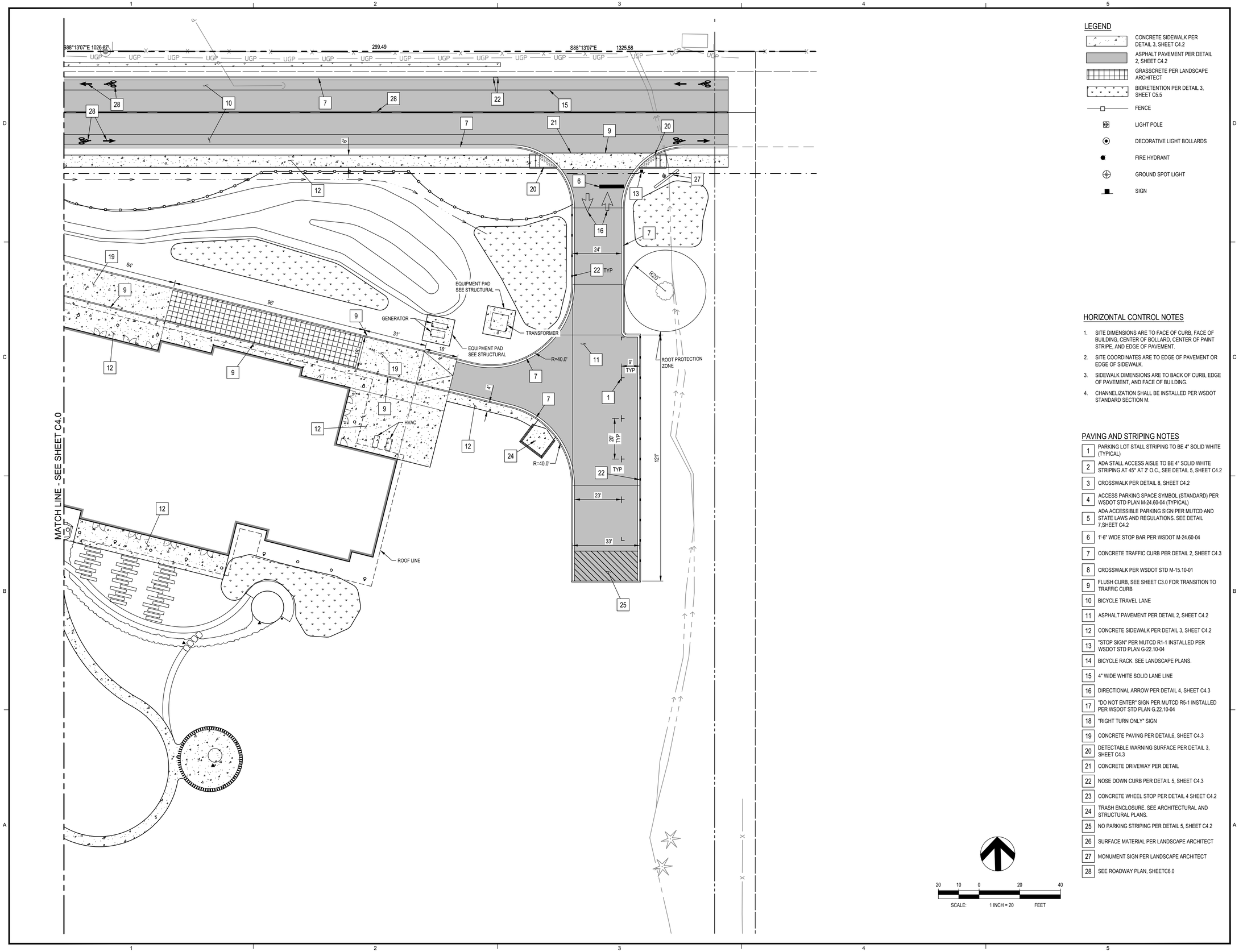
ENLARGED SITE PLAN - WEST

SHEET NO:

C4.0

SHEET OF

Received by City of Sequim
DCD / [illegible]
1-13-2020



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2. SITE COORDINATES ARE TO EDGE OF PAVEMENT OR EDGE OF SIDEWALK.
3. SIDEWALK DIMENSIONS ARE TO BACK OF CURB, EDGE OF PAVEMENT, AND FACE OF BUILDING.
4. CHANNELIZATION SHALL BE INSTALLED PER WSDOT STANDARD SECTION M.

PAVING AND STRIPING NOTES

1. PARKING LOT STALL STRIPING TO BE 4" SOLID WHITE (TYPICAL)
2. ADA STALL ACCESS AISLE TO BE 4" SOLID WHITE STRIPING AT 45° AT 2' O.C., SEE DETAIL 5, SHEET C4.2
3. CROSSWALK PER DETAIL 8, SHEET C4.2
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26. SURFACE MATERIAL PER LANDSCAPE ARCHITECT
27. MONUMENT SIGN PER LANDSCAPE ARCHITECT
28. SEE ROADWAY PLAN, SHEETC6.0

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ALLISON L. HEIN
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45458
REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	KB
CHECKED	ALH
DATE	JAN 10, 2020

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SHEET TITLE:

ENLARGED SITE PLAN -EAST

SHEET NO:

C4.1

SHEET OF

Received by City of Sequim
DCD / PCD / PW / PARKS
1-10-2020

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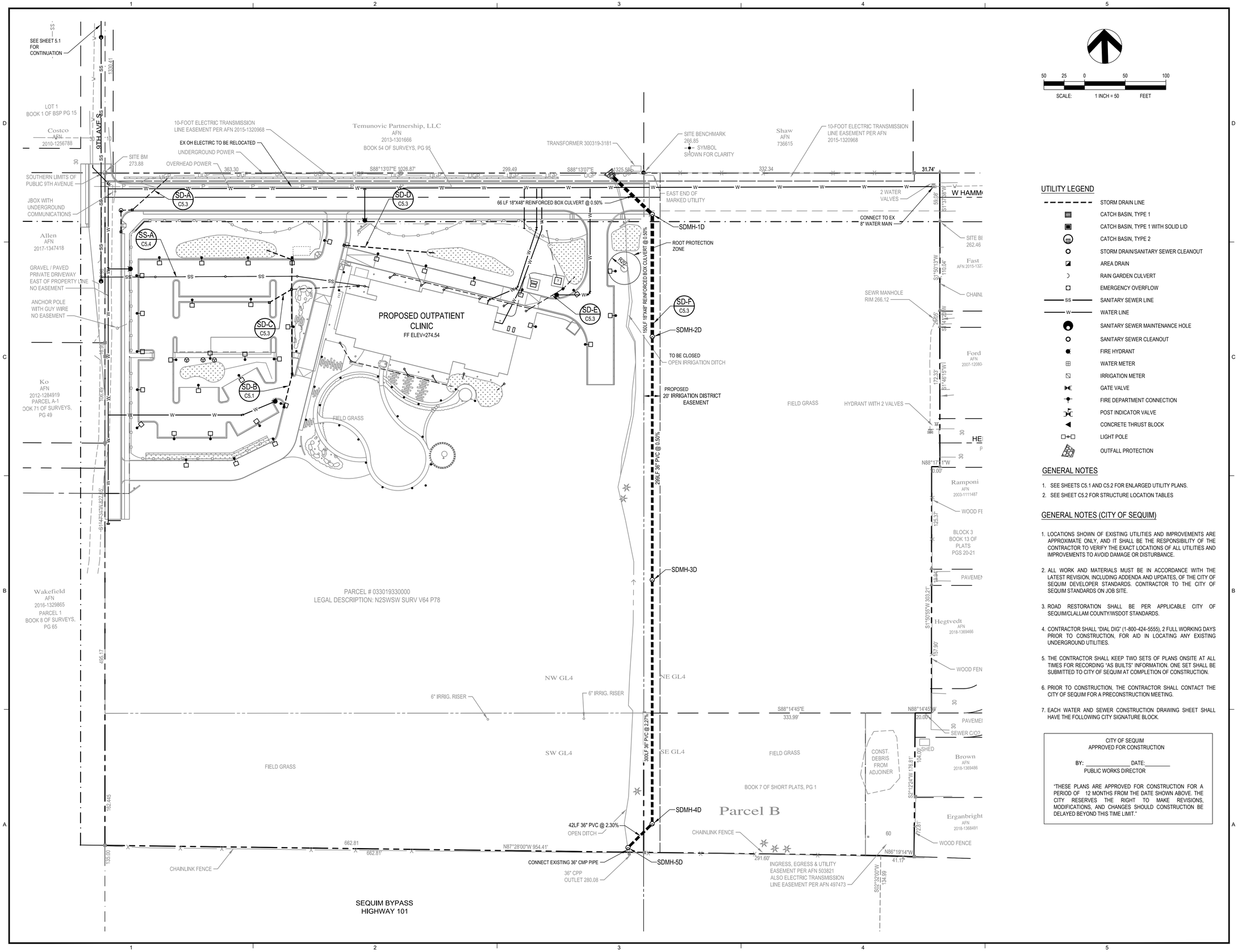

UTILITY LEGEND

- STORM DRAIN LINE
- CATCH BASIN, TYPE 1
- CATCH BASIN, TYPE 1 WITH SOLID LID
- CATCH BASIN, TYPE 2
- STORM DRAIN/SANITARY SEWER CLEANOUT
- AREA DRAIN
- RAIN GARDEN CULVERT
- EMERGENCY OVERFLOW
- SANITARY SEWER LINE
- WATER LINE
- SANITARY SEWER MAINTENANCE HOLE
- SANITARY SEWER CLEANOUT
- FIRE HYDRANT
- WATER METER
- IRRIGATION METER
- GATE VALVE
- FIRE DEPARTMENT CONNECTION
- POST INDICATOR VALVE
- CONCRETE THRUST BLOCK
- LIGHT POLE
- OUTFALL PROTECTION

GENERAL NOTES

1. SEE SHEETS C5.1 AND C5.2 FOR ENLARGED UTILITY PLANS.
2. SEE SHEET C5.2 FOR STRUCTURE LOCATION TABLES

GENERAL NOTES (CITY OF SEQUIM)

1. LOCATIONS SHOWN OF EXISTING UTILITIES AND IMPROVEMENTS ARE APPROXIMATE ONLY, AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT LOCATIONS OF ALL UTILITIES AND IMPROVEMENTS TO AVOID DAMAGE OR DISTURBANCE.
2. ALL WORK AND MATERIALS MUST BE IN ACCORDANCE WITH THE LATEST REVISION, INCLUDING ADDENDA AND UPDATES, OF THE CITY OF SEQUIM DEVELOPER STANDARDS. CONTRACTOR TO THE CITY OF SEQUIM STANDARDS ON JOB SITE.
3. ROAD RESTORATION SHALL BE PER APPLICABLE CITY OF SEQUIM/CLALLAM COUNTY/WSDOT STANDARDS.
4. CONTRACTOR SHALL "DIAL DIG" (1-800-424-5555), 2 FULL WORKING DAYS PRIOR TO CONSTRUCTION, FOR AID IN LOCATING ANY EXISTING UNDERGROUND UTILITIES.
5. THE CONTRACTOR SHALL KEEP TWO SETS OF PLANS ONSITE AT ALL TIMES FOR RECORDING "AS BUILTS" INFORMATION. ONE SET SHALL BE SUBMITTED TO CITY OF SEQUIM AT COMPLETION OF CONSTRUCTION.
6. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY OF SEQUIM FOR A PRECONSTRUCTION MEETING.
7. EACH WATER AND SEWER CONSTRUCTION DRAWING SHEET SHALL HAVE THE FOLLOWING CITY SIGNATURE BLOCK.

CITY OF SEQUIM
APPROVED FOR CONSTRUCTION

BY: _____ DATE: _____
PUBLIC WORKS DIRECTOR

"THESE PLANS ARE APPROVED FOR CONSTRUCTION FOR A PERIOD OF 12 MONTHS FROM THE DATE SHOWN ABOVE. THE CITY RESERVES THE RIGHT TO MAKE REVISIONS, MODIFICATIONS, AND CHANGES SHOULD CONSTRUCTION BE DELAYED BEYOND THIS TIME LIMIT."

ALLISON L. HAYES
STATE OF WASHINGTON
45458
REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

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SHEET TITLE:
OVERALL UTILITY PLAN

SHEET NO:
C5.0

SHEET OF

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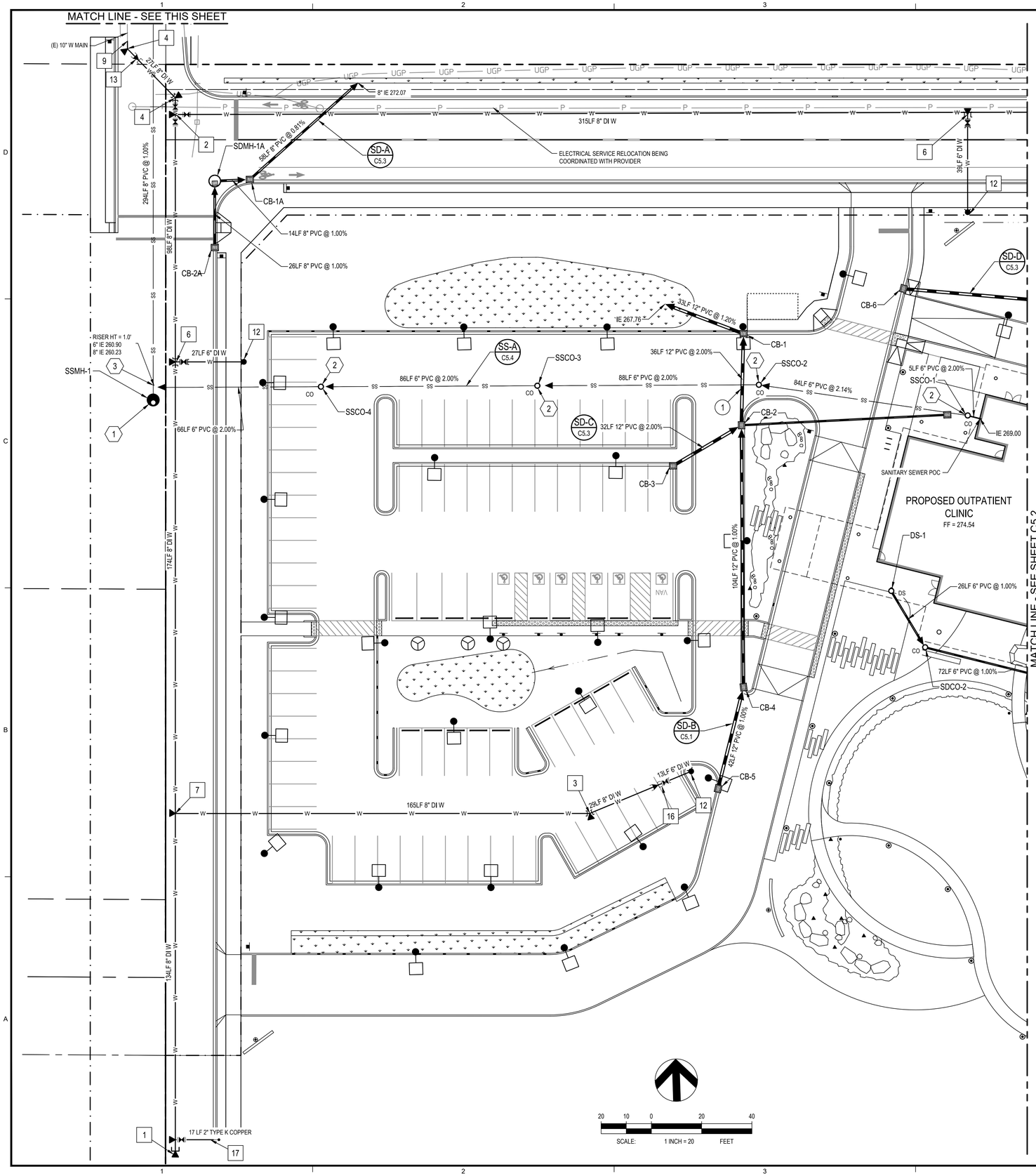
1-10-2020



GENERAL NOTES

1. SEE SHEET C5.2 FOR STORM DRAINAGE AND SANITARY SEWER STRUCTURE LOCATION TABLE.
2. WATER SYSTEM APPERTUNANCES PER CITY OF SEQUIM DEVELOPER STANDARDS
3. WATER MAINS AND SERVICE LEADS SHALL HAVE A MINIMUM OF 3.5 FEET OF COVER.
4. EXISTING 10" WATER MAIN ON 9TH AVE LOCATION TO BE VERIFIED. MAINTAIN 10' HORIZONTAL SEPERATION BETWEEN SANITARY SEWER.
5. CONNECT PERIMETER DRAINS INTO GRAVITY STORM WATER SYSTEM AS REQUIRED. IF REQUIRED DEPTH OF FOOTING DRAIN IS BELOW INVERT, A PUMP STATION FOR THE PERIMETER DRAINS WILL BE REQUIRED.
6. CONNECT DOWNSPOUTS AND/OR ROOF DRAINS TO GRAVITY STORM SYSTEM AS REQUIRED.
7. THE CONTRACTOR SHALL COORDINATE WITH THE AUTHORITIES HAVING JURISDICTION FOR ALL REQUIREMENTS AND TO CONFIRM THAT AN ADEQUATE DEPTH OF COVER IS MAINTAINED OVER THE UTILITIES, INCLUDING CLEARANCES BETWEEN THE VARIOUS UTILITIES.

UTILITY LEGEND

- STORM DRAIN LINE
- CATCH BASIN, TYPE 1
- CATCH BASIN, TYPE 1 WITH SOLID LID
- CATCH BASIN, TYPE 2
- DS STORM DOWNSPOUT
- AREA DRAIN
- RAIN GARDEN CULVERT
- EMERGENCY OVERFLOW
- SS SANITARY SEWER
- W WATER
- SANITARY SEWER MANHOLE
- CO STORM/SANITARY SEWER CLEANOUT
- FIRE HYDRANT
- WATER METER
- IRRIGATION METER
- GATE VALVE
- FIRE DEPARTMENT CONNECTION
- POST INDICATOR VALVE
- CONCRETE THRUST BLOCK
- LIGHT POLE
- REDUCER
- BLOWOFF ASSEMBLY

WATER INSTALLATION NOTES

1	(1) 8" CAP CONCRETE BLOCKING
2	(1) 8" TEE (3) 8" GATE VALVE (MJxFL) CONCRETE BLOCKING
3	(1) 8" 22.5° BEND CONCRETE BLOCKING
4	(1) 8" 45° BEND CONCRETE BLOCKING
5	(1) 6" 45° BEND CONCRETE BLOCKING
6	(1) 8"x6" TEE (1) 8" GATE VALVE (MJ X FL) CONCRETE BLOCKING
7	(1) 8"X8" TEE CONCRETE BLOCKING
8	(1) 8"x2" TAP CONCRETE BLOCKING
9	CONNECT TO EXISTING 10" WATER MAIN
10	SEE SHEET C5.0 FOR WATERLINE CONTINUATION
11	IRRIGATION WATER METER AND METER BOX, 1.5" METER AND 2" SERVICE
12	6" FIRE HYDRANT ASSEMBLY PER CITY OF SEQUIM DEVELOPER STD V-W2
13	(1) 8"X10" REDUCER
14	2" DOMESTIC WATER METER AND METER BOX
15	(1) 6" 22.5° BEND CONCRETE BLOCKING
16	(1) 8"X6" REDUCER (1) 6" GATE VALVE
17	(1) 8" X 4" TAP (1) 4" GATE VALVE (1) BLOWOFF ASSEMBLY PER CITY OF SEQUIM DEVELOPER STANDARD V-W7

SEWER INSTALLATION NOTES

1. SANITARY SEWER MANHOLE PER CITY OF SEQUIM DEVELOPER STANDARDS V-SFA AND V-S4B
2. SANITARY SEWER CLEANOUT PER CITY OF SEQUIM DEVELOPER STANDARDS V-S16
3. (1) 8"X6" WYE
   SIDE SEWER CONNECTION PER CITY OF SEQUIM DEVELOPER STANDARD V-S11
4. CONNECTION DEPTH TO BE VERIFIED

STORM INSTALLATION NOTES

1. AT CROSSINGS, PROVIDE A MINIMUM VERTICAL CLEARANCE OF 18 INCHES BETWEEN WATER PIPE (ABOVE) AND PIPE CARRYING NON-POTABLE WATER (BELOW). IF CLEARANCE LESS THAN THOSE STATED INSTALL SLEEVE ON NON-POTABLE LINE. THE SLEEVE PIPE SHALL BE ONE (1) SIZE LARGER THAN THE CONSTRUCTION PIPE. THE SLEEVE SHALL BE AT LEAST TWENTY (20) FEET IN LENGTH AND CENTERED ON THE CROSSING TO PROVIDE FOR A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET EACH SIDE OF THE CROSSING, MEASURED PERPENDICULAR TO THE CROSSED LINE. EACH END OF THE SLEEVE SHALL BE SEALED WITH A FERNCO RUBBER COUPLER.
2. SEE SHEET C5.0 FOR IRRIGATION SYSTEM REROUTE DESIGN.

GENERAL NOTES

1. LOCATIONS SHOWN OF EXISTING UTILITIES AND IMPROVEMENTS ARE APPROXIMATE ONLY, AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT LOCATIONS OF ALL UTILITIES AND IMPROVEMENTS TO AVOID DAMAGE OR DISTURBANCE.
2. ALL WORK AND MATERIALS MUST BE IN ACCORDANCE WITH THE LATEST REVISION, INCLUDING ADDENDA AND UPDATES, OF THE CITY OF SEQUIM DEVELOPER STANDARDS. CONTRACTOR TO THE CITY OF SEQUIM STANDARDS ON JOB SITE.
3. ROAD RESTORATION SHALL BE PER APPLICABLE CITY OF SEQUIM/CLALLAM COUNTY/WSDOT STANDARDS.
4. CONTRACTOR SHALL "DIAL DIG" (1-800-424-5555), 2 FULL WORKING DAYS PRIOR TO CONSTRUCTION, FOR AID IN LOCATING ANY EXISTING UNDERGROUND UTILITIES.
5. THE CONTRACTOR SHALL KEEP TWO SETS OF PLANS ONSITE AT ALL TIMES FOR RECORDING "AS BUILTS" INFORMATION. ONE SET SHALL BE SUBMITTED TO CITY OF SEQUIM AT COMPLETION OF CONSTRUCTION.
6. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY OF SEQUIM FOR A PRECONSTRUCTION MEETING.
7. EACH WATER AND SEWER CONSTRUCTION DRAWING SHEET SHALL HAVE THE FOLLOWING CITY SIGNATURE BLOCK.

CITY OF SEQUIM
APPROVED FOR CONSTRUCTION

BY: _____ DATE: _____
PUBLIC WORKS DIRECTOR

"THESE PLANS ARE APPROVED FOR CONSTRUCTION FOR A PERIOD OF 12 MONTHS FROM THE DATE SHOWN ABOVE. THE CITY RESERVES THE RIGHT TO MAKE REVISIONS, MODIFICATIONS, AND CHANGES SHOULD CONSTRUCTION BE DELAYED BEYOND THIS TIME LIMIT."

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ALLISON L. HIX — STATE OF WASHINGTON — 45458 — REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	MG
CHECKED	ALH
DATE	JAN 10, 2020

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SHEET TITLE:

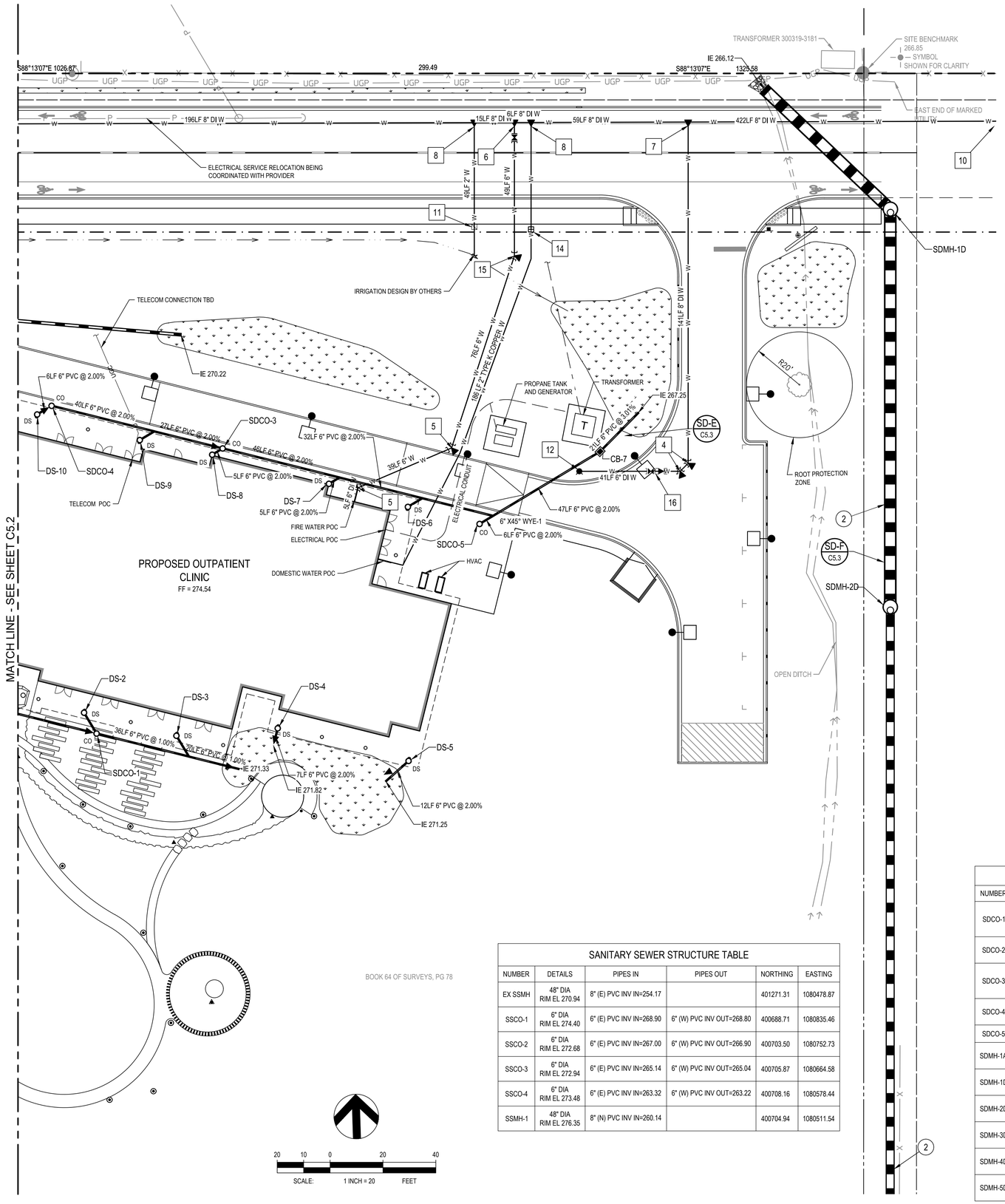
ENLARGED UTILITY PLAN - WEST

SHEET NO:

C5.1

SHEET OF

Received by City of Seguim
DCD / PCD / PLANNING
1-15-2020



STORM INSTALLATION NOTES

1. AT CROSSINGS, PROVIDE A MINIMUM VERTICAL CLEARANCE OF 18 INCHES BETWEEN WATER PIPE (ABOVE) AND PIPE CARRYING NON-POTABLE WATER (BELOW). IF CLEARANCE LESS THAN THOSE STATED INSTALL SLEEVE ON NON-POTABLE LINE. THE SLEEVE PIPE SHALL BE ONE (1) SIZE LARGER THAN THE CONSTRUCTION PIPE. THE SLEEVE SHALL BE AT LEAST TWENTY (20) FEET IN LENGTH AND CENTERED ON THE CROSSING TO PROVIDE FOR A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET EACH SIDE OF THE CROSSING, MEASURED PERPENDICULAR TO THE CROSSED LINE. EACH END OF THE SLEEVE SHALL BE SEALED WITH A FERNCO RUBBER COUPLER.
2. SEE SHEET C5.0 FOR IRRIGATION SYSTEM REROUTE DESIGN.

SEWER INSTALLATION NOTES

1. SANITARY SEWER MANHOLE PER CITY OF SEQUIM DEVELOPER STANDARDS V-SFA AND V-S4B
2. SANITARY SEWER CLEANOUT PER CITY OF SEQUIM DEVELOPER STANDARDS V-S16
3. (1) 8"X6" WYE
   SIDE SEWER CONNECTION PER CITY OF SEQUIM DEVELOPER STANDARD V-S11
4. CONNECTION DEPTH TO BE VERIFIED

STORM DRAINAGE STRUCTURE TABLE

NUMBER	RIM ELEV	PIPE INVERT	NORTHING	EASTING
6"x45° WYE-1	EL 269.36	6" (SW) PVC IE=268.81 6" (NE) PVC IE=268.81 6" (W) PVC IE=268.81	400654.89	1081037.79
CB-1	EL 272.42	12" (S) PVC IE=268.16 12" (W) PVC IE=268.16	400724.02	1080747.23
CB-1A	EL 274.63	8" (NE) PVC IE=272.54 8" (W) PVC IE=272.54	400791.47	1080552.71
CB-2	EL 272.79	12" (S) PVC IE=268.89 12" (N) PVC IE=268.89 12" (SW) PVC IE=268.89 6" (E) PVC IE=269.39	400687.57	1080745.30
CB-2A	EL 274.99	8" (N) PVC IE=272.94	400764.83	1080537.92
CB-3	EL 273.03	12" (NE) PVC IE=269.52	400672.28	1080717.55
CB-4	EL 273.42	12" (S) PVC IE=269.93 12" (N) PVC IE=269.93	400583.34	1080742.87
CB-5	EL 273.84	12" (N) PVC IE=270.35	400543.27	1080731.49
CB-6	EL 272.78	12" (E) PVC IE=270.78	400739.91	1080811.42
CB-7	EL 271.98	6" (SW) PVC IE=267.87 6" (NE) PVC IE=267.87	400677.94	1081079.01
DS-1	EL 274.39	6" (SE) PVC IE=272.87	400619.81	1080802.82
DS-2	EL 274.39	6" (SE) PVC IE=272.06	400585.28	1080880.88
DS-3	EL 274.39	6" (SE) PVC IE=271.70	400575.49	1080915.52
DS-4	EL 274.45	6" (S) PVC IE=271.95	400577.11	1080953.91
DS-5	EL 274.04	6" (SW) PVC IE=271.48	400563.24	1081002.98
DS-6	EL 274.38	6" (NE) PVC IE=269.50	400659.28	1081005.71
DS-7	EL 274.44	6" (NE) PVC IE=270.10	400668.94	1080976.14
DS-8	EL 274.44	6" (NE) PVC IE=271.01	400681.31	1080932.35
DS-9	EL 274.45	6" (NE) PVC IE=271.59	400687.70	1080905.15
DS-10	EL 274.41	6" (NE) PVC IE=272.38	400698.58	1080866.65

SANITARY SEWER STRUCTURE TABLE

NUMBER	DETAILS	PIPES IN	PIPES OUT	NORTHING	EASTING
EX SSMH	48" DIA RIM EL 270.94	8" (E) PVC INV IN=254.17		401271.31	1080478.87
SSCO-1	6" DIA RIM EL 274.40	6" (E) PVC INV IN=268.90	6" (W) PVC INV OUT=268.80	400688.71	1080835.46
SSCO-2	6" DIA RIM EL 272.68	6" (E) PVC INV IN=267.00	6" (W) PVC INV OUT=266.90	400703.50	1080752.73
SSCO-3	6" DIA RIM EL 272.94	6" (E) PVC INV IN=265.14	6" (W) PVC INV OUT=265.04	400705.87	1080664.58
SSCO-4	6" DIA RIM EL 273.48	6" (E) PVC INV IN=263.32	6" (W) PVC INV OUT=263.22	400708.16	1080578.44
SSMH-1	48" DIA RIM EL 276.35	8" (N) PVC INV IN=260.14		400704.94	1080511.54

UTILITY LEGEND

- STORM DRAIN LINE
- CATCH BASIN, TYPE 1
- CATCH BASIN, TYPE 1 WITH SOLID LID
- CATCH BASIN, TYPE 2
- DS — STORM DOWNSPOUT
- AREA DRAIN
- RAIN GARDEN CULVERT
- EMERGENCY OVERFLOW
- SS — SANITARY SEWER
- W — WATER
- SANITARY SEWER MANHOLE
- CO — STORM/SANITARY SEWER CLEANOUT
- FIRE HYDRANT
- WATER METER
- IRRIGATION METER
- GATE VALVE
- FIRE DEPARTMENT CONNECTION
- POST INDICATOR VALVE
- CONCRETE THRUST BLOCK
- LIGHT POLE
- REDUCER
- BLOWOFF ASSEMBLY

WATER INSTALLATION NOTES

1. (1) 8" CAP
   CONCRETE BLOCKING
2. (1) 8" TEE
   (3) 8" GATE VALVE (MJxFL)
   CONCRETE BLOCKING
3. (1) 8" 22.5° BEND
   CONCRETE BLOCKING
4. (1) 8" 45° BEND
   CONCRETE BLOCKING
5. (1) 6" 45° BEND
   CONCRETE BLOCKING
6. (1) 8"x6" TEE
   (1) 8" GATE VALVE (MJ X FL)
   CONCRETE BLOCKING
7. (1) 8"X8" TEE
   CONCRETE BLOCKING
8. (1) 8"x2" TAP
   CONCRETE BLOCKING
9. CONNECT TO EXISTING 10" WATER MAIN
10. SEE SHEET C5.0 FOR WATERLINE CONTINUATION
11. IRRIGATION WATER METER AND METER BOX, 1.5" METER AND 2" SERVICE
12. 6" FIRE HYDRANT ASSEMBLY PER CITY OF SEQUIM DEVELOPER STD V-W2
13. (1) 8"X10" REDUCER
14. 2" DOMESTIC WATER METER AND METER BOX
15. (1) 6" 22.5° BEND
    CONCRETE BLOCKING
16. (1) 8"X6" REDUCER
    (1) 6" GATE VALVE
17. (1) 8" X 4" TAP
    (1) 4" GATE VALVE
    (1) BLOWOFF ASSEMBLY PER CITY OF SEQUIM DEVELOPER STANDARD V-W7

STORM DRAINAGE STRUCTURE TABLE

NUMBER	RIM ELEV	PIPE INVERT	NORTHING	EASTING
SDCO-1	EL 274.26	6" (W) PVC IE=271.88 6" (E) PVC IE=271.88 6" (NW) PVC IE=271.88	400577.25	1080885.36
SDCO-2	EL 274.26	6" (NW) PVC IE=272.61 6" (E) PVC IE=272.61	400596.97	1080815.60
SDCO-3	EL 274.39	6" (W) PVC IE=270.92 6" (E) PVC IE=270.92 6" (SW) PVC IE=270.92	400683.56	1080936.36
SDCO-4	EL 274.34	6" (SW) PVC IE=272.26 6" (E) PVC IE=272.26	400701.69	1080872.21
SDCO-5	EL 274.11	6" (NE) PVC IE=268.93	400651.99	1081032.61
SDMH-1A	EL 274.71	8" (E) PVC IE=272.68 8" (S) PVC IE=272.68	400791.31	1080538.75
SDMH-1D	EL 269.80	48" (S) REINFORCED BOX CULVERT : IE=266.45 48" (NW) REINFORCED BOX CULVERT IE=266.45	400766.08	1081191.57
SDMH-2D	EL 273.20	36" (S) PVC IE=267.20 48" (N) REINFORCED BOX CULVERT IE=267.20	400615.74	1081186.86
SDMH-3D	EL 276.11	36" (S) PVC IE=268.70 36" (N) PVC IE=268.70	400316.55	1081177.48
SDMH-4D	EL 282.28	36" (SW) PVC IE=275.51 36" (N) PVC IE=275.51	400016.71	1081168.09
SDMH-5D	EL 283.08	36" (NE) PVC IE=276.47 36" (S) REINFORCED CONCRETE PIPE IE=280.08	399988.33	1081137.45

CITY OF SEQUIM
APPROVED FOR CONSTRUCTION

BY: _____ DATE: _____
PUBLIC WORKS DIRECTOR

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ALLISON L. HUNT — STATE OF WASHINGTON — 45458 — REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	MG
CHECKED	ALH
DATE	JAN 10, 2020

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SHEET TITLE:

ENLARGED UTILITY PLAN - EAST

SHEET NO:

C5.2

SHEET OF

Received by City of Sequim
DCD / [illegible]
1-13-2020

COFFMAN ENGINEERS
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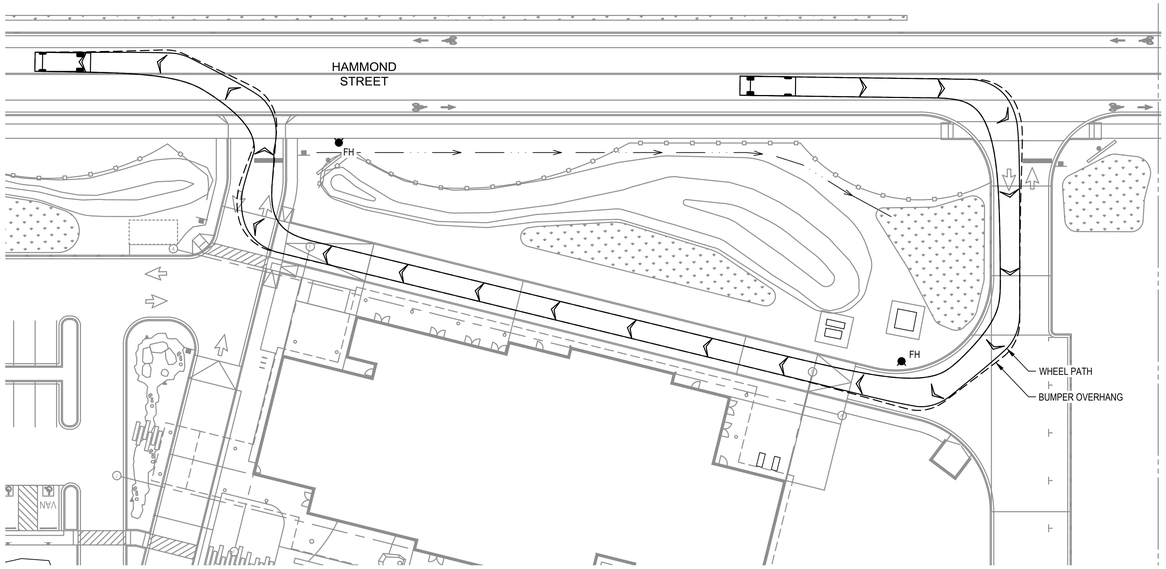
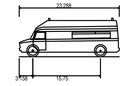
www.coffman.com

ALLISON L. HAY
STATE OF WASHINGTON
45458
REGISTERED PROFESSIONAL ENGINEER
01/10/2020

PRELIMINARY

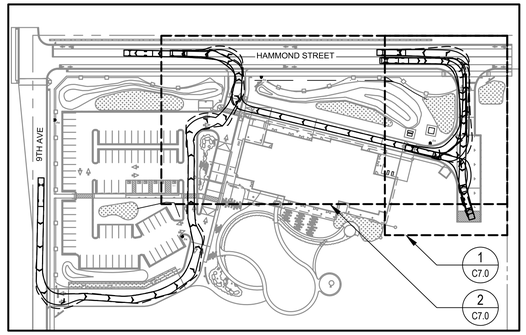


1 C7.0 AMBULANCE CIRCULATION
SCALE 1" = 30'



Horton 453 Type I Ford E-Series Ambulance

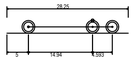
Overall Length	23.288ft
Overall Width	8.021ft
Overall Body Height	9.000ft
Min Body Ground Clearance	1.075ft
Track Width	8.021ft
Lock-to-lock time	5.00s
Curb to Curb Turning Radius	27.400ft



KEY PLAN
SCALE: 1" = 100'

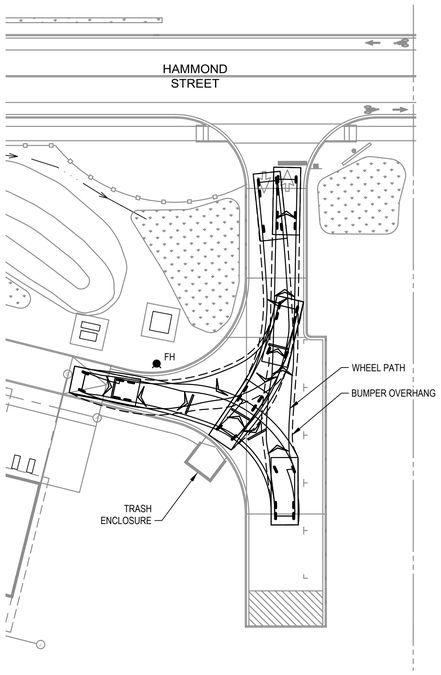
LEGEND

FH FIRE HYDRANT

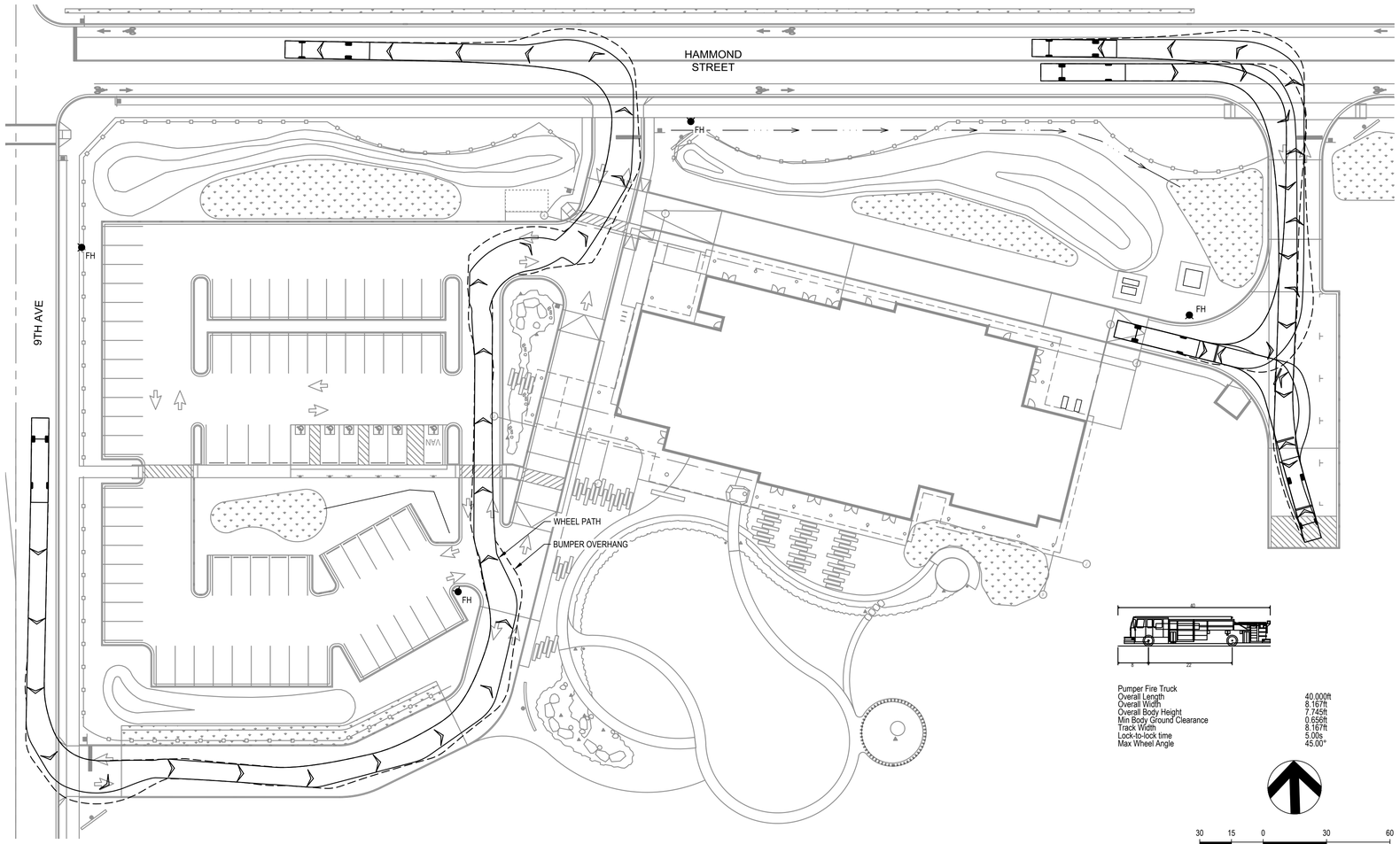


Trash Compactor Truck

Overall Length	28.250ft
Overall Width	11.330ft
Overall Body Height	1.473ft
Min Body Ground Clearance	1.473ft
Track Width	8.420ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	35.00°



2 C7.0 REFUSE COLLECTOR TRUCK CIRCULATION
SCALE 1" = 30'



FIRE TRUCK CIRCULATION
SCALE: 1" = 30'

Pumper Fire Truck

Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°

30 15 0 30 60
SCALE: 1 INCH = 30 FEET

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

DESIGN REVIEW APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	MPB
CHECKED	ALH
DATE	JAN 10, 2020

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SHEET TITLE:
CIRCULATION PLAN

SHEET NO:
C7.0

SHEET OF

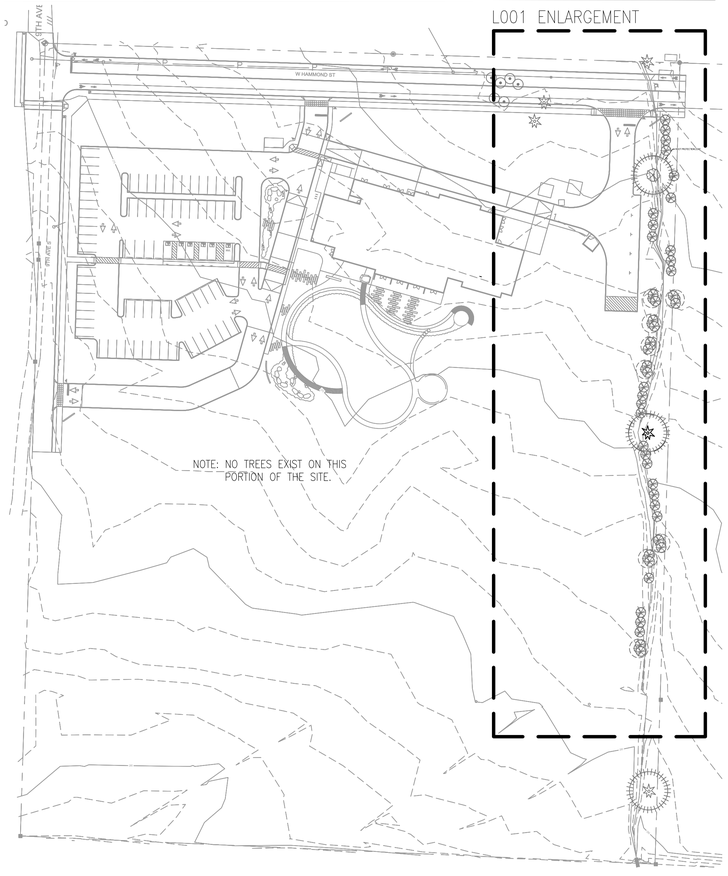
Received by City of Sequim
Planning & Building 06/08/20

NOTES

1. TREE RETENTION AND LANDSCAPING PER SEQUIM MUNICIPAL CODE SECTION 18.24.130 AND 18.24.130.B.2.0.
2. THE ONLY TREES THAT EXIST ON THE SITE ARE THOSE LOCATED ALONG THE EXISTING IRRIGATION CANAL, AS SHOWN.
3. TREES WERE INVENTORIED DECEMBER 2019 TO DETERMINE WHICH CAN BE RETAINED. LOCATIONS ARE APPROXIMATE, NOT SURVEYED.
4. THE IRRIGATION CANAL WILL BE BURIED IN A PIPE AS PART OF THIS DEVELOPMENT. SEE CIVIL PLANS FOR LOCATION.
5. TREE PROTECTION IS REQUIRED FOR TREES THAT ARE INDICATED TO BE RETAINED (CRITICAL ROOT ZONE/DRIPLINE) TO BE PROTECTED FROM CONSTRUCTION ACTIVITY. NO MECHANICAL GRADING TO OCCUR WITHIN THE CRITICAL ROOT ZONE/DRIPLINE OF TREES.
6. MOST ALDER TREES ALONG EXISTING CANAL ARE IN POOR CONDITION, DEAD OR ARE MULTI-TRUNK SUCKERS GROWING OUT OF STUMPS. REMOVING THE CANAL WATER SOURCE (PLACEMENT WITHIN PIPE AS PROPOSED) IS LIKELY TO HAVE A NEGATIVE IMPACT ON EXISTING TREES GROWING ALONG THE CANAL BANKS, THUS THE RECOMMENDATION FOR REMOVAL.
7. REFER TO CIVIL NOTES FOR DEMOLITION AND GRADING ACTIVITIES.
8. PLACE 6' HT. TEMPORARY CHAINLINK FENCE AROUND TREES INDICATED AS RETAINED TREES. PLACE FENCE BENEATH DRIPLINE OF EACH TREE.
9. IF GRADING IS REQUIRED WITHIN THE DRIP LINE OF RETAINED TREES, IT IS TO BE EXECUTED BY HAND AND ROOTS OVER 2" DIAMETER SHALL BE CLEANLY CUT, NOT TORN, IF NECESSARY.

KEY

N.T.S.



SCHEDULE

TREES	CODE	QTY	BOTANICAL / COMMON NAME	CONT	CAL	SIZE
	AME AUT	9	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY	B & B	2" CAL	
	COR EDD	4	CORNUS KOUSA X NUTTALLII 'EDDIE'S WHITE WONDER' / KOUSA DOGWOOD	B & B	2"CAL	
	PSE DOU	7	PSEUDOTSUGA MENZIESII / DOUGLAS FIR	NA	NA	6' HT.
	THU PLI	6	THUJA PLICATA / WESTERN RED CEDAR	NA	NA	6' HT.

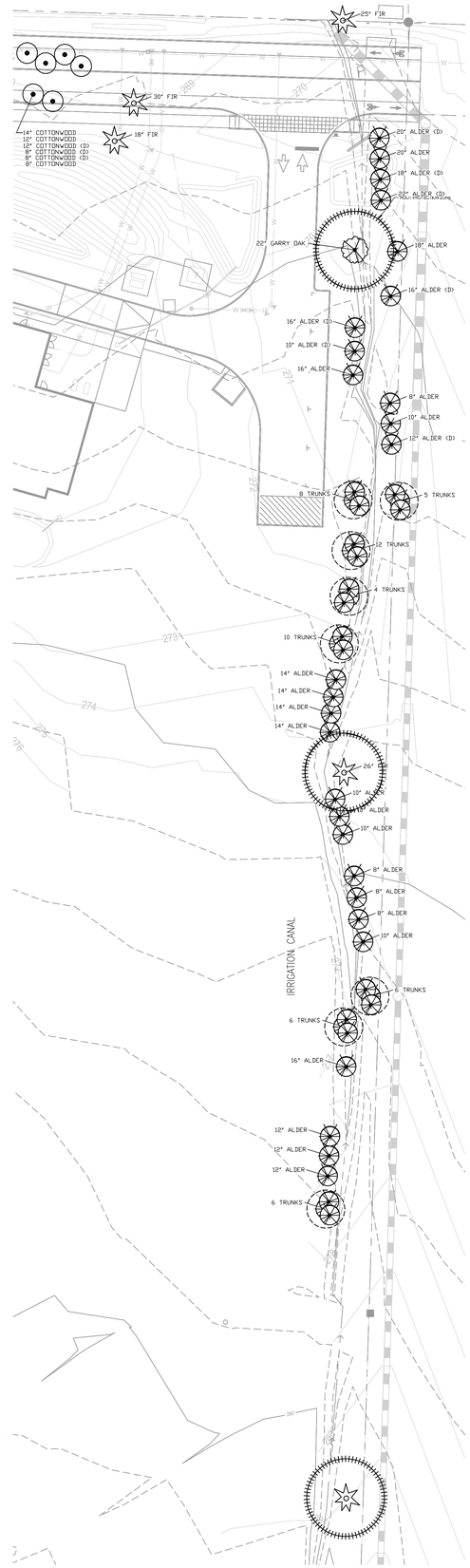
SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	CONT
	GAR JAM	19	GARRYA ELLIPTICA 'JAMES ROOF' / JAMES ROOF COAST SILK TASSEL	3 GAL
	MAH AQU	80	MAHONIA AQUIFOLIUM / TALL OREGON GRAPE	3 GAL
	MYR CAL	21	MYRICA CALIFORNICA / PACIFIC WAX MYRTLE	3 GAL

SHRUB AREAS	CODE	QTY	BOTANICAL / COMMON NAME	CONT	SPACING
	ROS NUT	221	ROSA NUTKANA / NOOTKA ROSE	3 GAL	60" o.c.
	SYM ALB	245	SYMPHORICARPOS ALBUS / COMMON WHITE SNOWBERRY	3 GAL	60" o.c.

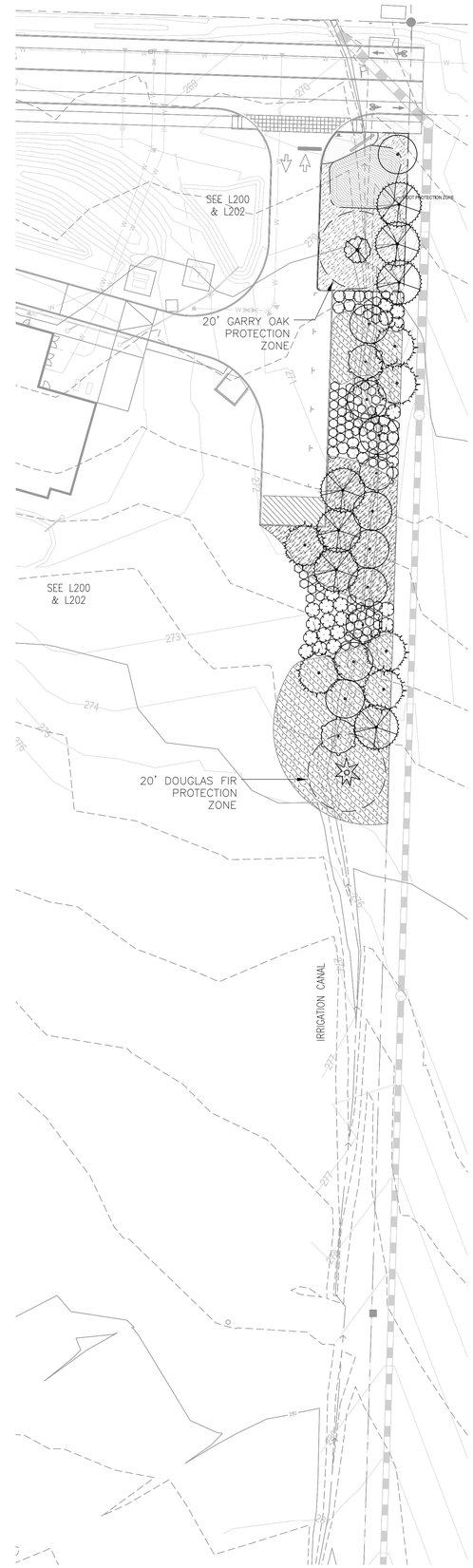
PLANTING AREA SCHEDULE

BIORETENTION & RIPARIAN PLANTINGS	996 SF		
ACANTHUS MOLLIS / BEAR'S BREECH	12	1 GAL.	10% @ 36" oc
ASTER CHILENSIS / PACIFIC ASTER	26	1 GAL.	10% @ 24" oc
BERGENIA CORDIFOLIA 'WINTERGLUT' / HEARTLEAF BERGENIA	26	1 GAL.	10% @ 24" oc
CAREX OBNUPTA / SLOUGH SEDGE	52	1 GAL.	20% @ 24" oc
ERIGERON SPECIOSUS / SHOWY FLEABANE	26	1 GAL.	10% @ 24" oc
GERANIUM X CANTABRIGIENSE 'BIOKOVO' / BIOKOVO CRANESBILL	93	1 GAL.	20% @ 18" oc
HERNIARIA GLABRA / GREEN CARPET	93	4" POT	20% @ 18" oc
IRIS DOUGLASIANA / DOUGLAS IRIS	93	N/A	20% @ 18" oc
JUNCUS EFFUSUS / COMMON RUSH	52	1 GAL.	20% @ 24" oc
LIRIOPE SPICATA 'SILVER DRAGON' / CREEPING LILY TURF	93	1 GAL.	20% @ 18" oc

EXISTING TO RETAIN



PROPOSED ENHANCEMENT



ALDER
COTTONWOOD
GARRY OAK
DOUGLAS FIR
ALDER CLUMP
(D) DEAD/POOR
TREE TO BE RETAINED

GRAPHIC SCALE
30' 0 15' 30'
1 INCH = 30 FT.

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BREMERTON, WA 98337
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310 Madison Ave South, Suite A
Bainbridge Island, WA 98110
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www.fbpartnership.com

STATE OF WASHINGTON
JEFFREY K. BOUMA
No 847 EXP. 06/02/20
LANDSCAPE ARCHITECT

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
SEQUIM, WA 98382

PROJECT # 2018136.01

PERMIT SET

ISSUE DATE JANUARY 10, 2020

REVISION SCHEDULE

TREE RETENTION PLAN

SCALE: 1"=30' ON 30" X 42" SHEET

SHEET #
L001

MATERIALS SCHEDULE

LEGEND

PAVING MATERIALS

SYMBOL	CALLOUT	MATERIAL	REFERENCE	DESCRIPTION	COLOR	FINISH/PATTERN	NOTE 1	NOTE 2
	P1	CAST-IN-PLACE CONCRETE TYPE 1	X/LXXX	4" DEPTH STANDARD CONCRETE	STANDARD	LIGHT ACID WASHED	COORD WITH CIVIL DRAWINGS	JOINTING PER PLAN
	P2	SPECIALTY PAVEMENT	X/LXXX	AGGREGATE CONCRETE	STANDARD	¾" PEA GRAVEL AGGREGATE	COORD. WITH CIVIL DRAWINGS	JOINTING PER PLAN
	P3	SPECIALTY PAVEMENT	X/LXXX	STAMPED CONCRETE	TBD	TBD	COORD. WITH CIVIL DRAWINGS	JOINTING PER PLAN
	P4	GRAVEL	X/LXXX	⅜ CLEAN GRANITE	STANDARD	COMPACTED	3" DEPTH	
	P5	EBONY WOOD, OR EQUAL	X/LXXX	TREATED ON POSTS & BEAMS, LESS THAN 30" HT., NO RAILINGS	NATURAL	PER PLAN	¾" X 6" DECKING	TAPERED ON CURVES PER PLAN
	P6	GRASS PAVE	X/LXXX	INVISIBLE STRUCTURES, OR EQUAL	NA	NA	PER CIVIL	
	P7	STEPPING STONES #1	X/LXXX	PACIFIC BLACK BASALT SLABS, 2" X 18" X 48"	CHARCOAL BLACK, GREY	THERMAL BRUSH	SAND SET	
	P8	STEPPING STONES #2	X/LXXX	BASALT COLUMN	BLACK	FLAT TOP	~24" HT.	

ELEMENTS

SYMBOL		DESCRIPTION	REFERENCE	DESCRIPTION	MODEL NUMBER/NAME	COLOR/FINISH	NOTE 1	NOTE 2
	E1	CASCADE WATER FEATURE, BOULDERS	X/LXXX	BASALT COLUMN, SHORT HIGH CASCADE GRANITE, 4-5 MAN	NA	NA	DESIGN/BUILD WITH LANDSCAPE CONTRACTOR	SHOP DRAWINGS REQUIRED
	E2	COBBLE		CLEAN GRANITE, 4-6"	NA	GREY, VARIABLE	6" DEPTH	
SEE PLAN	E3	SPREADING WATER FEATURE	X/LXXX	MORTARED CHINESE BASALT SLAB	CHARCOAL BLACK	THERMAL BRUSH	DESIGN/BUILD WITH LANDSCAPE CONTRACTOR	
	E4	WOOD BENCH FEATURE	X/LXXX	18" X 18" X X'L WOOD TIMBER	NA	NONE	SANDED SURFACES	SET ON ¾" COMPOSITE SPACERS (12" X 12"), 4" O.C.
	E5	FEATURE BOULDER		GRANITE, VERY LARGE	NA	GREY	OWNER/ARCHITECT TO SELECT	
	E6	BIKE RACK		ROUND, 3 BIKE CAPACITY	LANDSCAPE FORMS 'RING' OR EQUAL	PANGARD II POWDERCOAT		
SEE PLAN	E7	FUTURE SMOKING SHELTER		PER ARCH	NA	NA	TO BE UNDER A SEPARATE PERMIT	
SEE PLAN	E8	FUTURE GAZEBO/SHELTER		PER ARCH	NA	NA	TO BE UNDER A SEPARATE PERMIT	
SEE PLAN	E9	FACILITY SIGN		PER ARCH	NA	NA		
	E10	FENCE	X/LXXX	CEDAR SPLIT RAIL	NATURAL	NATURAL	2-RAIL	POST-ENDS TREATED & GRAVEL FOOTINGS

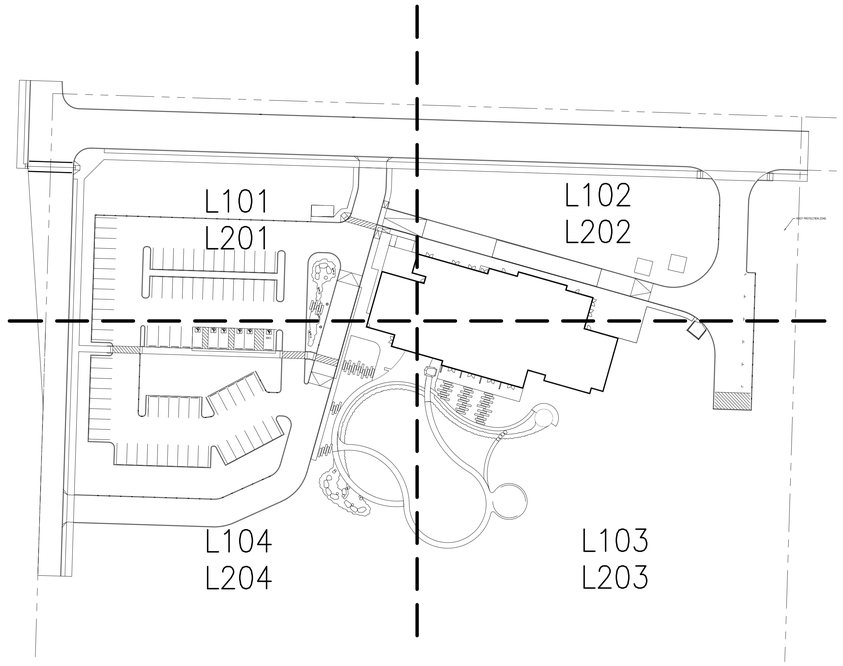
LIGHTING AND POWER

SYMBOL		DESCRIPTION	REFERENCE	DESCRIPTION	MODEL NUMBER/NAME	COLOR/FINISH	NOTE 1	NOTE 2
		PARKING LOT LIGHT	PER ELEC.	FIXTURE T.B.D.				
		BOLLARD LIGHT	PER ELEC.	FIXTURE T.B.D.				
		POWER FOR SIGN, ACCENT, STRUCTURE LIGHTS, E.V. STATION	PER ELEC.	FIXTURE T.B.D.				
		POWER FOR WATER PUMP	PER ELEC.	FIXTURE T.B.D.				

NOTES:

1. COLORS AND FINISHES TO BE CONFIRMED WITH OWNER AND ARCHITECT DURING CD'S.
2. CONCRETE HATCH NOT SHOWN FOR ALL PAVED AREAS. REFER TO CIVIL DRAWINGS FOR CONCRETE IN OTHER VEHICULAR AREAS (ROAD, ENTRIES, LOADING) AND CITY SIDEWALKS.
3. LAYOUT PLAN WITH DIMENSIONS TO BE PROVIDED DURING CD'S.
4. REFER TO PLANTING PLAN SHEETS FOR AREAS LABELED AS "PA" (PLANTING AREA).

SHEET INDEX



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STATE OF WASHINGTON
JEFFREY K. BOUMA
No 847 EXP. 06/02/20
LANDSCAPE ARCHITECT

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
SEQUIM, WA 98382

PROJECT # 2018136.01

PERMIT SET

ISSUE DATE JANUARY 10, 2020

REVISION SCHEDULE

LANDSCAPE MATERIALS

SHEET #
L100

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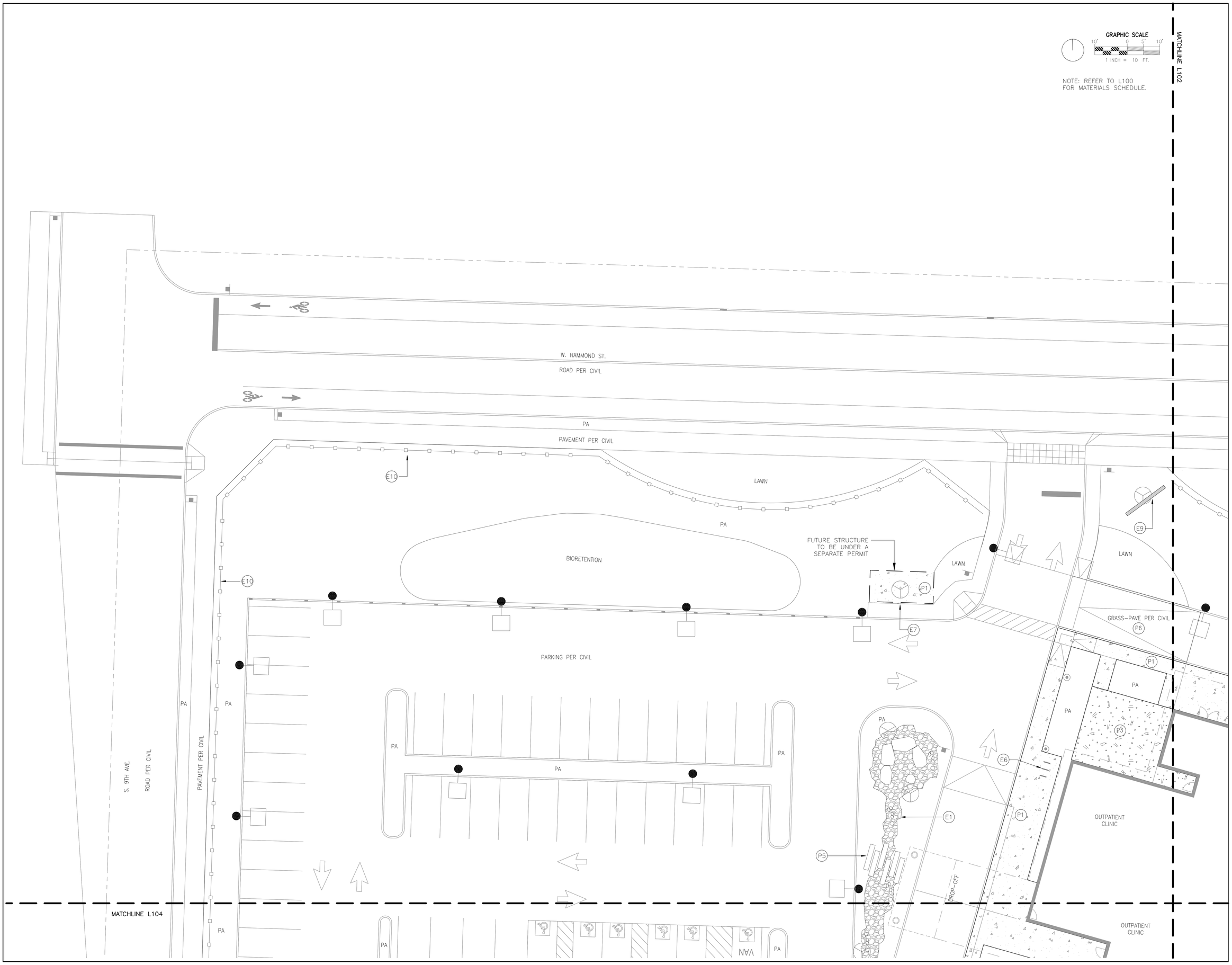

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
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SEQUIM, WA 98382

PROJECT #	2018136.01
PERMIT SET	
ISSUE DATE	JANUARY 10, 2020

REVISION SCHEDULE

LANDSCAPE MATERIALS
NORTHWEST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L101

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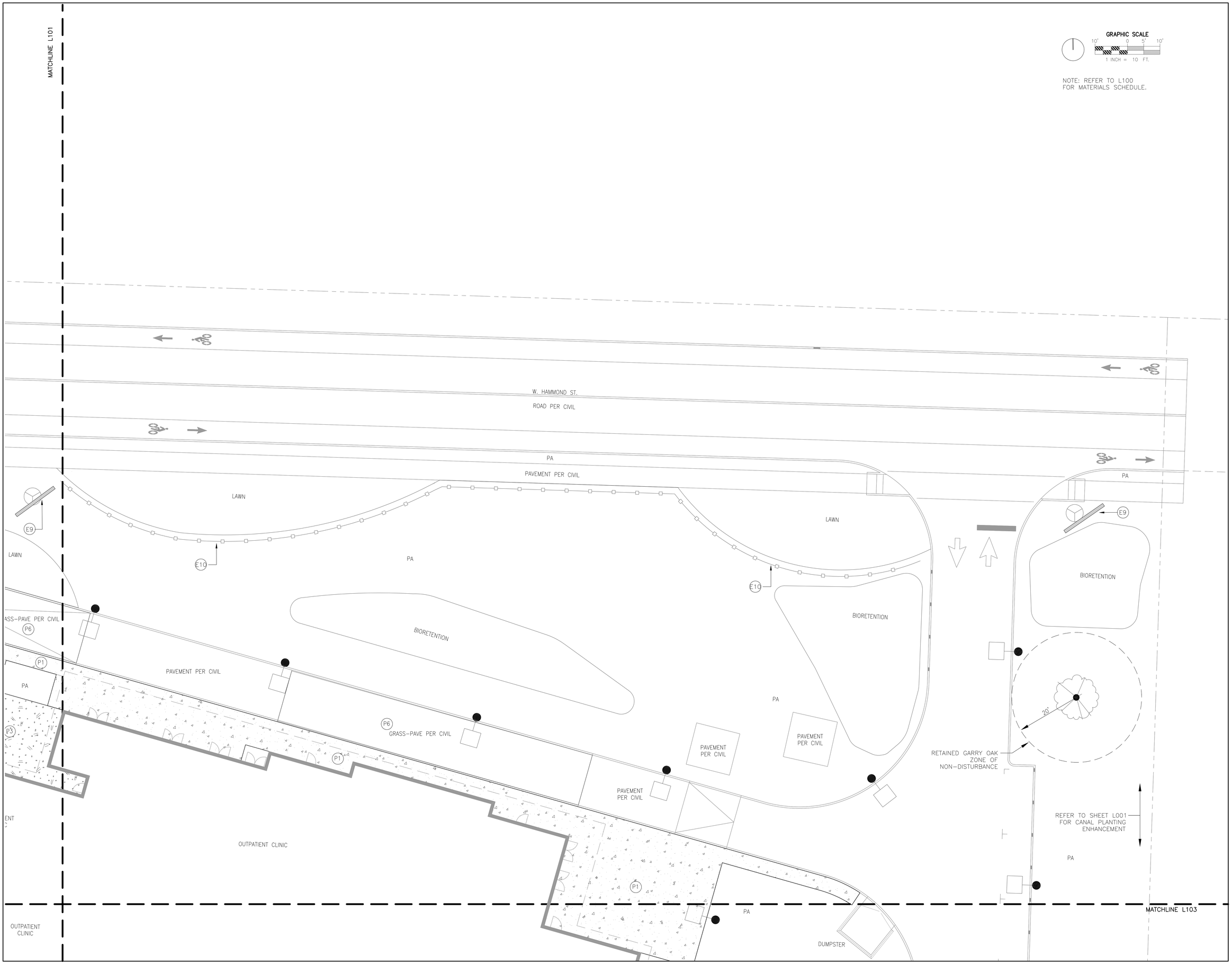

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OUTPATIENT CLINIC
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SEQUIM, WA 98382

PROJECT #	2018136.01
PERMIT SET	
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REVISION SCHEDULE

LANDSCAPE MATERIALS
NORTHEAST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L102

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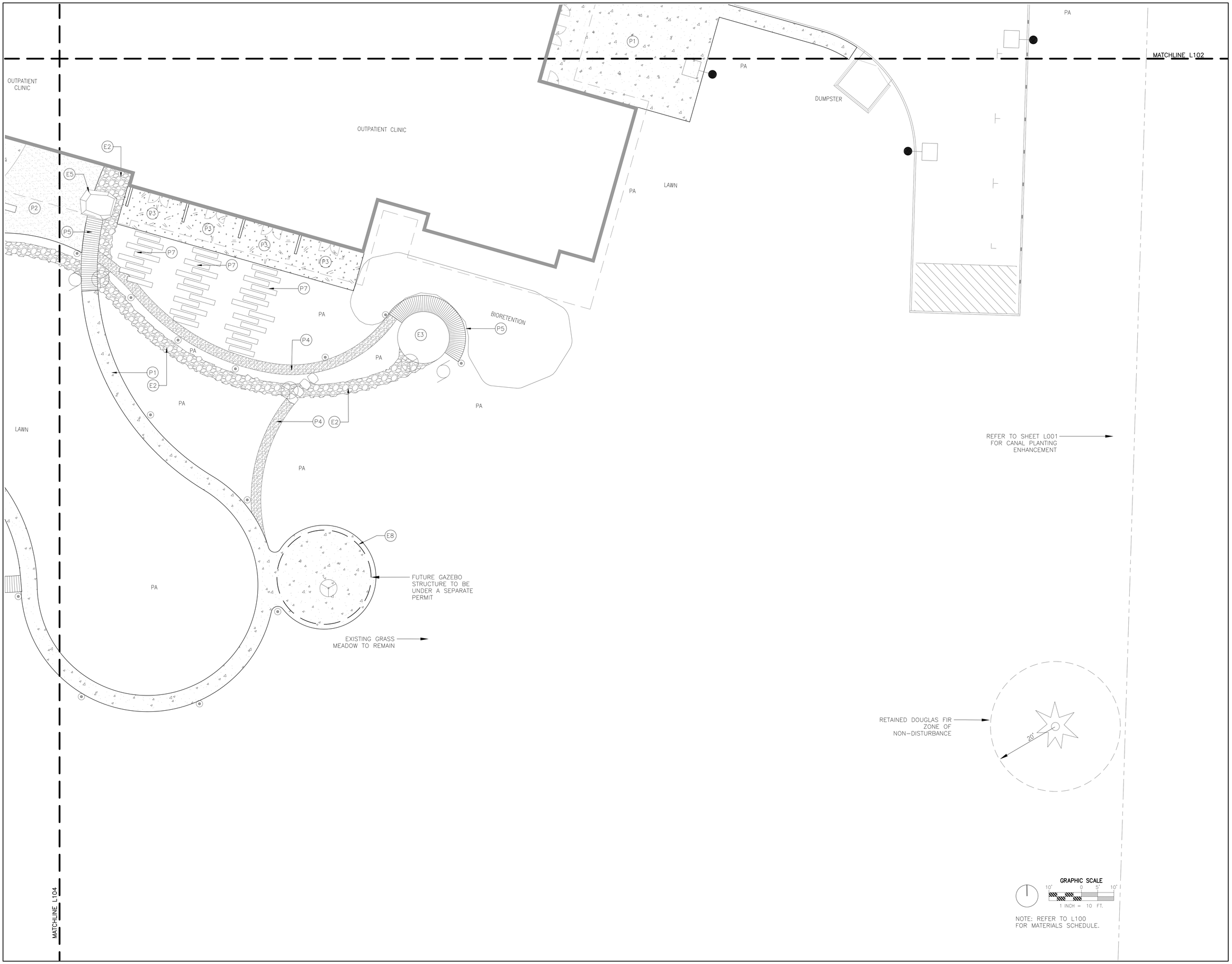

GRAPHIC SCALE
10' 0 5' 10'
1 INCH = 10 FT.

NOTE: REFER TO L100 FOR MATERIALS SCHEDULE.

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526 S 9TH AVE
SEQUIM, WA 98382

PROJECT #	2018136.01
PERMIT SET	
ISSUE DATE	JANUARY 10, 2020

REVISION SCHEDULE

LANDSCAPE MATERIALS SOUTHEAST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L103

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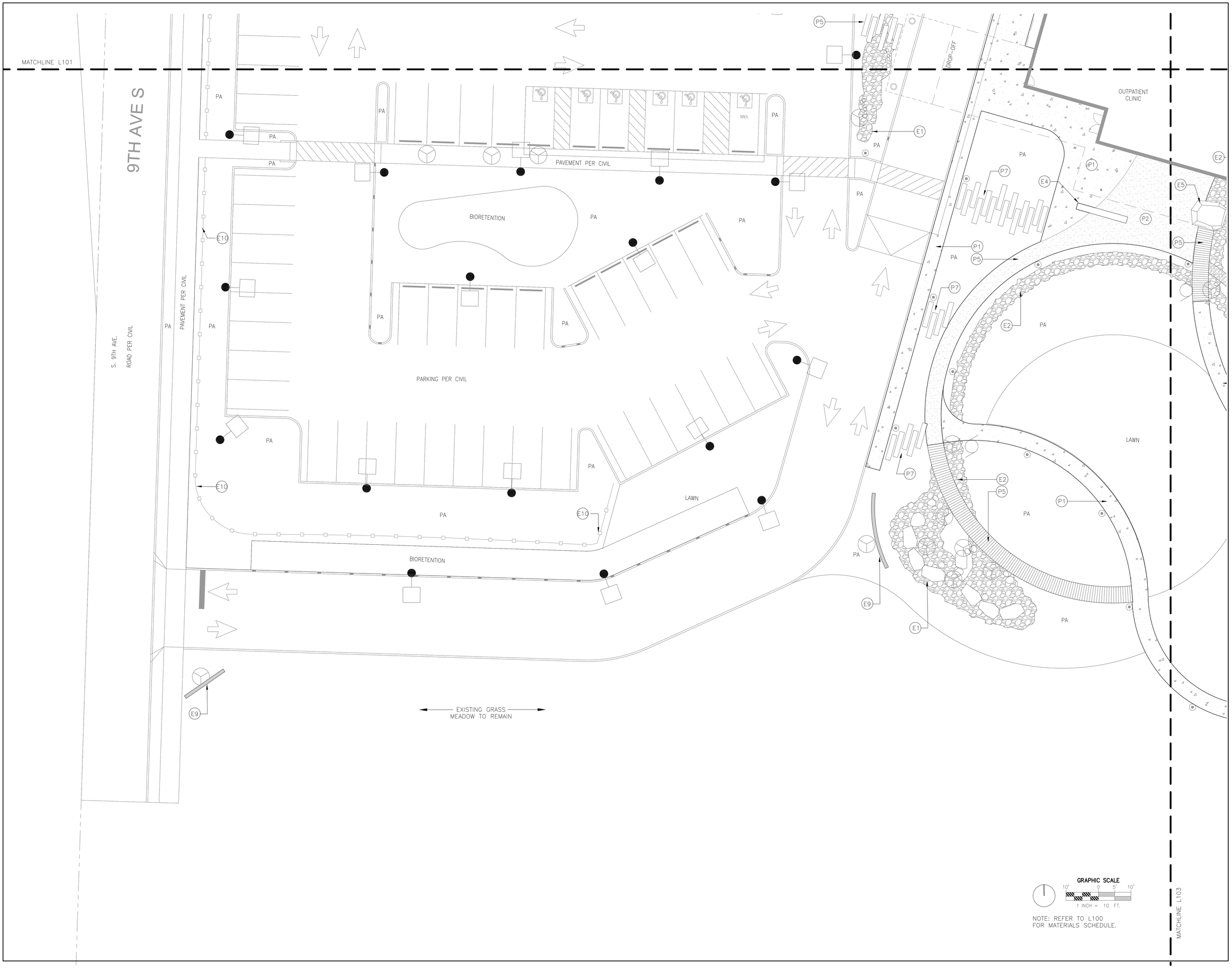

GRAPHIC SCALE
10' 0 5' 10'
1 INCH = 10 FT.

NOTE: REFER TO L100 FOR MATERIALS SCHEDULE.

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ISSUE DATE	JANUARY 10, 2020

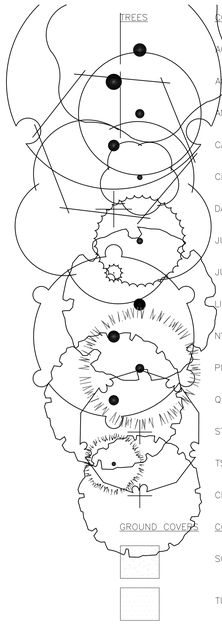
REVISION SCHEDULE

LANDSCAPE MATERIALS SOUTHWEST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L104

PLANTING SCHEDULE



TREES	CODE	QTY	BOTANICAL / COMMON NAME	CONT	CAL	SIZE
	ACE FLA	1	ACER NEGUNDO 'FLAMINGO' / FLAMINGO BOX ELDER	B & B	2" CAL	
	ACE JEF	7	ACER X FREEMANII 'JEFFSRED' / AUTUMN BLAZE MAPLE	B & B	2" CAL	
	AME AUT	18	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY	B & B	2" CAL	
	CAT SPE	5	CATALPA SPECIOSA / NORTHERN CATALPA	B & B	2" CAL	
	CER OCC	3	CERCIS OCCIDENTALIS / WESTERN REDBUD	B & B	1.5" CAL.	
	DAV SON	1	DAVIDIA INVOLUCRATA 'SONOMA' / HANDKERCHIEF TREE	B & B	2" CAL	
	JUN KAI	14	JUNIPERUS CHINENSIS 'KAIZUKA' / HOLLYWOOD JUNIPER	B & B	N/A	6' HT.
	JUN ME2	3	JUNIPERUS SCOPULORUM 'MEDORA' / MEDORA JUNIPER	B & B	N/A	5-6' HT
	LIR EME	4	LIRIODENDRON TULIPIFERA 'EMERALD CITY' / EMERALD CITY TULIP TREE	B & B	2" CAL	
	NYS SYL	4	NYSSA SYLVATICA / SOUR GUM	B & B	2" CAL	
	PIN CON	15	PINUS CONTORTA VAR. CONTORTA / SHORE PINE	B & B	N/A	6' HT.
	QUE WAR	22	QUERCUS WAREI / WARES OAK	B & B	2" CAL	
	STY FRO	1	STYRAX JAPONICUS 'FROSTED EMERALD' / FROSTED EMERALD JAPANESE SNOWBELL	B & B	2" CAL	
	TSU MER	4	TSUGA MERTENSIANA / MOUNTAIN HEMLOCK	B & B	N/A	6' HT.
	CHI TAS	8	X CHITALPA TASHKENTENSIS / CHITALPA	B & B	2" CAL	
GROUND COVERS	CODE	QTY	BOTANICAL / COMMON NAME	CONT		
	SODLAW	3,219 SF	SOD LAWN / DROUGHT TOLERANT FESCUE BLEND	N/A		
	TUR HYD	11,227 SF	TURF HYDROSEED / DROUGHT TOLERANT FESCUE BLEND	N/A		

PLANTING NOTES

1. LANDESCAPE DESIGN PER SEQUIM MUNICIPAL CODE SECTION 18.33.050.A.
2. REFER TO SHEET L001 FOR TREE RETENTION.
3. FOR ALL TOPSOIL, THE CONTRACTOR SHALL OBTAIN A LANDSCAPE SOIL ANALYSIS CERTIFYING THAT THE SOIL MEETS THE SOIL SPECIFICATIONS. THE CERTIFICATION SHALL BE REVIEWED BY THE LANDSCAPE ARCHITECT AND APPROVED.
4. AN ALL-PURPOSE, ORGANIC FERTILIZER TO BE APPLIED TO ALL PLANTING AREAS AT A RATE PER MANUFACTURERS RECOMMENDATIONS.
5. APPLY 3" DEPTH OF COMPOSTED ORGANIC BARK MULCH IN ALL PLANTING AREAS. MULCH TO BE FREE OF WEED SEED, SAWDUST, AND SHALL NOT CONTAIN ANYTHING DETRIMENTAL TO PLANT GROWTH. PULL MULCH 3" AWAY FROM BASE OF PLANT.
6. ALL PLANT MATERIAL SHALL CONFORM TO ANSI STANDARDS FOR NURSERY STOCK, LATEST EDITION.
7. ALL PLANT MATERIAL SHOULD BE DISEASE FREE AND ARRIVE IN A VIGOROUS GROWING CONDITION.
8. LANDSCAPE ARCHITECT WILL SUPERVISE THE PLANTING PROCESS. MODIFICATIONS TO THE PLANTING PLAN MAY OCCUR BASED ON FIELD CONDITIONS AND THE AVAILABILITY OF PLANT MATERIAL.
9. LOCAL NURSERY STOCK WILL BE USED TO ENSURE THAT THE MATERIAL HAS ACCLIMATED TO LOCAL CONDITIONS (REDUCING PLANTING STRESS) AND IS GENETICALLY COMPARABLE WITH PLANTS IN THE LOCAL AREA.
10. PLANTING AREAS ARE TO BE IRRIGATED. IRRIGATION DESIGN TO BE PROVIDED AT 60% DESIGN.
11. PLANTS SHALL BE INSPECTED PRIOR TO PLANTING TO VERIFY CONFORMANCE WITH PLANTING SIZE AND OTHER REQUIREMENTS.
12. ALL LANDSCAPING SHALL BE WARRANTED FOR A PERIOD OF 1 YEAR AFTER FINAL ACCEPTANCE BY THE OWNER.
13. PRIOR TO THE END OF THE WARRANTY PERIOD, THE LANDSCAPE WILL BE INSPECTED AND DEAD OR UNHEALTHY PLANTS WILL BE REQUIRED TO BE REPLACED WITH SAME SPECIES AND SIZES.

PLANTING AREA SCHEDULE

SITE SCREEN/BUFFER PLANTINGS	22,810 SF		
ARBUTUS UNEDO 'COMPACTA' / DWARF STRAWBERRY TREE	75	5 GAL.	20% @ 96" oc
CORNUS ALBA 'BAILHALO' / IVORY HALO DOGWOOD	75	5 GAL.	20% @ 96" oc
FRAGARIA CHILOENSIS / BEACH STRAWBERRY	1,916	4" POT	99% @ 42" oc
GARRYA ELLIPTICA 'JAMES ROOF' / JAMES ROOF COAST SILK TASSEL	75	5 GAL.	20% @ 96" oc
PHYSOCARPUS OPULIFOLIUS 'DIABOLO' / DIABLO NINEBARK	75	5 GAL.	20% @ 96" oc
ROSA RUGOSA / RUGOSA ROSE	75	5 GAL.	20% @ 96" oc
PARKING LOT PLANTINGS	9,996 SF		
ARCTOSTAPHYLOS X 'JOHN DOURLEY' / JOHN DOURLEY MANZANITA	130	3 GAL	20% @ 48" oc
BACCHARIS MAGELLANICA / CHRISTMAS BUSH	289	4" POT	25% @ 36" oc
DISTYLIUM X 'CINNAMON GIRL' / CINNAMON GIRL DISTYLIUM	231	3 GAL	20% @ 36" oc
FESTUCA GLAUCA 'ELIJAH BLUE' / BLUE FESCUE	1,155	1 GAL.	25% @ 18" oc
MYRTUS COMMUNIS 'COMPACTA VARIEGATA' / VARIEGATED DWARF MYRTLE	333	3 GAL	20% @ 30" oc
PEROVSKIA ATRIPLICIFOLIA 'LITTLE SPIRE' / LITTLE SPIRE RUSSIAN SAGE	520	1 GAL.	20% @ 24" oc
POTENTILLA FRUTICOSA 'BAILBRULE' / CREME BRULEE POTENTILLA	520	3 GAL	20% @ 24" oc
ENTRY PLANTINGS	2,356 SF		
BACCHARIS MAGELLANICA / CHRISTMAS BUSH	270	4" POT	99% @ 36" oc
DEUTZIA GRACILIS 'NIKKO' / SLENDER DEUTZIA	59	3 GAL	15% @ 30" oc
FOTHERGILLA X 'BLUE MIST' / DWARF FOTHERGILLA	44	3 GAL	11% @ 30" oc
GARDENIA JASMINOIDES 'KLEIM'S HARDY' / KLEIM'S HARDY GARDENIA	59	3 GAL	15% @ 30" oc
MYRTUS COMMUNIS 'COMPACTA VARIEGATA' / VARIEGATED DWARF MYRTLE	59	3 GAL	15% @ 30" oc
RHODODENDRON AZALEA 'PERCY WISEMAN' / PERCY WISEMAN AZALEA	46	3 GAL	30% @ 48" oc
VIBURNUM X 'SPG-3-024' / MOONLIT LACE VIBURNUM	41	3 GAL	15% @ 36" oc
BIORETENTION & RIPARIAN PLANTINGS	10,142 SF		
ACANTHUS MOLLIS / BEAR'S BREECH	118	1 GAL.	10% @ 36" oc
ASTER CHILENSIS / PACIFIC ASTER	264	1 GAL.	10% @ 24" oc
BERGENIA CORDIFOLIA 'WINTERGLUT' / HEARTLEAF BERGENIA	264	1 GAL.	10% @ 24" oc
CAREX OBNUPTA / SLOUGH SEDGE	527	1 GAL.	20% @ 24" oc
ERIGERON SPECIOSUS / SHOWY FLEABANE	264	1 GAL.	10% @ 24" oc
GERANIUM X CANTABRIGIENSE 'BIOKOVO' / BIOKOVO CRANESBILL	937	1 GAL.	20% @ 18" oc
HERNIARIA GLABRA / GREEN CARPET	937	4" POT	20% @ 18" oc
IRIS DOUGLASIANA / DOUGLAS IRIS	937	N/A	20% @ 18" oc
JUNCUS EFFUSUS / COMMON RUSH	527	1 GAL.	20% @ 24" oc
LIRIOPE SPICATA 'SILVER DRAGON' / CREEPING LILY TURF	937	1 GAL.	20% @ 18" oc
ENHANCED MEADOW PLANTINGS	12,482 SF		
ACHILLEA MILLEFOLIUM / COMMON YARROW	692	1 GAL.	12% @ 18" oc
AGASTACHE X 'BLACK ADDER' / BLACK ADDER ANISE HYSSOP	173	1 GAL.	12% @ 36" oc
ALLIUM GIGANTEUM 'GLOBEMASTER' / GIANT ALLIUM	934	N/A	5% @ 10" oc
ARCTOSTAPHYLOS X 'SUNSET' / SUNSET MANZANITA	58	3 GAL	11% @ 60" oc
ECHINACEA PURPUREA / PURPLE CONEFLOWER	692	1 GAL.	12% @ 18" oc
LAVANDULA ANGUSTIFOLIA 'HIDCOTE SUPERIOR' / HIDCOTE SUPERIOR LAVENDER	390	3 GAL	12%
MISCANTHUS SINENSIS 'LITTLE KITTEN' / LITTLE MISS JAPANESE FEATHER GRASS	692	1 GAL	12% @ 18" oc
PENNISETUM ORIENTALE 'HAMELN' / HAMELN FOUNTAIN GRASS	390	1 GAL	12% @ 24" oc
ROSA X 'RADCOR' / RAINBOW KNOCK OUT SHRUB ROSE	173	5 GAL.	12% @ 36" oc
ROCK WATERFEATURE PLANTINGS	3,144 SF		
CHAMAECYPARIS OBTUSA 'LITTLE JOHN' / LITTLE JOHN HINOKI CYPRESS	35	10 GAL.	17% @ 48" oc
IRIS DOUGLASIANA / DOUGLAS IRIS	247	N/A	17% @ 18" oc
JUNCUS EFFUSUS / COMMON RUSH	139	1 GAL.	17% @ 24" oc
PENNISETUM ORIENTALE 'HAMELN' / HAMELN FOUNTAIN GRASS	139	1 GAL	17% @ 24" oc
PINUS MUGO 'PUMILIO' / MUGO PINE	35	10 GAL.	17% @ 48" oc
THUJA KORAIENSIS 'GLAUCA PROSTRATA' / GLAUCA PROSTRATA KOREAN ARBORVITAE	55	5 GAL.	15% @ 36" oc

NOTES:
1. A DETAILED PLANTING PLAN WITH SPECIFIC LOCATIONS IDENTIFIED FOR EACH PLANT WILL BE PROVIDED IN CONSTRUCTION DRAWINGS.

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STATE OF WASHINGTON
JEFFREY K. BOUMA
No. 847 EXP. 06/02/20
LANDSCAPE ARCHITECT

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
SEQUIM, WA 98382

PROJECT # 2018136.01

PERMIT SET

ISSUE DATE JANUARY 10, 2020

REVISION SCHEDULE

PLANT SCHEDULE

SHEET #
L200

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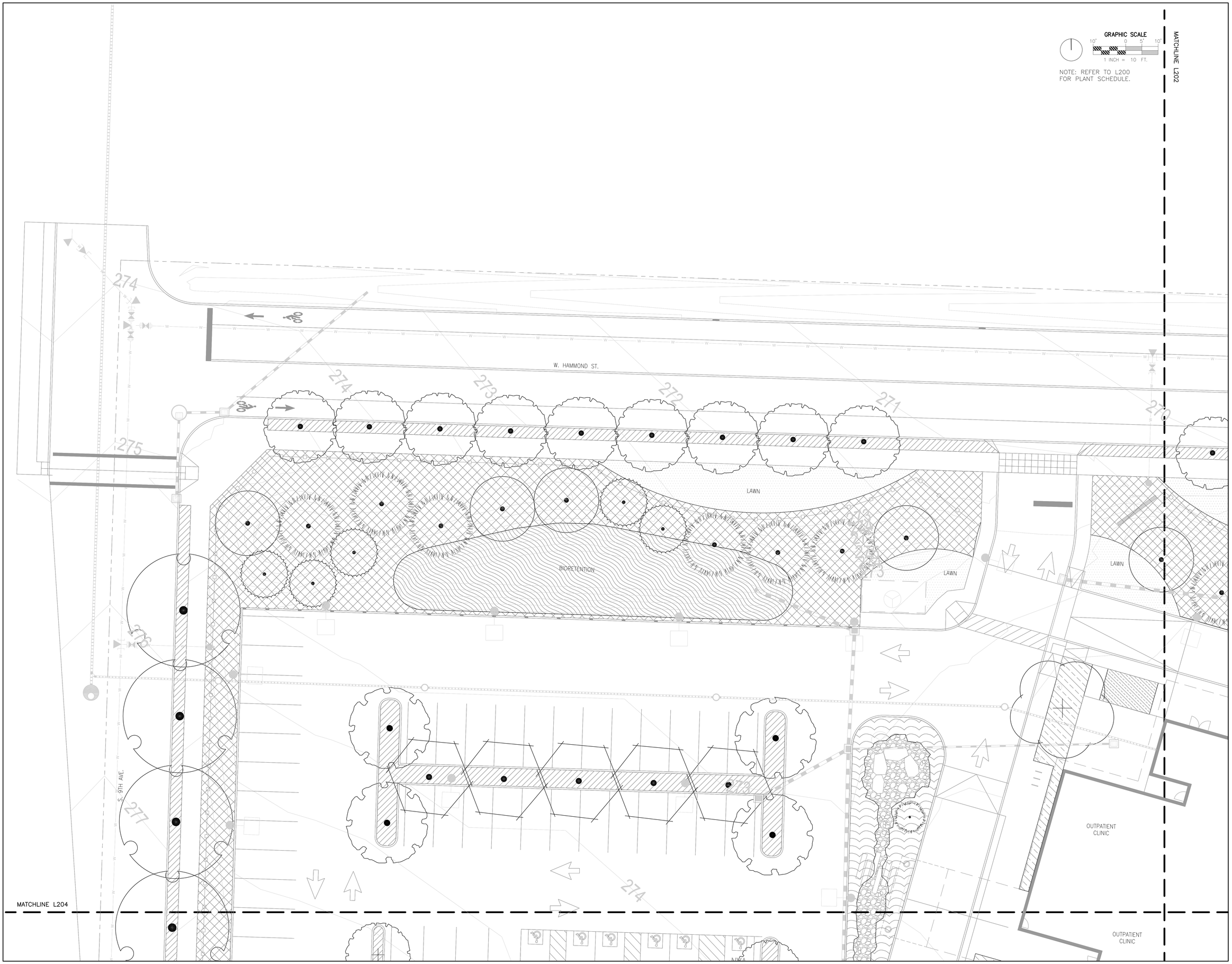

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526 S 9TH AVE
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PROJECT #	2018136.01
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ISSUE DATE	JANUARY 10, 2020

REVISION SCHEDULE

PLANTING PLAN
NORTHWEST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L201

Received by City of Sequim
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STATE OF WASHINGTON
JEFFREY K. BOUMA
No. 847 EXP. 06/02/2018
LANDSCAPE ARCHITECT

GRAPHIC SCALE
10' 0 5' 10'
1 INCH = 10 FT.

NOTE: REFER TO L200
FOR PLANT SCHEDULE.

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
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REVISION SCHEDULE

PLANTING PLAN
NORTHEAST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L202

Received by City of Sequim
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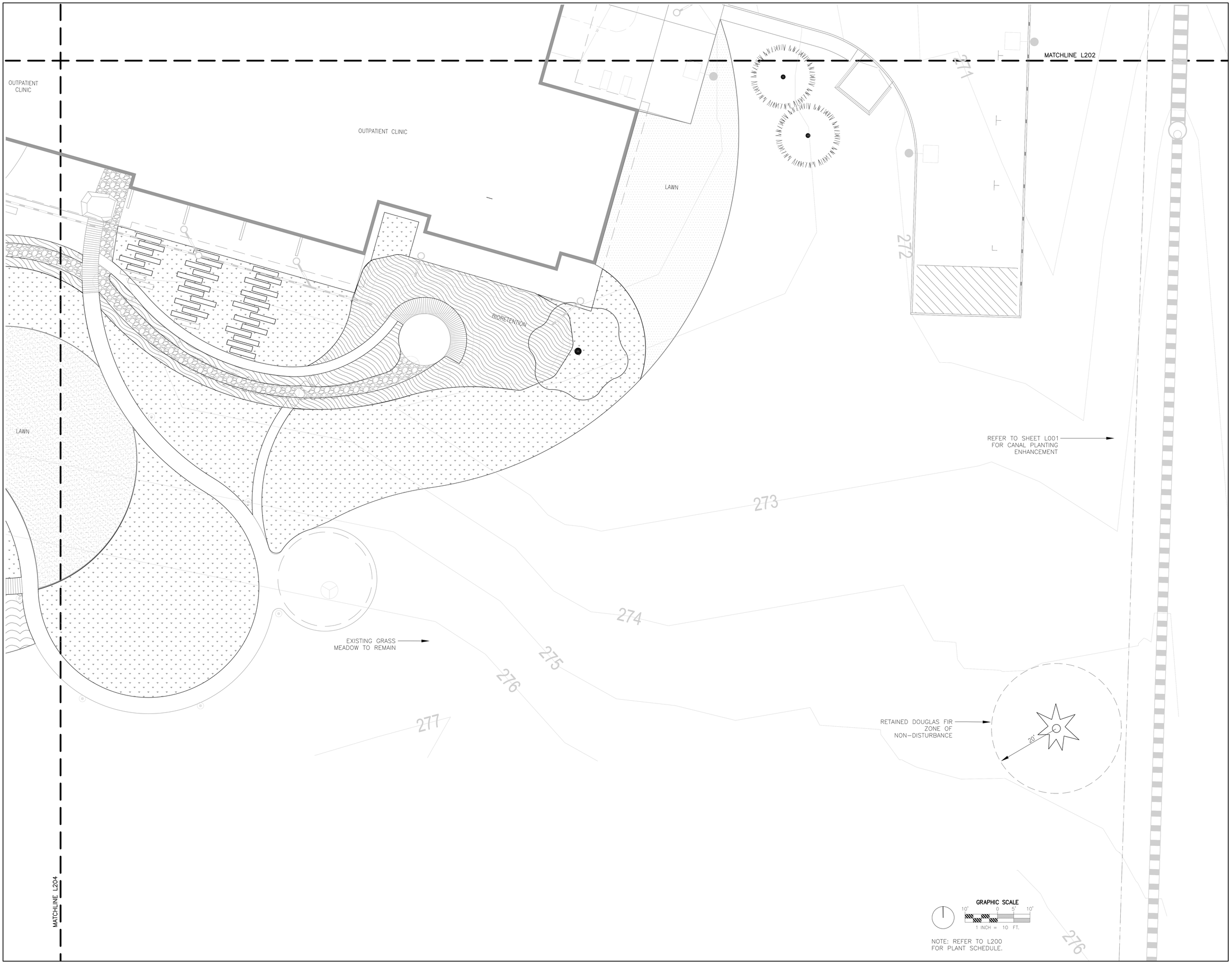

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ISSUE DATE	JANUARY 10, 2020

REVISION SCHEDULE

PLANTING PLAN
SOUTHEAST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L203

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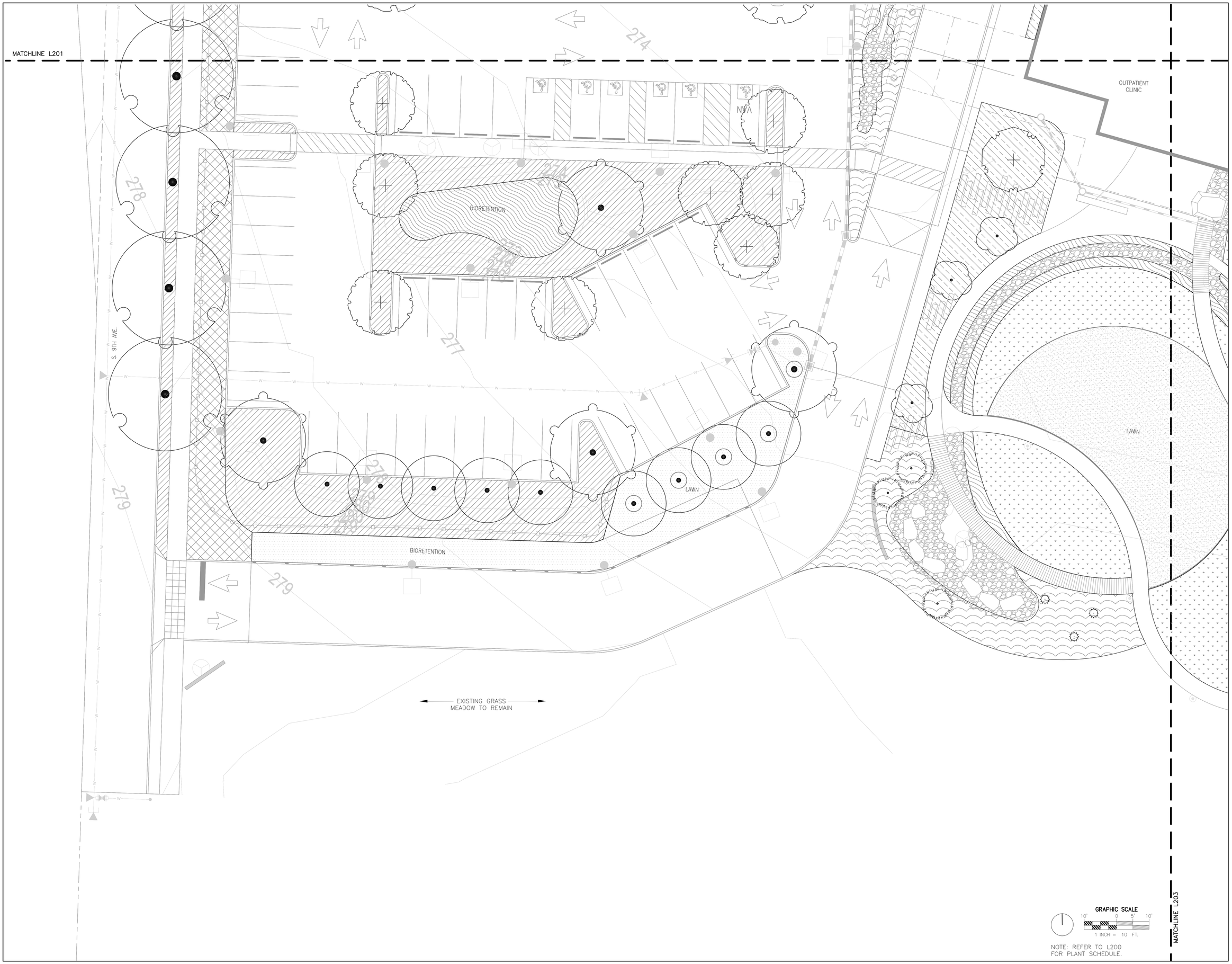

NOTE: REFER TO L200 FOR PLANT SCHEDULE.

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Landscape Architecture + Community Planning
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Bainbridge Island, WA 98110
(206) 780.5661
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STATE OF WASHINGTON
JEFFREY K. BOUMA
NO 947 EXP. 06/02/2020
LANDSCAPE ARCHITECT

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
526 S 9TH AVE
SEQUIM, WA 98382

PROJECT #	2018136.01
PERMIT SET	
ISSUE DATE	JANUARY 10, 2020

REVISION SCHEDULE

PLANTING PLAN
SOUTHWEST

SCALE: 1"=10' ON 30" X 42" SHEET

SHEET #
L204

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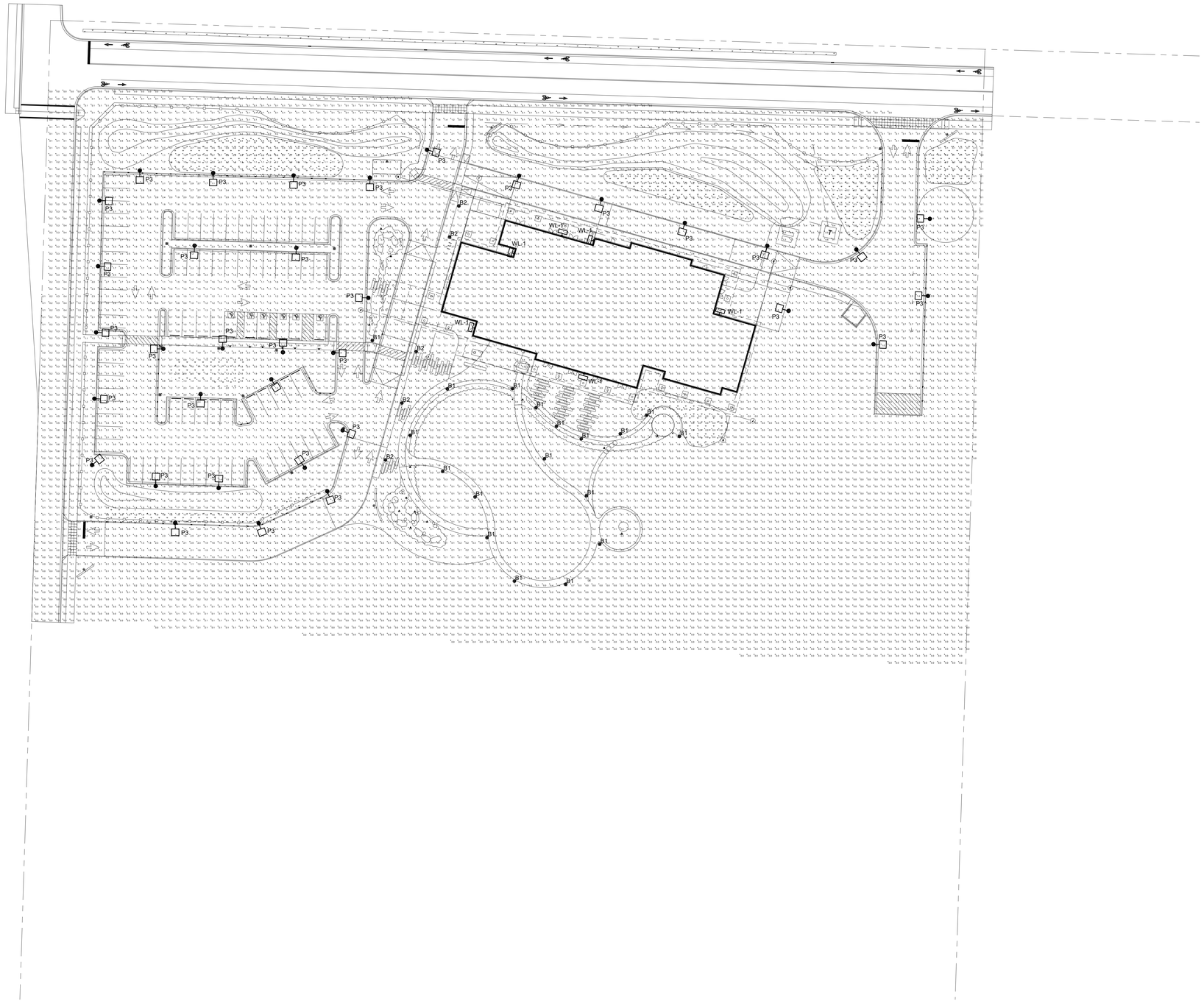
SHEET NOTES:

1. SEE LIGHT FIXTURE SCHEDULE FOR SITE POLE HEIGHT. SEE LANDSCAPE FOR SIGN TYPE.



1 SITE PLAN - PHOTOMETRIC STUDY
SCALE: 1/32" = 1'-0"

RFMARCH
ARCHITECTURE INTERIORS PLANNING VISUAL
275 FIFTH STREET, SUITE 100
BREMERTON, WA 98337
360-377-8773
RFMARCH.COM

TFWB ENGINEERS
Travis Fitzmaurice Wartelle Balangue Engineers Inc.
1200 Westlake Ave. N., #505
Seattle, WA 98109
p: 206-285-7228 | info@tfwb-eng.com

KEVIN E. WARTELLE
STATE OF WASHINGTON
44189
REGISTERED PROFESSIONAL ENGINEER

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC

526 S 9TH AVE
SEQUIM, WA 98382

PAPER SIZE	ARCH E1 (30" X 42")
PROJECT #	2017000.00

PERMIT SET

ISSUE DATE	JAN. 10, 2020

REVISION SCHEDULE

SITE PLAN - PHOTOMETRIC STUDY

SHEET #
E1.02

O:\cad\Jamestown S'Klallam Healing Campus 19-06\PE1.02.dwg
5/19/2015 7:30 PM

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COFFMAN ENGINEERS

TECHNICAL INFORMATION REPORT

JAMESTOWN S'KLALLAM TRIBE OUTPATIENT CLINIC

SEQUIM, WASHINGTON

JANUARY 10, 2019

CEI PROJECT NO. 191652

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COFFMAN ENGINEERS

TECHNICAL INFORMATION REPORT

JAMESTOWN S'KLALLAM TRIBE

OUTPATIENT CLINIC

SEQUIM, WA

PREPARED BY:

COFFMAN ENGINEERS, INC.
1101 Second Avenue, Suite #400
Seattle, Washington

CONTACT:

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Civil Engineering Department
206-623-0717

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Appendix A – Facility Calculations
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Figure 1 – Vicinity Map and Site Plan
Figure 2 – Proposed Basin Map
Figure 3 – TESC Plan

1.0 PROJECT OVERVIEW

This technical information report (TIR) contains information for the design of the stormwater system for the proposed Outpatient Clinic to be constructed in Sequim, WA. This TIR has been prepared in accordance with the 2014 Stormwater Management Manual for Western Washington (SMMWW). The project proposes to develop the northwest 3.3 (+/-) acres of the 18.19-acre subject parcel.

The project scope includes construction of a 16,720-square-foot medical clinic and associated parking lot as well as roadway extensions for South 9th Avenue and West Hammond Street. Installation of new utilities from South 9th Avenue to the project site, including water, sanitary sewer, power and communications is proposed.

Project Location: Parcel Numbers: 03301933000

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Applicant: Suzanne Pontecorvo
Rice Fergus Miller
275 Fifth Street, Suite 100
Bremerton, Washington 98337
360-377-8773

Civil Engineer: Coffman Engineers, Inc.
1101 Second Avenue, Suite 400
Seattle, Washington 98101
Contact: Allison Hazen, P.E.
206-623-0717

Total Parcel Area: 792,356+/- square feet (18.19 ac)
Total Project Area: 143,775 square feet+/- (3.3 ac+/-)

1.1. Existing Conditions

The project area is located between South 7th Avenue and South 9th Avenue, immediately north of US-Highway 101 in Sequim, Washington. This area is gently sloped from the southwest to the northeast and bisected by a public irrigation ditch crossing the site from the south to the north. The property is mainly vegetated with grasses except for a row of trees that runs through the middle of the property, which border the existing open irrigation ditch. Refer to Figure 1 for the vicinity map.

1.2. Developed Conditions

The proposed project is to develop the northwest 3.3 (+/-) acres of the 18.19 (+/-) acre property. A 16,720-square-foot medical clinic that will be made up of a medication assisted treatment program offering FDA approved dosing, primary care services, consulting services, dental healthcare services, and childcare services while clients are seen. Right-of-way improvements will include extensions of South 9th Avenue and West Hammond Street within the development limits of the site. Refer to Figure 1 for the overall site plan.

1.3. Site Geology

A geotechnical report for this project was completed by Krazan & Associates, Inc., dated October 24, 2019, Project No. 102-19020.

1.4. Existing Drainage Conditions

The project site generally slopes from southwest to northeast and any runoff that does not infiltrate is currently collected in an irrigation trench running south to north at about the center of the project site. The project area drains northeast to an existing irrigation ditch which is ultimately tributary to the Dungeness River.

1.5. Developed Drainage Conditions

The developed stormwater system will include an onsite conveyance system, filter strips, infiltration trenches and bioretention ponds. Onsite treatment and infiltration of 100% of the runoff is proposed.

The existing on-site irrigation ditch will be hard-piped, at the request of the irrigation district, in order to conserve the supply for uses downstream. The relocated conveyance

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line will shift to the east of the existing location in a new irrigation district easement, to avoid damage to a Garry Oak tree that is currently near the existing open ditch.

The runoff from the West Hammond Street right-of-way improvements will be directed primarily to a biofiltration trench along the north side of West Hammond Street for treatment and infiltration. At the far east end of the proposed West Hammond Street, a small portion of the street will be dispersed across the onsite pasture areas to be cleansed and infiltrate. The east half of the right-of-way along the new South 9th Avenue will be collected in catch basins and routed to the biofiltration trench along the north side West Hammond Street. The west half of the South 9th Avenue right-of-way will be dispersed across the onsite pasture areas to be cleansed and infiltrate. Refer to Figure 2 for the proposed basin map.

1.6. Drainage Control During Construction

To minimize the potential erosive impacts to local soils during construction, the contractor shall install storm drain inlet protection in catch basins receiving runoff from the project area or near the work area. A temporary sedimentation pond will also be used during construction to collect and treat stormwater. Contractor shall cover embankments and disturbed surfaces with mulches, plastic sheeting or jute matting to control erosion during inclement weather. A stabilized construction access is to be installed as necessary to prevent tracking sediment onto roadways and use wattles to contain sediment onsite as needed. Details of these requirements are shown on the *Temporary Erosion & Sedimentation Control (TESC) Plan*, which is included in the separately bound civil plan set.

1.7. Maintenance

The Owners shall be responsible for the regular inspection and maintenance of the on-site drainage facilities and structures including the bioretention ponds, filter strips, infiltration facilities, catch basins, pipes and downspouts. Refer to Section 8 of this report for the Operations & Maintenance requirements.

2.0 MINIMUM STORMWATER REQUIREMENTS

The following are the minimum requirements in Section I-2.5.1 of the Department of Ecology's *2014 Stormwater Management Manual for Western Washington (SWMMWW).*

<u>REQUIREMENT #1: PREPARATION OF STORMWATER SITE PLANS</u>
Stormwater site plans have been prepared for this project. Refer to the separately bound civil plan set Jamestown S'Klallam Tribe Outpatient Clinic dated 12/30/2019.

<u>REQUIREMENT #2: CONST. STORMWATER POLLUTION PREVENTION (SWPPP)</u>
Refer to Section 2.1 of this report for compliance with the Construction SWPPP Elements.

<u>REQUIREMENT #3: SOURCE CONTROL POLLUTION</u>
There will be a medical storage room sized at approximately 23 square feet containting medical gas tanks of oxygen and nitrous oxide. These tanks will be stored indoors, be of small quanties and will discharge gas in the event of a small leak. No source control measures are required for stormwater.

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REQUIREMENT #4: PRESERVE NATURAL DRAINAGE SYSTEM AND OUTFALLS
The project will infiltrate onsite as it does under natural conditions. Extreme flows will continue to drain to the existing irrigation ditch as it does under existing conditions.

REQUIREMENT #5: ON-SITE STORMWATER MANAGEMENT
Onsite stormwater management BMPs are recommended. The stormwater will be collected by bioretention ponds and infiltration trenches, and will infiltrate onsite or within the proposed right-of-way, separate from on-site runoff.

REQUIREMENT #6: RUNOFF TREATMENT
The stormwater will be treated by the bioretention ponds, biofiltration trenches and filter strips.

REQUIREMENT #7: FLOW CONTROL
The stormwater will be infiltrated onsite within the bioretention ponds and infiltration trenches. The onsite infiltration will be 100% which will provide the required flow control.

REQUIREMENT #8: WETLAND PROTECTION
There are no known wetlands near the proposed work area, so this requirement does not apply.

REQUIREMENT #9: OPERATION AND MAINTENANCE
There are operational and maintenance procedures for the proposed onsite bioretention ponds, filter strips, infiltration facilities and conveyance system included in the Department of Ecology's 2014 Stormwater Management Manual for Western Washington (SWMMWW).

2.1. STORMWATER POLLUTION PREVENTION PLAN (SWPPP) ELEMENTS

The construction-related Best Management Practices (BMP's) noted below are in reference to the Department of Ecology's *2014 Stormwater Management Manual for Western Washington (SWMMWW).*

Element 1: Mark Clearing Limits
The limits of clearing shall be established and marked at the beginning of construction with high visability construction fencing or other measures.

Element 2: Establish Construction Access
A stabilized construction access point will be established by the Contractor.

Element 3: Control Flow Rates
Flow control will be carried out through the use of bioretention ponds, filter strips, and onsite infiltration.

Element 4: Install Sediment Controls
On-site stormwater runoff shall be directed through filter fabric fences or catch basin inserts, prior to being discharged to the downstream drainage system. A temporary sedimentation pond will also be used as needed to control sediment transport from the site.

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Element 5: Stabilize Soils
Disturbed soil that remains unchanged for more than two days within the period from October 1 to April 30 (or seven days from May 1 to September 30), shall be covered with nets and blankets, topsoil, hydroseed, sod or other approved methods (as necessary) to reduce erosive impacts. If required on a short term basis, mulch and plastic covering may be used temporarily until more permanent stabilization with plant growth can be established.

Element 6: Protect Slopes
There are no existing steep slopes within the work area.

Element 7: Protect Drain Inlets
All storm drain inlets shall, at a minimum, be inspected weekly and cleared of any flow-restricting debris or sediment. Catch basin inserts shall be installed in all existing and new catch basins, until the site soil at the prioject site is stabilized.

Element 8: Stabilize Channels and Outlets
The irrigation ditch will have a stabilized outlet adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches.

Element 9: Control Pollutants
Spill control structures shall be used in the catch basins to collect runoff from pollution generating surfaces.

Element 10: Control De-Watering
Stormwater collected within any excavations will be directed to the temporary sedimentation pond before discharging to the downstream system. Contractor to monitor the stormwater quality to ensure it meets the local jurisdictions requirements for discharging stormwater from the site.

Element 11: Maintain BMPs
All BMPs utilized for this project shall be maintained in accordance with their respective BMP specifications.

Element 12: Manage The Project
The on-site construction Supervisors shall be responsible for monitoring all erosion and sedimenation control measures, in addition to providing repairs or additional erosion-reducing measure, as field conditions require.

3.0 OFFSITE ANALYSIS

Per Section I.3.1.3 of the Preparation of Stormwater Site Plans section of the Department of Ecology's *2014 Stormwater Management Manual for Western Washington (SWMMWW)*, a downstream analysis is required for the proposed project.

3.1. Downstream

The downstream system consists of the existing irrigation trench crosssing the project site which continues to the north. The proposed stormwater system will infiltrate 100% of the onsite runoff and overland discharge to the downstream system will only be used in the case of an emergency overflow.

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3.2. Upstream

There will be no significant impact to the upstream system.

4.0 FLOW CONTROL AND WATER QUALITY FACILITY ANALYSIS AND DESIGN

4.1. Flow Control

Flow control is required and will be achieved by infiltrating the onsite runoff. The onsite stormwater will be directed to one of six infiltration facilities consisting of bioretention ponds and infiltration trenches. Below is a summary table of the contributing basin areas for the project site. Refer to Figure 2 for the proposed basin map. The flow control and water quality facilities will be combined, refer to section 4.2 for more information.

TABLE 1A: ONSITE CONTRIBUTING AREAS

			IMPERVIOUS AREA					
BASIN	TOTAL AREA		ROOF AREA		PAVED AREA		PERVIOUS AREA	
AREAS	SQ FT	ACRES	SQ FT	ACRES	SQ FT	ACRES	SQ FT	ACRES
1	7,031	0.16	-	-	4,095	0.09	2,936	0.07
2A	16,454	0.38	-	-	9,656	0.22	6,798	0.16
2B	45,690	1.05	-	-	35,736	0.82	9,954	0.23
3	28,343	0.65	9,604	0.22	5,569	0.13	13,170	0.30
4	12,869	0.30	-	-	5,645	0.13	7,224	0.17
5	20,440	0.47	-	-	5,404	0.12	15,036	0.35
6	12,948	0.30	12,948	0.30	-	-	-	-
TOTAL	143,775	3.30						

The flow control for the stormwater within the right-of-way shall consist of a bioretention trench along the north side of West Hammond Street and limited area of dispersion (for sections of the road that are not proposed to be complete at this time. The flow control and water quality facilities will be combined, refer to section 4.2 for more information.

TABLE 1B: OFFSITE CONTRIBUTING AREAS

			IMPERVIOUS AREA					
BASIN	TOTAL AREA		ROOF AREA		PAVED AREA		PERVIOUS AREA	
AREAS	SQ FT	ACRES	SQ FT	ACRES	SQ FT	ACRES	SQ FT	ACRES
ROW	51,087	1.17	-	-	39,636	0.91	11,451	0.26
TOTAL	51,087	1.17						

4.2. Water Quality

The facilities for flow control and water quality will be combined when bioretention ponds are used, and separate when filter strips are used. The water quality for the stormwater within the right-of-way shall consist of a bioretention trench along the north side of West Hammond Street and overland flow for the limited areas. Below is a summary of the available facility dimensions and the required dimensions from the sizing calculation results for the onsite and ROW facilities. Refer to the calculations included in Appendix A for additional information.

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TABLE 2A: FACILITY SUMMARY - AVAILABLE

BASIN AREAS	FACILITY TYPE	AVAILABLE BOTTOM AREA (sqft)	POND FREEBOARD DEPTH (ft)	POND STORAGE DEPTH (ft)	GRAVEL DEPTH (ft)	SIDE SLOPES	SLOPE	LENGTH (ft)	WIDTH (ft)
1	Filter Strip	n/a	n/a	n/a	n/a	n/a	2.5%	153	7
1	Trench	230	n/a	n/a	2.00	n/a	n/a	153	1.5
2A	Bio Pond	565	1.00	2.00	1.00	2H:1V	n/a	n/a	n/a
2B	Bio Pond	648	1.00	3.50	1.00	2H:1V	n/a	n/a	n/a
3	Bio Pond	784	0.50	1.00	1.00	2H:1V	n/a	n/a	n/a
4	Bio Pond	743	1.00	1.00	1.00	2H:1V	n/a	n/a	n/a
5	Bio Pond	438	1.00	1.50	1.00	2H:1V	n/a	n/a	n/a
6	Bio Pond	704	1.00	1.00	1.00	2H:1V	n/a	n/a	n/a
ROW	Bio Trench	1,068	1.00	1.00	1.00	3H:1V	2%	534	2

TABLE 2B: FACILITY SUMMARY REQUIRED

BASIN AREAS	FACILITY TYPE	REQUIRED BOTTOM AREA (sqft)	POND FREEBOARD DEPTH (ft)	POND STORAGE DEPTH (ft)	COMPOST DEPTH (ft)	SAND DEPTH (ft)	GRAVEL DEPTH (ft)	SIDE SLOPE	SLOPE	BOTTOM LENGTH (ft)	BOTTOM WIDTH (ft)
1	Filter Strip	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.5%	150	13
1	Trench	225	n/a	n/a	0.50	0.50	2.00	n/a	n/a	150	1.5
2A	Bio Pond	560	0.50	1.50	0.50	1.50	1.00	2H:1V	n/a	20	28
2B	Bio Pond	640	1.00	3.00	0.50	1.50	1.00	2H:1V	n/a	10	64
3	Bio Pond	700	0.50	1.00	0.50	1.50	1.00	2H:1V	n/a	35	20
4	Bio Pond	700	1.00	1.00	0.50	1.50	1.00	2H:1V	n/a	35	20
5	Bio Pond	400	1.00	1.50	0.50	1.50	1.00	2H:1V	n/a	20	20
6	Bio Pond	700	1.00	1.00	0.50	1.50	1.00	2H:1V	n/a	35	20
ROW	Bio Trench	1,060	1.00	1.00	0.50	1.50	1.00	3H:1V	2%	530	2

5.0 CONVEYANCE CALCULATIONS

The stormwater conveyance system has been designed per the Department of Ecology's *Western Washington Hydraulic Model (WWHM).* The rational method has been used to calculate design peak flow rates. Refer to Appendix B for the pipe conveyance calculations. Below is a summary of the conveyance system calculation results.

TABLE 3: CONVEYANCE SUMMARY

STRUCTURE		CONTRIBUTING AREA		PIPE		PEAK FLOW		FLOW DEPTH	
				DIA.	SLOPE	25-YR	100-YR	25-YR	100-YR
INLET	OUTLET	(sq ft)	(acres)	(inches)	(ft/ft)	(cfs)	(cfs)	(in)	(in)
CB-1	2B POND	45,690	1.05	12	0.01	1.73	2.15	5.9	6.8
CB-7	3 POND	9,604	0.22	6	0.02	0.43	0.54	3.2	3.7
SD CO 1	6 POND	8,458	0.19	6	0.01	0.38	0.47	3.7	4.3
CB1A	DITCH	11,968	0.27	8	0.008	0.54	0.68	4	4.6

5.1. Backwater Conveyance

Backwater conveyance does not apply to this project.

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6.0 SPECIAL REPORTS AND STUDIES

The geotechnical report is available upon request.

7.0 OTHER PERMITS

This project will require City of Sequim building and construction permits.

8.0 MAINTENANCE REQUIREMENTS

Maintenance of the onsite drainage facilities will conform to the requirements provided in the 2014 Department of Ecology's *2014 Stormwater Management Manual for Western Washington (SWMMWW).*

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APPENDICIES

APPENDIX A – FACILITY CALCULATIONS

APPENDIX B – CONVEYANCE CALCULATIONS

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APPENDIX A

FACILITY CALCULATIONS

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APPENDIX A

FACILITY CALCULATIONS

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BASIN AREA 1

FACILITY CALCULATIONS

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AREA 1 - FILTER STRIP

Area =	4,095	sq ft	
=	0.09	acres	
y=	0.083	ft max	
n=	0.35		
t=	9	minutes	
s=	0.025		Range of 0.01 to 0.33
V=	0.5	ft/sec	Maximum velocity
Q=	0.018	cfs	(72% of 2 yr runoff for Q from WWHM)
K=	1.35		
T=	150	ft	
y=	0.007	ft	OK, does not exceed 1 inch (0.0833 ft)
V=	0.024	ft/sec	OK, does not exceed 0.5 ft/sec
L=	**13.0**	ft	

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WWHM2012
PROJECT REPORT

Project Name: Area 1 Bioretention
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
PARKING FLAT	0.09
Impervious Total	0.09
Basin Total	0.09

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

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Pervious Land Use	acre
A B, Lawn, Steep	.07
Pervious Total	0.07

Impervious Land Use	acre
PARKING FLAT	0.09
Impervious Total	0.09
Basin Total	0.16

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 1	Surface retention 1	

Name : Bioretention 1
Bottom Length: 150.00 ft.
Bottom Width: 1.50 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 0.5
Material type for second layer: Sand
Material thickness of third layer: 2
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 6.468
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 6.468
Percent Infiltrated: 100
Total Precip Applied to Facility: 0.416
Total Evap From Facility: 0.285
Underdrain not used
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 1 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0052	0.0000	0.0000	0.0000
0.0341	0.0052	0.0001	0.0000	0.0000
0.0681	0.0052	0.0002	0.0000	0.0000
0.1022	0.0052	0.0002	0.0000	0.0000

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0.1363	0.0052	0.0003	0.0000	0.0001
0.1703	0.0052	0.0004	0.0000	0.0001
0.2044	0.0052	0.0005	0.0000	0.0004
0.2385	0.0052	0.0006	0.0000	0.0005
0.2725	0.0052	0.0006	0.0000	0.0010
0.3066	0.0052	0.0007	0.0000	0.0010
0.3407	0.0052	0.0008	0.0000	0.0013
0.3747	0.0052	0.0009	0.0000	0.0020
0.4088	0.0052	0.0010	0.0000	0.0024
0.4429	0.0052	0.0010	0.0000	0.0026
0.4769	0.0052	0.0011	0.0000	0.0034
0.5110	0.0052	0.0012	0.0000	0.0044
0.5451	0.0052	0.0013	0.0000	0.0045
0.5791	0.0052	0.0013	0.0000	0.0053
0.6132	0.0052	0.0014	0.0000	0.0069
0.6473	0.0052	0.0015	0.0000	0.0072
0.6813	0.0052	0.0015	0.0000	0.0078
0.7154	0.0052	0.0016	0.0000	0.0101
0.7495	0.0052	0.0017	0.0000	0.0108
0.7835	0.0052	0.0018	0.0000	0.0108
0.8176	0.0052	0.0018	0.0000	0.0140
0.8516	0.0052	0.0019	0.0000	0.0145
0.8857	0.0052	0.0020	0.0000	0.0154
0.9198	0.0052	0.0020	0.0000	0.0187
0.9538	0.0052	0.0021	0.0000	0.0188
0.9879	0.0052	0.0022	0.0000	0.0210
1.0220	0.0052	0.0023	0.0000	0.0238
1.0560	0.0052	0.0023	0.0000	0.0243
1.0901	0.0052	0.0024	0.0000	0.0276
1.1242	0.0052	0.0025	0.0000	0.0295
1.1582	0.0052	0.0025	0.0000	0.0307
1.1923	0.0052	0.0026	0.0000	0.0313
1.2264	0.0052	0.0027	0.0000	0.0313
1.2604	0.0052	0.0028	0.0000	0.0313
1.2945	0.0052	0.0028	0.0000	0.0313
1.3286	0.0052	0.0029	0.0000	0.0313
1.3626	0.0052	0.0030	0.0000	0.0313
1.3967	0.0052	0.0031	0.0000	0.0313
1.4308	0.0052	0.0031	0.0000	0.0313
1.4648	0.0052	0.0032	0.0000	0.0313
1.4989	0.0052	0.0033	0.0000	0.0313
1.5330	0.0052	0.0034	0.0000	0.0313
1.5670	0.0052	0.0034	0.0000	0.0313
1.6011	0.0052	0.0035	0.0000	0.0313
1.6352	0.0052	0.0036	0.0000	0.0313
1.6692	0.0052	0.0036	0.0000	0.0313
1.7033	0.0052	0.0037	0.0000	0.0313
1.7374	0.0052	0.0038	0.0000	0.0313
1.7714	0.0052	0.0039	0.0000	0.0313
1.8055	0.0052	0.0039	0.0000	0.0313
1.8396	0.0052	0.0040	0.0000	0.0313
1.8736	0.0052	0.0041	0.0000	0.0313
1.9077	0.0052	0.0042	0.0000	0.0313
1.9418	0.0052	0.0042	0.0000	0.0313
1.9758	0.0052	0.0043	0.0000	0.0313
2.0099	0.0052	0.0044	0.0000	0.0313
2.0440	0.0052	0.0044	0.0000	0.0313

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2.0780	0.0052	0.0045	0.0000	0.0313
2.1121	0.0052	0.0046	0.0000	0.0313
2.1462	0.0052	0.0047	0.0000	0.0313
2.1802	0.0052	0.0047	0.0000	0.0313
2.2143	0.0052	0.0048	0.0000	0.0313
2.2484	0.0052	0.0049	0.0000	0.0313
2.2824	0.0052	0.0050	0.0000	0.0313
2.3165	0.0052	0.0050	0.0000	0.0313
2.3505	0.0052	0.0051	0.0000	0.0313
2.3846	0.0052	0.0052	0.0000	0.0313
2.4187	0.0052	0.0052	0.0000	0.0313
2.4527	0.0052	0.0053	0.0000	0.0313
2.4868	0.0052	0.0054	0.0000	0.0313
2.5209	0.0052	0.0055	0.0000	0.0313
2.5549	0.0052	0.0055	0.0000	0.0313
2.5890	0.0052	0.0056	0.0000	0.0313
2.6231	0.0052	0.0057	0.0000	0.0313
2.6571	0.0052	0.0058	0.0000	0.0313
2.6912	0.0052	0.0058	0.0000	0.0313
2.7253	0.0052	0.0059	0.0000	0.0313
2.7593	0.0052	0.0060	0.0000	0.0313
2.7934	0.0052	0.0061	0.0000	0.0313
2.8275	0.0052	0.0061	0.0000	0.0313
2.8615	0.0052	0.0062	0.0000	0.0313
2.8956	0.0052	0.0063	0.0000	0.0313
2.9297	0.0052	0.0063	0.0000	0.0313
2.9637	0.0052	0.0064	0.0000	0.0313
2.9978	0.0052	0.0065	0.0000	0.0313
3.0000	0.0052	0.0065	0.0000	0.0313

Surface retention 1 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0052	0.0065	0.0000	0.0625	0.0000
3.0341	0.0052	0.0067	0.0000	0.0625	0.0000
3.0681	0.0052	0.0068	0.0000	0.0710	0.0000
3.1000	0.0052	0.0070	0.0000	0.0750	0.0000

Name : Surface retention 1

Element Flows To:
Outlet 1 **Outlet 2**
Bioretention 1

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.09

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Mitigated Landuse Totals for POC #1
Total Pervious Area:0.07
Total Impervious Area:0.09

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.025093
5 year	0.034044
10 year	0.040201
25 year	0.048246
50 year	0.054437
100 year	0.060799

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.033	0.000
1950	0.023	0.000
1951	0.047	0.000
1952	0.016	0.000
1953	0.038	0.000
1954	0.033	0.000
1955	0.026	0.000
1956	0.023	0.000
1957	0.022	0.000
1958	0.026	0.000
1959	0.033	0.000
1960	0.029	0.000
1961	0.023	0.000
1962	0.020	0.000
1963	0.025	0.000
1964	0.046	0.000
1965	0.017	0.000
1966	0.020	0.000
1967	0.025	0.000
1968	0.024	0.000
1969	0.022	0.000
1970	0.032	0.000
1971	0.054	0.000
1972	0.028	0.000
1973	0.024	0.000
1974	0.013	0.000
1975	0.034	0.000
1976	0.030	0.000

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1977	0.020	0.000
1978	0.020	0.000
1979	0.041	0.000
1980	0.021	0.000
1981	0.038	0.000
1982	0.035	0.000
1983	0.028	0.000
1984	0.019	0.000
1985	0.045	0.000
1986	0.026	0.000
1987	0.057	0.000
1988	0.023	0.000
1989	0.024	0.000
1990	0.028	0.000
1991	0.028	0.000
1992	0.025	0.000
1993	0.015	0.000
1994	0.014	0.000
1995	0.013	0.000
1996	0.015	0.000
1997	0.020	0.000
1998	0.022	0.000
1999	0.028	0.000
2000	0.037	0.000
2001	0.014	0.000
2002	0.024	0.000
2003	0.018	0.000
2004	0.024	0.000
2005	0.031	0.000
2006	0.022	0.000
2007	0.051	0.000
2008	0.020	0.000
2009	0.017	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0567	0.0000
2	0.0541	0.0000
3	0.0505	0.0000
4	0.0467	0.0000
5	0.0461	0.0000
6	0.0448	0.0000
7	0.0409	0.0000
8	0.0384	0.0000
9	0.0381	0.0000
10	0.0371	0.0000
11	0.0351	0.0000
12	0.0345	0.0000
13	0.0333	0.0000
14	0.0330	0.0000
15	0.0327	0.0000
16	0.0325	0.0000
17	0.0311	0.0000
18	0.0298	0.0000
19	0.0285	0.0000

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20	0.0285	0.0000
21	0.0280	0.0000
22	0.0279	0.0000
23	0.0279	0.0000
24	0.0279	0.0000
25	0.0263	0.0000
26	0.0263	0.0000
27	0.0262	0.0000
28	0.0253	0.0000
29	0.0253	0.0000
30	0.0248	0.0000
31	0.0244	0.0000
32	0.0244	0.0000
33	0.0244	0.0000
34	0.0241	0.0000
35	0.0237	0.0000
36	0.0232	0.0000
37	0.0230	0.0000
38	0.0230	0.0000
39	0.0227	0.0000
40	0.0223	0.0000
41	0.0221	0.0000
42	0.0218	0.0000
43	0.0216	0.0000
44	0.0206	0.0000
45	0.0203	0.0000
46	0.0199	0.0000
47	0.0199	0.0000
48	0.0196	0.0000
49	0.0196	0.0000
50	0.0195	0.0000
51	0.0193	0.0000
52	0.0175	0.0000
53	0.0167	0.0000
54	0.0167	0.0000
55	0.0159	0.0000
56	0.0155	0.0000
57	0.0151	0.0000
58	0.0138	0.0000
59	0.0136	0.0000
60	0.0134	0.0000
61	0.0133	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0125	1379	0	0	Pass
0.0130	1245	0	0	Pass
0.0134	1113	0	0	Pass
0.0138	994	0	0	Pass
0.0142	888	0	0	Pass
0.0147	778	0	0	Pass

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0.0151	693	0	0	Pass
0.0155	626	0	0	Pass
0.0159	562	0	0	Pass
0.0164	504	0	0	Pass
0.0168	454	0	0	Pass
0.0172	415	0	0	Pass
0.0176	371	0	0	Pass
0.0180	336	0	0	Pass
0.0185	311	0	0	Pass
0.0189	276	0	0	Pass
0.0193	244	0	0	Pass
0.0197	220	0	0	Pass
0.0202	200	0	0	Pass
0.0206	180	0	0	Pass
0.0210	161	0	0	Pass
0.0214	145	0	0	Pass
0.0219	132	0	0	Pass
0.0223	124	0	0	Pass
0.0227	116	0	0	Pass
0.0231	106	0	0	Pass
0.0235	98	0	0	Pass
0.0240	93	0	0	Pass
0.0244	85	0	0	Pass
0.0248	80	0	0	Pass
0.0252	76	0	0	Pass
0.0257	71	0	0	Pass
0.0261	67	0	0	Pass
0.0265	61	0	0	Pass
0.0269	59	0	0	Pass
0.0274	57	0	0	Pass
0.0278	55	0	0	Pass
0.0282	46	0	0	Pass
0.0286	41	0	0	Pass
0.0290	40	0	0	Pass
0.0295	38	0	0	Pass
0.0299	35	0	0	Pass
0.0303	33	0	0	Pass
0.0307	31	0	0	Pass
0.0312	29	0	0	Pass
0.0316	28	0	0	Pass
0.0320	28	0	0	Pass
0.0324	27	0	0	Pass
0.0329	25	0	0	Pass
0.0333	24	0	0	Pass
0.0337	21	0	0	Pass
0.0341	20	0	0	Pass
0.0345	18	0	0	Pass
0.0350	18	0	0	Pass
0.0354	16	0	0	Pass
0.0358	16	0	0	Pass
0.0362	16	0	0	Pass
0.0367	16	0	0	Pass
0.0371	16	0	0	Pass
0.0375	14	0	0	Pass
0.0379	14	0	0	Pass
0.0384	13	0	0	Pass
0.0388	11	0	0	Pass

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0.0392	10	0	0	Pass
0.0396	10	0	0	Pass
0.0401	10	0	0	Pass
0.0405	10	0	0	Pass
0.0409	9	0	0	Pass
0.0413	8	0	0	Pass
0.0417	7	0	0	Pass
0.0422	6	0	0	Pass
0.0426	6	0	0	Pass
0.0430	6	0	0	Pass
0.0434	6	0	0	Pass
0.0439	6	0	0	Pass
0.0443	6	0	0	Pass
0.0447	6	0	0	Pass
0.0451	5	0	0	Pass
0.0456	5	0	0	Pass
0.0460	5	0	0	Pass
0.0464	4	0	0	Pass
0.0468	3	0	0	Pass
0.0472	3	0	0	Pass
0.0477	3	0	0	Pass
0.0481	3	0	0	Pass
0.0485	3	0	0	Pass
0.0489	3	0	0	Pass
0.0494	3	0	0	Pass
0.0498	3	0	0	Pass
0.0502	3	0	0	Pass
0.0506	2	0	0	Pass
0.0511	2	0	0	Pass
0.0515	2	0	0	Pass
0.0519	2	0	0	Pass
0.0523	2	0	0	Pass
0.0527	2	0	0	Pass
0.0532	2	0	0	Pass
0.0536	2	0	0	Pass
0.0540	2	0	0	Pass
0.0544	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0.0083 **acre-feet**
On-line facility target flow: 0.0115 **cfs.**
Adjusted for 15 min: 0.0115 **cfs.**
Off-line facility target flow: 0.0063 **cfs.**
Adjusted for 15 min: 0.0063 **cfs.**

LID Report

LID Technique	Used for Water Quality	Percent Treated	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated
retention 1 POC	N		5.89			N	100.00
Total Volume Infiltrated			5.89	0.00	0.00		100.00

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0.00 0% No Treat. Credit
Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA 2A

FACILITY CALCULATIONS

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WWHM2012
PROJECT REPORT

Project Name: Basin 2A Bioretention
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Mod	.16
Pervious Total	0.16

Impervious Land Use	acre
PARKING FLAT	0.22
Impervious Total	0.22
Basin Total	0.38

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

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Pervious Land Use	acre
A B, Lawn, Mod	.16
Pervious Total	0.16

Impervious Land Use	acre
PARKING FLAT	0.22
Impervious Total	0.22
Basin Total	0.38

Element Flows To:

Surface	Interflow	Groundwater
Surface etention 2A	Surface etention 2A	

Name : Bioretention 2A
Bottom Length: 20.00 ft.
Bottom Width: 28.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 15.535
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 15.535
Percent Infiltrated: 100
Total Precip Applied to Facility: 1.151
Total Evap From Facility: 1.349
Underdrain not used
Discharge Structure
Riser Height: 1.5 ft.
Riser Diameter: 12 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 2A Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0294	0.0000	0.0000	0.0000
0.0549	0.0292	0.0003	0.0000	0.0000
0.1099	0.0288	0.0007	0.0000	0.0000

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0.1648	0.0284	0.0010	0.0000	0.0000
0.2198	0.0281	0.0013	0.0000	0.0000
0.2747	0.0277	0.0017	0.0000	0.0002
0.3297	0.0274	0.0020	0.0000	0.0005
0.3846	0.0270	0.0024	0.0000	0.0008
0.4396	0.0267	0.0028	0.0000	0.0010
0.4945	0.0263	0.0032	0.0000	0.0018
0.5495	0.0260	0.0035	0.0000	0.0028
0.6044	0.0257	0.0038	0.0000	0.0039
0.6593	0.0253	0.0042	0.0000	0.0041
0.7143	0.0250	0.0045	0.0000	0.0057
0.7692	0.0246	0.0049	0.0000	0.0076
0.8242	0.0243	0.0053	0.0000	0.0099
0.8791	0.0240	0.0056	0.0000	0.0102
0.9341	0.0237	0.0060	0.0000	0.0125
0.9890	0.0233	0.0064	0.0000	0.0156
1.0440	0.0230	0.0068	0.0000	0.0190
1.0989	0.0227	0.0072	0.0000	0.0206
1.1538	0.0224	0.0076	0.0000	0.0228
1.2088	0.0221	0.0080	0.0000	0.0271
1.2637	0.0217	0.0084	0.0000	0.0318
1.3187	0.0214	0.0088	0.0000	0.0356
1.3736	0.0211	0.0093	0.0000	0.0370
1.4286	0.0208	0.0097	0.0000	0.0379
1.4835	0.0205	0.0101	0.0000	0.0427
1.5385	0.0202	0.0106	0.0000	0.0488
1.5934	0.0199	0.0110	0.0000	0.0555
1.6484	0.0196	0.0115	0.0000	0.0557
1.7033	0.0193	0.0120	0.0000	0.0626
1.7582	0.0190	0.0124	0.0000	0.0703
1.8132	0.0187	0.0129	0.0000	0.0778
1.8681	0.0184	0.0134	0.0000	0.0778
1.9231	0.0181	0.0139	0.0000	0.0778
1.9780	0.0179	0.0144	0.0000	0.0778
2.0330	0.0176	0.0149	0.0000	0.0778
2.0879	0.0173	0.0155	0.0000	0.0778
2.1429	0.0170	0.0160	0.0000	0.0778
2.1978	0.0167	0.0166	0.0000	0.0778
2.2527	0.0165	0.0171	0.0000	0.0778
2.3077	0.0162	0.0177	0.0000	0.0778
2.3626	0.0159	0.0183	0.0000	0.0778
2.4176	0.0157	0.0188	0.0000	0.0778
2.4725	0.0154	0.0194	0.0000	0.0778
2.5275	0.0151	0.0200	0.0000	0.0778
2.5824	0.0149	0.0206	0.0000	0.0778
2.6374	0.0146	0.0212	0.0000	0.0778
2.6923	0.0143	0.0219	0.0000	0.0778
2.7473	0.0141	0.0225	0.0000	0.0778
2.8022	0.0138	0.0231	0.0000	0.0778
2.8571	0.0136	0.0238	0.0000	0.0778
2.9121	0.0133	0.0244	0.0000	0.0778
2.9670	0.0131	0.0251	0.0000	0.0778
3.0000	0.0129	0.0255	0.0000	0.0778

Surface etention 2A Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0294	0.0255	0.0000	0.1556	0.0000

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3.0549	0.0297	0.0271	0.0000	0.1556	0.0000
3.1099	0.0301	0.0287	0.0000	0.1691	0.0000
3.1648	0.0305	0.0304	0.0000	0.1735	0.0000
3.2198	0.0309	0.0321	0.0000	0.1779	0.0000
3.2747	0.0312	0.0338	0.0000	0.1823	0.0000
3.3297	0.0316	0.0355	0.0000	0.1867	0.0000
3.3846	0.0320	0.0373	0.0000	0.1911	0.0000
3.4396	0.0324	0.0390	0.0000	0.1956	0.0000
3.4945	0.0327	0.0408	0.0000	0.2000	0.0000
3.5495	0.0331	0.0426	0.0000	0.2044	0.0000
3.6044	0.0335	0.0445	0.0000	0.2088	0.0000
3.6593	0.0339	0.0463	0.0000	0.2132	0.0000
3.7143	0.0343	0.0482	0.0000	0.2176	0.0000
3.7692	0.0347	0.0501	0.0000	0.2220	0.0000
3.8242	0.0351	0.0520	0.0000	0.2264	0.0000
3.8791	0.0355	0.0540	0.0000	0.2308	0.0000
3.9341	0.0359	0.0559	0.0000	0.2352	0.0000
3.9890	0.0363	0.0579	0.0000	0.2396	0.0000
4.0440	0.0367	0.0599	0.0000	0.2440	0.0000
4.0989	0.0371	0.0619	0.0000	0.2484	0.0000
4.1538	0.0375	0.0640	0.0000	0.2528	0.0000
4.2088	0.0379	0.0660	0.0000	0.2572	0.0000
4.2637	0.0383	0.0681	0.0000	0.2616	0.0000
4.3187	0.0387	0.0703	0.0000	0.2660	0.0000
4.3736	0.0392	0.0724	0.0000	0.2704	0.0000
4.4286	0.0396	0.0746	0.0000	0.2748	0.0000
4.4835	0.0400	0.0767	0.0000	0.2792	0.0000
4.5385	0.0404	0.0790	0.0800	0.2836	0.0000
4.5934	0.0409	0.0812	0.3014	0.2880	0.0000
4.6484	0.0413	0.0834	0.5952	0.2925	0.0000
4.7033	0.0417	0.0857	0.9282	0.2969	0.0000
4.7582	0.0421	0.0880	1.2676	0.3013	0.0000
4.8132	0.0426	0.0904	1.5809	0.3057	0.0000
4.8681	0.0430	0.0927	1.8406	0.3101	0.0000
4.9231	0.0435	0.0951	2.0318	0.3145	0.0000
4.9780	0.0439	0.0975	2.1614	0.3189	0.0000
5.0000	0.0441	0.0985	2.2994	0.3206	0.0000

Name : Surface etention 2A

Element Flows To:
Outlet 1 **Outlet 2**
Bioretention 2A

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.16

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Total Impervious Area:0.22

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.16
Total Impervious Area:0.22

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.061371
5 year	0.083252
10 year	0.0983
25 year	0.117965
50 year	0.133095
100 year	0.148641

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.081	0.000
1950	0.056	0.000
1951	0.114	0.000
1952	0.039	0.000
1953	0.093	0.000
1954	0.081	0.000
1955	0.064	0.000
1956	0.056	0.000
1957	0.054	0.000
1958	0.064	0.000
1959	0.080	0.000
1960	0.070	0.000
1961	0.057	0.000
1962	0.049	0.000
1963	0.062	0.000
1964	0.113	0.000
1965	0.041	0.000
1966	0.048	0.000
1967	0.061	0.000
1968	0.060	0.000
1969	0.053	0.000
1970	0.079	0.000
1971	0.132	0.000
1972	0.070	0.000
1973	0.058	0.000
1974	0.033	0.000
1975	0.084	0.000

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1976	0.073	0.000
1977	0.048	0.000
1978	0.048	0.000
1979	0.100	0.000
1980	0.050	0.000
1981	0.094	0.000
1982	0.086	0.000
1983	0.068	0.000
1984	0.047	0.000
1985	0.109	0.000
1986	0.064	0.000
1987	0.139	0.000
1988	0.056	0.000
1989	0.060	0.000
1990	0.068	0.000
1991	0.068	0.000
1992	0.062	0.000
1993	0.038	0.000
1994	0.034	0.000
1995	0.033	0.000
1996	0.037	0.000
1997	0.049	0.000
1998	0.053	0.000
1999	0.068	0.000
2000	0.091	0.000
2001	0.033	0.000
2002	0.059	0.000
2003	0.043	0.000
2004	0.060	0.000
2005	0.076	0.000
2006	0.054	0.000
2007	0.124	0.000
2008	0.050	0.000
2009	0.041	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.1387	0.0000
2	0.1323	0.0000
3	0.1235	0.0000
4	0.1143	0.0000
5	0.1127	0.0000
6	0.1095	0.0000
7	0.1001	0.0000
8	0.0939	0.0000
9	0.0931	0.0000
10	0.0907	0.0000
11	0.0857	0.0000
12	0.0843	0.0000
13	0.0814	0.0000
14	0.0806	0.0000
15	0.0799	0.0000
16	0.0794	0.0000
17	0.0760	0.0000
18	0.0727	0.0000

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19	0.0698	0.0000
20	0.0697	0.0000
21	0.0683	0.0000
22	0.0683	0.0000
23	0.0683	0.0000
24	0.0681	0.0000
25	0.0644	0.0000
26	0.0643	0.0000
27	0.0641	0.0000
28	0.0620	0.0000
29	0.0619	0.0000
30	0.0606	0.0000
31	0.0598	0.0000
32	0.0597	0.0000
33	0.0596	0.0000
34	0.0590	0.0000
35	0.0580	0.0000
36	0.0568	0.0000
37	0.0564	0.0000
38	0.0563	0.0000
39	0.0556	0.0000
40	0.0544	0.0000
41	0.0542	0.0000
42	0.0534	0.0000
43	0.0529	0.0000
44	0.0504	0.0000
45	0.0497	0.0000
46	0.0488	0.0000
47	0.0486	0.0000
48	0.0479	0.0000
49	0.0478	0.0000
50	0.0477	0.0000
51	0.0471	0.0000
52	0.0428	0.0000
53	0.0409	0.0000
54	0.0409	0.0000
55	0.0388	0.0000
56	0.0379	0.0000
57	0.0369	0.0000
58	0.0338	0.0000
59	0.0332	0.0000
60	0.0329	0.0000
61	0.0326	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0307	1380	0	0	Pass
0.0317	1243	0	0	Pass
0.0328	1114	0	0	Pass
0.0338	992	0	0	Pass
0.0348	890	0	0	Pass

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0.0359	779	0	0	Pass
0.0369	695	0	0	Pass
0.0379	627	0	0	Pass
0.0390	562	0	0	Pass
0.0400	502	0	0	Pass
0.0410	453	0	0	Pass
0.0421	415	0	0	Pass
0.0431	371	0	0	Pass
0.0441	337	0	0	Pass
0.0452	312	0	0	Pass
0.0462	277	0	0	Pass
0.0472	244	0	0	Pass
0.0483	219	0	0	Pass
0.0493	200	0	0	Pass
0.0503	181	0	0	Pass
0.0514	161	0	0	Pass
0.0524	145	0	0	Pass
0.0534	133	0	0	Pass
0.0545	124	0	0	Pass
0.0555	116	0	0	Pass
0.0565	106	0	0	Pass
0.0576	98	0	0	Pass
0.0586	93	0	0	Pass
0.0596	86	0	0	Pass
0.0607	80	0	0	Pass
0.0617	76	0	0	Pass
0.0628	71	0	0	Pass
0.0638	67	0	0	Pass
0.0648	61	0	0	Pass
0.0659	59	0	0	Pass
0.0669	57	0	0	Pass
0.0679	55	0	0	Pass
0.0690	46	0	0	Pass
0.0700	41	0	0	Pass
0.0710	40	0	0	Pass
0.0721	38	0	0	Pass
0.0731	35	0	0	Pass
0.0741	33	0	0	Pass
0.0752	31	0	0	Pass
0.0762	29	0	0	Pass
0.0772	28	0	0	Pass
0.0783	28	0	0	Pass
0.0793	27	0	0	Pass
0.0803	25	0	0	Pass
0.0814	24	0	0	Pass
0.0824	21	0	0	Pass
0.0834	20	0	0	Pass
0.0845	18	0	0	Pass
0.0855	18	0	0	Pass
0.0865	16	0	0	Pass
0.0876	16	0	0	Pass
0.0886	16	0	0	Pass
0.0896	16	0	0	Pass
0.0907	16	0	0	Pass
0.0917	14	0	0	Pass
0.0928	14	0	0	Pass
0.0938	13	0	0	Pass

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0.0948	11	0	0	Pass
0.0959	10	0	0	Pass
0.0969	10	0	0	Pass
0.0979	10	0	0	Pass
0.0990	10	0	0	Pass
0.1000	9	0	0	Pass
0.1010	8	0	0	Pass
0.1021	8	0	0	Pass
0.1031	6	0	0	Pass
0.1041	6	0	0	Pass
0.1052	6	0	0	Pass
0.1062	6	0	0	Pass
0.1072	6	0	0	Pass
0.1083	6	0	0	Pass
0.1093	6	0	0	Pass
0.1103	5	0	0	Pass
0.1114	5	0	0	Pass
0.1124	5	0	0	Pass
0.1134	4	0	0	Pass
0.1145	3	0	0	Pass
0.1155	3	0	0	Pass
0.1165	3	0	0	Pass
0.1176	3	0	0	Pass
0.1186	3	0	0	Pass
0.1196	3	0	0	Pass
0.1207	3	0	0	Pass
0.1217	3	0	0	Pass
0.1228	3	0	0	Pass
0.1238	2	0	0	Pass
0.1248	2	0	0	Pass
0.1259	2	0	0	Pass
0.1269	2	0	0	Pass
0.1279	2	0	0	Pass
0.1290	2	0	0	Pass
0.1300	2	0	0	Pass
0.1310	2	0	0	Pass
0.1321	2	0	0	Pass
0.1331	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Infiltration Volume Credit	Percent Volume Infiltrated	Water Quality Percent Treated	Water Quality Comment

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```
etention  2A POC                N     14.14                                   N     100.00
Total Volume Infiltrated               14.14        0.00     0.00                    100.00
0.00         0%          No Treat. Credit
Compliance with LID Standard 8
Duration Analysis Result = Passed
```

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA 2B

FACILITY CALCULATIONS

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WWHM2012
PROJECT REPORT

Project Name: Basin 2B Bioretention Pond
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Mod	.23
Pervious Total	0.23

Impervious Land Use	acre
PARKING FLAT	0.82
Impervious Total	0.82
Basin Total	1.05

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

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Pervious Land Use	acre
A B, Lawn, Mod	.23
Pervious Total	0.23

Impervious Land Use	acre
PARKING FLAT	0.82
Impervious Total	0.82
Basin Total	1.05

Element Flows To:

Surface	Interflow	Groundwater
Surface etention 2B	Surface etention 2B	

Name : Bioretention 2B
Bottom Length: 10.00 ft.
Bottom Width: 64.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 58.817
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 58.817
Percent Infiltrated: 100
Total Precip Applied to Facility: 1.922
Total Evap From Facility: 1.816
Underdrain not used
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 12 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 2B Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0384	0.0000	0.0000	0.0000
0.0769	0.0377	0.0005	0.0000	0.0000
0.1538	0.0370	0.0011	0.0000	0.0000

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0.2308	0.0363	0.0016	0.0000	0.0001
0.3077	0.0356	0.0022	0.0000	0.0005
0.3846	0.0350	0.0028	0.0000	0.0013
0.4615	0.0343	0.0034	0.0000	0.0020
0.5385	0.0336	0.0040	0.0000	0.0027
0.6154	0.0330	0.0046	0.0000	0.0047
0.6923	0.0323	0.0052	0.0000	0.0074
0.7692	0.0317	0.0058	0.0000	0.0099
0.8462	0.0310	0.0064	0.0000	0.0108
0.9231	0.0304	0.0071	0.0000	0.0150
1.0000	0.0298	0.0077	0.0000	0.0201
1.0769	0.0291	0.0084	0.0000	0.0206
1.1538	0.0285	0.0091	0.0000	0.0261
1.2308	0.0279	0.0098	0.0000	0.0265
1.3077	0.0272	0.0105	0.0000	0.0331
1.3846	0.0266	0.0113	0.0000	0.0411
1.4615	0.0260	0.0121	0.0000	0.0501
1.5385	0.0254	0.0129	0.0000	0.0537
1.6154	0.0248	0.0137	0.0000	0.0603
1.6923	0.0242	0.0145	0.0000	0.0716
1.7692	0.0236	0.0154	0.0000	0.0841
1.8462	0.0230	0.0162	0.0000	0.0889
1.9231	0.0224	0.0171	0.0000	0.0889
2.0000	0.0219	0.0180	0.0000	0.0889
2.0769	0.0213	0.0190	0.0000	0.0889
2.1538	0.0207	0.0200	0.0000	0.0889
2.2308	0.0201	0.0210	0.0000	0.0889
2.3077	0.0196	0.0220	0.0000	0.0889
2.3846	0.0190	0.0230	0.0000	0.0889
2.4615	0.0185	0.0241	0.0000	0.0889
2.5385	0.0179	0.0252	0.0000	0.0889
2.6154	0.0174	0.0263	0.0000	0.0889
2.6923	0.0168	0.0274	0.0000	0.0889
2.7692	0.0163	0.0285	0.0000	0.0889
2.8462	0.0157	0.0297	0.0000	0.0889
2.9231	0.0152	0.0309	0.0000	0.0889
3.0000	0.0147	0.0321	0.0000	0.0889

Surface etention 2B Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0384	0.0321	0.0000	0.0889	0.0000
3.0769	0.0391	0.0351	0.0000	0.0889	0.0000
3.1538	0.0398	0.0381	0.0000	0.0889	0.0000
3.2308	0.0405	0.0412	0.0000	0.0889	0.0000
3.3077	0.0412	0.0444	0.0000	0.0889	0.0000
3.3846	0.0419	0.0476	0.0000	0.0889	0.0000
3.4615	0.0426	0.0508	0.0000	0.0889	0.0000
3.5385	0.0433	0.0541	0.0000	0.0889	0.0000
3.6154	0.0441	0.0575	0.0000	0.0889	0.0000
3.6923	0.0448	0.0609	0.0000	0.0889	0.0000
3.7692	0.0455	0.0644	0.0000	0.0889	0.0000
3.8462	0.0463	0.0679	0.0000	0.0889	0.0000
3.9231	0.0470	0.0715	0.0000	0.0889	0.0000
4.0000	0.0478	0.0751	0.0000	0.0889	0.0000
4.0769	0.0485	0.0788	0.0000	0.0889	0.0000
4.1538	0.0493	0.0826	0.0000	0.0889	0.0000
4.2308	0.0500	0.0864	0.0000	0.0889	0.0000

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4.3077	0.0508	0.0903	0.0000	0.0889	0.0000
4.3846	0.0515	0.0942	0.0000	0.0889	0.0000
4.4615	0.0523	0.0982	0.0000	0.0889	0.0000
4.5385	0.0531	0.1023	0.0000	0.0889	0.0000
4.6154	0.0539	0.1064	0.0000	0.0889	0.0000
4.6923	0.0547	0.1106	0.0000	0.0889	0.0000
4.7692	0.0555	0.1148	0.0000	0.0889	0.0000
4.8462	0.0562	0.1191	0.0000	0.0889	0.0000
4.9231	0.0570	0.1235	0.0000	0.0889	0.0000
5.0000	0.0579	0.1279	0.0000	0.0889	0.0000
5.0769	0.0587	0.1324	0.0000	0.0889	0.0000
5.1538	0.0595	0.1369	0.0000	0.0889	0.0000
5.2308	0.0603	0.1415	0.0000	0.0889	0.0000
5.3077	0.0611	0.1462	0.0000	0.0889	0.0000
5.3846	0.0619	0.1509	0.0000	0.0889	0.0000
5.4615	0.0628	0.1557	0.0000	0.0889	0.0000
5.5385	0.0636	0.1606	0.0000	0.0889	0.0000
5.6154	0.0644	0.1655	0.0000	0.0889	0.0000
5.6923	0.0653	0.1705	0.0000	0.0889	0.0000
5.7692	0.0661	0.1755	0.0000	0.0889	0.0000
5.8462	0.0670	0.1806	0.0000	0.0889	0.0000
5.9231	0.0678	0.1858	0.0000	0.0889	0.0000
6.0000	0.0687	0.1911	0.0000	0.0889	0.0000
6.0769	0.0696	0.1964	0.2257	0.0889	0.0000
6.1538	0.0704	0.2018	0.6273	0.0889	0.0000
6.2308	0.0713	0.2072	1.0991	0.0889	0.0000
6.3077	0.0722	0.2127	1.5516	0.0889	0.0000
6.3846	0.0731	0.2183	1.9054	0.0889	0.0000
6.4615	0.0739	0.2240	2.1274	0.0889	0.0000
6.5385	0.0748	0.2297	2.3112	0.0889	0.0000
6.6154	0.0757	0.2355	2.4708	0.0889	0.0000
6.6923	0.0766	0.2414	2.6207	0.0889	0.0000
6.7692	0.0775	0.2473	2.7624	0.0889	0.0000
6.8462	0.0784	0.2533	2.8972	0.0889	0.0000
6.9231	0.0793	0.2594	3.0261	0.0889	0.0000
7.0000	0.0803	0.2655	3.1496	0.0889	0.0000
7.0000	0.0803	0.2655	3.2685	0.0889	0.0000

Name : Surface etention 2B

Element Flows To:
Outlet 1 **Outlet 2**
Bioretention 2B

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.23

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Total Impervious Area:0.82

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.23
Total Impervious Area:0.82

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.228672
5 year	0.310228
10 year	0.366319
25 year	0.439621
50 year	0.49602
100 year	0.553976

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.304	0.000
1950	0.207	0.000
1951	0.426	0.000
1952	0.145	0.000
1953	0.347	0.000
1954	0.300	0.000
1955	0.240	0.000
1956	0.210	0.000
1957	0.202	0.000
1958	0.240	0.000
1959	0.298	0.000
1960	0.260	0.000
1961	0.211	0.000
1962	0.182	0.000
1963	0.231	0.000
1964	0.420	0.000
1965	0.152	0.000
1966	0.178	0.000
1967	0.226	0.000
1968	0.222	0.000
1969	0.197	0.000
1970	0.296	0.000
1971	0.493	0.000
1972	0.260	0.000
1973	0.216	0.000
1974	0.121	0.000
1975	0.314	0.000

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1976	0.271	0.000
1977	0.178	0.000
1978	0.179	0.000
1979	0.373	0.000
1980	0.188	0.000
1981	0.350	0.000
1982	0.319	0.000
1983	0.255	0.000
1984	0.176	0.000
1985	0.408	0.000
1986	0.239	0.000
1987	0.517	0.000
1988	0.210	0.000
1989	0.222	0.000
1990	0.255	0.000
1991	0.255	0.000
1992	0.231	0.000
1993	0.141	0.000
1994	0.126	0.000
1995	0.122	0.000
1996	0.137	0.000
1997	0.181	0.000
1998	0.199	0.000
1999	0.254	0.000
2000	0.338	0.000
2001	0.124	0.000
2002	0.220	0.000
2003	0.160	0.000
2004	0.223	0.000
2005	0.283	0.000
2006	0.203	0.000
2007	0.460	0.000
2008	0.185	0.000
2009	0.152	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.5170	0.0000
2	0.4929	0.0000
3	0.4604	0.0000
4	0.4260	0.0000
5	0.4202	0.0000
6	0.4081	0.0000
7	0.3727	0.0000
8	0.3499	0.0000
9	0.3470	0.0000
10	0.3381	0.0000
11	0.3195	0.0000
12	0.3141	0.0000
13	0.3035	0.0000
14	0.3005	0.0000
15	0.2980	0.0000
16	0.2958	0.0000
17	0.2831	0.0000
18	0.2711	0.0000

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19	0.2600	0.0000
20	0.2597	0.0000
21	0.2547	0.0000
22	0.2546	0.0000
23	0.2546	0.0000
24	0.2539	0.0000
25	0.2398	0.0000
26	0.2397	0.0000
27	0.2390	0.0000
28	0.2310	0.0000
29	0.2308	0.0000
30	0.2260	0.0000
31	0.2226	0.0000
32	0.2222	0.0000
33	0.2220	0.0000
34	0.2199	0.0000
35	0.2158	0.0000
36	0.2115	0.0000
37	0.2101	0.0000
38	0.2098	0.0000
39	0.2071	0.0000
40	0.2029	0.0000
41	0.2017	0.0000
42	0.1990	0.0000
43	0.1972	0.0000
44	0.1877	0.0000
45	0.1853	0.0000
46	0.1817	0.0000
47	0.1810	0.0000
48	0.1786	0.0000
49	0.1783	0.0000
50	0.1777	0.0000
51	0.1756	0.0000
52	0.1595	0.0000
53	0.1524	0.0000
54	0.1523	0.0000
55	0.1446	0.0000
56	0.1411	0.0000
57	0.1374	0.0000
58	0.1260	0.0000
59	0.1236	0.0000
60	0.1224	0.0000
61	0.1214	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1143	1390	0	0	Pass
0.1182	1249	0	0	Pass
0.1220	1113	0	0	Pass
0.1259	1012	0	0	Pass
0.1298	914	0	0	Pass

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0.1336	789	0	0	Pass
0.1375	704	0	0	Pass
0.1413	631	0	0	Pass
0.1452	564	0	0	Pass
0.1490	504	0	0	Pass
0.1529	464	0	0	Pass
0.1567	421	0	0	Pass
0.1606	376	0	0	Pass
0.1645	342	0	0	Pass
0.1683	316	0	0	Pass
0.1722	278	0	0	Pass
0.1760	244	0	0	Pass
0.1799	226	0	0	Pass
0.1837	204	0	0	Pass
0.1876	183	0	0	Pass
0.1914	164	0	0	Pass
0.1953	148	0	0	Pass
0.1992	133	0	0	Pass
0.2030	124	0	0	Pass
0.2069	119	0	0	Pass
0.2107	107	0	0	Pass
0.2146	98	0	0	Pass
0.2184	93	0	0	Pass
0.2223	86	0	0	Pass
0.2261	80	0	0	Pass
0.2300	79	0	0	Pass
0.2339	71	0	0	Pass
0.2377	67	0	0	Pass
0.2416	62	0	0	Pass
0.2454	59	0	0	Pass
0.2493	57	0	0	Pass
0.2531	55	0	0	Pass
0.2570	48	0	0	Pass
0.2608	42	0	0	Pass
0.2647	40	0	0	Pass
0.2686	39	0	0	Pass
0.2724	35	0	0	Pass
0.2763	33	0	0	Pass
0.2801	31	0	0	Pass
0.2840	30	0	0	Pass
0.2878	28	0	0	Pass
0.2917	28	0	0	Pass
0.2955	28	0	0	Pass
0.2994	25	0	0	Pass
0.3033	24	0	0	Pass
0.3071	21	0	0	Pass
0.3110	20	0	0	Pass
0.3148	19	0	0	Pass
0.3187	18	0	0	Pass
0.3225	16	0	0	Pass
0.3264	16	0	0	Pass
0.3302	16	0	0	Pass
0.3341	16	0	0	Pass
0.3379	16	0	0	Pass
0.3418	14	0	0	Pass
0.3457	14	0	0	Pass
0.3495	13	0	0	Pass

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0.3534	11	0	0	Pass
0.3572	10	0	0	Pass
0.3611	10	0	0	Pass
0.3649	10	0	0	Pass
0.3688	10	0	0	Pass
0.3726	9	0	0	Pass
0.3765	8	0	0	Pass
0.3804	8	0	0	Pass
0.3842	6	0	0	Pass
0.3881	6	0	0	Pass
0.3919	6	0	0	Pass
0.3958	6	0	0	Pass
0.3996	6	0	0	Pass
0.4035	6	0	0	Pass
0.4073	6	0	0	Pass
0.4112	5	0	0	Pass
0.4151	5	0	0	Pass
0.4189	5	0	0	Pass
0.4228	4	0	0	Pass
0.4266	3	0	0	Pass
0.4305	3	0	0	Pass
0.4343	3	0	0	Pass
0.4382	3	0	0	Pass
0.4420	3	0	0	Pass
0.4459	3	0	0	Pass
0.4498	3	0	0	Pass
0.4536	3	0	0	Pass
0.4575	3	0	0	Pass
0.4613	2	0	0	Pass
0.4652	2	0	0	Pass
0.4690	2	0	0	Pass
0.4729	2	0	0	Pass
0.4767	2	0	0	Pass
0.4806	2	0	0	Pass
0.4845	2	0	0	Pass
0.4883	2	0	0	Pass
0.4922	2	0	0	Pass
0.4960	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Infiltration Volume Credit	Percent Volume Infiltrated	Water Quality Percent	Water Quality Treated Comment

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```
Total Volume Infiltrated              0.00         0.00     0.00                    0.00
0.00         0%          No Treat. Credit
Compliance with LID Standard 8
Duration Analysis Result = Passed
```

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA 3

FACILITY CALCULATIONS

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WWHM2012
PROJECT REPORT

Project Name: BASIN 3 BIORETENTION
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 3
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Mod	.3
Pervious Total	0.3

Impervious Land Use	acre
ROADS MOD	0.22
PARKING FLAT	0.13
Impervious Total	0.35
Basin Total	0.65

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

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GroundWater: No

Pervious Land Use	acre
A B, Lawn, Mod	.3
Pervious Total	0.3

Impervious Land Use	acre
ROADS MOD	0.22
PARKING FLAT	0.13
Impervious Total	0.35
Basin Total	0.65

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 3	Surface retention 3	

Name : Bioretention 3
Bottom Length: 35.00 ft.
Bottom Width: 20.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 25.268
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 25.268
Percent Infiltrated: 100
Total Precip Applied to Facility: 1.491
Total Evap From Facility: 1.695
Underdrain not used
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 8 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 3 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0345	0.0000	0.0000	0.0000

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0.0495	0.0343	0.0004	0.0000	0.0000
0.0989	0.0339	0.0007	0.0000	0.0000
0.1484	0.0336	0.0011	0.0000	0.0000
0.1978	0.0332	0.0015	0.0000	0.0000
0.2473	0.0329	0.0019	0.0000	0.0002
0.2967	0.0325	0.0023	0.0000	0.0005
0.3462	0.0322	0.0027	0.0000	0.0008
0.3956	0.0318	0.0031	0.0000	0.0010
0.4451	0.0315	0.0035	0.0000	0.0017
0.4945	0.0311	0.0039	0.0000	0.0027
0.5440	0.0308	0.0043	0.0000	0.0038
0.5934	0.0305	0.0047	0.0000	0.0040
0.6429	0.0301	0.0051	0.0000	0.0055
0.6923	0.0298	0.0054	0.0000	0.0074
0.7418	0.0295	0.0058	0.0000	0.0095
0.7912	0.0291	0.0062	0.0000	0.0099
0.8407	0.0288	0.0066	0.0000	0.0121
0.8901	0.0285	0.0070	0.0000	0.0150
0.9396	0.0281	0.0075	0.0000	0.0183
0.9890	0.0278	0.0079	0.0000	0.0199
1.0385	0.0275	0.0083	0.0000	0.0220
1.0879	0.0272	0.0087	0.0000	0.0261
1.1374	0.0269	0.0092	0.0000	0.0306
1.1868	0.0265	0.0096	0.0000	0.0343
1.2363	0.0262	0.0101	0.0000	0.0356
1.2857	0.0259	0.0105	0.0000	0.0379
1.3352	0.0256	0.0110	0.0000	0.0410
1.3846	0.0253	0.0115	0.0000	0.0469
1.4341	0.0250	0.0119	0.0000	0.0533
1.4835	0.0247	0.0124	0.0000	0.0537
1.5330	0.0244	0.0129	0.0000	0.0602
1.5824	0.0241	0.0134	0.0000	0.0676
1.6319	0.0238	0.0139	0.0000	0.0755
1.6813	0.0235	0.0144	0.0000	0.0786
1.7308	0.0232	0.0149	0.0000	0.0840
1.7802	0.0229	0.0154	0.0000	0.0911
1.8297	0.0226	0.0159	0.0000	0.0930
1.8791	0.0223	0.0165	0.0000	0.0972
1.9286	0.0220	0.0170	0.0000	0.0972
1.9780	0.0217	0.0175	0.0000	0.0972
2.0275	0.0214	0.0181	0.0000	0.0972
2.0769	0.0211	0.0187	0.0000	0.0972
2.1264	0.0209	0.0193	0.0000	0.0972
2.1758	0.0206	0.0198	0.0000	0.0972
2.2253	0.0203	0.0204	0.0000	0.0972
2.2747	0.0200	0.0210	0.0000	0.0972
2.3242	0.0197	0.0217	0.0000	0.0972
2.3736	0.0195	0.0223	0.0000	0.0972
2.4231	0.0192	0.0229	0.0000	0.0972
2.4725	0.0189	0.0235	0.0000	0.0972
2.5220	0.0187	0.0242	0.0000	0.0972
2.5714	0.0184	0.0248	0.0000	0.0972
2.6209	0.0181	0.0254	0.0000	0.0972
2.6703	0.0179	0.0261	0.0000	0.0972
2.7198	0.0176	0.0268	0.0000	0.0972
2.7692	0.0173	0.0274	0.0000	0.0972
2.8187	0.0171	0.0281	0.0000	0.0972

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2.8681	0.0168	0.0288	0.0000	0.0972
2.9176	0.0166	0.0295	0.0000	0.0972
2.9670	0.0163	0.0302	0.0000	0.0972
3.0000	0.0161	0.0307	0.0000	0.0972

Surface retention 3 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0345	0.0307	0.0000	0.1944	0.0000
3.0495	0.0349	0.0324	0.0000	0.1944	0.0000
3.0989	0.0352	0.0341	0.0000	0.2103	0.0000
3.1484	0.0356	0.0359	0.0000	0.2153	0.0000
3.1978	0.0360	0.0376	0.0000	0.2202	0.0000
3.2473	0.0363	0.0394	0.0000	0.2252	0.0000
3.2967	0.0367	0.0412	0.0000	0.2301	0.0000
3.3462	0.0371	0.0431	0.0000	0.2351	0.0000
3.3956	0.0375	0.0449	0.0000	0.2400	0.0000
3.4451	0.0378	0.0468	0.0000	0.2450	0.0000
3.4945	0.0382	0.0486	0.0000	0.2499	0.0000
3.5440	0.0386	0.0505	0.0000	0.2549	0.0000
3.5934	0.0390	0.0525	0.0000	0.2599	0.0000
3.6429	0.0393	0.0544	0.0000	0.2648	0.0000
3.6923	0.0397	0.0563	0.0000	0.2698	0.0000
3.7418	0.0401	0.0583	0.0000	0.2747	0.0000
3.7912	0.0405	0.0603	0.0000	0.2797	0.0000
3.8407	0.0409	0.0623	0.0000	0.2846	0.0000
3.8901	0.0413	0.0644	0.0000	0.2896	0.0000
3.9396	0.0417	0.0664	0.0000	0.2945	0.0000
3.9890	0.0421	0.0685	0.0000	0.2995	0.0000
4.0385	0.0425	0.0706	0.0533	0.3045	0.0000
4.0879	0.0429	0.0727	0.1820	0.3094	0.0000
4.1374	0.0433	0.0748	0.3430	0.3144	0.0000
4.1868	0.0437	0.0770	0.5072	0.3193	0.0000
4.2363	0.0441	0.0791	0.6466	0.3243	0.0000
4.2857	0.0445	0.0813	0.7429	0.3292	0.0000
4.3352	0.0449	0.0835	0.8104	0.3342	0.0000
4.3846	0.0453	0.0857	0.8681	0.3391	0.0000
4.4341	0.0457	0.0880	0.9223	0.3441	0.0000
4.4835	0.0461	0.0903	0.9734	0.3490	0.0000
4.5000	0.0462	0.0910	1.0219	0.3507	0.0000

Name : Surface retention 3

Element Flows To:

Outlet 1	**Outlet 2**
Bioretention 3	

ANALYSIS RESULTS

Stream Protection Duration

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Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.3
Total Impervious Area:0.35

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.3
Total Impervious Area:0.35

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.107928
5 year	0.145884
10 year	0.171918
25 year	0.205868
50 year	0.231942
100 year	0.258699

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.142	0.000
1950	0.090	0.000
1951	0.191	0.000
1952	0.076	0.000
1953	0.174	0.000
1954	0.144	0.000
1955	0.105	0.000
1956	0.097	0.000
1957	0.095	0.000
1958	0.117	0.000
1959	0.136	0.000
1960	0.130	0.000
1961	0.101	0.000
1962	0.097	0.000
1963	0.104	0.000
1964	0.210	0.000
1965	0.068	0.000
1966	0.091	0.000
1967	0.104	0.000
1968	0.099	0.000
1969	0.099	0.000
1970	0.149	0.000
1971	0.224	0.000
1972	0.129	0.000
1973	0.094	0.000

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1974	0.054	0.000
1975	0.140	0.000
1976	0.121	0.000
1977	0.085	0.000
1978	0.084	0.000
1979	0.164	0.000
1980	0.086	0.000
1981	0.160	0.000
1982	0.139	0.000
1983	0.118	0.000
1984	0.079	0.000
1985	0.180	0.000
1986	0.104	0.000
1987	0.255	0.000
1988	0.095	0.000
1989	0.105	0.000
1990	0.136	0.000
1991	0.121	0.000
1992	0.110	0.000
1993	0.068	0.000
1994	0.065	0.000
1995	0.054	0.000
1996	0.071	0.000
1997	0.093	0.000
1998	0.090	0.000
1999	0.124	0.000
2000	0.162	0.000
2001	0.054	0.000
2002	0.107	0.000
2003	0.083	0.000
2004	0.105	0.000
2005	0.135	0.000
2006	0.089	0.000
2007	0.209	0.000
2008	0.096	0.000
2009	0.072	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.2550	0.0000
2	0.2243	0.0000
3	0.2096	0.0000
4	0.2087	0.0000
5	0.1908	0.0000
6	0.1801	0.0000
7	0.1742	0.0000
8	0.1638	0.0000
9	0.1625	0.0000
10	0.1600	0.0000
11	0.1491	0.0000
12	0.1439	0.0000
13	0.1420	0.0000
14	0.1402	0.0000
15	0.1386	0.0000
16	0.1360	0.0000

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17	0.1356	0.0000
18	0.1353	0.0000
19	0.1302	0.0000
20	0.1287	0.0000
21	0.1236	0.0000
22	0.1212	0.0000
23	0.1210	0.0000
24	0.1183	0.0000
25	0.1174	0.0000
26	0.1102	0.0000
27	0.1072	0.0000
28	0.1051	0.0000
29	0.1050	0.0000
30	0.1047	0.0000
31	0.1043	0.0000
32	0.1041	0.0000
33	0.1041	0.0000
34	0.1010	0.0000
35	0.0988	0.0000
36	0.0986	0.0000
37	0.0973	0.0000
38	0.0969	0.0000
39	0.0963	0.0000
40	0.0955	0.0000
41	0.0952	0.0000
42	0.0940	0.0000
43	0.0930	0.0000
44	0.0913	0.0000
45	0.0901	0.0000
46	0.0895	0.0000
47	0.0888	0.0000
48	0.0862	0.0000
49	0.0851	0.0000
50	0.0840	0.0000
51	0.0831	0.0000
52	0.0791	0.0000
53	0.0760	0.0000
54	0.0722	0.0000
55	0.0705	0.0000
56	0.0682	0.0000
57	0.0677	0.0000
58	0.0652	0.0000
59	0.0544	0.0000
60	0.0543	0.0000
61	0.0538	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0540	1167	0	0	Pass
0.0558	1038	0	0	Pass
0.0576	937	0	0	Pass

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0.0594	829	0	0	Pass
0.0612	736	0	0	Pass
0.0630	662	0	0	Pass
0.0648	583	0	0	Pass
0.0665	534	0	0	Pass
0.0683	472	0	0	Pass
0.0701	430	0	0	Pass
0.0719	388	0	0	Pass
0.0737	355	0	0	Pass
0.0755	329	0	0	Pass
0.0773	293	0	0	Pass
0.0791	260	0	0	Pass
0.0809	236	0	0	Pass
0.0827	209	0	0	Pass
0.0845	194	0	0	Pass
0.0863	173	0	0	Pass
0.0881	164	0	0	Pass
0.0899	145	0	0	Pass
0.0917	131	0	0	Pass
0.0935	121	0	0	Pass
0.0953	111	0	0	Pass
0.0971	103	0	0	Pass
0.0989	94	0	0	Pass
0.1007	88	0	0	Pass
0.1025	81	0	0	Pass
0.1043	75	0	0	Pass
0.1061	69	0	0	Pass
0.1079	63	0	0	Pass
0.1097	61	0	0	Pass
0.1115	56	0	0	Pass
0.1133	55	0	0	Pass
0.1151	54	0	0	Pass
0.1169	52	0	0	Pass
0.1187	47	0	0	Pass
0.1205	45	0	0	Pass
0.1223	42	0	0	Pass
0.1241	39	0	0	Pass
0.1259	38	0	0	Pass
0.1277	37	0	0	Pass
0.1295	34	0	0	Pass
0.1313	31	0	0	Pass
0.1331	29	0	0	Pass
0.1349	29	0	0	Pass
0.1367	26	0	0	Pass
0.1385	26	0	0	Pass
0.1403	23	0	0	Pass
0.1421	22	0	0	Pass
0.1439	20	0	0	Pass
0.1456	19	0	0	Pass
0.1474	19	0	0	Pass
0.1492	17	0	0	Pass
0.1510	17	0	0	Pass
0.1528	17	0	0	Pass
0.1546	16	0	0	Pass
0.1564	16	0	0	Pass
0.1582	15	0	0	Pass
0.1600	15	0	0	Pass

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0.1618	14	0	0	Pass
0.1636	13	0	0	Pass
0.1654	11	0	0	Pass
0.1672	11	0	0	Pass
0.1690	11	0	0	Pass
0.1708	11	0	0	Pass
0.1726	11	0	0	Pass
0.1744	10	0	0	Pass
0.1762	10	0	0	Pass
0.1780	9	0	0	Pass
0.1798	9	0	0	Pass
0.1816	8	0	0	Pass
0.1834	7	0	0	Pass
0.1852	7	0	0	Pass
0.1870	7	0	0	Pass
0.1888	6	0	0	Pass
0.1906	6	0	0	Pass
0.1924	4	0	0	Pass
0.1942	4	0	0	Pass
0.1960	4	0	0	Pass
0.1978	4	0	0	Pass
0.1996	4	0	0	Pass
0.2014	4	0	0	Pass
0.2032	4	0	0	Pass
0.2050	4	0	0	Pass
0.2068	4	0	0	Pass
0.2086	4	0	0	Pass
0.2104	2	0	0	Pass
0.2122	2	0	0	Pass
0.2140	2	0	0	Pass
0.2158	2	0	0	Pass
0.2176	2	0	0	Pass
0.2194	2	0	0	Pass
0.2212	2	0	0	Pass
0.2230	2	0	0	Pass
0.2248	1	0	0	Pass
0.2265	1	0	0	Pass
0.2283	1	0	0	Pass
0.2301	1	0	0	Pass
0.2319	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Treatment?	Total Volume Needs Treatment	Volume Through Facility (ac-ft.)	Infiltration Volume	Cumulative Volume Infiltration	Percent Volume Infiltrated	Water Quality Percent	Comment

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```
Treated
                                    (ac-ft)        (ac-ft)                Credit
retention  3 POC                N      22.99                                   N      100.00
Total Volume Infiltrated                 22.99         0.00      0.00                    100.00
0.00          0%          No Treat. Credit
Compliance with LID Standard 8
Duration Analysis Result = Passed
```

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA 4

FACILITY CALCULATIONS

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WWHM2012
PROJECT REPORT

Project Name: Area 4_bioretention
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Mod	.17
Pervious Total	0.17

Impervious Land Use	acre
PARKING FLAT	0.13
Impervious Total	0.13
Basin Total	0.3

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

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Pervious Land Use	acre
A B, Lawn, Mod	.17
Pervious Total	0.17

Impervious Land Use	acre
PARKING FLAT	0.13
Impervious Total	0.13
Basin Total	0.3

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 4	Surface retention 4	

Name : Bioretention 4
Bottom Length: 35.00 ft.
Bottom Width: 20.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 9.173
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 9.173
Percent Infiltrated: 100
Total Precip Applied to Facility: 1.36
Total Evap From Facility: 1.478
Underdrain not used
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 8 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 4 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0345	0.0000	0.0000	0.0000
0.0549	0.0343	0.0004	0.0000	0.0000
0.1099	0.0339	0.0008	0.0000	0.0000

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0.1648	0.0335	0.0012	0.0000	0.0000
0.2198	0.0331	0.0017	0.0000	0.0001
0.2747	0.0327	0.0021	0.0000	0.0003
0.3297	0.0323	0.0026	0.0000	0.0007
0.3846	0.0319	0.0030	0.0000	0.0010
0.4396	0.0316	0.0035	0.0000	0.0013
0.4945	0.0312	0.0039	0.0000	0.0023
0.5495	0.0308	0.0043	0.0000	0.0035
0.6044	0.0304	0.0048	0.0000	0.0049
0.6593	0.0301	0.0052	0.0000	0.0051
0.7143	0.0297	0.0056	0.0000	0.0071
0.7692	0.0293	0.0061	0.0000	0.0095
0.8242	0.0289	0.0065	0.0000	0.0124
0.8791	0.0286	0.0070	0.0000	0.0128
0.9341	0.0282	0.0074	0.0000	0.0157
0.9890	0.0279	0.0079	0.0000	0.0195
1.0440	0.0275	0.0084	0.0000	0.0237
1.0989	0.0271	0.0088	0.0000	0.0257
1.1538	0.0268	0.0093	0.0000	0.0285
1.2088	0.0264	0.0098	0.0000	0.0339
1.2637	0.0261	0.0103	0.0000	0.0398
1.3187	0.0257	0.0108	0.0000	0.0445
1.3736	0.0254	0.0114	0.0000	0.0463
1.4286	0.0250	0.0119	0.0000	0.0474
1.4835	0.0247	0.0124	0.0000	0.0533
1.5385	0.0244	0.0129	0.0000	0.0610
1.5934	0.0240	0.0135	0.0000	0.0693
1.6484	0.0237	0.0141	0.0000	0.0697
1.7033	0.0234	0.0146	0.0000	0.0783
1.7582	0.0230	0.0152	0.0000	0.0879
1.8132	0.0227	0.0158	0.0000	0.0972
1.8681	0.0224	0.0163	0.0000	0.0972
1.9231	0.0221	0.0169	0.0000	0.0972
1.9780	0.0217	0.0175	0.0000	0.0972
2.0330	0.0214	0.0182	0.0000	0.0972
2.0879	0.0211	0.0188	0.0000	0.0972
2.1429	0.0208	0.0195	0.0000	0.0972
2.1978	0.0205	0.0201	0.0000	0.0972
2.2527	0.0202	0.0208	0.0000	0.0972
2.3077	0.0199	0.0214	0.0000	0.0972
2.3626	0.0196	0.0221	0.0000	0.0972
2.4176	0.0193	0.0228	0.0000	0.0972
2.4725	0.0190	0.0235	0.0000	0.0972
2.5275	0.0187	0.0242	0.0000	0.0972
2.5824	0.0184	0.0249	0.0000	0.0972
2.6374	0.0181	0.0257	0.0000	0.0972
2.6923	0.0178	0.0264	0.0000	0.0972
2.7473	0.0175	0.0271	0.0000	0.0972
2.8022	0.0172	0.0279	0.0000	0.0972
2.8571	0.0169	0.0286	0.0000	0.0972
2.9121	0.0166	0.0294	0.0000	0.0972
2.9670	0.0163	0.0302	0.0000	0.0972
3.0000	0.0161	0.0307	0.0000	0.0972

Surface retention 4 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0345	0.0307	0.0000	0.1944	0.0000

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3.0549	0.0349	0.0326	0.0000	0.1944	0.0000
3.1099	0.0353	0.0345	0.0000	0.2114	0.0000
3.1648	0.0357	0.0365	0.0000	0.2169	0.0000
3.2198	0.0361	0.0384	0.0000	0.2224	0.0000
3.2747	0.0365	0.0404	0.0000	0.2279	0.0000
3.3297	0.0370	0.0424	0.0000	0.2334	0.0000
3.3846	0.0374	0.0445	0.0000	0.2389	0.0000
3.4396	0.0378	0.0466	0.0000	0.2444	0.0000
3.4945	0.0382	0.0486	0.0000	0.2499	0.0000
3.5495	0.0386	0.0507	0.0000	0.2555	0.0000
3.6044	0.0390	0.0529	0.0000	0.2610	0.0000
3.6593	0.0395	0.0550	0.0000	0.2665	0.0000
3.7143	0.0399	0.0572	0.0000	0.2720	0.0000
3.7692	0.0403	0.0594	0.0000	0.2775	0.0000
3.8242	0.0408	0.0617	0.0000	0.2830	0.0000
3.8791	0.0412	0.0639	0.0000	0.2885	0.0000
3.9341	0.0416	0.0662	0.0000	0.2940	0.0000
3.9890	0.0421	0.0685	0.0000	0.2995	0.0000
4.0440	0.0425	0.0708	0.0650	0.3050	0.0000
4.0989	0.0429	0.0731	0.2160	0.3105	0.0000
4.1538	0.0434	0.0755	0.3989	0.3160	0.0000
4.2088	0.0438	0.0779	0.5737	0.3215	0.0000
4.2637	0.0443	0.0803	0.7058	0.3270	0.0000
4.3187	0.0447	0.0828	0.7843	0.3325	0.0000
4.3736	0.0452	0.0853	0.8556	0.3380	0.0000
4.4286	0.0456	0.0877	0.9164	0.3435	0.0000
4.4835	0.0461	0.0903	0.9734	0.3490	0.0000
4.5385	0.0466	0.0928	1.0272	0.3546	0.0000
4.5934	0.0470	0.0954	1.0783	0.3601	0.0000
4.6484	0.0475	0.0980	1.1272	0.3656	0.0000
4.7033	0.0479	0.1006	1.1739	0.3711	0.0000
4.7582	0.0484	0.1032	1.2189	0.3766	0.0000
4.8132	0.0489	0.1059	1.2623	0.3821	0.0000
4.8681	0.0494	0.1086	1.3043	0.3876	0.0000
4.9231	0.0498	0.1113	1.3449	0.3931	0.0000
4.9780	0.0503	0.1141	1.3844	0.3986	0.0000
5.0000	0.0505	0.1152	1.4227	0.4008	0.0000

Name : Surface retention 4

Element Flows To:
Outlet 1 **Outlet 2**
Bioretention 4

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.17

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Total Impervious Area:0.13

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.17
Total Impervious Area:0.13

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.03628
5 year	0.04921
10 year	0.058102
25 year	0.069721
50 year	0.07866
100 year	0.087844

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.048	0.000
1950	0.033	0.000
1951	0.068	0.000
1952	0.023	0.000
1953	0.055	0.000
1954	0.048	0.000
1955	0.038	0.000
1956	0.033	0.000
1957	0.032	0.000
1958	0.038	0.000
1959	0.047	0.000
1960	0.041	0.000
1961	0.034	0.000
1962	0.029	0.000
1963	0.037	0.000
1964	0.067	0.000
1965	0.024	0.000
1966	0.028	0.000
1967	0.036	0.000
1968	0.035	0.000
1969	0.031	0.000
1970	0.047	0.000
1971	0.078	0.000
1972	0.041	0.000
1973	0.034	0.000
1974	0.019	0.000
1975	0.050	0.000

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1976	0.043	0.000
1977	0.028	0.000
1978	0.028	0.000
1979	0.059	0.000
1980	0.030	0.000
1981	0.055	0.000
1982	0.051	0.000
1983	0.040	0.000
1984	0.028	0.000
1985	0.065	0.000
1986	0.038	0.000
1987	0.082	0.000
1988	0.033	0.000
1989	0.035	0.000
1990	0.040	0.000
1991	0.040	0.000
1992	0.037	0.000
1993	0.022	0.000
1994	0.020	0.000
1995	0.019	0.000
1996	0.022	0.000
1997	0.029	0.000
1998	0.032	0.000
1999	0.040	0.000
2000	0.054	0.000
2001	0.020	0.000
2002	0.035	0.000
2003	0.025	0.000
2004	0.035	0.000
2005	0.045	0.000
2006	0.032	0.000
2007	0.073	0.000
2008	0.029	0.000
2009	0.024	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0820	0.0000
2	0.0782	0.0000
3	0.0730	0.0000
4	0.0676	0.0000
5	0.0666	0.0000
6	0.0647	0.0000
7	0.0592	0.0000
8	0.0555	0.0000
9	0.0551	0.0000
10	0.0536	0.0000
11	0.0506	0.0000
12	0.0498	0.0000
13	0.0481	0.0000
14	0.0476	0.0000
15	0.0472	0.0000
16	0.0469	0.0000
17	0.0449	0.0000
18	0.0430	0.0000

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19	0.0412	0.0000
20	0.0412	0.0000
21	0.0404	0.0000
22	0.0404	0.0000
23	0.0404	0.0000
24	0.0403	0.0000
25	0.0381	0.0000
26	0.0380	0.0000
27	0.0379	0.0000
28	0.0367	0.0000
29	0.0366	0.0000
30	0.0358	0.0000
31	0.0354	0.0000
32	0.0353	0.0000
33	0.0352	0.0000
34	0.0349	0.0000
35	0.0343	0.0000
36	0.0336	0.0000
37	0.0334	0.0000
38	0.0333	0.0000
39	0.0329	0.0000
40	0.0322	0.0000
41	0.0320	0.0000
42	0.0316	0.0000
43	0.0313	0.0000
44	0.0298	0.0000
45	0.0294	0.0000
46	0.0289	0.0000
47	0.0287	0.0000
48	0.0283	0.0000
49	0.0283	0.0000
50	0.0282	0.0000
51	0.0278	0.0000
52	0.0253	0.0000
53	0.0242	0.0000
54	0.0241	0.0000
55	0.0229	0.0000
56	0.0224	0.0000
57	0.0219	0.0000
58	0.0200	0.0000
59	0.0196	0.0000
60	0.0194	0.0000
61	0.0192	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0181	1383	0	0	Pass
0.0188	1245	0	0	Pass
0.0194	1116	0	0	Pass
0.0200	994	0	0	Pass
0.0206	890	0	0	Pass

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0.0212	779	0	0	Pass
0.0218	699	0	0	Pass
0.0224	628	0	0	Pass
0.0230	563	0	0	Pass
0.0236	505	0	0	Pass
0.0243	454	0	0	Pass
0.0249	415	0	0	Pass
0.0255	372	0	0	Pass
0.0261	339	0	0	Pass
0.0267	312	0	0	Pass
0.0273	277	0	0	Pass
0.0279	246	0	0	Pass
0.0285	219	0	0	Pass
0.0291	201	0	0	Pass
0.0298	181	0	0	Pass
0.0304	161	0	0	Pass
0.0310	146	0	0	Pass
0.0316	134	0	0	Pass
0.0322	124	0	0	Pass
0.0328	117	0	0	Pass
0.0334	106	0	0	Pass
0.0340	98	0	0	Pass
0.0346	93	0	0	Pass
0.0353	86	0	0	Pass
0.0359	81	0	0	Pass
0.0365	76	0	0	Pass
0.0371	71	0	0	Pass
0.0377	67	0	0	Pass
0.0383	61	0	0	Pass
0.0389	59	0	0	Pass
0.0395	57	0	0	Pass
0.0401	55	0	0	Pass
0.0408	46	0	0	Pass
0.0414	41	0	0	Pass
0.0420	40	0	0	Pass
0.0426	38	0	0	Pass
0.0432	35	0	0	Pass
0.0438	33	0	0	Pass
0.0444	31	0	0	Pass
0.0450	29	0	0	Pass
0.0456	28	0	0	Pass
0.0463	28	0	0	Pass
0.0469	27	0	0	Pass
0.0475	25	0	0	Pass
0.0481	24	0	0	Pass
0.0487	21	0	0	Pass
0.0493	20	0	0	Pass
0.0499	18	0	0	Pass
0.0505	18	0	0	Pass
0.0512	16	0	0	Pass
0.0518	16	0	0	Pass
0.0524	16	0	0	Pass
0.0530	16	0	0	Pass
0.0536	16	0	0	Pass
0.0542	14	0	0	Pass
0.0548	14	0	0	Pass
0.0554	13	0	0	Pass

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0.0560	11	0	0	Pass
0.0567	10	0	0	Pass
0.0573	10	0	0	Pass
0.0579	10	0	0	Pass
0.0585	10	0	0	Pass
0.0591	9	0	0	Pass
0.0597	8	0	0	Pass
0.0603	7	0	0	Pass
0.0609	6	0	0	Pass
0.0615	6	0	0	Pass
0.0622	6	0	0	Pass
0.0628	6	0	0	Pass
0.0634	6	0	0	Pass
0.0640	6	0	0	Pass
0.0646	6	0	0	Pass
0.0652	5	0	0	Pass
0.0658	5	0	0	Pass
0.0664	5	0	0	Pass
0.0670	4	0	0	Pass
0.0677	3	0	0	Pass
0.0683	3	0	0	Pass
0.0689	3	0	0	Pass
0.0695	3	0	0	Pass
0.0701	3	0	0	Pass
0.0707	3	0	0	Pass
0.0713	3	0	0	Pass
0.0719	3	0	0	Pass
0.0725	3	0	0	Pass
0.0732	2	0	0	Pass
0.0738	2	0	0	Pass
0.0744	2	0	0	Pass
0.0750	2	0	0	Pass
0.0756	2	0	0	Pass
0.0762	2	0	0	Pass
0.0768	2	0	0	Pass
0.0774	2	0	0	Pass
0.0780	2	0	0	Pass
0.0787	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality Percent	Water Quality Treated Comment

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```
retention  4 POC                N     8.35                                    N     100.00
Total Volume Infiltrated               8.35         0.00     0.00                    100.00
0.00         0%          No Treat. Credit
Compliance with LID Standard 8
Duration Analysis Result = Passed
```

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA 5

FACILITY CALCULATIONS

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WWHM2012
PROJECT REPORT

Project Name: Area 5 Bioretention
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	.35
Pervious Total	0.35

Impervious Land Use	acre
PARKING FLAT	0.12
Impervious Total	0.12
Basin Total	0.47

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

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Pervious Land Use	acre
A B, Lawn, Flat	.35
Pervious Total	0.35

Impervious Land Use	acre
PARKING FLAT	0.12
Impervious Total	0.12
Basin Total	0.47

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 5	Surface retention 5	

Name : Bioretention 5
Bottom Length: 20.00 ft.
Bottom Width: 20.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 8.492
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 8.492
Percent Infiltrated: 100
Total Precip Applied to Facility: 0.824
Total Evap From Facility: 0.925
Underdrain not used
Discharge Structure
Riser Height: 1.5 ft.
Riser Diameter: 8 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 5 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0235	0.0000	0.0000	0.0000
0.0604	0.0233	0.0003	0.0000	0.0000
0.1209	0.0229	0.0005	0.0000	0.0000

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0.1813	0.0226	0.0008	0.0000	0.0000
0.2418	0.0222	0.0011	0.0000	0.0002
0.3022	0.0219	0.0013	0.0000	0.0005
0.3626	0.0215	0.0016	0.0000	0.0007
0.4231	0.0212	0.0019	0.0000	0.0009
0.4835	0.0209	0.0022	0.0000	0.0016
0.5440	0.0205	0.0025	0.0000	0.0025
0.6044	0.0202	0.0028	0.0000	0.0035
0.6648	0.0199	0.0031	0.0000	0.0037
0.7253	0.0196	0.0033	0.0000	0.0052
0.7857	0.0192	0.0036	0.0000	0.0069
0.8462	0.0189	0.0039	0.0000	0.0079
0.9066	0.0186	0.0043	0.0000	0.0090
0.9670	0.0183	0.0046	0.0000	0.0092
1.0275	0.0180	0.0049	0.0000	0.0114
1.0879	0.0177	0.0052	0.0000	0.0141
1.1484	0.0174	0.0055	0.0000	0.0172
1.2088	0.0171	0.0059	0.0000	0.0186
1.2692	0.0167	0.0062	0.0000	0.0207
1.3297	0.0165	0.0066	0.0000	0.0245
1.3901	0.0162	0.0069	0.0000	0.0288
1.4505	0.0159	0.0073	0.0000	0.0321
1.5110	0.0156	0.0077	0.0000	0.0332
1.5714	0.0153	0.0081	0.0000	0.0335
1.6319	0.0150	0.0084	0.0000	0.0386
1.6923	0.0147	0.0088	0.0000	0.0442
1.7527	0.0144	0.0092	0.0000	0.0502
1.8132	0.0142	0.0096	0.0000	0.0504
1.8736	0.0139	0.0101	0.0000	0.0556
1.9341	0.0136	0.0105	0.0000	0.0556
1.9945	0.0133	0.0109	0.0000	0.0556
2.0549	0.0131	0.0114	0.0000	0.0556
2.1154	0.0128	0.0118	0.0000	0.0556
2.1758	0.0126	0.0123	0.0000	0.0556
2.2363	0.0123	0.0128	0.0000	0.0556
2.2967	0.0120	0.0133	0.0000	0.0556
2.3571	0.0118	0.0138	0.0000	0.0556
2.4176	0.0115	0.0143	0.0000	0.0556
2.4780	0.0113	0.0148	0.0000	0.0556
2.5385	0.0110	0.0153	0.0000	0.0556
2.5989	0.0108	0.0158	0.0000	0.0556
2.6593	0.0106	0.0164	0.0000	0.0556
2.7198	0.0103	0.0169	0.0000	0.0556
2.7802	0.0101	0.0175	0.0000	0.0556
2.8407	0.0099	0.0180	0.0000	0.0556
2.9011	0.0096	0.0186	0.0000	0.0556
2.9615	0.0094	0.0192	0.0000	0.0556
3.0000	0.0092	0.0195	0.0000	0.0556

Surface retention 5 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0235	0.0195	0.0000	0.1111	0.0000
3.0604	0.0239	0.0210	0.0000	0.1111	0.0000
3.1209	0.0242	0.0224	0.0000	0.1214	0.0000
3.1813	0.0246	0.0239	0.0000	0.1249	0.0000
3.2418	0.0250	0.0254	0.0000	0.1284	0.0000
3.3022	0.0253	0.0269	0.0000	0.1318	0.0000

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3.3626	0.0257	0.0285	0.0000	0.1353	0.0000
3.4231	0.0261	0.0300	0.0000	0.1387	0.0000
3.4835	0.0264	0.0316	0.0000	0.1422	0.0000
3.5440	0.0268	0.0332	0.0000	0.1457	0.0000
3.6044	0.0272	0.0349	0.0000	0.1491	0.0000
3.6648	0.0276	0.0365	0.0000	0.1526	0.0000
3.7253	0.0280	0.0382	0.0000	0.1560	0.0000
3.7857	0.0284	0.0399	0.0000	0.1595	0.0000
3.8462	0.0287	0.0416	0.0000	0.1630	0.0000
3.9066	0.0291	0.0434	0.0000	0.1664	0.0000
3.9670	0.0295	0.0451	0.0000	0.1699	0.0000
4.0275	0.0299	0.0469	0.0000	0.1733	0.0000
4.0879	0.0303	0.0488	0.0000	0.1768	0.0000
4.1484	0.0307	0.0506	0.0000	0.1803	0.0000
4.2088	0.0311	0.0525	0.0000	0.1837	0.0000
4.2692	0.0316	0.0544	0.0000	0.1872	0.0000
4.3297	0.0320	0.0563	0.0000	0.1906	0.0000
4.3901	0.0324	0.0582	0.0000	0.1941	0.0000
4.4505	0.0328	0.0602	0.0000	0.1976	0.0000
4.5110	0.0332	0.0622	0.0081	0.2010	0.0000
4.5714	0.0337	0.0642	0.1341	0.2045	0.0000
4.6319	0.0341	0.0663	0.3244	0.2079	0.0000
4.6923	0.0345	0.0683	0.5244	0.2114	0.0000
4.7527	0.0349	0.0704	0.6839	0.2149	0.0000
4.8132	0.0354	0.0726	0.7783	0.2183	0.0000
4.8736	0.0358	0.0747	0.8556	0.2218	0.0000
4.9341	0.0362	0.0769	0.9223	0.2253	0.0000
4.9945	0.0367	0.0791	0.9844	0.2287	0.0000
5.0549	0.0371	0.0813	1.0428	0.2322	0.0000
5.1154	0.0376	0.0836	1.0981	0.2356	0.0000
5.1758	0.0380	0.0859	1.1508	0.2391	0.0000
5.2363	0.0385	0.0882	1.2011	0.2426	0.0000
5.2967	0.0389	0.0905	1.2495	0.2460	0.0000
5.3571	0.0394	0.0929	1.2960	0.2495	0.0000
5.4176	0.0399	0.0953	1.3409	0.2529	0.0000
5.4780	0.0403	0.0977	1.3844	0.2564	0.0000
5.5000	0.0405	0.0986	1.4265	0.2577	0.0000

Name : Surface retention 5

Element Flows To:
Outlet 1 **Outlet 2**
Bioretention 5

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.35

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Total Impervious Area:0.12

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.35
Total Impervious Area:0.12

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.033527
5 year	0.045462
10 year	0.053667
25 year	0.064387
50 year	0.072634
100 year	0.081106

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.044	0.000
1950	0.030	0.000
1951	0.062	0.000
1952	0.021	0.000
1953	0.051	0.000
1954	0.044	0.000
1955	0.035	0.000
1956	0.031	0.000
1957	0.030	0.000
1958	0.035	0.000
1959	0.044	0.000
1960	0.038	0.000
1961	0.031	0.000
1962	0.027	0.000
1963	0.034	0.000
1964	0.062	0.000
1965	0.022	0.000
1966	0.026	0.000
1967	0.033	0.000
1968	0.033	0.000
1969	0.029	0.000
1970	0.043	0.000
1971	0.072	0.000
1972	0.038	0.000
1973	0.032	0.000
1974	0.018	0.000
1975	0.046	0.000

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1976	0.040	0.000
1977	0.026	0.000
1978	0.026	0.000
1979	0.055	0.000
1980	0.028	0.000
1981	0.051	0.000
1982	0.047	0.000
1983	0.037	0.000
1984	0.026	0.000
1985	0.060	0.000
1986	0.035	0.000
1987	0.076	0.000
1988	0.031	0.000
1989	0.033	0.000
1990	0.037	0.000
1991	0.037	0.000
1992	0.034	0.000
1993	0.021	0.000
1994	0.018	0.000
1995	0.018	0.000
1996	0.020	0.000
1997	0.027	0.000
1998	0.029	0.000
1999	0.037	0.000
2000	0.049	0.000
2001	0.018	0.000
2002	0.032	0.000
2003	0.023	0.000
2004	0.033	0.000
2005	0.042	0.000
2006	0.030	0.000
2007	0.067	0.000
2008	0.027	0.000
2009	0.022	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0757	0.0000
2	0.0722	0.0000
3	0.0674	0.0000
4	0.0625	0.0000
5	0.0615	0.0000
6	0.0597	0.0000
7	0.0547	0.0000
8	0.0512	0.0000
9	0.0509	0.0000
10	0.0495	0.0000
11	0.0468	0.0000
12	0.0460	0.0000
13	0.0444	0.0000
14	0.0440	0.0000
15	0.0436	0.0000
16	0.0433	0.0000
17	0.0415	0.0000
18	0.0397	0.0000

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19	0.0381	0.0000
20	0.0381	0.0000
21	0.0373	0.0000
22	0.0373	0.0000
23	0.0373	0.0000
24	0.0372	0.0000
25	0.0352	0.0000
26	0.0351	0.0000
27	0.0350	0.0000
28	0.0339	0.0000
29	0.0339	0.0000
30	0.0331	0.0000
31	0.0328	0.0000
32	0.0326	0.0000
33	0.0326	0.0000
34	0.0322	0.0000
35	0.0318	0.0000
36	0.0311	0.0000
37	0.0309	0.0000
38	0.0308	0.0000
39	0.0304	0.0000
40	0.0297	0.0000
41	0.0297	0.0000
42	0.0292	0.0000
43	0.0289	0.0000
44	0.0276	0.0000
45	0.0271	0.0000
46	0.0268	0.0000
47	0.0265	0.0000
48	0.0261	0.0000
49	0.0261	0.0000
50	0.0261	0.0000
51	0.0257	0.0000
52	0.0234	0.0000
53	0.0223	0.0000
54	0.0223	0.0000
55	0.0212	0.0000
56	0.0207	0.0000
57	0.0203	0.0000
58	0.0185	0.0000
59	0.0181	0.0000
60	0.0179	0.0000
61	0.0178	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0168	1386	0	0	Pass
0.0173	1252	0	0	Pass
0.0179	1117	0	0	Pass
0.0185	997	0	0	Pass
0.0190	896	0	0	Pass

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0.0196	782	0	0	Pass
0.0201	702	0	0	Pass
0.0207	629	0	0	Pass
0.0213	569	0	0	Pass
0.0218	505	0	0	Pass
0.0224	458	0	0	Pass
0.0230	422	0	0	Pass
0.0235	372	0	0	Pass
0.0241	341	0	0	Pass
0.0247	314	0	0	Pass
0.0252	277	0	0	Pass
0.0258	248	0	0	Pass
0.0264	220	0	0	Pass
0.0269	201	0	0	Pass
0.0275	183	0	0	Pass
0.0281	163	0	0	Pass
0.0286	148	0	0	Pass
0.0292	135	0	0	Pass
0.0297	124	0	0	Pass
0.0303	117	0	0	Pass
0.0309	108	0	0	Pass
0.0314	98	0	0	Pass
0.0320	92	0	0	Pass
0.0326	87	0	0	Pass
0.0331	81	0	0	Pass
0.0337	77	0	0	Pass
0.0343	72	0	0	Pass
0.0348	67	0	0	Pass
0.0354	61	0	0	Pass
0.0360	59	0	0	Pass
0.0365	57	0	0	Pass
0.0371	55	0	0	Pass
0.0376	46	0	0	Pass
0.0382	40	0	0	Pass
0.0388	40	0	0	Pass
0.0393	38	0	0	Pass
0.0399	35	0	0	Pass
0.0405	33	0	0	Pass
0.0410	31	0	0	Pass
0.0416	29	0	0	Pass
0.0422	28	0	0	Pass
0.0427	28	0	0	Pass
0.0433	28	0	0	Pass
0.0439	25	0	0	Pass
0.0444	24	0	0	Pass
0.0450	21	0	0	Pass
0.0455	20	0	0	Pass
0.0461	18	0	0	Pass
0.0467	18	0	0	Pass
0.0472	16	0	0	Pass
0.0478	16	0	0	Pass
0.0484	16	0	0	Pass
0.0489	16	0	0	Pass
0.0495	15	0	0	Pass
0.0501	14	0	0	Pass
0.0506	14	0	0	Pass
0.0512	13	0	0	Pass

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0.0518	11	0	0	Pass
0.0523	10	0	0	Pass
0.0529	10	0	0	Pass
0.0534	10	0	0	Pass
0.0540	10	0	0	Pass
0.0546	9	0	0	Pass
0.0551	8	0	0	Pass
0.0557	7	0	0	Pass
0.0563	6	0	0	Pass
0.0568	6	0	0	Pass
0.0574	6	0	0	Pass
0.0580	6	0	0	Pass
0.0585	6	0	0	Pass
0.0591	6	0	0	Pass
0.0597	6	0	0	Pass
0.0602	5	0	0	Pass
0.0608	5	0	0	Pass
0.0613	5	0	0	Pass
0.0619	4	0	0	Pass
0.0625	4	0	0	Pass
0.0630	3	0	0	Pass
0.0636	3	0	0	Pass
0.0642	3	0	0	Pass
0.0647	3	0	0	Pass
0.0653	3	0	0	Pass
0.0659	3	0	0	Pass
0.0664	3	0	0	Pass
0.0670	3	0	0	Pass
0.0676	2	0	0	Pass
0.0681	2	0	0	Pass
0.0687	2	0	0	Pass
0.0692	2	0	0	Pass
0.0698	2	0	0	Pass
0.0704	2	0	0	Pass
0.0709	2	0	0	Pass
0.0715	2	0	0	Pass
0.0721	2	0	0	Pass
0.0726	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Infiltration Volume Credit	Percent Volume Infiltrated	Water Quality Percent	Water Quality Treated Comment

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```
retention  5 POC                N     0.00                                    N     0.00
Total Volume Infiltrated               0.00         0.00     0.00                    0.00
0.00         0%          No Treat. Credit
Compliance with LID Standard 8
Duration Analysis Result = Passed
```

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA 6

FACILITY CALCULATIONS

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DCD / PUBLIC WORKS
01/13/2020

WWHM2012
PROJECT REPORT

Project Name: Area 6 Bioretention
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
ROADS MOD	0.3
Impervious Total	0.3
Basin Total	0.3

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

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Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
ROADS MOD	0.3
Impervious Total	0.3
Basin Total	0.3

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 6	Surface retention 6	

Name : Bioretention 6
Bottom Length: 35.00 ft.
Bottom Width: 20.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 22.132
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 22.132
Percent Infiltrated: 100
Total Precip Applied to Facility: 1.259
Total Evap From Facility: 1.136
Underdrain not used
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 8 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 6 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0161	0.0000	0.0000	0.0000
0.0549	0.0161	0.0004	0.0000	0.0000
0.1099	0.0161	0.0008	0.0000	0.0000
0.1648	0.0161	0.0012	0.0000	0.0000
0.2198	0.0161	0.0016	0.0000	0.0001

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0.2747	0.0161	0.0020	0.0000	0.0003
0.3297	0.0161	0.0024	0.0000	0.0007
0.3846	0.0161	0.0028	0.0000	0.0010
0.4396	0.0161	0.0032	0.0000	0.0013
0.4945	0.0161	0.0036	0.0000	0.0023
0.5495	0.0161	0.0040	0.0000	0.0035
0.6044	0.0161	0.0043	0.0000	0.0049
0.6593	0.0161	0.0047	0.0000	0.0051
0.7143	0.0161	0.0050	0.0000	0.0071
0.7692	0.0161	0.0054	0.0000	0.0095
0.8242	0.0161	0.0058	0.0000	0.0124
0.8791	0.0161	0.0061	0.0000	0.0128
0.9341	0.0161	0.0065	0.0000	0.0157
0.9890	0.0161	0.0068	0.0000	0.0195
1.0440	0.0161	0.0072	0.0000	0.0237
1.0989	0.0161	0.0075	0.0000	0.0257
1.1538	0.0161	0.0079	0.0000	0.0285
1.2088	0.0161	0.0082	0.0000	0.0339
1.2637	0.0161	0.0086	0.0000	0.0398
1.3187	0.0161	0.0089	0.0000	0.0445
1.3736	0.0161	0.0093	0.0000	0.0463
1.4286	0.0161	0.0096	0.0000	0.0474
1.4835	0.0161	0.0100	0.0000	0.0533
1.5385	0.0161	0.0103	0.0000	0.0610
1.5934	0.0161	0.0107	0.0000	0.0693
1.6484	0.0161	0.0111	0.0000	0.0697
1.7033	0.0161	0.0114	0.0000	0.0783
1.7582	0.0161	0.0118	0.0000	0.0879
1.8132	0.0161	0.0121	0.0000	0.0972
1.8681	0.0161	0.0125	0.0000	0.0972
1.9231	0.0161	0.0128	0.0000	0.0972
1.9780	0.0161	0.0132	0.0000	0.0972
2.0330	0.0161	0.0135	0.0000	0.0972
2.0879	0.0161	0.0139	0.0000	0.0972
2.1429	0.0161	0.0143	0.0000	0.0972
2.1978	0.0161	0.0146	0.0000	0.0972
2.2527	0.0161	0.0150	0.0000	0.0972
2.3077	0.0161	0.0154	0.0000	0.0972
2.3626	0.0161	0.0157	0.0000	0.0972
2.4176	0.0161	0.0161	0.0000	0.0972
2.4725	0.0161	0.0165	0.0000	0.0972
2.5275	0.0161	0.0168	0.0000	0.0972
2.5824	0.0161	0.0172	0.0000	0.0972
2.6374	0.0161	0.0176	0.0000	0.0972
2.6923	0.0161	0.0179	0.0000	0.0972
2.7473	0.0161	0.0183	0.0000	0.0972
2.8022	0.0161	0.0187	0.0000	0.0972
2.8571	0.0161	0.0190	0.0000	0.0972
2.9121	0.0161	0.0194	0.0000	0.0972
2.9670	0.0161	0.0198	0.0000	0.0972
3.0000	0.0161	0.0200	0.0000	0.0972

Surface retention 6 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0161	0.0200	0.0000	0.1944	0.0000
3.0549	0.0161	0.0209	0.0000	0.1944	0.0000
3.1099	0.0161	0.0218	0.0000	0.2114	0.0000

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3.1648	0.0161	0.0226	0.0000	0.2169	0.0000
3.2198	0.0161	0.0235	0.0000	0.2224	0.0000
3.2747	0.0161	0.0244	0.0000	0.2279	0.0000
3.3297	0.0161	0.0253	0.0000	0.2334	0.0000
3.3846	0.0161	0.0262	0.0000	0.2389	0.0000
3.4396	0.0161	0.0270	0.0000	0.2444	0.0000
3.4945	0.0161	0.0279	0.0000	0.2499	0.0000
3.5495	0.0161	0.0288	0.0000	0.2555	0.0000
3.6044	0.0161	0.0297	0.0000	0.2610	0.0000
3.6593	0.0161	0.0306	0.0000	0.2665	0.0000
3.7143	0.0161	0.0315	0.0000	0.2720	0.0000
3.7692	0.0161	0.0323	0.0000	0.2775	0.0000
3.8242	0.0161	0.0332	0.0000	0.2830	0.0000
3.8791	0.0161	0.0341	0.0000	0.2885	0.0000
3.9341	0.0161	0.0350	0.0000	0.2940	0.0000
3.9890	0.0161	0.0359	0.0000	0.2995	0.0000
4.0440	0.0161	0.0368	0.0650	0.3050	0.0000
4.0989	0.0161	0.0376	0.2160	0.3105	0.0000
4.1538	0.0161	0.0385	0.3989	0.3160	0.0000
4.2088	0.0161	0.0394	0.5737	0.3215	0.0000
4.2637	0.0161	0.0403	0.7058	0.3270	0.0000
4.3187	0.0161	0.0412	0.7843	0.3325	0.0000
4.3736	0.0161	0.0421	0.8556	0.3380	0.0000
4.4286	0.0161	0.0429	0.9164	0.3435	0.0000
4.4835	0.0161	0.0438	0.9734	0.3490	0.0000
4.5385	0.0161	0.0447	1.0272	0.3546	0.0000
4.5934	0.0161	0.0456	1.0783	0.3601	0.0000
4.6484	0.0161	0.0465	1.1272	0.3656	0.0000
4.7033	0.0161	0.0474	1.1739	0.3711	0.0000
4.7582	0.0161	0.0482	1.2189	0.3766	0.0000
4.8132	0.0161	0.0491	1.2623	0.3821	0.0000
4.8681	0.0161	0.0500	1.3043	0.3876	0.0000
4.9231	0.0161	0.0509	1.3449	0.3931	0.0000
4.9780	0.0161	0.0518	1.3844	0.3986	0.0000
5.0000	0.0161	0.0521	1.4227	0.4008	0.0000

Name : Surface retention 6

Element Flows To:

Outlet 1	**Outlet 2**
Bioretention 6	

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.3

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Mitigated Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.3

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.100088
5 year	0.134151
10 year	0.156858
25 year	0.185783
50 year	0.207529
100 year	0.229467

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.128	0.000
1950	0.078	0.000
1951	0.172	0.000
1952	0.072	0.000
1953	0.162	0.000
1954	0.131	0.000
1955	0.098	0.000
1956	0.101	0.000
1957	0.091	0.000
1958	0.113	0.000
1959	0.121	0.000
1960	0.121	0.000
1961	0.092	0.000
1962	0.102	0.000
1963	0.092	0.000
1964	0.195	0.000
1965	0.060	0.000
1966	0.092	0.000
1967	0.093	0.000
1968	0.088	0.000
1969	0.092	0.000
1970	0.139	0.000
1971	0.199	0.000
1972	0.121	0.000
1973	0.081	0.000
1974	0.050	0.000
1975	0.123	0.000
1976	0.107	0.000
1977	0.080	0.000

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1978	0.077	0.000
1979	0.143	0.000
1980	0.082	0.000
1981	0.145	0.000
1982	0.120	0.000
1983	0.106	0.000
1984	0.070	0.000
1985	0.157	0.000
1986	0.094	0.000
1987	0.236	0.000
1988	0.085	0.000
1989	0.095	0.000
1990	0.130	0.000
1991	0.110	0.000
1992	0.105	0.000
1993	0.064	0.000
1994	0.064	0.000
1995	0.048	0.000
1996	0.067	0.000
1997	0.088	0.000
1998	0.085	0.000
1999	0.114	0.000
2000	0.148	0.000
2001	0.047	0.000
2002	0.099	0.000
2003	0.079	0.000
2004	0.104	0.000
2005	0.126	0.000
2006	0.082	0.000
2007	0.185	0.000
2008	0.091	0.000
2009	0.070	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.2360	0.0000
2	0.1993	0.0000
3	0.1949	0.0000
4	0.1850	0.0000
5	0.1724	0.0000
6	0.1624	0.0000
7	0.1574	0.0000
8	0.1485	0.0000
9	0.1449	0.0000
10	0.1425	0.0000
11	0.1393	0.0000
12	0.1313	0.0000
13	0.1298	0.0000
14	0.1280	0.0000
15	0.1260	0.0000
16	0.1232	0.0000
17	0.1213	0.0000
18	0.1213	0.0000
19	0.1210	0.0000
20	0.1199	0.0000

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21	0.1136	0.0000
22	0.1127	0.0000
23	0.1100	0.0000
24	0.1067	0.0000
25	0.1063	0.0000
26	0.1050	0.0000
27	0.1038	0.0000
28	0.1019	0.0000
29	0.1014	0.0000
30	0.0986	0.0000
31	0.0984	0.0000
32	0.0950	0.0000
33	0.0944	0.0000
34	0.0931	0.0000
35	0.0922	0.0000
36	0.0921	0.0000
37	0.0919	0.0000
38	0.0918	0.0000
39	0.0912	0.0000
40	0.0911	0.0000
41	0.0876	0.0000
42	0.0876	0.0000
43	0.0852	0.0000
44	0.0846	0.0000
45	0.0822	0.0000
46	0.0816	0.0000
47	0.0813	0.0000
48	0.0802	0.0000
49	0.0788	0.0000
50	0.0777	0.0000
51	0.0769	0.0000
52	0.0724	0.0000
53	0.0698	0.0000
54	0.0697	0.0000
55	0.0667	0.0000
56	0.0645	0.0000
57	0.0645	0.0000
58	0.0600	0.0000
59	0.0500	0.0000
60	0.0480	0.0000
61	0.0467	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0500	993	0	0	Pass
0.0516	901	0	0	Pass
0.0532	812	0	0	Pass
0.0548	718	0	0	Pass
0.0564	659	0	0	Pass
0.0580	601	0	0	Pass
0.0596	544	0	0	Pass

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0.0612	482	0	0	Pass
0.0628	426	0	0	Pass
0.0644	392	0	0	Pass
0.0660	358	0	0	Pass
0.0675	322	0	0	Pass
0.0691	301	0	0	Pass
0.0707	270	0	0	Pass
0.0723	244	0	0	Pass
0.0739	222	0	0	Pass
0.0755	202	0	0	Pass
0.0771	186	0	0	Pass
0.0787	167	0	0	Pass
0.0803	158	0	0	Pass
0.0819	139	0	0	Pass
0.0834	122	0	0	Pass
0.0850	112	0	0	Pass
0.0866	104	0	0	Pass
0.0882	98	0	0	Pass
0.0898	91	0	0	Pass
0.0914	83	0	0	Pass
0.0930	74	0	0	Pass
0.0946	71	0	0	Pass
0.0962	67	0	0	Pass
0.0978	65	0	0	Pass
0.0994	62	0	0	Pass
0.1009	59	0	0	Pass
0.1025	54	0	0	Pass
0.1041	51	0	0	Pass
0.1057	49	0	0	Pass
0.1073	46	0	0	Pass
0.1089	45	0	0	Pass
0.1105	42	0	0	Pass
0.1121	41	0	0	Pass
0.1137	39	0	0	Pass
0.1153	39	0	0	Pass
0.1169	38	0	0	Pass
0.1184	36	0	0	Pass
0.1200	34	0	0	Pass
0.1216	30	0	0	Pass
0.1232	27	0	0	Pass
0.1248	26	0	0	Pass
0.1264	24	0	0	Pass
0.1280	23	0	0	Pass
0.1296	22	0	0	Pass
0.1312	20	0	0	Pass
0.1328	18	0	0	Pass
0.1344	18	0	0	Pass
0.1359	18	0	0	Pass
0.1375	18	0	0	Pass
0.1391	18	0	0	Pass
0.1407	17	0	0	Pass
0.1423	17	0	0	Pass
0.1439	16	0	0	Pass
0.1455	15	0	0	Pass
0.1471	14	0	0	Pass
0.1487	13	0	0	Pass
0.1503	11	0	0	Pass

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0.1519	11	0	0	Pass
0.1534	11	0	0	Pass
0.1550	11	0	0	Pass
0.1566	11	0	0	Pass
0.1582	10	0	0	Pass
0.1598	10	0	0	Pass
0.1614	10	0	0	Pass
0.1630	9	0	0	Pass
0.1646	9	0	0	Pass
0.1662	9	0	0	Pass
0.1678	9	0	0	Pass
0.1694	7	0	0	Pass
0.1709	7	0	0	Pass
0.1725	6	0	0	Pass
0.1741	6	0	0	Pass
0.1757	6	0	0	Pass
0.1773	6	0	0	Pass
0.1789	6	0	0	Pass
0.1805	4	0	0	Pass
0.1821	4	0	0	Pass
0.1837	4	0	0	Pass
0.1853	3	0	0	Pass
0.1868	3	0	0	Pass
0.1884	3	0	0	Pass
0.1900	3	0	0	Pass
0.1916	3	0	0	Pass
0.1932	3	0	0	Pass
0.1948	3	0	0	Pass
0.1964	2	0	0	Pass
0.1980	2	0	0	Pass
0.1996	1	0	0	Pass
0.2012	1	0	0	Pass
0.2028	1	0	0	Pass
0.2043	1	0	0	Pass
0.2059	1	0	0	Pass
0.2075	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality Comment	Percent Water Quality Treated
retention 6 POC	N	20.14			N	100.00		
Total Volume Infiltrated		20.14	0.00	0.00		100.00		
0.00	0%	No Treat. Credit						

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Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA ROW

FACILITY CALCULATIONS

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WWHM2012
PROJECT REPORT

Project Name: ROW Bioretention
Site Name:
Site Address:
City :
Report Date: 12/26/2019
Gage : Port Angelis
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.80
Version Date: 2018/10/10
Version : 4.2.16

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Mod	.26
Pervious Total	0.26

Impervious Land Use	acre
ROADS MOD	0.3
PARKING FLAT	0.91
Impervious Total	1.21
Basin Total	1.47

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

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GroundWater: No

Pervious Land Use	acre
A B, Lawn, Mod	.26
Pervious Total	0.26

Impervious Land Use	acre
ROADS MOD	0.3
PARKING FLAT	0.91
Impervious Total	1.21
Basin Total	1.47

Element Flows To:

Surface	Interflow	Groundwater
Surface tention ROW	Surface tention ROW	

Name : Bioretention ROW
Bottom Length: 530.00 ft.
Bottom Width: 2.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 6
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 88.931
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 88.931
Percent Infiltrated: 100
Total Precip Applied to Facility: 7.415
Total Evap From Facility: 5.705
Underdrain not used
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 8 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention ROW Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.2516	0.0000	0.0000	0.0000

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0.0549	0.2490	0.0003	0.0000	0.0000
0.1099	0.2447	0.0007	0.0000	0.0000
0.1648	0.2404	0.0011	0.0000	0.0000
0.2198	0.2362	0.0016	0.0000	0.0001
0.2747	0.2319	0.0022	0.0000	0.0004
0.3297	0.2276	0.0027	0.0000	0.0010
0.3846	0.2233	0.0034	0.0000	0.0016
0.4396	0.2191	0.0041	0.0000	0.0020
0.4945	0.2148	0.0048	0.0000	0.0034
0.5495	0.2106	0.0055	0.0000	0.0053
0.6044	0.2063	0.0062	0.0000	0.0074
0.6593	0.2021	0.0070	0.0000	0.0078
0.7143	0.1978	0.0078	0.0000	0.0108
0.7692	0.1936	0.0087	0.0000	0.0144
0.8242	0.1894	0.0096	0.0000	0.0188
0.8791	0.1852	0.0106	0.0000	0.0194
0.9341	0.1809	0.0116	0.0000	0.0237
0.9890	0.1767	0.0126	0.0000	0.0295
1.0440	0.1725	0.0137	0.0000	0.0359
1.0989	0.1683	0.0149	0.0000	0.0390
1.1538	0.1641	0.0161	0.0000	0.0432
1.2088	0.1599	0.0173	0.0000	0.0513
1.2637	0.1557	0.0186	0.0000	0.0602
1.3187	0.1515	0.0199	0.0000	0.0673
1.3736	0.1474	0.0213	0.0000	0.0700
1.4286	0.1432	0.0227	0.0000	0.0718
1.4835	0.1390	0.0241	0.0000	0.0807
1.5385	0.1349	0.0256	0.0000	0.0924
1.5934	0.1307	0.0272	0.0000	0.1050
1.6484	0.1266	0.0288	0.0000	0.1055
1.7033	0.1224	0.0304	0.0000	0.1185
1.7582	0.1183	0.0321	0.0000	0.1331
1.8132	0.1141	0.0338	0.0000	0.1472
1.8681	0.1100	0.0356	0.0000	0.1472
1.9231	0.1059	0.0375	0.0000	0.1472
1.9780	0.1017	0.0393	0.0000	0.1472
2.0330	0.0976	0.0413	0.0000	0.1472
2.0879	0.0935	0.0434	0.0000	0.1472
2.1429	0.0894	0.0454	0.0000	0.1472
2.1978	0.0853	0.0476	0.0000	0.1472
2.2527	0.0812	0.0498	0.0000	0.1472
2.3077	0.0771	0.0520	0.0000	0.1472
2.3626	0.0730	0.0543	0.0000	0.1472
2.4176	0.0689	0.0566	0.0000	0.1472
2.4725	0.0648	0.0590	0.0000	0.1472
2.5275	0.0608	0.0614	0.0000	0.1472
2.5824	0.0567	0.0639	0.0000	0.1472
2.6374	0.0526	0.0664	0.0000	0.1472
2.6923	0.0486	0.0690	0.0000	0.1472
2.7473	0.0445	0.0716	0.0000	0.1472
2.8022	0.0405	0.0743	0.0000	0.1472
2.8571	0.0364	0.0770	0.0000	0.1472
2.9121	0.0324	0.0797	0.0000	0.1472
2.9670	0.0284	0.0826	0.0000	0.1472
3.0000	0.0243	0.0843	0.0000	0.1472

Surface tention ROW Hydraulic Table

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Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.2516	0.0843	0.0000	0.2944	0.0000
3.0549	0.2559	0.0982	0.0000	0.2944	0.0000
3.1099	0.2602	0.1124	0.0000	0.3201	0.0000
3.1648	0.2645	0.1268	0.0000	0.3285	0.0000
3.2198	0.2688	0.1415	0.0000	0.3368	0.0000
3.2747	0.2732	0.1563	0.0000	0.3451	0.0000
3.3297	0.2775	0.1715	0.0000	0.3535	0.0000
3.3846	0.2818	0.1868	0.0000	0.3618	0.0000
3.4396	0.2862	0.2024	0.0000	0.3702	0.0000
3.4945	0.2905	0.2183	0.0000	0.3785	0.0000
3.5495	0.2948	0.2344	0.0000	0.3868	0.0000
3.6044	0.2992	0.2507	0.0000	0.3952	0.0000
3.6593	0.3036	0.2672	0.0000	0.4035	0.0000
3.7143	0.3079	0.2840	0.0000	0.4118	0.0000
3.7692	0.3123	0.3011	0.0000	0.4202	0.0000
3.8242	0.3166	0.3184	0.0000	0.4285	0.0000
3.8791	0.3210	0.3359	0.0000	0.4369	0.0000
3.9341	0.3254	0.3536	0.0000	0.4452	0.0000
3.9890	0.3298	0.3716	0.0000	0.4535	0.0000
4.0440	0.3342	0.3899	0.0650	0.4619	0.0000
4.0989	0.3386	0.4084	0.2160	0.4702	0.0000
4.1538	0.3430	0.4271	0.3989	0.4785	0.0000
4.2088	0.3474	0.4461	0.5737	0.4869	0.0000
4.2637	0.3518	0.4653	0.7058	0.4952	0.0000
4.3187	0.3562	0.4847	0.7843	0.5035	0.0000
4.3736	0.3606	0.5044	0.8556	0.5119	0.0000
4.4286	0.3651	0.5243	0.9164	0.5202	0.0000
4.4835	0.3695	0.5445	0.9734	0.5286	0.0000
4.5385	0.3739	0.5649	1.0272	0.5369	0.0000
4.5934	0.3784	0.5856	1.0783	0.5452	0.0000
4.6484	0.3828	0.6065	1.1272	0.5536	0.0000
4.7033	0.3873	0.6277	1.1739	0.5619	0.0000
4.7582	0.3917	0.6491	1.2189	0.5702	0.0000
4.8132	0.3962	0.6707	1.2623	0.5786	0.0000
4.8681	0.4006	0.6926	1.3043	0.5869	0.0000
4.9231	0.4051	0.7148	1.3449	0.5953	0.0000
4.9780	0.4096	0.7371	1.3844	0.6036	0.0000
5.0000	0.4114	0.7462	1.4227	0.6069	0.0000

Name : Surface tention ROW

Element Flows To:
Outlet 1 **Outlet 2**
Bioretention ROW

ANALYSIS RESULTS

Stream Protection Duration

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Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.26
Total Impervious Area:1.21

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.26
Total Impervious Area:1.21

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.348735
5 year	0.473557
10 year	0.559467
25 year	0.671797
50 year	0.758266
100 year	0.847153

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.465	0.000
1950	0.307	0.000
1951	0.641	0.000
1952	0.233	0.000
1953	0.547	0.000
1954	0.465	0.000
1955	0.356	0.000
1956	0.316	0.000
1957	0.310	0.000
1958	0.358	0.000
1959	0.452	0.000
1960	0.410	0.000
1961	0.326	0.000
1962	0.282	0.000
1963	0.348	0.000
1964	0.661	0.000
1965	0.229	0.000
1966	0.264	0.000
1967	0.344	0.000
1968	0.330	0.000
1969	0.311	0.000
1970	0.468	0.000
1971	0.746	0.000
1972	0.399	0.000
1973	0.321	0.000

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1974	0.183	0.000
1975	0.472	0.000
1976	0.408	0.000
1977	0.264	0.000
1978	0.270	0.000
1979	0.556	0.000
1980	0.280	0.000
1981	0.521	0.000
1982	0.474	0.000
1983	0.389	0.000
1984	0.265	0.000
1985	0.610	0.000
1986	0.354	0.000
1987	0.810	0.000
1988	0.318	0.000
1989	0.342	0.000
1990	0.412	0.000
1991	0.392	0.000
1992	0.344	0.000
1993	0.217	0.000
1994	0.190	0.000
1995	0.184	0.000
1996	0.219	0.000
1997	0.289	0.000
1998	0.301	0.000
1999	0.395	0.000
2000	0.524	0.000
2001	0.184	0.000
2002	0.343	0.000
2003	0.256	0.000
2004	0.333	0.000
2005	0.426	0.000
2006	0.302	0.000
2007	0.696	0.000
2008	0.297	0.000
2009	0.226	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.8097	0.0000
2	0.7462	0.0000
3	0.6959	0.0000
4	0.6612	0.0000
5	0.6407	0.0000
6	0.6102	0.0000
7	0.5562	0.0000
8	0.5475	0.0000
9	0.5237	0.0000
10	0.5213	0.0000
11	0.4744	0.0000
12	0.4717	0.0000
13	0.4676	0.0000
14	0.4649	0.0000
15	0.4647	0.0000
16	0.4517	0.0000

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17	0.4263	0.0000
18	0.4123	0.0000
19	0.4098	0.0000
20	0.4075	0.0000
21	0.3988	0.0000
22	0.3953	0.0000
23	0.3925	0.0000
24	0.3890	0.0000
25	0.3579	0.0000
26	0.3556	0.0000
27	0.3535	0.0000
28	0.3483	0.0000
29	0.3443	0.0000
30	0.3439	0.0000
31	0.3426	0.0000
32	0.3416	0.0000
33	0.3329	0.0000
34	0.3295	0.0000
35	0.3265	0.0000
36	0.3208	0.0000
37	0.3177	0.0000
38	0.3158	0.0000
39	0.3107	0.0000
40	0.3098	0.0000
41	0.3070	0.0000
42	0.3024	0.0000
43	0.3006	0.0000
44	0.2969	0.0000
45	0.2885	0.0000
46	0.2823	0.0000
47	0.2798	0.0000
48	0.2705	0.0000
49	0.2647	0.0000
50	0.2643	0.0000
51	0.2639	0.0000
52	0.2558	0.0000
53	0.2329	0.0000
54	0.2291	0.0000
55	0.2264	0.0000
56	0.2187	0.0000
57	0.2168	0.0000
58	0.1899	0.0000
59	0.1838	0.0000
60	0.1835	0.0000
61	0.1827	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1744	1321	0	0	Pass
0.1803	1183	0	0	Pass
0.1862	1062	0	0	Pass

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0.1921	939	0	0	Pass
0.1980	841	0	0	Pass
0.2039	744	0	0	Pass
0.2098	672	0	0	Pass
0.2157	594	0	0	Pass
0.2216	532	0	0	Pass
0.2274	470	0	0	Pass
0.2333	429	0	0	Pass
0.2392	390	0	0	Pass
0.2451	351	0	0	Pass
0.2510	321	0	0	Pass
0.2569	298	0	0	Pass
0.2628	268	0	0	Pass
0.2687	235	0	0	Pass
0.2746	215	0	0	Pass
0.2805	194	0	0	Pass
0.2864	168	0	0	Pass
0.2923	155	0	0	Pass
0.2982	138	0	0	Pass
0.3041	129	0	0	Pass
0.3100	118	0	0	Pass
0.3159	111	0	0	Pass
0.3218	106	0	0	Pass
0.3277	100	0	0	Pass
0.3336	88	0	0	Pass
0.3395	82	0	0	Pass
0.3454	74	0	0	Pass
0.3513	70	0	0	Pass
0.3572	65	0	0	Pass
0.3631	61	0	0	Pass
0.3690	60	0	0	Pass
0.3749	58	0	0	Pass
0.3808	53	0	0	Pass
0.3867	51	0	0	Pass
0.3926	49	0	0	Pass
0.3985	44	0	0	Pass
0.4044	41	0	0	Pass
0.4103	36	0	0	Pass
0.4162	33	0	0	Pass
0.4221	31	0	0	Pass
0.4280	30	0	0	Pass
0.4339	29	0	0	Pass
0.4398	28	0	0	Pass
0.4457	26	0	0	Pass
0.4516	26	0	0	Pass
0.4575	25	0	0	Pass
0.4634	24	0	0	Pass
0.4693	21	0	0	Pass
0.4752	19	0	0	Pass
0.4811	18	0	0	Pass
0.4870	18	0	0	Pass
0.4929	16	0	0	Pass
0.4988	16	0	0	Pass
0.5047	16	0	0	Pass
0.5106	16	0	0	Pass
0.5164	15	0	0	Pass
0.5223	14	0	0	Pass

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0.5282	12	0	0	Pass
0.5341	12	0	0	Pass
0.5400	11	0	0	Pass
0.5459	11	0	0	Pass
0.5518	10	0	0	Pass
0.5577	9	0	0	Pass
0.5636	9	0	0	Pass
0.5695	9	0	0	Pass
0.5754	9	0	0	Pass
0.5813	8	0	0	Pass
0.5872	8	0	0	Pass
0.5931	8	0	0	Pass
0.5990	7	0	0	Pass
0.6049	6	0	0	Pass
0.6108	6	0	0	Pass
0.6167	5	0	0	Pass
0.6226	5	0	0	Pass
0.6285	5	0	0	Pass
0.6344	5	0	0	Pass
0.6403	5	0	0	Pass
0.6462	4	0	0	Pass
0.6521	4	0	0	Pass
0.6580	4	0	0	Pass
0.6639	3	0	0	Pass
0.6698	3	0	0	Pass
0.6757	3	0	0	Pass
0.6816	3	0	0	Pass
0.6875	3	0	0	Pass
0.6934	3	0	0	Pass
0.6993	2	0	0	Pass
0.7052	2	0	0	Pass
0.7111	2	0	0	Pass
0.7170	2	0	0	Pass
0.7229	2	0	0	Pass
0.7288	2	0	0	Pass
0.7347	2	0	0	Pass
0.7406	2	0	0	Pass
0.7465	2	0	0	Pass
0.7524	1	0	0	Pass
0.7583	1	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Treatment?	Total Volume Needs Treatment	Volume Through Facility	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration	Percent Volume Infiltrated	Water Quality Percent	Comment

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```
Treated
                                    (ac-ft)        (ac-ft)                Credit
tention  ROW POC                N      80.93                                   N      100.00
Total Volume Infiltrated                 80.93         0.00      0.00                    100.00
0.00          0%          No Treat. Credit
Compliance with LID Standard 8
Duration Analysis Result = Passed
```

Perlnd and Implnd Changes

No changes have been made.

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BASIN AREA 1

FACILITY CALCULATIONS

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BASIN AREA 2A

FACILITY CALCULATIONS

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BASIN AREA 2B

FACILITY CALCULATIONS

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BASIN AREA 3

FACILITY CALCULATIONS

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BASIN AREA 4

FACILITY CALCULATIONS

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BASIN AREA 5

FACILITY CALCULATIONS

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BASIN AREA 6

FACILITY CALCULATIONS

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BASIN AREA ROW

FACILITY CALCULATIONS

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APPENDIX B

CONVEYANCE CALCULATIONS

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B.0 CONVEYANCE SYSTEM CALCULATIONS

Per the King County Surface Water Design Manual, the Rational Method will be used to calculate design peak flow rates.

B.1 RATIONAL METHOD PEAK FLOW CALCULATIONS

The Rational Method peak flow rate is calculated using the following equation:

$$Q = C * I * A$$

where:

Q = peak flow [cfs]
C = composite Rational Method runoff coefficient
A = contributing area [acre]
I = peak rainfall intensity [in/hr]

RUNOFF COEFFICIENT

The runoff coefficient is calculated by the following equation:

$$Cc = (C1*A1 + C2*A2..Cn*An)/At$$

where:

C_i = Curve number for a contributing area
ΣAi = Total Contributing Area
A_i = Area of a contributing area
C = Composite Rational Method coefficient for a watershed

INTENSITY

Rainfall intensity is calculated using the following equations:

$$I = P * i$$

where:

$$i = a * Tc^{(-b)}$$

I = peak rainfall intensity [in/hr]
P = 24-hour precipitation for a given return frequency [in]
i = unit peak intensity factor
a, b = empirical coefficients (KCSWDM)
T_c = Time of Concentration [min]

Return Fre	P (in) **
2 year	**1.70**
10 year	**2.40**
25 year	**2.70**
100 year	**3.30**

** Precipitation/Frequency values are from NOAA Isopluvials for Washington State.

TIME OF CONCENTRATION

A time of concentration of 6.3 minutes will be utilized in this design, which corresponds to the shortest storm duration with the largrest rainfall intensity. This yields the most conservative peak flow estimate via the Rational Method.

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B.2 PIPE SIZING - CB-1 TO AREA 2B POND

Inlet Structure: CB-1
Outlet Structure: 2B POND

Contributing Areas & Rational C-Values:

Total Area = 45,690 [sq. ft.]
= 1.05 [acre]

Surface Type	Area (sq. ft.)	Runoff Coef. (C) **
House/Roof Area	0	0.90
Road / Walk	35,736	0.90
Landscape	9,954	0.25
Total Area =	45,690	

Composite C-value for on-site project area = 0.76

TIME OF CONCENTRATION

A time of concentration of 6.3 minutes will be utilized in this design, which corresponds to the shortest storm duration with the largest rainfall intensity. This yields the most conservative peak flow estimate via the Rational Method.

Time of Concentration, Tc = 6.30 [min]

INTENSITY:

Return Freq	a	b	i	P [in]	I [in/hr]
2 year	1.58	0.58	0.543	1.70	0.92
10 year	2.44	0.64	0.751	2.40	1.80
25 year	2.66	0.65	0.804	2.70	2.17
100 year	2.61	0.63	0.819	3.30	2.70

DESIGN FLOW:

Return Freq	C	I [in/hr]	A [acre]	Q [cfs]
2 year	0.76	0.92	1.05	0.735
10 year	0.76	1.80	1.05	1.434
25 year	0.76	2.17	1.05	1.727
100 year	0.76	2.70	1.05	2.149

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PIPE SIZING:

All pipes will be sized for the 25-year, 24-hour event using the Manning's formula for open channel flow and checked for the 100-year, 24-hour storm.

Manning's formula for open channel flow =

25 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	PVC PIPE
Diameter, D =	12.0	inches
Slope =	0.0100	ft/ft
Depth of Flow, h =	5.9	inches

Results (assumes constant n):

Full Pipe Area, A =	0.8	sq ft
Flow Area, a =	0.4	sq ft
Wetted Perimeter, P =	1.6	feet
Hydraulic Radius, R =	0.2	feet
Q full =	3.56	cfs
V full =	4.54	fps

Design for 25-year storm:

@ depth = 5.9 inches, V =	4.50	fps	
@ depth = 5.9 inches, Q =	1.73	cfs	, OK

100 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	DI PIPE
Diameter, D =	12.0	inches
Slope =	0.0100	ft/ft
Depth of Flow, h =	6.8	inches

Results (assumes constant n):

Full Pipe Area, A =	0.8	sq ft
Flow Area, a =	0.5	sq ft
Wetted Perimeter, P =	1.7	feet
Hydraulic Radius, R =	0.3	feet
Q full =	3.56	cfs
V full =	4.54	fps

Check for a 100-year storm:

@ depth = 6.8 inches, V =	4.77	fps	
@ depth = 6.8 inches, Q =	2.19	cfs	, OK

All pipes upstream from this structure will have smaller contributing areas and will therefore have adequate capacity.

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B.3 PIPE SIZING - CB-7 TO AREA 3 POND

Inlet Structure: CB-7
Outlet Structure: 3 POND

Contributing Areas & Rational C-Values:

Total Area = 9,604 [sq. ft.]
= 0.22 [acre]

Surface Type	Area (sq. ft.)	Runoff Coef. (C) **
House/Roof Area	9,604	0.90
Road / Walk	0	0.90
Landscape	0	0.25
Total Area =	9,604	

Composite C-value for on-site project area = 0.90

TIME OF CONCENTRATION

A time of concentration of 6.3 minutes will be utilized in this design, which corresponds to the shortest storm duration with the largest rainfall intensity. This yields the most conservative peak flow estimate via the Rational Method.

Time of Concentration, Tc = 6.30 [min]

INTENSITY:

Return Freq	a	b	i	P [in]	I [in/hr]
2 year	1.58	0.58	0.543	1.70	0.92
10 year	2.44	0.64	0.751	2.40	1.80
25 year	2.66	0.65	0.804	2.70	2.17
100 year	2.61	0.63	0.819	3.30	2.70

DESIGN FLOW:

Return Freq	C	I [in/hr]	A [acre]	Q [cfs]
2 year	0.90	0.92	0.22	0.183
10 year	0.90	1.80	0.22	0.358
25 year	0.90	2.17	0.22	0.431
100 year	0.90	2.70	0.22	0.536

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PIPE SIZING:

All pipes will be sized for the 25-year, 24-hour event using the Manning's formula for open channel flow and checked for the 100-year, 24-hour storm.

Manning's formula for open channel flow =

25 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	PVC PIPE
Diameter, D =	6.0	inches
Slope =	0.0200	ft/ft
Depth of Flow, h =	3.2	inches

Results (assumes constant n):

Full Pipe Area, A =	0.2	sq ft
Flow Area, a =	0.1	sq ft
Wetted Perimeter, P =	0.8	feet
Hydraulic Radius, R =	0.1	feet
Q full =	0.79	cfs
V full =	4.04	fps

Design for 25-year storm:

@ depth = 3.2 inches, V =	4.15	fps	
@ depth = 3.2 inches, Q =	0.44	cfs	, OK

100 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	DI PIPE
Diameter, D =	6.0	inches
Slope =	0.0200	ft/ft
Depth of Flow, h =	3.7	inches

Results (assumes constant n):

Full Pipe Area, A =	0.2	sq ft
Flow Area, a =	0.1	sq ft
Wetted Perimeter, P =	0.9	feet
Hydraulic Radius, R =	0.1	feet
Q full =	0.79	cfs
V full =	4.04	fps

Check for a 100-year storm:

@ depth = 3.7 inches, V =	4.38	fps	
@ depth = 3.7 inches, Q =	0.56	cfs	, OK

All pipes upstream from this structure will have smaller contributing areas and will therefore have adequate capacity.

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B.4 PIPE SIZING - SD CO 1 TO AREA 6 POND

Inlet Structure: SD CO 1
Outlet Structure: 6 POND

Contributing Areas & Rational C-Values:

Total Area = 8,458 [sq. ft.]
= 0.19 [acre]

Surface Type	Area (sq. ft.)	Runoff Coef. (C) **
House/Roof Area	8,458	0.90
Road / Walk	0	0.90
Landscape	0	0.25
Total Area =	8,458	

Composite C-value for on-site project area = 0.90

TIME OF CONCENTRATION

A time of concentration of 6.3 minutes will be utilized in this design, which corresponds to the shortest storm duration with the largest rainfall intensity. This yields the most conservative peak flow estimate via the Rational Method.

Time of Concentration, Tc = 6.30 [min]

INTENSITY:

Return Freq	a	b	i	P [in]	I [in/hr]
2 year	1.58	0.58	0.543	1.70	0.92
10 year	2.44	0.64	0.751	2.40	1.80
25 year	2.66	0.65	0.804	2.70	2.17
100 year	2.61	0.63	0.819	3.30	2.70

DESIGN FLOW:

Return Freq	C	I [in/hr]	A [acre]	Q [cfs]
2 year	0.90	0.92	0.19	0.161
10 year	0.90	1.80	0.19	0.315
25 year	0.90	2.17	0.19	0.379
100 year	0.90	2.70	0.19	0.472

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PIPE SIZING:

All pipes will be sized for the 25-year, 24-hour event using the Manning's formula for open channel flow and checked for the 100-year, 24-hour storm.

Manning's formula for open channel flow =

25 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	PVC PIPE
Diameter, D =	6.0	inches
Slope =	0.0100	ft/ft
Depth of Flow, h =	3.7	inches

Results (assumes constant n):

Full Pipe Area, A =	0.2	sq ft
Flow Area, a =	0.1	sq ft
Wetted Perimeter, P =	0.9	feet
Hydraulic Radius, R =	0.1	feet
Q full =	0.56	cfs
V full =	2.86	fps

Design for 25-year storm:

@ depth = 3.7 inches, V =	3.09	fps	
@ depth = 3.7 inches, Q =	0.39	cfs	, OK

100 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	DI PIPE
Diameter, D =	6.0	inches
Slope =	0.0100	ft/ft
Depth of Flow, h =	4.3	inches

Results (assumes constant n):

Full Pipe Area, A =	0.2	sq ft
Flow Area, a =	0.2	sq ft
Wetted Perimeter, P =	1.0	feet
Hydraulic Radius, R =	0.1	feet
Q full =	0.56	cfs
V full =	2.86	fps

Check for a 100-year storm:

@ depth = 4.3 inches, V =	3.21	fps	
@ depth = 4.3 inches, Q =	0.48	cfs	, OK

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B.5 PIPE SIZING - CB-1A TO DITCH

Inlet Structure: CB1A
Outlet Structure: DITCH

Contributing Areas & Rational C-Values:

Total Area = 11,968 [sq. ft.]
= 0.27 [acre]

Surface Type	Area (sq. ft.)	Runoff Coef. (C) **
House/Roof Area	0	0.90
Road / Walk	11,968	0.90
Landscape	0	0.25
Total Area =	11,968	

Composite C-value for on-site project area = 0.90

TIME OF CONCENTRATION

A time of concentration of 6.3 minutes will be utilized in this design, which corresponds to the shortest storm duration with the largest rainfall intensity. This yields the most conservative peak flow estimate via the Rational Method.

Time of Concentration, Tc = 6.30 [min]

INTENSITY:

Return Freq	a	b	i	P [in]	I [in/hr]
2 year	1.58	0.58	0.543	1.70	0.92
10 year	2.44	0.64	0.751	2.40	1.80
25 year	2.66	0.65	0.804	2.70	2.17
100 year	2.61	0.63	0.819	3.30	2.70

DESIGN FLOW:

Return Freq	C	I [in/hr]	A [acre]	Q [cfs]
2 year	0.90	0.92	0.27	0.228
10 year	0.90	1.80	0.27	0.446
25 year	0.90	2.17	0.27	0.537
100 year	0.90	2.70	0.27	0.668

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PIPE SIZING:

All pipes will be sized for the 25-year, 24-hour event using the Manning's formula for open channel flow and checked for the 100-year, 24-hour storm.

Manning's formula for open channel flow =

25 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	PVC PIPE
Diameter, D =	8.0	inches
Slope =	0.0081	ft/ft
Depth of Flow, h =	4.0	inches

Results (assumes constant n):

Full Pipe Area, A =	0.3	sq ft
Flow Area, a =	0.2	sq ft
Wetted Perimeter, P =	1.0	feet
Hydraulic Radius, R =	0.2	feet
Q full =	1.09	cfs
V full =	3.12	fps

Design for 25-year storm:

@ depth = 4 inches, V =	3.12	fps	
@ depth = 4 inches, Q =	0.54	cfs	, OK

100 YEAR CALCULATION

Given Round Pipe:

Manning's Coef, n =	0.013	DI PIPE
Diameter, D =	8.0	inches
Slope =	0.0081	ft/ft
Depth of Flow, h =	4.6	inches

Results (assumes constant n):

Full Pipe Area, A =	0.3	sq ft
Flow Area, a =	0.2	sq ft
Wetted Perimeter, P =	1.1	feet
Hydraulic Radius, R =	0.2	feet
Q full =	1.09	cfs
V full =	3.12	fps

Check for a 100-year storm:

@ depth = 4.6 inches, V =	3.29	fps	
@ depth = 4.6 inches, Q =	0.68	cfs	, OK

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FIGURES

FIGURE 1 – VICINITY MAP AND SITE PLAN

FIGURE 2 – PROPOSED BASIN MAP

FIGURE 3 – TESC PLAN

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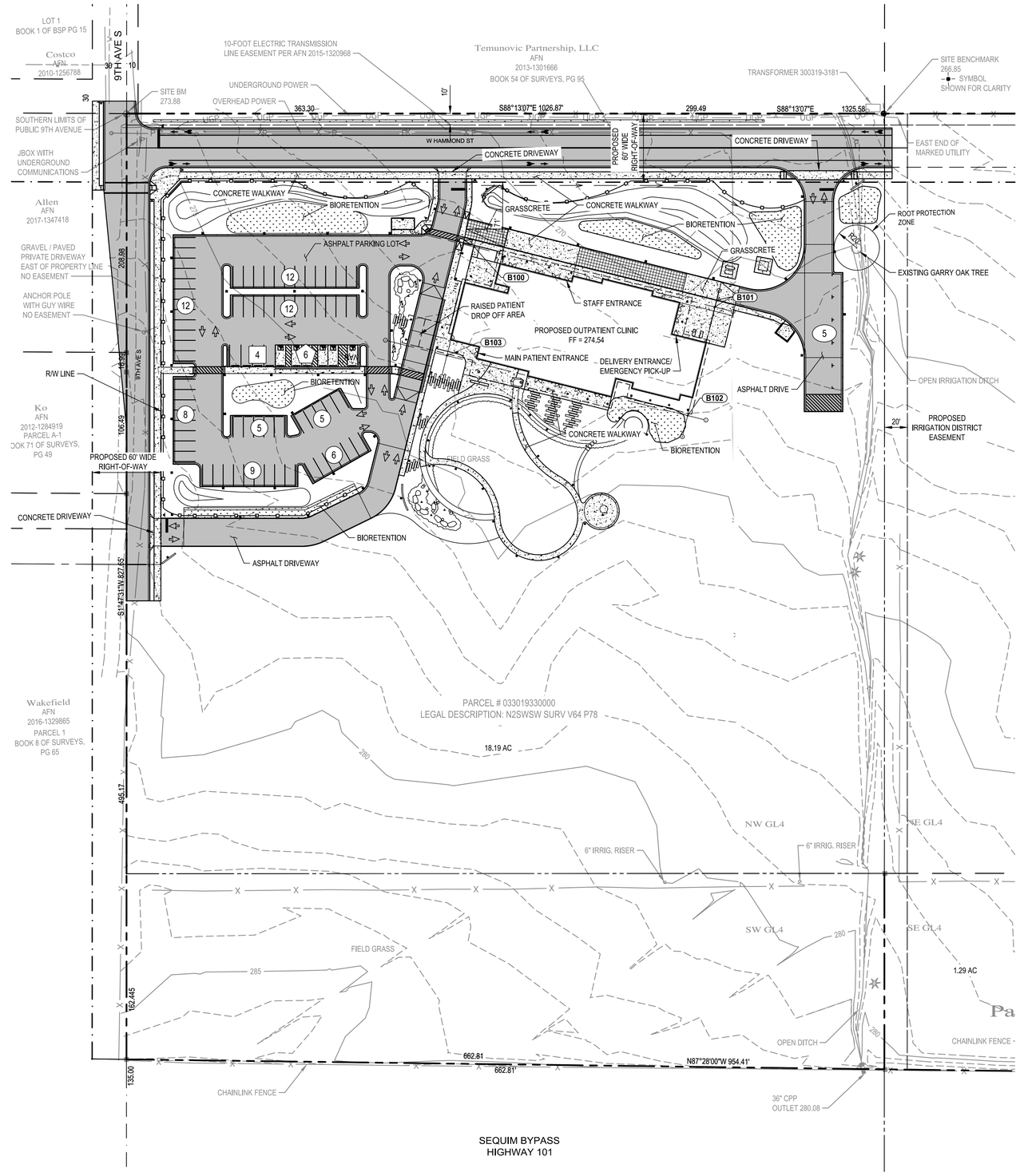
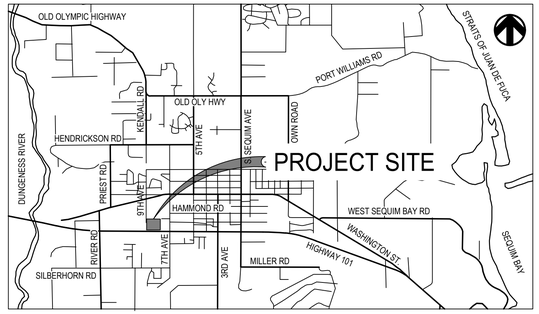
JAMESTOWN S'KLALLAM TRIBE

OUTPATIENT CLINIC

526 S. 9TH AVENUE

SEQUIM, WASHINGTON, CLALLAM COUNTY, USA





LOCATION MAP

NTS

GENERAL NOTES

1. SEE ENLARGED SITE PLAN SHEETS C4.0 AND C4.1 FOR HORIZONTAL CONTROL.
2. SEE UTILITY PLAN SHEETS C5.1 AND C5.2 FOR ALL ABOVE AND BELOW GRADE UTILITIES.

SHEET LIST

SHEET NO	SHEET TITLE
C1.0	OVERALL SITE PLAN
C1.1	NOTES
C1.2	NOTES AND ABBREVIATIONS
C1.3	SURVEY
C2.0	TESC PLAN
C2.1	TESC DETAILS
C3.0	OVERALL GRADING AND STORMWATER DRAINAGE PLAN
C3.1	ENLARGED GRADING AND STORMWATER DRAINAGE PLAN - WEST
C3.2	ENLARGED GRADING AND STORMWATER DRAINAGE PLAN - EAST
C3.3	SITE CROSS SECTIONS
C4.0	ENLARGED SITE PLAN - WEST
C4.1	ENLARGED SITE PLAN -EAST
C4.2	SITE DETAILS
C4.3	SITE DETAILS
C5.0	OVERALL UTILITY PLAN
C5.1	ENLARGED UTILITY PLAN - WEST
C5.2	ENLARGED UTILITY PLAN - EAST
C5.3	UTILITY PROFILES
C5.4	UTILITY DETAILS
C5.5	UTILITY DETAILS
C6.0	TYPICAL ROADWAY SECTIONS
C6.1	HAMMOND STREET ROADWAY PLANS AND PROFILE
C6.2	HAMMOND STREET ROADWAY PLANS AND PROFILE
C6.3	9TH AVE PLAN AND PROFILE
C7.0	CIRCULATION PLAN

PARKING DATA

PARKING REQUIRED:

TOTAL STALLS: 1 STALL/200 NET SF = 16,720 SF/200 SF = 83.6 = 84 STALLS

ADA STALLS: 1 ADA STALL/25 STALLS = 84 STALLS/25 STALLS = 3.36 = 4 STALLS

PARKING PROVIDED:

SYMBOL	DESCRIPTION	COUNT
#	OVERSIZED STALLS (10'x19') =	4
#	STANDARD STALLS (9'x19') =	69
#	ADA STALLS (INCLUDING 1 VAN STALL) =	6
#	PARALLEL PARKING STALLS (9'x20')=	5
	TOTAL STALLS =	84

BUILDING GRID COORDINATE TABLE

POINT ID	NORTHING	EASTING
B100	400712.28	1080820.65
B101	400653.26	1081029.47
B102	400558.95	1081002.81
B103	400617.97	1080793.99

LEGEND

PROPERTY LINE

SECTION LINE

EASEMENT LINE

50 25 0 50 100

SCALE: 1 INCH = 50 FEET

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Seattle, WA 98101
ph 206.623.0717
www.coffman.com

ALLISON L. HUNT
STATE OF WASHINGTON
45458
REGISTERED PROFESSIONAL ENGINEER
12/30/2019

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

BUILDING PERMIT APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO. 191652
DRAWN KB
CHECKED ALH
DATE DEC 30, 2019

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SHEET TITLE:

FIGURE 1: VICINITY MAP AND SITE PLAN

SHEET NO:

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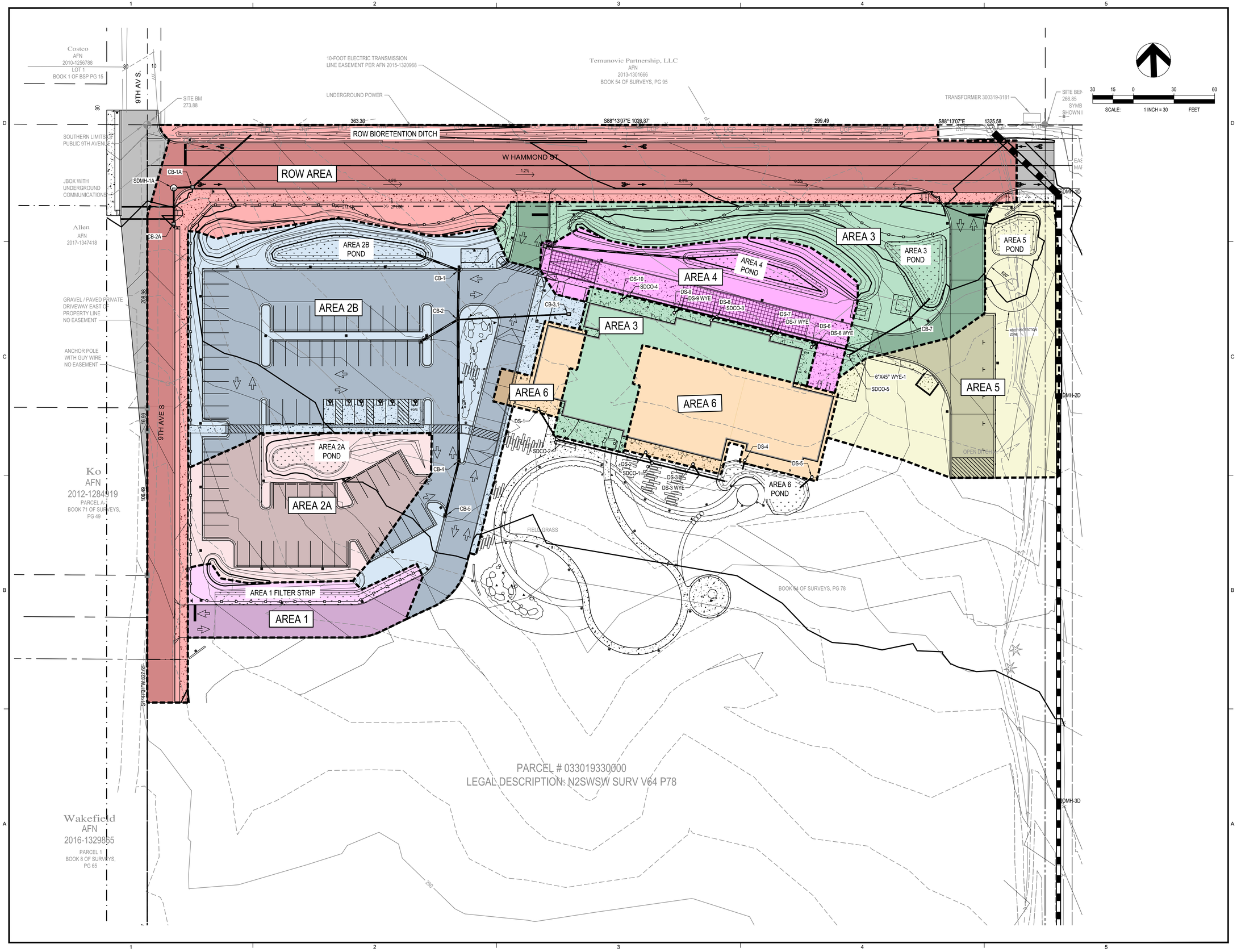

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PROFESSIONAL ENGINEER
12/30/2019

JAMESTOWN S'KLALLAM TRIBE
OUTPATIENT CLINIC
SEQUIM, WASHINGTON

BUILDING PERMIT APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	
CHECKED	ALH
DATE	DEC 30, 2019

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SHEET TITLE:

FIGURE 2: DEVELOPED DRAINAGE BASINS

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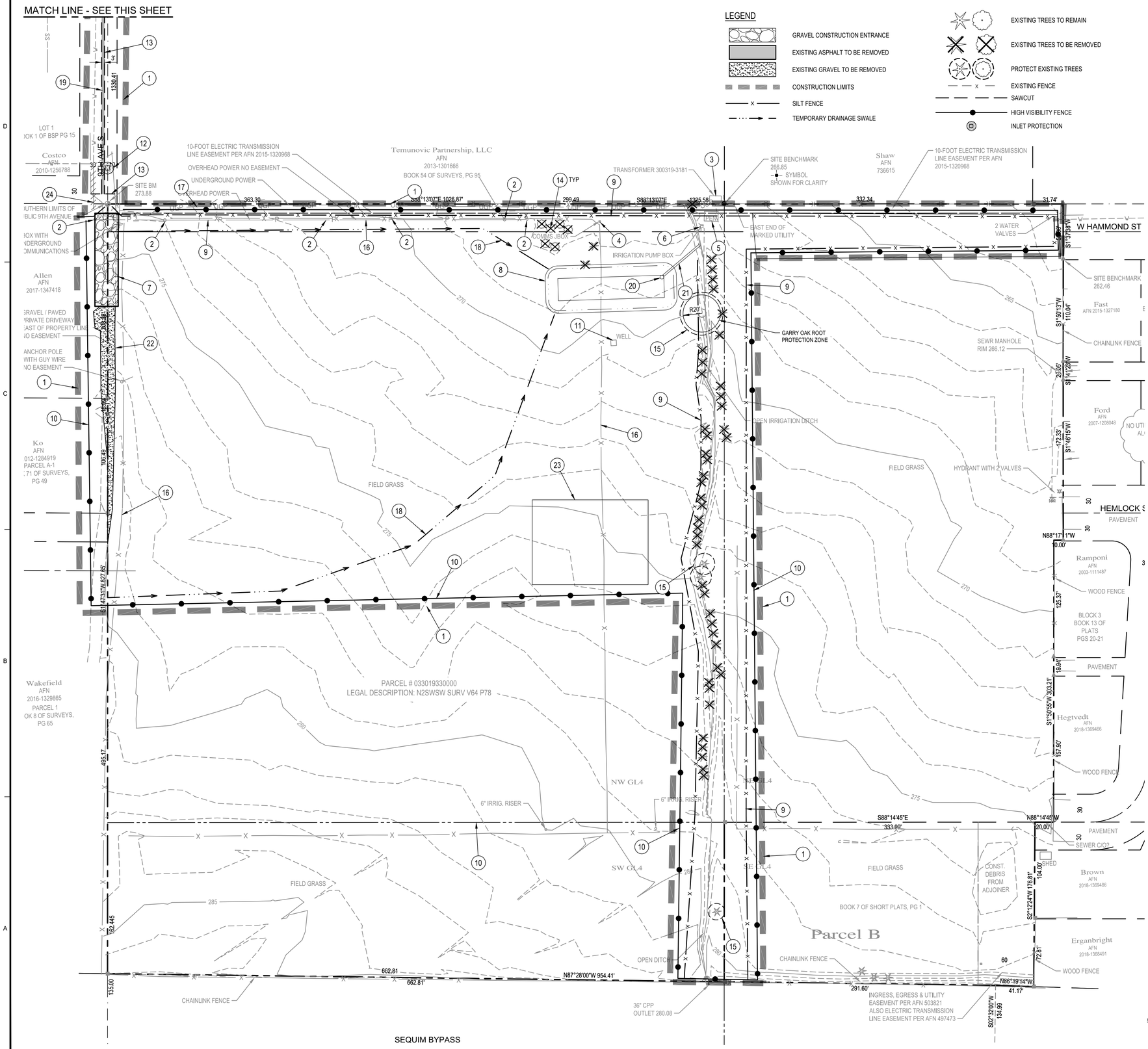
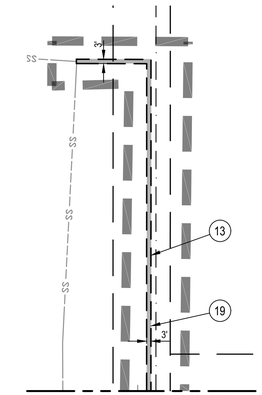
12/30/2019





DEMOLITION & TESC NOTES

1. LIMITS OF CONSTRUCTION
2. POWER SERVICE TO BE RELOCATED PER UTILITY PURVEYOR, IN PROGRESS
3. PROTECT TRANSFORMER DURING CONSTRUCTION
4. RELOCATE COMMUNICATION PER ELECTRICAL
5. REMOVE LEAN-TO
6. REMOVE IRRIGATION PUMP
7. INSTALL CONSTRUCTION ENTRANCE PER DETAIL 2, SHEET C2.1
8. INSTALL SEDIMENT POND WITH LINER FOR CONSTRUCTION
9. INSTALL FILTER FABRIC FENCE PER DETAIL 5, SHEET C2.1
10. INSTALL HIGH VISIBILITY FENCE PER WSDOT STD PLAN I-10.10-01
11. DECOMMISSION WELL PER WASHINGTON STATE DEPARTMENT OF ECOLOGY STANDARDS AND REMOVE ALL WATER FITTINGS AND PIPES
12. INSTALL INLET PROTECTION PER DETAIL 1, SHEET C2.1
13. SAWCUT
14. REMOVE EXISTING TREE
15. PROTECT EXISTING TREE PER DETAIL 9, SHEET C2.1
16. REMOVE EXISTING FENCE
17. PROTECT UNDERGROUND POWER
18. INSTALL TEMPORARY SWALE PER DETAIL 6, SHEET C2.1
19. REMOVE EXISTING ASPHALT
20. TESC POND STANDPIPE PER DETAIL 8, SHEET C2.1
21. INSTALL 52 LF 12" CMP OUTFALL PIPE
22. REMOVE GRAVEL DRIVE AS NEEDED
23. STOCKPIPE PER DETAIL 4, SHEET C2.1
24. DEMO EXISTING WATER LINE

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SEQUIM, WASHINGTON

BUILDING PERMIT APPLICATION

REV	DATE	DESCRIPTION

PROJ. NO.	191652
DRAWN	KB
CHECKED	ALH
DATE	DEC 30, 2019

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SHEET TITLE:

FIGURE 3: TEMPORARY EROSION AND SEDIMENT CONTROL

SHEET NO:

SHEET OF

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED MEDICAL ADDICTION TREATMENT (MAT) FACILITY
APNS: 03301933000 AND 033019339010
SEQUIM, WASHINGTON

PROJECT NO.102-19020
OCTOBER 24, 2019

Prepared for:

JAMESTOWN S'KLALLAM TRIBE
ATTN: MR. KIRK NELSON
1033 OLD BLYN HIGHWAY
SEQUIM, WA 98382

Prepared by:

KRAZAN & ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING DIVISION
1230 FINN HILL RD. NW, SUITE A
POULSBO, WASHINGTON 98370
(360) 598-2126

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

October 24, 2019 KA Project No. 102-19020

Jamestown S'Klallam Tribe
1033 Old Blyn Highway
Sequim, WA 98382

Attn: Kirk Nelson, Construction Manager
Email: knelson@jamestowntribe.org
Tel: 360-681-4602

Reference: Geotechnical Engineering Investigation
Proposed MAT Facility
Assessor Parcel Numbers (APNs): 03301933000 and 033019339010
Sequim, WA

Dear Mr. Nelson,

In accordance with your request, we have completed a Geotechnical Engineering Investigation for the referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Vijay Chaudhary, P.E.
Project Engineer

VC:MR

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October 24, 2019 KA Project No. 10219020

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED MEDICAL ADDICTION TREATMENT (MAT) FACILITY
APNS: 03301933000 AND 033019339010
SEQUIM, WASHINGTON

INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed MAT Facility project on APNs 03301933000 and 033019339010 in Sequim, Washington, as shown on the Vicinity Map in Figure 1. Discussions regarding site conditions are presented in this report, together with conclusions and recommendations pertaining to site preparation, excavations, structural fill, utility trench backfill, foundations, drainage, stormwater infiltration, and erosion control.

A site plan showing the approximate exploration locations is presented following the text of this report in Figure 2. A description of the field investigation, summary exploration logs, and the exploration log legend are presented in Appendix A along with the laboratory testing results. Appendix B contains a guide to earthwork specifications. Pavement design guidelines are presented in Appendix C. The recommendations in the main text of the report have precedence over the more general specifications in the appendices.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the subsurface soil and groundwater conditions at the subject property to develop geotechnical engineering recommendations for use in the design of specific construction elements, and to provide criteria for site preparation and earthwork construction.

Our scope of services was performed in general accordance with our proposal for this project, dated August 15, 2019 (Proposal Number G19025WAP) and included the following:

- Provide an exploration of the subsurface soil and groundwater conditions by conducting one (1) Cone Penetrometer Test (CPT) using a subcontracted testing rig and excavating six (6) to eight (8) test pits. The excavation services were provided by the client;
- Provide a site plan showing the CPT and test pit locations;
- Provide comprehensive CPT and test pit logs including soil stratification and classification, and groundwater levels where applicable;

- Provide recommended foundation type for the proposed structure;
- Provide recommendations for foundation design, including allowable foundation bearing pressure, anticipated settlements (both total and differential), coefficient of horizontal friction, passive soil pressure and frost penetration depth;
- Provide recommendations for seismic design considerations including site coefficient and ground acceleration based on the 2012/2015 IBC;
- Provide recommendations for structural fill materials, placement, and compaction;
- Provide recommendations regarding the suitability of on-site soils as structural fill;
- Provide recommendations for temporary excavations;
- Provide recommendations for site drainage and erosion control;
- Provide opinions and recommendations regarding stormwater infiltration feasibility and a design infiltration rate as per Volume III, Chapter 3 of the 2014 SMMWW
- Provide recommendations for the pavement design.

Environmental services, such as chemical analysis of soil and groundwater for possible environmental contaminants, were not included in our scope of services for this project.

PROPOSED CONSTRUCTION

Based on our review of the conceptual site plan and area map, prepared by Rice Fergus Miller, dated June 25, 2019, it is our understanding that that the northern portion of the site will be developed with the MAT Facility and will cover an area of roughly 15, 000 square feet. There are other structures shown on conceptual plan, which we understand will be developed in different phase. We understand that development will also include paved parking and landscape areas, and stormwater management system.

SITE CONDITIONS

The site consists of two (2) parcels covering an area of approximately 19.15 acres. The site is located between S 7th Avenue and S 9th Avenue, immediately east of S 9th Avenue in Sequim, Washington. The property is currently cleared and undeveloped. The property is mainly vegetated with grasses and there is a row of trees that runs through the middle of the property. There is an abandoned barn/outbuilding near the tree line. The site is bordered by scattered single family residences to the north, a residential development to the east, State Highway 101 to the south, and South 9th Avenue to the west with scattered single family residences beyond.

GEOLOGIC SETTING

The site lies within the central Puget Lowland. The lowland is part of a regional north-south trending trough that extends from southwestern British Columbia to near Eugene, Oregon. North of Olympia, Washington, this lowland is glacially carved, with a depositional and erosional history including at least four separate glacial advances/retreats. The Puget Lowland is bounded to the west by the Olympic Mountains and to the east by the Cascade Range. The lowland is filled with glacial and nonglacial sediments.

The Geologic Map of the Carlsborg 7.5-Minute Quadrangle, Clallam County, Washington, prepared by Henry W. Schasse and Karl W. Wegmann, (WA DNR Open File Report 2000-7) indicates that the site vicinity is underlain by Alluvium (Qa) and is near a contact with Older Alluvium (Qoa). Alluvium generally consists of moderately sorted silt, sand and gravel deposited by streams and rivers. Older Alluvium generally consists cobbly, pebbly, and bouldery gravel in a matrix of sand, silt, and clay.

FIELD INVESTIGATION

Six (6) exploratory test pits were completed to evaluate the subsurface soil and groundwater conditions in the proposed development area. The test pits were completed on October 3, 2019 with an excavator provided by the client. The test pits were excavated to depths of approximately 6.0 feet to 7.0 feet below the existing ground surface (BGS). A field engineer from Krazan and Associates was present during the explorations, examined the soils and geologic conditions encountered, obtained samples of the different soil types, and maintained logs of the explorations.

Representative samples of the subsurface soils encountered in the test pits were collected and sealed in plastic bags. These samples were transported to our laboratory for further examination and testing. The soils encountered in the exploratory test pits were continuously examined and visually classified in accordance with the Unified Soil Classification System (USCS).

Additionally, three (3) Cone Penetrometer Tests (CPT) were advanced at the site near the proposed building location. The explorations using the CPT rig were completed on same day as our test pit explorations. The CPT method consists of pushing an instrumented cone into the ground at a controlled rate and recording the measured soil parameters such as tip resistance, friction ratio, and pore pressure. These parameters are used to determine the geotechnical engineering properties of soils and delineate soil stratigraphy. The results of the CPT are included in Appendix A. The approximate locations of the CPTs are also shown on the Site Plan in Figure 2.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Six (6) exploratory test pits were completed at this site. Our exploratory test pits generally exposed medium dense native granular soils to the depth explored at 7.0 feet BGS. This section of the report is intended to provide a general description the subsurface conditions. Detailed descriptions of the soils encountered in each of the test pits are presented in the test pit logs in Appendix A.

TP-1 exposed 6-inches of organic topsoil underlain by moist, medium dense to dense, tan-brown gravel with sand and cobbles extending to a depth of approximately 4.0 feet BGS. Underlying the gravel with sand, TP-1 exposed moist, dense, brown sand with silt and gravel and cobbles to the depth explored at 6.0 feet BGS.

TP-2 exposed 6-inches of organic topsoil underlain by moist, medium dense to dense, tan-brown gravel with sand and cobbles extending to a depth of approximately 5.0 feet BGS. Underlying the gravel with sand, TP-2 exposed moist, dense, brown sand with silt and gravel and cobbles to the depth explored at 7.0 feet BGS.

TP-3 exposed 6-inches of organic topsoil underlain by moist, medium dense to dense, tan-brown gravel with sand and cobbles extending to a depth of approximately 3.5 feet BGS. Underlying the gravel with sand, TP-3 exposed moist, dense, brown sand with silt and gravel and cobbles to the depth explored at 6.0 feet BGS.

TP-4 exposed 6-inches of organic topsoil underlain by moist, medium dense to dense, tan-brown gravel with sand and cobbles extending to a depth of approximately 4.5 feet BGS. Underlying the gravel with sand, TP-4 exposed moist, dense, brown sand with silt and gravel and cobbles to the depth explored at 7.0 feet BGS.

TP-5 exposed 6-inches of organic topsoil underlain by moist, medium dense to dense, tan-brown gravel with sand and cobbles extending to a depth of approximately 5.0 feet BGS. Underlying the gravel with sand, TP-5 exposed moist, dense, brown sand with silt and gravel and cobbles to the depth explored at 6.0 feet BGS.

TP-6 exposed 6-inches of organic topsoil underlain by moist, medium dense to dense, tan-brown gravel with sand and cobbles extending to a depth of approximately 4.5 feet BGS. Underlying the gravel with sand, TP-6 exposed moist, dense, brown sand with silt and gravel and cobbles to the depth explored at 6.5 feet BGS.

GEOLOGIC HAZARDS

Erosion Concern/Hazard

The Natural Resources Conservation Services (NRCS) map for Clallam County Area, Washington, classifies the site area as Carlsborg gravelly sandy loam (0 to 5 percent slopes). The NRCS classifies the Carlsborg gravelly sandy loam as Hydrologic Group A with low potential for erosion in a disturbed state.

It has been our experience that soil erosion potential can be minimized through landscaping and surface water runoff control. Typically, erosion of exposed soils will be most noticeable during periods of rainfall and may be controlled by the use of normal temporary erosion control measures, such as silt fences, hay bales, mulching, control ditches or diversion trenching, and contour furrowing. Erosion control measures should be in place before the onset of wet weather.

Seismic Hazard

The 2015 International Building Code (IBC), Section 1613.3.2, refers to Chapter 20 of ASCE-7 for Site Class Definitions. It is our opinion that the overall soil profile corresponds to Site Class C as defined by Table 20.3-1 "Site Class Definitions," according to the 2010 ASCE-7 Standard. Site Class C applies to a "Stiff Soil" profile. The seismic site class is based on a soil profile extending to a depth of 100 feet. The soil explorations on this site extended to a maximum depth of approximately 8 feet and this seismic site class designation is based on the assumption that medium dense to very dense conditions continue below the depth explored.

We referred to the Applied Technology Council (ATC) website and 2015 IBC to obtain values for S_S, S_{MS}, S_{DS}, S_1, S_{M1}, S_{D1}, F_a, and F_v. The ATC website utilizes the most updated published data on seismic conditions from the United States Geological Survey. The seismic design parameters for this site are presented in the following table:

Seismic Design Parameters
(Reference: 2015 IBC Section 1613.3.2, ASCE, and ATC)

Seismic Item	Value
Site Coefficient F_a	1.000
S_s	1.320
S_{MS}	1.320
S_{DS}	0.880
Site Coefficient F_v	1.500
S_1	0.544
S_{M1}	0.816
S_{D1}	0.544

Additional seismic considerations include liquefaction potential and amplification of ground motions by loose/soft soil deposits. Liquefaction usually occurs under vibratory conditions such as those induced by seismic events. The liquefaction potential is highest for loose sand with a high groundwater table. Soil liquefaction is a state where soil particles lose contact with each other and become suspended in a viscous fluid. This suspension of the soil grains results in a complete loss of strength as the effective stress drops to zero. Liquefaction normally occurs under saturated conditions in soils such as loose sand in which the strength is purely frictional. However, liquefaction has occurred in soils other than clean sand.

The "Liquefaction Susceptibility Map of Clallam County, Washington," by Stephen Palmer, et al. (WADNR, September 2004) indicates that the property is located in an area of moderate to high liquefaction susceptibility. However, our explorations indicated the site is underlain by medium dense to very dense sand with gravel and cobbles are considered to have a ***low*** potential for liquefaction and amplification of ground motion.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on our explorations, it is our opinion that conventional spread foundations supported on medium dense or firmer native soil, or on structural fill extending to the medium dense or firmer native soil would provide adequate support for the proposed new building.

Our explorations generally encountered approximately 6-inches of organic topsoil underlain by the medium dense to dense granular native soils. The medium dense or firmer native soil should provide

adequate support for foundations, and pavement. Footings should extend through any organic soil, or loose/soft soil and be founded on the underlying medium dense or firmer native soil or structural fill extending to the competent native soils.

The upper 6.5 feet of soils encountered on this site are considered moisture-sensitive and will be easily disturbed and difficult to compact when wet. We recommend that construction take place during extended periods of dry weather in the summer months, if possible. If construction is to take place during wet weather, additional expenses and delays should be expected due to the wet conditions. Additional expenses could include the need for placing a blanket of rock spalls to protect exposed subgrades and construction traffic areas.

The on-site granular soils encountered may be suitable for use as structural fill material, provided the moisture content is near optimum and the soil could be suitably compacted to specifications. This will depend on the moisture content of the soils at the time of construction. Krazan and Associates should be retained to determine if the on-site soils can be used as structural fill material at the time of construction.

Site Preparation

In general, site clearing should include removal of any vegetation and associated root systems; wood; abandoned utilities; structures including foundations, basement walls and floors; rubble; and rubbish. Site stripping in the proposed building pad area should extend until all the organic topsoil has been removed. Further site preparation recommendations are provided in the **Foundations, Pavement,** and **Floor Slab and Exterior Flatwork** sections of this report.

After stripping is completed, the building pad area should be proof-rolled with a loaded tandem-axle dump truck and be visually inspected to identify any loose/soft areas. Any loose/soft soils should be excavated to expose firm native soils. The resulting excavations should be filled with structural fill consisting of approved on-site material, or imported materials. Structural fill material should be within ± 2 percent of the optimum moisture content, and the soils should be compacted to a minimum of 95 percent of the maximum dry density as determined by the ASTM D 1557 Test Method.

During wet weather conditions, which typically occur from October through May, subgrade stability problems and grading difficulties may develop due to excess moisture, disturbance of moisture sensitive soils and/or the presence of perched groundwater. Earthwork construction during extended periods of wet weather could create the need to remove wet disturbed soils if they cannot be suitably compacted due to elevated moisture contents. The on-site soils encountered in our test pits are considered to be moisture sensitive. If over-excavation is necessary, it should be confirmed through continuous monitoring and testing by a qualified geotechnical engineer or geologist. Soils that have become unstable may require drying to near their optimal moisture content before compaction is feasible. Selective drying may be accomplished by scarifying or windrowing surficial material during extended periods of dry, warm weather (typically during the summer months). If the soils cannot be dried back to a workable moisture condition, remedial measures may be required. Preparation of the site for wet weather conditions may

consist of the placement of a layer of aggregate base for the protection of exposed soils during construction.

It should be understood that even if Best Management Practices (BMPs) for soil protection are implemented for the wet season, there is a significant chance that additional soil mitigation work will be needed.

Any buried structures encountered during construction should be completely removed and backfilled with structural fill. Excavations, depressions, or soft and pliant areas extending below the planned subgrade elevations should be excavated to expose medium dense or firmer soil, and be backfilled with structural fill. In general, any septic tanks, underground storage tanks, debris pits, cesspools, or similar structures and deleterious materials should be completely removed. Any concrete footings encountered in the planned foundation area should be removed to depth of at least 3 feet below proposed footing elevations or as recommended by the geotechnical engineer. The resulting excavations should be backfilled with structural fill.

A representative of our firm should be available on request during all grading operations to observe, test and evaluate earthwork construction. This testing and observation is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction and stability of the material. The geotechnical engineer may reject any material that does not meet compaction and stability requirements. Further recommendations, contained in this report, are predicated upon the assumption that earthwork construction will conform to the recommendations set forth in this section and in the Structural Fill subsection of this report.

Temporary Excavations

The on-site soils have variable cohesion strengths, therefore the safe angles to which these materials may be cut for temporary excavations is limited, as the soils may be prone to caving and slope failures in temporary excavations deeper than 4 feet. We did not observe caving in our test pits. Temporary excavations in the native soils should be sloped no steeper than 1H:1V (horizontal to vertical) where room permits.

All temporary cuts should be in accordance with Washington Administrative Code (WAC) Part N, Excavation, Trenching, and Shoring. The temporary slope cuts should be visually inspected daily by a qualified person during construction work activities and the results of the inspections should be included in daily reports. The contractor is responsible for maintaining the stability of the temporary cut slopes and minimizing slope erosion during construction. The temporary cut slopes should be covered with plastic sheeting or other erosion control materials to help minimize erosion during wet weather and the slopes should be closely monitored until the permanent retaining systems and erosion control measures are complete. Materials should not be stored and equipment should not be operated within 10 feet of the top of any temporary cut slope.

A Krazan & Associates geologist or geotechnical engineer should observe, at least periodically, the temporary cut slopes during the excavation work. The reason for this is that all soil conditions may not be fully delineated by the limited sampling of the site from the geotechnical explorations. In the case of temporary slope cuts, the existing soil conditions may not be fully revealed until the excavation work exposes the soil. Typically, as excavation work progresses the maximum inclination of the temporary slope will need to be evaluated by the geotechnical engineer so that supplemental recommendations can be made. Soil and groundwater conditions can be highly variable. Scheduling for soil work will need to be adjustable, to deal with unanticipated conditions, so that the project can proceed smoothly and required deadlines can be met. If any variations or undesirable conditions are encountered during construction, Krazan & Associates should be notified so that supplemental recommendations can be made.

Structural Fill

Fill placed beneath foundations or other settlement-sensitive structures should be placed as structural fill. Structural fill, by definition, is placed in accordance with prescribed methods and standards, and is monitored by an experienced geotechnical professional. Field monitoring procedures would include the performance of a representative number of in-place density tests to document the attainment of the desired degree of relative compaction. The area to receive the fill should be suitably prepared as described in the **Site Preparation** subsection of this report prior to beginning fill placement.

Best Management Practices (BMP's) should be followed when considering the suitability of the existing materials for use as structural fill. The on-site soils may be suitable for reuse as structural fill, provided the soil is free of organic material and debris, and it is within ± 2 percent of the optimum moisture content. If the native soils are stockpiled for later use as structural fill, the stockpiles should be covered to protect the soil from wet weather conditions. We recommend that a representative of Krazan & Associates be on site during the excavation work to determine which soils are suitable for placement as structural fill.

Imported, all weather structural fill material should consist of well-graded gravel or a sand and gravel mixture with a maximum grain size of 3 inches and less than 5 percent fines (material passing the U.S. Standard No. 200 Sieve). All structural fill material should be submitted for approval to the geotechnical engineer at least 48 hours prior to delivery to the site.

Fill soils should be placed in horizontal lifts not exceeding 8 inches in thickness prior to compaction, moisture-conditioned as necessary, (moisture content of soil shall not vary by more than ±2 percent of optimum moisture) and the material should be compacted to at least 95 percent of the maximum dry density based on ASTM D1557 Test Method. In-place density tests should be performed on all structural fill to document proper moisture content and adequate compaction. Additional lifts should not be placed if the previous lift did not meet the compaction requirements or if soil conditions are not considered stable.

Foundations

Shallow Foundation

General: The proposed structure may be supported on a conventional spread foundation system bearing on the medium dense or firmer native soils or on structural fill including rock spalls or Control Density Fill (CDF) extending to the medium dense or firmer native soils. Based on our soil explorations, we interpreted the medium dense to dense, native bearing soils at this site to be approximately 1-foot below the current grade. We recommend that we evaluate the foundation subgrade soils during construction to determine the consistency throughout the building pad.

Soil Bearing: Conventional shallow spread footings supported on medium dense of firmer native soils, or on structural fill extending to the medium dense or firmer native soils, may be designed using an allowable bearing pressure of **2,500 pounds per square foot (psf)** for dead plus live loads. We have assumed isolated column loads of 30,000 pounds and wall loads of 2,000 pounds per lineal foot. *We should be contacted to re-evaluate the allowable bearing pressure, if the design loads are different than the stated assumed values.* This value may be increased by 1/3 for short duration loads such as wind or seismic loading. A representative of Krazan and Associates should evaluate the foundation bearing soil and observe structural fill placement.

Footings should have a minimum embedment depth of 18 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footing widths should be based on the anticipated loads and allowable soil bearing pressure. Footings should have a minimum width of at least 12 inches regardless of load. Water should not be allowed to accumulate in footing trenches. All loose or disturbed soil should be removed from the foundation excavations prior to placing concrete. Water should not be allowed to collect in the foundation excavations.

Structural Fill in Footing Areas: If rock spalls or structural fill soils are used, then the foundation excavations would need to be widened on both sides of the footing a distance equal to one-half of the depth of the over-excavation below the bottom of the footing. Structural fill should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. To reduce the volume of extra excavation needed for the footing trenches and to simplify structural fill placement, it may be practical to place Control Density Fill (CDF) to fill the deeper footing trenches to the planned footing subgrade elevations. If CDF is used, the trench may be excavated only slightly wider (6 inches wider on each side) than the footing.

Potential Foundation Settlement: For foundations constructed as recommended, the total settlement is not expected to exceed 1-inch. Differential settlement should be less than ½-inch. Most settlement is expected to occur during construction, as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated. It should be noted that the risk of liquefaction is considered low, given the composition and density of the native, on-site soils.

Design Parameters – Lateral Resistance: Resistance to lateral displacement can be computed using an allowable friction factor of 0.35 acting between the bases of foundations and the supporting subgrade soil. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 300 pounds per cubic foot (pcf) acting against the appropriate vertical footing faces (neglecting the upper 12 inches). The allowable friction factor and allowable equivalent fluid passive pressure values include a factor of safety of 1.5. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance.

Lateral Earth Pressures and Retaining Walls

We have developed criteria for the design of retaining or below grade walls. Our design parameters are based on retention of the in-place soils. The parameters are also based on level, well-drained wall backfill conditions. Walls may be designed as "restrained" retaining walls based on "at-rest" earth pressures, plus any surcharge on top of the walls as described below, if the walls are braced to restrain movement and/or movement is not acceptable. Unrestrained walls may be designed based on "active" earth pressure, if the walls are not part of the buildings and some movement of the retaining walls is acceptable. Acceptable lateral movement equal to at least 0.2 percent of the wall height would warrant the use of "active" earth pressure values for design. We recommend that walls supporting horizontal backfill and not subjected to hydrostatic forces be designed using a triangular earth pressure distribution equivalent to that exerted by a fluid with a density of 35 pcf for yielding (active condition) walls, and 55 pcf for non-yielding (at-rest condition) walls.

The stated lateral earth pressures do not include the effects of hydrostatic pressure generated by water accumulation behind the retaining walls or loads imposed by construction equipment, foundations or roadways adjacent to the wall (surcharge loads). To minimize the lateral earth pressure and prevent the buildup of water pressure against the walls, continuous footing drains (with cleanouts) should be provided at the bases of the walls. The footing drains should consist of a minimum 4-inch diameter rigid PVC perforated pipe, sloped to drain, with perforations placed near the bottom. The drainpipe should be enveloped by 6 inches of washed gravel in all directions wrapped in filter fabric to prevent the migration of silt and clay into the drain.

The wall fill adjacent to and extending a lateral distance of at least 2 feet behind the walls should consist of free-draining granular material. All free-draining backfill should contain less than 3 percent fines (passing the U.S. Standard No. 200 Sieve) based upon the fraction passing the U.S. Standard No. 4 Sieve with at least 30 percent of the material being retained on the U.S. Standard No. 4 Sieve. Alternatively, a drainage composite may be used. It should be realized that the primary purpose of the free-draining material is the reduction of hydrostatic pressure. Some potential for the moisture to contact the back face of the wall may exist, even with treatment, which may require that more extensive waterproofing be specified for walls, which require interior moisture sensitive finishes.

We recommend that the wall fill be compacted to at least 95 percent of the maximum dry density based on ASTM D1557 Test Method. In-place density tests should be performed to verify adequate compaction. Soil compactors place transient surcharges on the backfill. Consequently, only light hand

operated equipment is recommended for fill compaction within 3 feet of walls so that excessive stress is not imposed on the walls.

Floor Slabs and Exterior Flatwork

Before the placement of concrete floors or sidewalks on the site, or before any floor supporting fill is placed, the organic topsoil must be removed. The subgrade should then be proof-rolled to confirm that the subgrade contains no soft or deflecting areas. Areas of yielding soils should be excavated to *at least 1 foot* below the planned slab subgrade and then backfilled with structural fill.

Any additional fill used to increase the elevation of the floor slab should meet the requirements of structural fill. Fill soils should be placed in horizontal lifts not exceeding 8 inches loose thickness, moisture-conditioned as necessary, (moisture content of soil shall not vary by more than ±2 percent of optimum moisture) and the material should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557.

Floor slabs may be designed using a modulus of subgrade reaction value of k = 200 pounds per cubic inch (pci) for slabs supported on medium dense or firmer native soils or on structural fill extending to medium dense or firmer native soil.

In areas where it is desired to reduce floor dampness, such as areas covered with moisture sensitive floor coverings, we recommend that concrete slab-on-grade floors be underlain by a water vapor retarder system. According to ASTM guidelines, the water vapor retarder should consist of a vapor retarder sheeting underlain by a minimum of 4-inches of compacted clean (less than 5 percent passing the U.S. Standard No. 200 Sieve), open-graded coarse rock of ¾-inch maximum size. The vapor retarder sheeting should be protected from puncture damage.

It is recommended that the utility trenches within the building pads be compacted, as specified in this report, to minimize the transmission of moisture through the utility trench backfill. Special attention to the drainage and irrigation adjacent to the buildings is recommended. Grading should establish drainage away from the structures and this drainage pattern should be maintained. Water should not be allowed to collect adjacent to the structures. Excessive irrigation within landscaped areas adjacent to the structure should not be allowed to occur. In addition, ventilation of the structure may be prudent to reduce the accumulation of interior moisture.

Erosion and Sediment Control

Erosion and sediment control (ESC) is used to minimize the transportation of sediment to wetlands, streams, lakes, drainage systems, and adjacent properties. Erosion and sediment control measures should be implemented and these measures should be in general accordance with local regulations. As a minimum, the following basic recommendations should be incorporated into the design of the erosion and sediment control features of the site:

1) Phase the soil, foundation, utility and other work, requiring excavation or the disturbance of the site soils, to take place during the dry season (generally May through September). However, provided precautions are taken using Best Management Practices (BMPs), grading activities can be undertaken during the wet season (generally October through April), but it should also be known that this may increase the overall cost of the project.

2) All site work should be completed and stabilized as quickly as possible.

3) Additional perimeter erosion and sediment control features may be required to reduce the possibility of sediment entering the surface water. This may include additional silt fences, silt fences with a higher Apparent Opening Size (AOS), construction of a berm, or other filtration systems.

4) Any runoff generated by dewatering discharge should be treated through construction of a sediment trap if there is sufficient space. If space is limited, other filtration methods will need to be incorporated.

Groundwater Influence on Structures and Earthwork Construction

The explorations were checked for the presence of groundwater seepage during exploratory operations. Groundwater seepage was not encountered in the test pits.

It should be recognized that groundwater elevations may fluctuate with time. The groundwater level will be dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, groundwater levels at the time of the field investigation may be different from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

If groundwater is encountered during construction, we should observe the conditions to determine if dewatering will be needed. Design of temporary dewatering systems to remove groundwater should be the responsibility of the contractor. If earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated. These soils may "pump," and the materials may not respond to densification techniques. Typical remedial measures include: disking and aerating the soil during dry weather; mixing the soil with drier materials; removing and replacing the soil with an approved fill material. A qualified geotechnical engineering firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Drainage

The ground surface should slope away from building pads and pavement areas, toward appropriate drop inlets or other surface drainage devices. It is recommended that adjacent exterior grades be sloped a

minimum of 2 percent for a minimum distance of 5 feet away from structures. Roof drains should be tightlined away from foundations. Roof drains should not be connected to the footing drains.

Pavement areas should be inclined at a minimum of 1 percent and drainage gradients should be maintained to carry all surface water to collection facilities, and suitable outlets. These grades should be maintained for the life of the project.

Specific recommendations for and design of storm water disposal systems or septic disposal systems are beyond the scope of our services and should be prepared by other consultants that are familiar with design and discharge requirements.

Utility Trench Backfill

We recommend that utility trench backfill be placed in general accordance with typical recommendations for structural fill placement. A firm and unyielding subgrade should allow for the proper placement of subsurface utilities. This could include the placement of geotextile and quarry rock in the bottom of utility trenches prior to placement of pipe bedding, utilities and trench backfill.

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards, by a contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the contractor. Traffic and vibration adjacent to trench walls should be minimized; cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

All utility trench backfill should consist of structural fill. Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. The upper 5 feet of utility trench backfill placed in pavement areas should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. Below 5 feet, utility trench backfill in pavement areas should be compacted to at least 90 percent of the maximum dry density based on ASTM Test Method D1557. Pipe bedding should be in accordance with the pipe manufacturer's recommendations.

The contractor is responsible for removing all water-sensitive soils from the trenches regardless of the backfill location and compaction requirements. The contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

We should be retained to evaluate proposed structural fill materials prior to construction to provide recommendations regarding how to place and evaluate fill performance. Pipe bedding should be in accordance with the pipe manufacturer's recommendations.

Pavement Design

Our explorations generally encountered medium dense to dense native granular soils. Undocumented fill was not encountered in our explorations. However, loose soils or undocumented fill maybe encountered in unexplored areas of the site. If loose soils or undocumented fill are encountered in the pavement subgrade, we recommend that subgrade modification techniques be considered. Subgrade modification typically includes the overexcavation of unsuitable materials, the placement of a high-strength geotextile fabric at the bottom of the over-excavated area, and then the placement of structural fill. Subgrade modification such as this is intended to disperse surcharge loads and therefore aid in pavement performance.

Where loose soils are encountered in the pavement subgrade, we recommend overexcavation of the loose soil/undocumented fill to at least 12 inches below the planned pavement subgrade elevation. We recommend that a high-strength geotextile separation fabric, such as Mirafi 600X or equivalent then be placed over the compacted soil. After the fabric is placed, the area should be filled to the planned pavement subgrade elevation with structural fill consisting of clean crushed rock, rock spalls or CDF. It should be noted that subgrade soils that have relatively high silt contents may be highly sensitive to moisture conditions. The subgrade strength and performance characteristics of a silty subgrade material may be dramatically reduced if it becomes wet.

Traffic loads were not provided, however, based on our knowledge of the proposed project, we expect the traffic to range from light duty (passenger automobiles) to heavy duty (firetrucks). The following tables show the recommended pavement sections for both light duty and heavy duty traffic loads.

ASPHALTIC CONCRETE (FLEXIBLE) PAVEMENT

Asphaltic Concrete	Aggregate Base*	Compacted Subgrade* **
4.0 in.	6.0 in.	12.0 in.

PORTLAND CEMENT CONCRETE (RIGID) PAVEMENT
4000 psi with FIBER MESH

Min. PCC Depth	Aggregate Base*	Compacted Subgrade* **
6.0 in.	6.0 in.	12.0 in.

** 95% compaction based on ASTM Test Method D1557*
*** A proof roll may be performed in lieu of in place density tests*

The asphaltic concrete depth in the flexible pavement tables should be a surface course type asphalt, such as Washington Department of Transportation (WSDOT) ½ inch HMA. The pavement specification in

Appendix C provides additional recommendations including aggregate base material. The asphaltic concrete depth in the flexible pavement tables should be a surface course type asphalt, such as Washington State Department of Transportation (WSDOT) ½ inch HMA.

Infiltration Testing and Analysis

The preliminary design infiltration rate was developed per the Small-Scale PIT method as stated in Volume III, Chapter 3 of the Department of Ecology 2014 Stormwater Management Manual for Western Washington (SWMMWW). This method provides a field test to estimate the initial saturated hydraulic conductivity (K_{sat}) for the subsurface soils encountered below the proposed infiltration facility. Correction factors are then applied to this measured value to account for site variability and number of locations tested, test method, and degree of influent control.

Changes in soil conditions and the corresponding infiltration rates are possible at different locations and depths. Accordingly, we recommend that additional tests (Small-Scale PIT) be performed once the design team establishes the type and location of the stormwater management system.

Based on our field explorations and small-scale PIT results, it is our opinion that the site is suitable for infiltration and the *preliminary* design infiltration rate of **6.0 inches per hour** would be appropriate for a well-maintained infiltration system using the native soils. The rate provided is a long-term design infiltration rate. The on-site stormwater infiltration system should be designed by a Washington State Licensed Civil Engineer.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our services as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. We should also be present during the construction of stormwater management system to evaluate the soils. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor. Furthermore, Krazan & Associates is not responsible for the contractor's procedures, methods, scheduling or management of the work site.

LIMITATIONS

Geotechnical engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences improves. Although your site was analyzed using the most appropriate current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to improvements in the field of geotechnical engineering, physical changes in the site either due to excavation or fill placement, new agency regulations or possible changes in the proposed structure after

the time of completion of the soils report may require the soils report to be professionally reviewed. In light of this, the owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that two years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. Our report, design conclusions and interpretations should not be construed as a warranty of the subsurface conditions. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those disclosed during our field investigation. The findings and conclusions of this report can be affected by the passage of time, such as seasonal weather conditions, manmade influences, such as construction on or adjacent to the site, natural events such as earthquakes, slope instability, flooding, or groundwater fluctuations. If any variations or undesirable conditions are encountered during construction, the geotechnical engineer should be notified so that supplemental recommendations can be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The geotechnical engineer should be notified of any changes so that the recommendations can be reviewed and reevaluated.

Misinterpretations of this report by other design team members can result in project delays and cost overruns. These risks can be reduced by having Krazan & Associates, Inc. involved with the design team's meetings and discussions after submitting the report. Krazan & Associates, Inc. should also be retained for reviewing pertinent elements of the design team's plans and specifications. Contractors can also misinterpret this report. To reduce this, risk Krazan & Associates. Inc. should participate in pre-bid and preconstruction meetings, and provide construction observations during the site work.

This report is a geotechnical engineering investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any environmental site assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater or atmosphere, or the presence of wetlands. Any statements or absence of statements, in this report or on any soils log regarding odors, unusual or suspicious items, or conditions observed are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessments.

The geotechnical information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical developments. We emphasize that this report is valid for this project as outlined above, and should not

be used for any other site. Our report is prepared for the exclusive use of our client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (360) 598-2126.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

10/24/19

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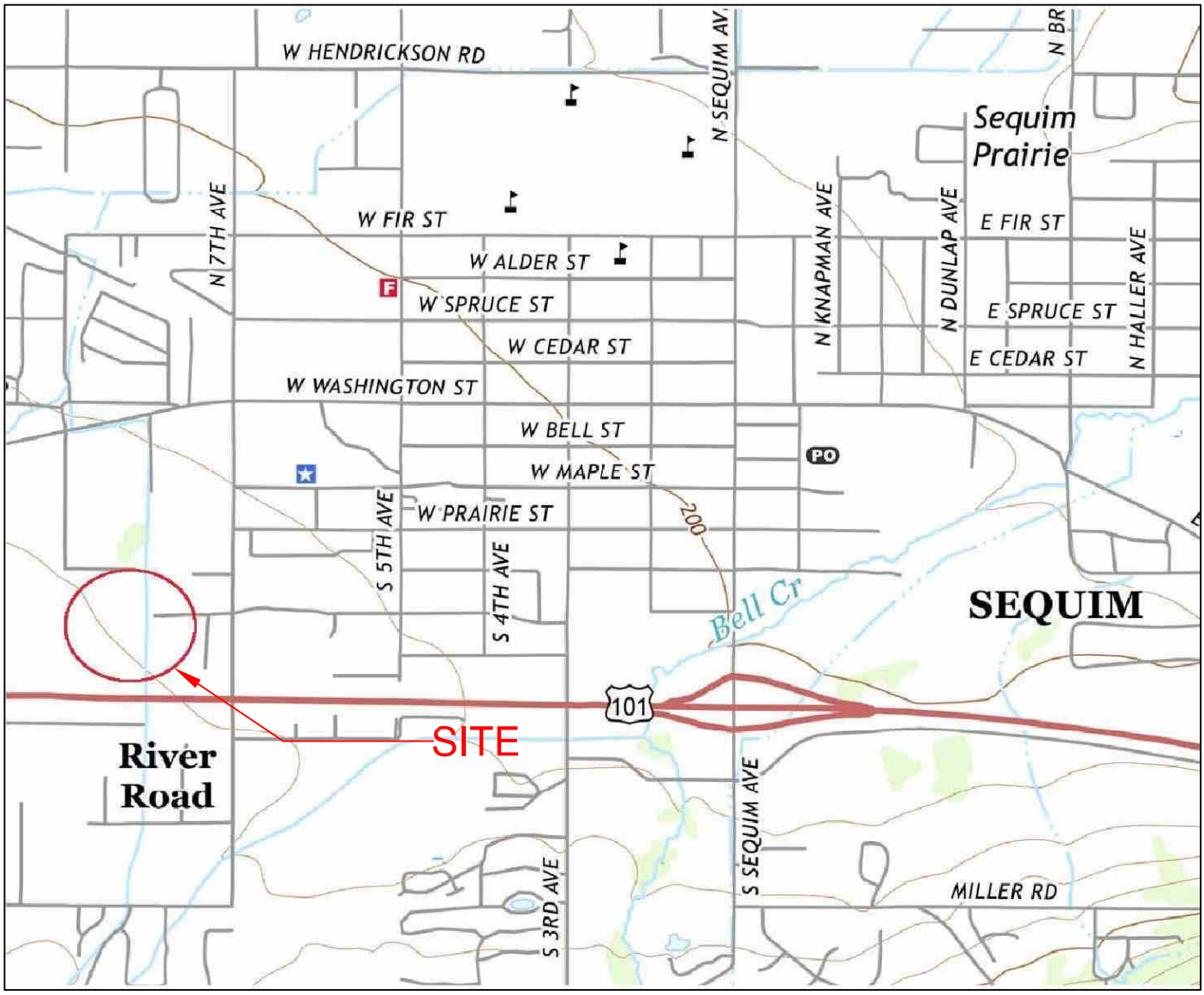
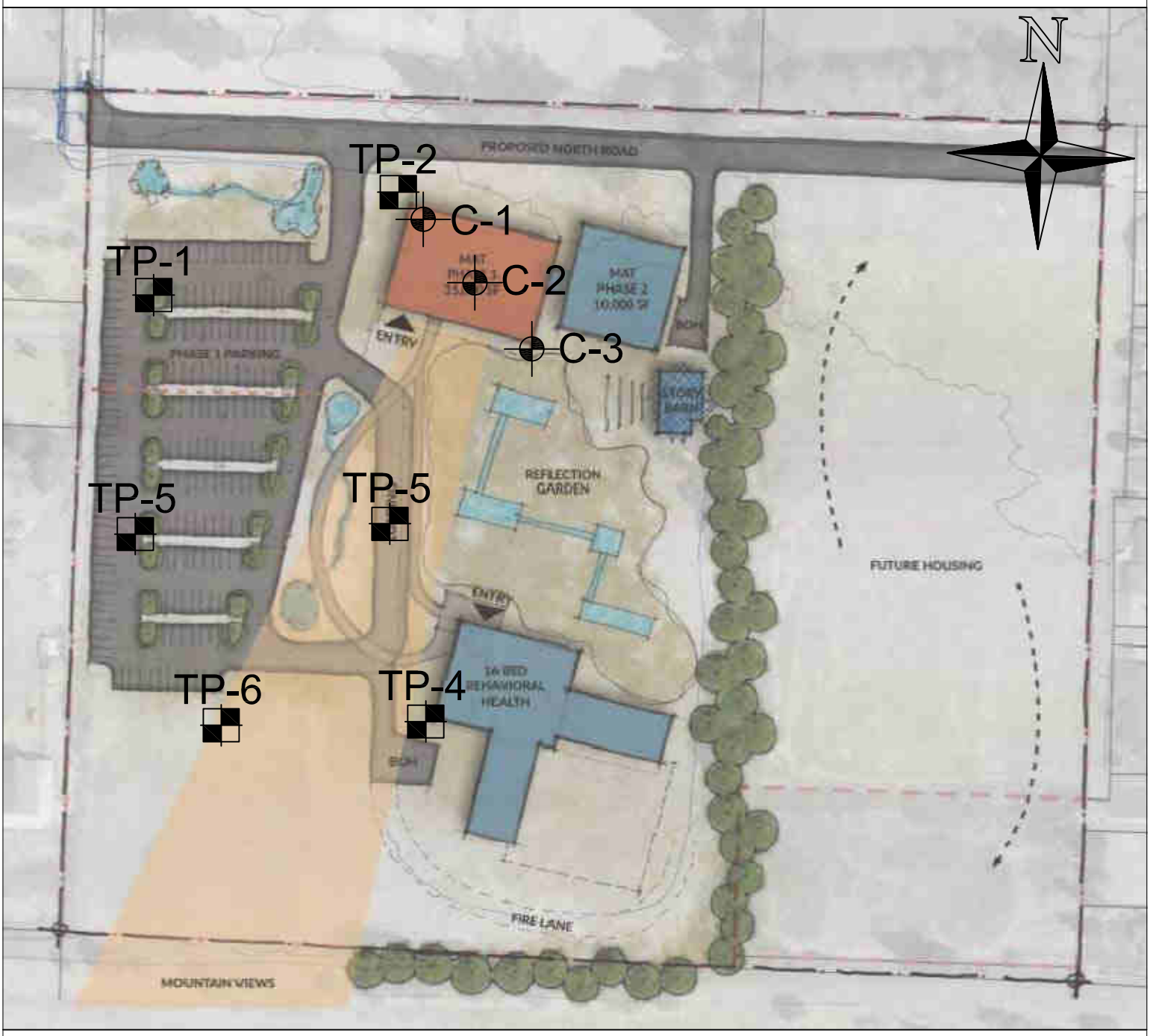
Project Engineer

VC:MR



Reference: USGS topographic map titled "Sequim Quadrangle, Washington, 7.5-Minute Series", dated 2017.

Vicinity Map	
Proposed MAT Facility	Figure 1
Sequim, WA	
Project Number: 102-19020	Drawn By: V.C. Date: October 2019
Krazan & ASSOCIATES, INC.	Not to Scale



LEGEND

TP-1 Number and Approximate Location of Test Pits

C-1 Number and Approximate Location of Cone Penetration Test (CPT)

Reference: Conceptual Site Plan, prepared by Rice Fergus Miller, dated June 25, 2019.

Site Plan

Proposed MAT Facility	Figure 2
Sequim, WA	
Project Number: 102-19020	Drawn By: V.C. Date: October 2019
Krazan & ASSOCIATES, INC.	Not to Scale

APPENDIX A

FIELD INVESTIGATION – LABORATORY TESTING

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploration program. Six (6) exploratory test pits were excavated and sampled for subsurface exploration at this site. The test pits were completed on October 3, 2019 with an excavator. The excavation services was provided by the client. The test pits were excavated approximately to a depth 6.0 feet to 7.0 feet BGS. The approximate exploratory test pit locations are shown on the Site Plan (Figure 2). The depths shown on the attached test pit logs are from the existing ground surface at the time of our exploration.

The soils encountered were logged in the field during the exploration and are described in accordance with the Unified Soil Classification System (USCS). All samples were returned to a Krazan laboratory for further evaluation. The logs of the soil exploration are presented in this appendix.

We also explored the subsurface conditions at the site with three (3) Cone Penetration Tests (CPT). The CPT method consists of pushing an instrumented cone into the ground at a controlled rate and recording the measured soil parameters such as tip resistance, friction ratio, and pore pressure. These parameters are used to determine the geotechnical engineering properties of soils and delineate soil stratigraphy. Each of the CPTs were terminated at refusal when the cone could not be advanced any deeper. CPT-1 extended to a depth of approximately 8.0 feet BGS, CPT-2 extended to a depth of approximately 5.0 feet BGS, and CPT-3 extended to a depth of approximately 6.0 feet BGS. The approximate locations of the Cone Penetrometer Tests are shown on the Site Plan in Figure 2.

Laboratory Testing

The laboratory testing program was developed primarily to determine the index properties of the soils. Test results were used for soil classification and as criteria for determining the engineering suitability of the surface and subsurface materials encountered. The laboratory test results are included in this appendix.

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-1

PROJECT: MAT Facility | **DATE: 10/3/19**
PROJECT NO.: 102-19020 | **PAGE: 1 of 1**
CONTRACTOR: Jamestown | **SURFACE ELEV.:**
SAMPLE METHOD: Grab | **LOCATION: Sequim, WA**

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits (10 20 30 40 50 60 70 80)
			Organic Topsoil			
1			**Gravel with Sand (GP)** Tan-brown fine to coarse sand with gravel and cobbles. (moist, medium dense to dense)			
2						
				S-1	G	
3						
4			**Sand with Silt and Gravel (SW-SM)** Brown fine to coarse sand with silt and gravel and cobbles. (moist, dense)			
5						
				S-2	G	
6			End of Exploratory Test Pit			
7						
8						
9						
10						

Water Level Initial: ▽ Final: ▼

Water Observations: Groundwater seepage was not encountered.

Notes: Small-Scale PIT was performed at approximatley 3 feet below ground surface.

Logged By: CB

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-2

PROJECT: MAT Facility | **DATE: 10/3/19**
PROJECT NO.: 102-19020 | **PAGE: 1 of 1**
CONTRACTOR: Jamestown | **SURFACE ELEV.:**
SAMPLE METHOD: Grab | **LOCATION: Sequim, WA**

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits (10 20 30 40 50 60 70 80)
			Organic Topsoil			
1			**Gravel with Sand (GP)** Tan-brown fine to coarse gravel with sand and cobbles. (moist, medium dense to dense)			
2						
3				S-1	G	
4						
5			**Sand with Silt and Gravel (SW-SM)** Brown fine to coarse sand with silt and gravel and cobbles. (moist, dense)			
6				S-2	G	
7			End of Exploratory Test Pit			
8						
9						
10						

Water Level Initial: ▽ Final: ▼

Water Observations: Groundwater seepage was not encountered.

Notes: Caving was not encountered.

Logged By: CB

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-3

PROJECT: MAT Facility | **DATE: 10/3/19**
PROJECT NO.: 102-19020 | **PAGE: 1 of 1**
CONTRACTOR: Jamestown | **SURFACE ELEV.:**
SAMPLE METHOD: Grab | **LOCATION: Sequim, WA**

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits (10 20 30 40 50 60 70 80)
			Organic Topsoil			
1			**Gravel with Sand (GP)** Tan-brown fine to coarse gravel with sand and cobbles. (moist, medium dense to dense)			
2						
3				S-1	G	
4			**Sand with Silt and Gravel (SW-SM)** Brown fine to coarse sand with silt and gravel and cobbles. (moist, dense)			
5						
6				S-2	G	
			End of Exploratory Test Pit			
7						
8						
9						
10						

Water Level Initial: ▽ Final: ▼

Water Observations: Groundwater seepage was not encountered.

Notes: Caving was not encountered.

Logged By: CB

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-4

PROJECT: MAT Facility | **DATE: 10/3/19**
PROJECT NO.: 102-19020 | **PAGE: 1 of 1**
CONTRACTOR: Jamestown | **SURFACE ELEV.:**
SAMPLE METHOD: Grab | **LOCATION: Sequim, WA**

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits (10 20 30 40 50 60 70 80)
			Organic Topsoil			
1			**Gravel with Sand (GP)** Tan-brown fine to coarse gravel with sand and cobbles. (moist, medium dense to dense)			
2						
3				S-1	G	
4						
5			**Sand with Silt and Gravel (SW-SM)** Brown fine to coarse sand with silt and gravel and cobbles. (moist, dense)			
6						
7				S-2	G	
			End of Exploratory Test Pit			
8						
9						
10						

Water Level Initial: ▽ Final: ▼

Water Observations: Groundwater seepage was not encountered.

Notes: Caving was not encountered.

Logged By: CB

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-5

PROJECT: MAT Facility | **DATE: 10/3/19**
PROJECT NO.: 102-19020 | **PAGE: 1 of 1**
CONTRACTOR: Jamestown | **SURFACE ELEV.:**
SAMPLE METHOD: Grab | **LOCATION: Sequim, WA**

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits (10 20 30 40 50 60 70 80)
			Organic Topsoil			
1			**Gravel with Sand (GP)** Tan-brown fine to coarse gravel with sand and cobbles. (moist, medium dense to dense)			
2						
3				S-1	G	
4						
5			**Sand with Silt and Gravel (SW-SM)** Brown fine to coarse sand with silt and gravel and cobbles. (moist, dense)	S-2	G	
6			End of Exploratory Test Pit			
7						
8						
9						
10						

Water Level Initial: ▽ Final: ▼

Water Observations: Groundwater seepage was not encountered.

Notes: Caving was not encountered.

Logged By: CB

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-6

PROJECT: MAT Facility | **DATE: 10/3/19**
PROJECT NO.: 102-19020 | **PAGE: 1 of 1**
CONTRACTOR: Jamestown | **SURFACE ELEV.:**
SAMPLE METHOD: Grab | **LOCATION: Sequim, WA**

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits (10 20 30 40 50 60 70 80)
			Organic Topsoil			
1			**Gravel with Sand (GP)** Tan-brown fine to coarse gravel with sand and cobbles. (moist, medium dense to dense)			
2						
3				S-1	G	
4						
5			**Sand with Silt and Gravel (SW-SM)** Brown fine to coarse sand with silt and gravel and cobbles. (moist, dense)			
6				S-2	G	
7			End of Exploratory Test Pit			
8						
9						
10						

Water Level Initial: ▽ Final: ▼

Water Observations: Groundwater seepage was not encountered.

Notes: Caving was not encountered.

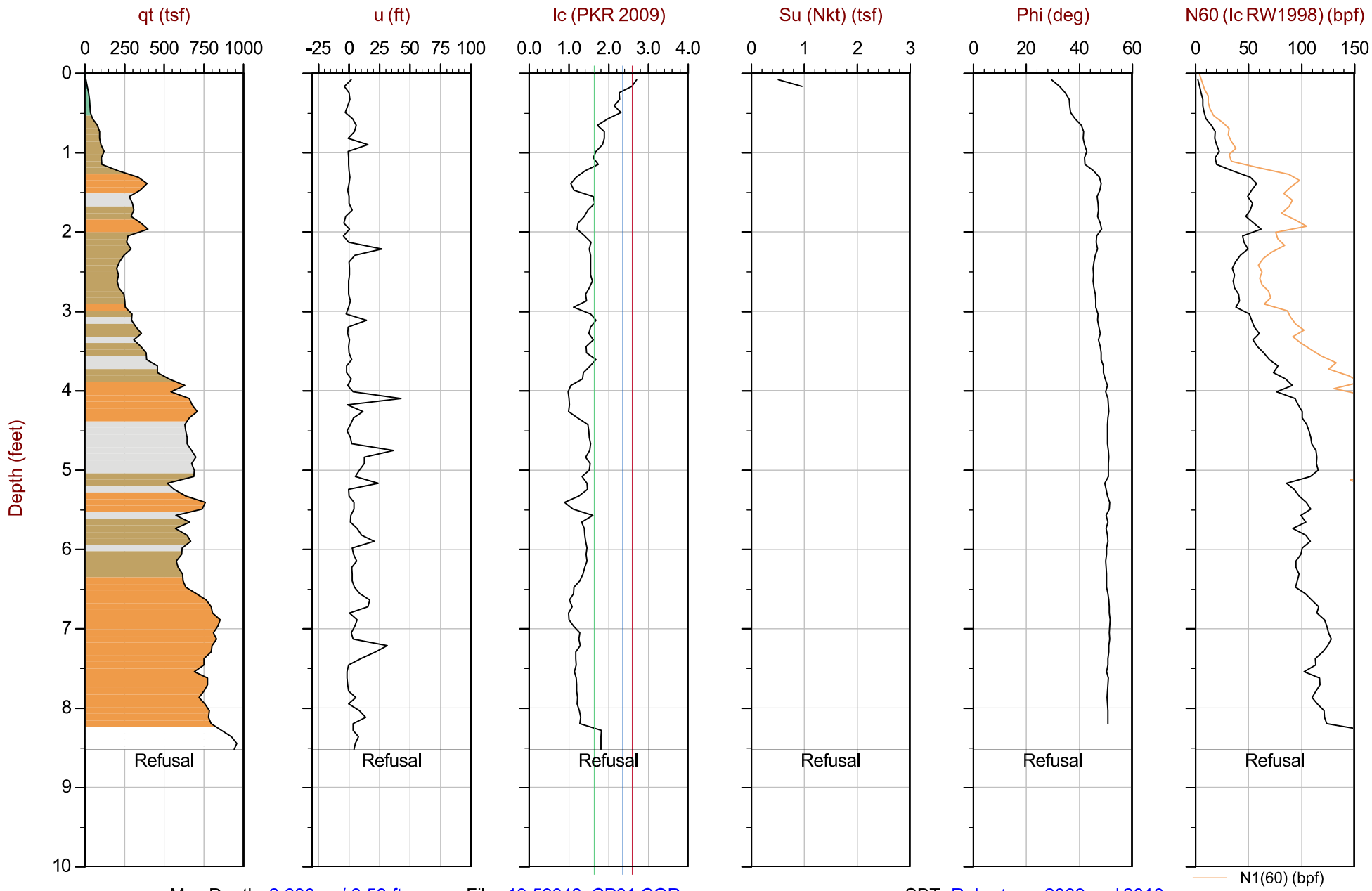
Logged By: CB

CONETEC

Krazan & Associates

Job No: 19-59048
Date: 2019-10-08 09:46
Site: MAT Facility

Sounding: CPT-01
Cone: 536:T1500F15U500



Max Depth: 2.600 m / 8.53 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 19-59048_CP01.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: Lat: 48.07561 Long: -123.12284

△ Dissipation with estimated Ueq value ▲ Dissipation, equilibrium not achieved ● Equilibrium Pore Pressure (Ueq) —— Hydrostatic Line

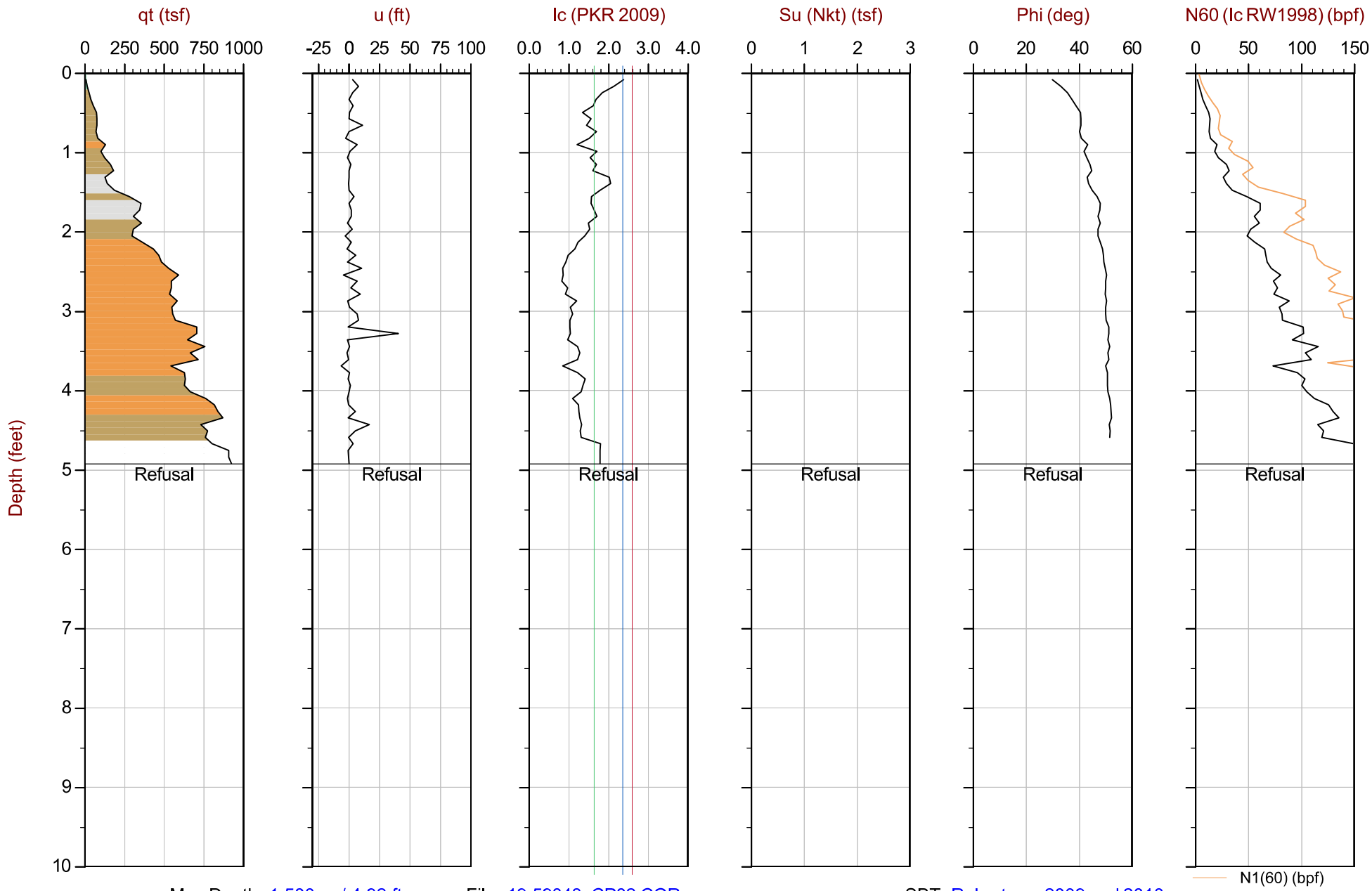
The reported coordinates were acquired from hand-held GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Krazan & Associates

Job No: 19-59048
Date: 2019-10-08 10:29
Site: MAT Facility

Sounding: CPT-02
Cone: 536:T1500F15U500



Max Depth: 1.500 m / 4.92 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 19-59048_CP02.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: Lat: 48.07575 Long: -123.12237

△ Dissipation with estimated Ueq value ▲ Dissipation, equilibrium not achieved ● Equilibrium Pore Pressure (Ueq) —— Hydrostatic Line

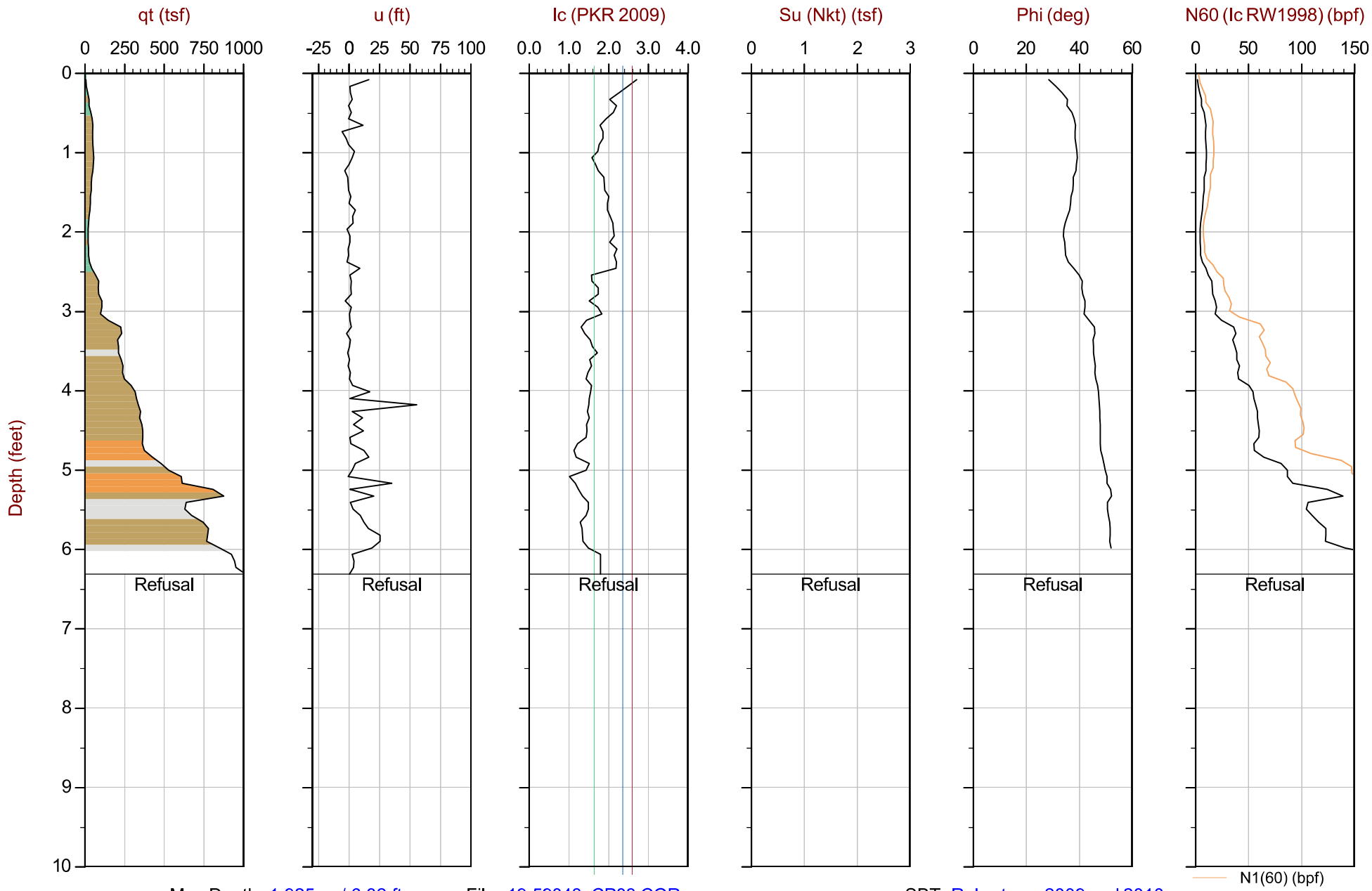
The reported coordinates were acquired from hand-held GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Krazan & Associates

Job No: 19-59048
Date: 2019-10-08 10:58
Site: MAT Facility

Sounding: CPT-03
Cone: 536:T1500F15U500



Max Depth: 1.925 m / 6.32 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 19-59048_CP03.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: Lat: 48.07563 Long: -123.12257

△ Dissipation with estimated Ueq value ▲ Dissipation, equilibrium not achieved ● Equilibrium Pore Pressure (Ueq) —— Hydrostatic Line

The reported coordinates were acquired from hand-held GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Geotechnical Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified to by the project Civil Engineer. Both the Geotechnical Engineer and Civil Engineer are the Owner's representatives. If the contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Geotechnical Engineer and Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Geotechnical Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Geotechnical Engineer. The Contractor shall notify the Geotechnical Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner of the Engineers.

TECHNICAL REQUIREMENTS: We recommend that all fill materials used on this site consist of clean, free-draining rock materials. We should be retained to evaluate proposed structural fill materials prior to construction to provide recommendations regarding how to place and evaluate fill performance.

SOIL AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the contractor for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including Court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Geotechnical Engineer to be deleterious. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree root removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill or tree root excavation should not be permitted until all exposed surfaces have been inspected and the Geotechnical Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Subgrade should be prepared as described in our site preparation section of this report.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Geotechnical Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Geotechnical Engineer. All materials utilized for constructing site fills shall be free from vegetable or other deleterious matter as determined by the Geotechnical Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Geotechnical Engineer.

Both cut and fill shall be surface compacted to the satisfaction of the Geotechnical Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Geotechnical Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIX C

PAVEMENT SPECIFICATIONS

1. DEFINITIONS – The term "pavement" shall include asphalt concrete surfacing, untreated aggregate base, and aggregate subbase. The term "subgrade" is that portion of the area on which surfacing, base, or subbase is to be placed.

2. SCOPE OF WORK – This portion of the work shall include all labor, materials, tools and equipment necessary for and reasonable incidental to the completion of the pavement shown on the plans and as herein specified, except work specifically noted as "Work Not Included."

3. PREPARATION OF THE SUBGRADE – The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans and as per the pavement design section of this report. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum compaction of 95% of maximum dry density as determined by test method ASTM D1557. The finished subgrades shall be tested and approved by the Geotechnical Engineer prior to the placement of additional pavement of additional pavement courses.

4. AGGREGATE BASE – Due to the presence of shallow groundwater, loose moisture sensitive and mapped liquefiable soils there is potential for adverse impacts to this property if large compaction equipment is used. Hence, we recommend that clean crushed rock should be used as aggregate base.

5. ASPHALTIC CONCRETE SURFACING – Asphaltic concrete surfacing shall consist of a mixture of mineral aggregate and paving grade asphalt, mixed at central mixing plant and spread and compacted on a prepared base in conformity with the lines, grades, and dimensions shown on the plans. The drying, proportioning, and mixing of the materials shall conform to WSDOT Specifications.

The prime coat, spreading and compacting equipment, and spreading and compacting the mixture shall conform to WSDOT Specifications, with the exception that no surface course shall be placed when the atmospheric temperature is below 50 degrees F. The surfacing shall be rolled with combination steel-wheel and pneumatic rollers, as described in WSDOT Specifications. The surface course shall be placed with an approved self-propelled mechanical spreading and finishing machine.

6. TACK COAT – The tack (mixing type asphaltic emulsion) shall conform to and be applied in accordance with the requirements of WSDOT Specifications.

Jamestown S'Klallam Tribe
Preliminary Medical Outpatient Clinic and Community Response Plan

As of January 13, 2020

1. INTRODUCTION

At the Jamestown S'Klallam Tribe (Jamestown Tribe), we join the rest of the medical community in recognizing that opioid dependence is a chronic disease. Chronic diseases such as opioid dependence, asthma, diabetes, and obesity are best treated through harm reduction. Methadone, Suboxone, and Vivitrol are ways to reduce harmful behaviors in patients with chronic opioid dependence.

The Jamestown Tribe intends to construct a 17,000 square foot outpatient clinic that provides medical services to patients with a medical condition. This clinic will be licensed through Washington State Department of Health and the Substance Abuse and Mental Health Services Administration (SAMHSA) as an (OTP) Opioid Treatment Program.

The clinic will provide Medication Assistance Treatment (MAT) for Opioid Use Disorder. It will also provide intensive wrap-around services for tribal citizens and members of the surrounding Jefferson and Clallam County community who have a need for the service. The program will meet the patients where they are in their struggle with substance use disorder and provide individualized medical care, preventive care, chemical dependency counseling, and mental health counseling. We will work to create a tracking and referral network for housing and other social needs.

History

Unfortunately, like many places in the state and nation, there are many residents of Clallam County who are addicted to opioids. In Clallam County, the height of pain pill prescriptions was around 2012. Based on data and community input, we recognized this was a critical community issue and knew that action was needed. One of our first steps was forming a partnership between the Jamestown Tribe and the University of Washington to identify and implement many "best practices" to change the prescribing habits of medical providers. Next, we identified health data that showed Clallam County as one of the highest counties in Washington for opioid overdose deaths. That led to the promotion of the use of Narcan by clinics and by first responders, which caused the death rate to decrease dramatically.

However, there was still too much opioid use and too many overdoses. In our continuing response to this crisis, we became the first prescription suboxone clinic in Clallam County. Today nearly 500 patients across our county use Suboxone to manage their illness.

Despite all these measures, there are still people in our community who need more intensive services and better access to care. With other healthcare providers and community leaders, we looked for care models and evidence-based practices that were already working. The model implemented by the Swinomish Tribe in Anacortes has been highly effective and includes a daily dosing MAT outpatient clinic with intensive wrap-around services. MAT is a recognized, evidence-based practice that is endorsed by Washington State and federal agencies as the "gold-standard" for best practices.[1]

We want to heal a patient's mind, body, and soul and lead them to long-term recovery. We have the collaborative support of all the major health organizations in Clallam and Jefferson Counties, including Olympic Medical Center, Jefferson Healthcare, Peninsula Behavioral Health, both Clallam and Jefferson County Commissioners, and both Clallam and Jefferson County Public Health Officers and Boards. We are grateful for their partnership in developing a model of care that will benefit our communities.

The supporters of our outpatient clinic include the following major health organizations and elected leaders:

- Olympic Medical Center
- Olympic Medical Providers
- Jefferson Healthcare
- North Olympic Health Network
- Peninsula Behavioral Health
- Jefferson County Commissioners
- Clallam County Commissioners
- Clallam County Sheriff Bill Benedict
- League of Women Voters
- Clallam County Public Health Officer
- Clallam County Board of Health
- Jefferson County Public Health Officer
- Sequim for Safety and Stabilization
- Voices for Health and Healing

Considerations for MAT Clinic

Last May, we purchased property behind a big box store. The property is zoned as a business and employment district, and medical clinics are among the many uses that

[1] https://www.ruralhealthinfo.org/rural-monitor/medication-assisted-treatment/

are already allowed on the property. The property was also a good location for the clinic because of its proximity to Highway 101 and the distances from other retail and residential areas.

This new clinic is even more isolated than our existing medical outpatient clinic on 5th Avenue. Our existing clinic, which has reached capacity, is located in the "Lifestyle" district that also allows for medicals clinics. We currently operate an Opioid Use Disorder (OUD) program within that facility.

The Jamestown Tribe has received a grant of $7.2 million from the state of Washington for construction of the new MAT clinic. This project received the legislature's support because of the significant regional need and the evidenced-based approach of the clinic's treatment. The Jamestown Tribe will add an additional $4 million to the project, which includes the cost of the property.

2. SUMMARY OF CLINIC SERVICES

After a two-year ramp-up period, the Jamestown Medical Outpatient Clinic will employ about 40 people and treat no more than 250 patients per day. Our license with the State of Washington Department of Health identifies our patient service delivery area as Jefferson and Clallam Counties *only*. That means this clinic can serve *only* the residents of Jefferson and Clallam Counties.

The services include:

- Initial intake exam with individualized wellness plan
- Medication-Assisted Treatment for Opioid Use Disorder (OUD) consisting of either Methadone, Buprenorphine (Suboxone), or Vivitrol
- Primary care
- Dental care
- Individual and group mental health counseling
- Individual and group substance abuse counseling
- On-site childcare services
- Shuttle transportation assistance
- Social service referrals

The Jamestown Medical Outpatient Clinic is committed to evidence-based programs that have a high success rate. Because many of the patients will be employed, our hours of operation will be from 6 a.m. - 4 p.m., Monday through Saturday.

Below is a brief description of anticipated programs offered in the clinic.

Initial Intake Exam

Every new patient will be required to complete an intake exam. This exam will consist of a complete physical exam, including a full blood and lab workup. Next, each potential

new patient will be given a behavioral health assessment that includes both mental and substance abuse assessments. Finally, the clinic intake team, consisting of medical and behavioral health providers, will develop an individual wellness plan for the patient. The individual wellness plan personalizes goals, medications, and appointments to address each person's unique situation.

This includes identifying the level and type of medication-assisted treatment that is best for that patient. If the patient is accepted, the wellness plan will be entered into the clinic's scheduling/appointment system so that when the patient arrives each day, their complete schedule is set for them.

In addition to the completion of an intake exam, each new patient will be required to attend a new patient education and orientation class and be required to agree to and sign a patient conduct contract. This contract will outline the expectations of each patient including:

- Daily attendance for MAT, counseling, and medical/dental services
- Random urine analysis
- Patient conduct expectations within facilities
- Patient conduct expectations on clinic property
- Patient conduct regarding arrival/departure to clinic
- Patient conduct expectations during transport

In the interest of providing outstanding patient care, we plan to limit the number of new patients each month. Ultimately, we hope to heal many people in our community. But we recognize it will take years to build up to that capacity.

It's also important to understand that the Jamestown Medical Outpatient Clinic is not a "methadone dose and go" clinic, where individuals line up and drop in for a medication. This will NOT be allowed at the Jamestown Medical Outpatient Clinic. Our patients will self-refer and want to accept recovery. They must go through the intake process and patient education. Appointments will not be given to those who do not comply.

In addition, each patient must attend other counseling services as assigned to them. Evidence shows that this model of intensive wrap-around services leads to a higher retention success rate. The clinic has ample lobby space and patients will wait inside for their various appointments before leaving to return home.

Medication-Assisted Treatment (MAT)

Most clinic patients will receive a daily dose of medication for their OUD that will consist of either Methadone, Buprenorphine (Suboxone), or Vivitrol.

These services are highly regulated by the state and federal government. The delivery of on-site medication-assisted treatment as part of an Opioid Treatment Program is licensed through the Washington State Department of Health and the Substance Abuse

and Mental Health Services Administration (SAMHSA) with the federal agency of Health and Human Services. In addition, the Drug Enforcement Administration certifies the facility for on-site dosing.

Primary Care

The primary care services will initially consist of one medical provider, a RN, and two medical assistants. The primary care services will operate in an area with three exam rooms, a phlebotomy room for blood draws, and a urine analysis (UA) station with a lab for the daily random tests that each patient will take approximately twice a month. When a patient arrives each day to the clinic, the login kiosk will tell them what time their medical appointments are and whether they are required to take a random UA that day.

Dental Care

The dental care services will operate in an area with three operatories, a panoramic x-ray, a sterilization station, and a lab. The staffing will include a dentist, a dental assistant, and a dental hygienist. When a patient arrives each day to the clinic, the login kiosk will tell them what time their dental appointments are scheduled.

Individual and Group Mental/Behavioral Health and Substance Abuse Disorder Counseling

The clinic will employ six mental/behavioral health counselors and six substance use disorder (SUD) counselors. They will operate within individual offices or within four group rooms that will accommodate up to 14 patients each. Each patient will have set individual sessions scheduled and a variety of group sessions to choose from including:

- Life skills – responsibility & accountability; money management
- Recovery support
- Opiates 101
- Narcan education
- Methadone orientation
- Suboxone orientation
- Emotional Wellness – coping w/ stress; values & beliefs; and anger management
- Relapse Prevention – behavioral triggers
- Women's talking circle
- Men's talking circle
- Family recovery
- Stages of change
- Art/social skills

On-site Child-Watch Services

Often, the retention success rate for OUD is determined by the access barriers a patient may have. One of the common access barriers is the inability to find childcare during

appointment times. Consequently, we will offer free child-watch services for up to two hours.

Shuttle Transportation Services

Another patient access barrier is transportation or the ability to get to the clinic daily. The clinic will provide shuttle service transportation to those patients, all of whom will reside in Jefferson or Clallam Counties, who have no other transportation options. Patients will have strict pickup times that include set daily appointments and set departure times for returning to their home pickup point. No patient will be allowed to stay on the property or loiter within town. Each patient must return to their original pickup point of origin, using the same mode of transportation they used for arrival. Transportation will be closely monitored both by the transportation manager, along with the clinic on-site security team.

3. COMMUNITY RESPONSE PLAN

We know there are concerns in the community about the safety of treating patients with Opioid Use Disorder (OUD).

First, we must emphasize that evidence shows that OUD patients are very safe and reliable.[2] Nonetheless, we recognize the importance of sharing our careful planning and effective practices with the community.

This plan outlines our commitment to providing outstanding services that are successful and safe for the patient, the employee, and the surrounding community.

We want to assure the community that we will provide a safe environment to the patients, our staff, and the local community through the following:

A. Property security plan,
B. Community outreach plan, and
C. Community response audit.

A. Property Security Plan

The Jamestown Medical Outpatient Clinic will utilize the professionals of Security Services NW Inc. to provide technical expertise on staffing needs and training along with recommendations and installation of cameras and monitoring systems. We anticipate installing a complete set of cameras that monitor the building, the parking lot,

[2] When Sequim Police Chief Crain was asked by Sequim City Council how many times in the last year the Sequim police had to make calls to the Jamestown Family Health Clinic regarding their 100+ Suboxone patients, the answer was ZERO. When Clallam County Sheriff Bill Benedict visited the Swinomish Clinic (the model for the Jamestown Medical Outpatient Clinic) and asked the local police Chief how many calls were made to the Swinomish Clinic, the Chief responded that the local Safeway store had more calls in a day than the Swinomish Clinic had in a year. In addition, recent studies have shown that crime does NOT increase around MAT Outpatient Clinics. (C. Debra M. Furr-Holden, 2016 77:1)

and the exterior portions of the property. During business hours, two professional security experts will patrol both the facility and exterior property while a third officer will monitor the cameras and lobby from the security station. We will employ a security program in which the officers wear uniforms and are easily identified; however, they will also get to know each patient personally to ensure better relationships and compliance with program policies.

In addition, we have been in discussions with bordering property owners about what kind of property buffer they would prefer. We will offer a range of options from tasteful fencing to beautiful landscaping. In addition, we will work with neighbors to evaluate lighting needs. Overall, we plan to develop individualized approaches to address the specific needs of our neighbors.

The clinic security team will closely monitor the parking lots and exterior property lines and ensure that:

- No unauthorized visitors are on the property,
- Patients remain on clinic property, and
- Patients arrive and leave via shuttle transportation or transportation mode of arrival.

Patient Education and Patient Conduct Contracts

As noted above, each patient will be required to attend a new patient education and orientation class and be required to agree to and sign a patient conduct contract. This contract will outline the expectations of each patient including:

- Daily attendance for MAT, counseling, and medical/dental services,
- Random UA requirements,
- Patient conduct expectations within facilities,
- Patient conduct expectations on clinic property,
- Patient conduct regarding arrival/departure to clinic, and
- Patient conduct expectations during transport.

Our patients are self-referred and motivated to change and accept recovery. We will help them with initial expectations through patient education and conduct contracts.

B. Community Outreach Plan

The Jamestown Medical Outpatient Clinic will employ several tactics to ensure community education, outreach, and safety:

Community Outreach

Over the last six months the Jamestown Tribe has met with over 30 community groups, answered hundreds of emails and phone calls, had dozens of one-on-one meetings and discussions, and held a public meeting with over 1,300 in attendance.

To provide the public with information about the clinic project, we developed an informational web site (https://jamestownhealingcampus.org), distributed fact sheets and FAQs, and published several full page ads in the three largest newspapers in Clallam and Jefferson Counties.

The Jamestown Tribe is committed to holding an annual public meeting to update the community and discuss any issues or concerns related to our clinic.

Clinic Social Navigator

The Jamestown Medical Outpatient Clinic will employ a clinic social navigator to help patients with social service referrals and needs. In addition, they will be responsible for tracking patient conduct and any dropouts of the program. Some of their duties will include:

- Participate in patient education and orientation
- Help patients with social service referrals and needs
- Track and monitor patient social service referrals
- Track and monitor patient conduct issues
- Track and monitor patient attendance and any dropouts
- Work with clinic security regarding any patient conduct issues
- Work with Sequim law enforcement and community social navigator regarding any patient conduct issues
- Locate patients off campus or that have dropped out of the program

Community Health Network

The Jamestown S'Klallam Tribe is a board member of the Olympic Community of Health (OCH), which has authorized over $200,000 for the development of a digital social service referral system within Clallam County. The Community Health Network will allow first responders, law enforcement, and other community-based organizations to enter individual contacts into the system and then refer that person for services such as food resources, housing, primary care, etc. The referral goes out and is tracked by a community social navigator.

The Jamestown Tribe has had discussions with Sequim Police Chief Sheri Crain and Clallam County Sheriff Bill Benedict over the interest of such a project that would begin in the summer/fall of 2020. The Jamestown Tribe is willing to help with the funding of a community social navigator that would be an employee of the City of Sequim and reside within law enforcement. This is a pilot project and will evolve as we implement it, but the goal is to help law enforcement and first responders with social service needs in the field and then track and monitor service needs and service gaps.

Here's how the community social navigator program would work: Imagine Sequim law enforcement is called to a business where an individual appears intoxicated or

incoherent on the front walkway. After assessing the situation, Sequim law enforcement would be able to enter the name of the individual into an app and select what services they think that individual needs. This information would go to the Sequim community social navigator, who would then complete referral requests. This would allow organizations to seek out the individual for care. Any services rendered would be entered into the system and tracked. At the end of each quarter, reports would be sent to the City of Sequim and Clallam County that identify contacts and status of referred services. This will identify what kind of at-risk individuals are in the community, where they came from, what services they needed, what services they received, and the current status of the individual.

In addition, this service can be used by law enforcement and first responders for calls to individuals that need social services more often than others. The individual is entered into the system and referrals sent to community-based organizations.

The Jamestown Medical Outpatient Clinic is ONLY providing services to patients with Opioid Use Disorder. We are not serving everyone who exhibits the need for social services. But we recognize there is a huge need to monitor at-risk individuals and what, if any, services they are receiving in the community.

C. Community Response Audit

In order to verify quality assurance and identify potential issues, the Jamestown Tribe will facilitate program reviews to ensure that patients are complying with clinic policies and procedures and that there is no adverse impact to the community.

Monthly/Quarterly Review Committee

The Jamestown Tribe will initially meet monthly and later quarterly to assess program operations and whether there are adverse impacts to the community. The review committee will consist of the Jamestown Health Director and Medical Outpatient Clinic COO, Sequim City staff, Sequim City Council, Sequim Police Chief Crain, Clallam County Sheriff Benedict and other representatives as necessary. The anticipated agenda for the meeting would include:

- Review of patient census and demographics (sex, age, medication, home location)
- Retention rate of patients
- Number of new patient intakes in last month
- Number of on-site incidents in last month
- Number of community incidents in last month
- Solutions for any identifiable issues
- Projected intake for the next month

Community Advisory Committee

The Jamestown Tribe will explore forming a Community Advisory Committee made up of health professionals, community-based organizations, elected leaders, and community members. The purpose of the Community Advisory Committee is to seek advice on various program options and services required to operate a successful Jamestown Medical Outpatient Clinic. The committee will provide feedback and advice but will not have any governing or legal authority over the clinic.

4. CONCLUSION

Medication-Assisted Treatment for Opioid Use Disorder patients with extensive wrap-around services has one of the highest retention success rates of any health treatment for a disease. Very few treatments for any medical condition offer a 75% success rate, and we are glad to be able to bring this treatment to Clallam and Jefferson counties.

The stigma that surrounds behavioral health programs and patients is pervasive and often leads to shame and fear, discouraging patients from recovery. The Jamestown Medical Outpatient Clinic project is a new – but proven – model that looks at long-term success by including intensive wrap-around services for each patient in recovery.

Doing nothing is not a solution for health issues and problems facing the North Olympic Peninsula.

A person does NOT choose addiction, but they can choose recovery.

And when they make that choice,

we want to be there to help them restore their lives.

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Jamestown Clinic

Sequim, WA

Traffic Impact Analysis

January 9, 2021

Prepared for:

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FINDINGS/CONCLUSIONS

This Traffic Impact Analysis (TIA) documents the traffic impacts associated with the proposed Jamestown S'Klallam Tribe Outpatient Clinic located on S 9th Ave one block south of the existing Costco in Sequim, WA.

Project Proposal. The proposed project includes a new 16,720 GSF Medical Assisted Treatment Outpatient Clinic in Sequim funded by Jamestown S'Klallam Tribe. Project buildout is expected by 2021. The project will be developed on a site is located at the existing dead end of 9th Ave, at the south end of the existing Costco. The project is planning to extend the existing 9th Ave right-of-way south to the project main entrance, and also construct a new road along the north side of our property that will consist of two 11' traffic lanes and a 6' bike lane on each side.

Trip Generation. Based on information provided by the applicant, the proposed Jamestown Clinic is estimated to generate a total of 370 daily trips with 29 trips occurring during the AM peak hour (8:30–9:30 a.m.), and 22 trips occurring during the Midday peak hour (12:30-1:30 p.m.). During Afternoon peak hour from 2:00–3:00 p.m. the project is estimated to generate 48 trips.

Trip Distribution. All traffic generated by the project will use 9th Ave and the existing roundabout intersection at Washington Street, and is estimated have a split of 60% to/from the West and 40% to/from the East.

Traffic Operations Analysis. Level of service (LOS) analyses were conducted at four study intersections during the weekday AM, Midday, and Afternoon peak hours. All four of the signalized and roundabout study intersections are expected to operate at LOS C or better in 2021 without or with the proposed Clinic during the peak hours evaluated.

Mitigation. To mitigate long-term transportation impacts, the City of Sequim administers a Traffic Impact Fee (TIF) to new developments to improve the transportation system to accommodate the increase in traffic generation by new development. The traffic impact fee for the proposed Jamestown Clinic will be determined by the City based on the size of the building area as a medical clinic use.

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INTRODUCTION

This Traffic Impact Analysis (TIA) documents the traffic impacts associated with the proposed Jamestown Clinic located in Sequim, WA. A vicinity map of the project location is shown in Figure 1.

Project Description

The project proposal includes a new 16,720 gross square feet (GSF) Medical Assisted Treatment Outpatient Clinic in Sequim funded by Jamestown S'Klallam Tribe. Project buildout is expected by 2021. The project will be developed on a site is located at the existing dead end of 9th Ave, at the south end of the existing Costco.

The project is planning to extend the existing 9th Ave right-of-way south to the project main entrance as shown in the preliminary site plan is provided in Figure 2. The project will also construct a new road (West Hammond Street) along the north side of our property that will consist of two 11' traffic lanes and a 6' bike lane on each side.

Project Approach

Based on scoping discussions with City of Sequim staff, the following tasks were undertaken to evaluate and disclose the traffic impacts associated with the proposed clinic:

- Assessed existing conditions and reviewed planning documents.
- Documented existing traffic volumes and intersection LOS at the following four study intersections during the time periods identified:
    1. Washington Street / River Road (roundabout) – AM and Afternoon only
    2. Washington Street / Priest Road (signalized) – AM and Afternoon only
    3. Washington Street / 9th Ave (roundabout) – AM, Midday, and Afternoon
    4. Washington Street / 7th Ave (signalized) – Afternoon only
- Documented trip generation for weekday daily, and AM peak hour, Midday peak hour, Afternoon peak hour , and PM peak hour conditions.
- Documented trip distribution and assignment of peak hour project-generated traffic.
- Documented traffic forecasts and assumptions for year 2021 peak hour conditions with and without the proposed development.
- Analyzed LOS for future conditions without and with project at the 4 study intersections.
- Documented proposed traffic mitigation.

Primary Data and Information Sources

- 2019 Peak Hour traffic counts by All Traffic Data.
- *Highway Capacity Manual (HCM)*, TRB, 6th edition.
- WSDOT *Statewide Transportation Improvement Plan (STIP).*
- Sequim *2020-2025 Transportation Improvement Program (TIP).*

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Figure 1: Project Site Vicinity

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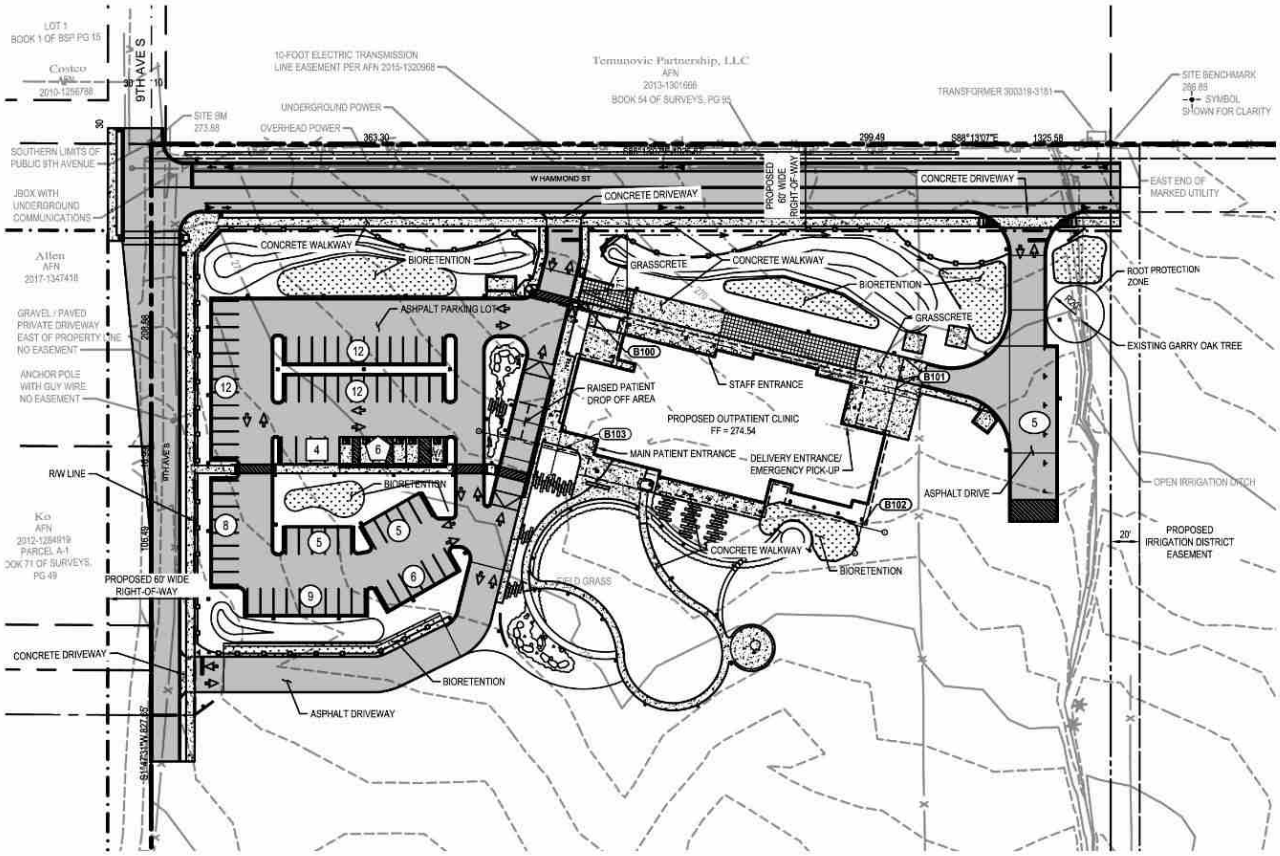

Figure 2: Preliminary Site Plan

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EXISTING CONDITIONS

Roadway Network

Table 1 describes the existing characteristics of the streets that would be used as primary routes to and from the site. Roadway characteristics are described in terms of orientation, arterial classification, posted speed limits, number of lanes, posted speed limits, paved shoulders, and pedestrian facilities. The relationship of these roadways to the project site is shown in Figure 1.

Table 1 – Existing Roadway Network Summary

Roadway	Orientation	Arterial Classification	Posted Speed Limit	# of Travel Lanes	Paved Shoulders	Sidewalks
U.S. Highway 101	East/West	Principal Arterial	55	2	Yes	No
Washington Street	East/West	Minor Arterial	30	2-5	No	Both Sides
River Road	North/South	Minor Collector	25	2	No	Both Sides North of Washington St
Priest Road	North/South	Minor Collector	25	3	No	East Side South of Washington St, West Side North of Washington St
9th Ave	North/South	Local	25	2-3	No	West Side
7th Ave	North/South	Local	25	3	No	East Side south of Washington St, Both Sides North of Washington St

Existing Peak Hour Traffic Volumes

Year 2019 existing weekday AM, Midday and Afternoon peak hour traffic counts were conducted on Thursday, December 19, 2019 at the following study intersections:

1. Washington Street / River Road
2. Washington Street / Priest Road
3. Washington Street / 9th Ave
4. Washington Street / 7th Ave

The existing weekday AM peak hour traffic volumes represent the highest hour of traffic between 7:00 and 9:00 a.m. The Midday peak hour traffic volumes represent the highest hour of traffic between 11:00 a.m. and 1:30 p.m. The Afternoon peak hour represents the peak hour with the highest level of project trip generation, which occurs from 2:00 to 3:00 p.m.

The existing AM peak hour traffic volumes are shown in Figure 3, the existing Midday peak hour traffic volumes are shown in Figure 4, and the existing Afternoon peak hour traffic volumes are shown in Figure 5. The detailed traffic count sheets are provided in Appendix A.

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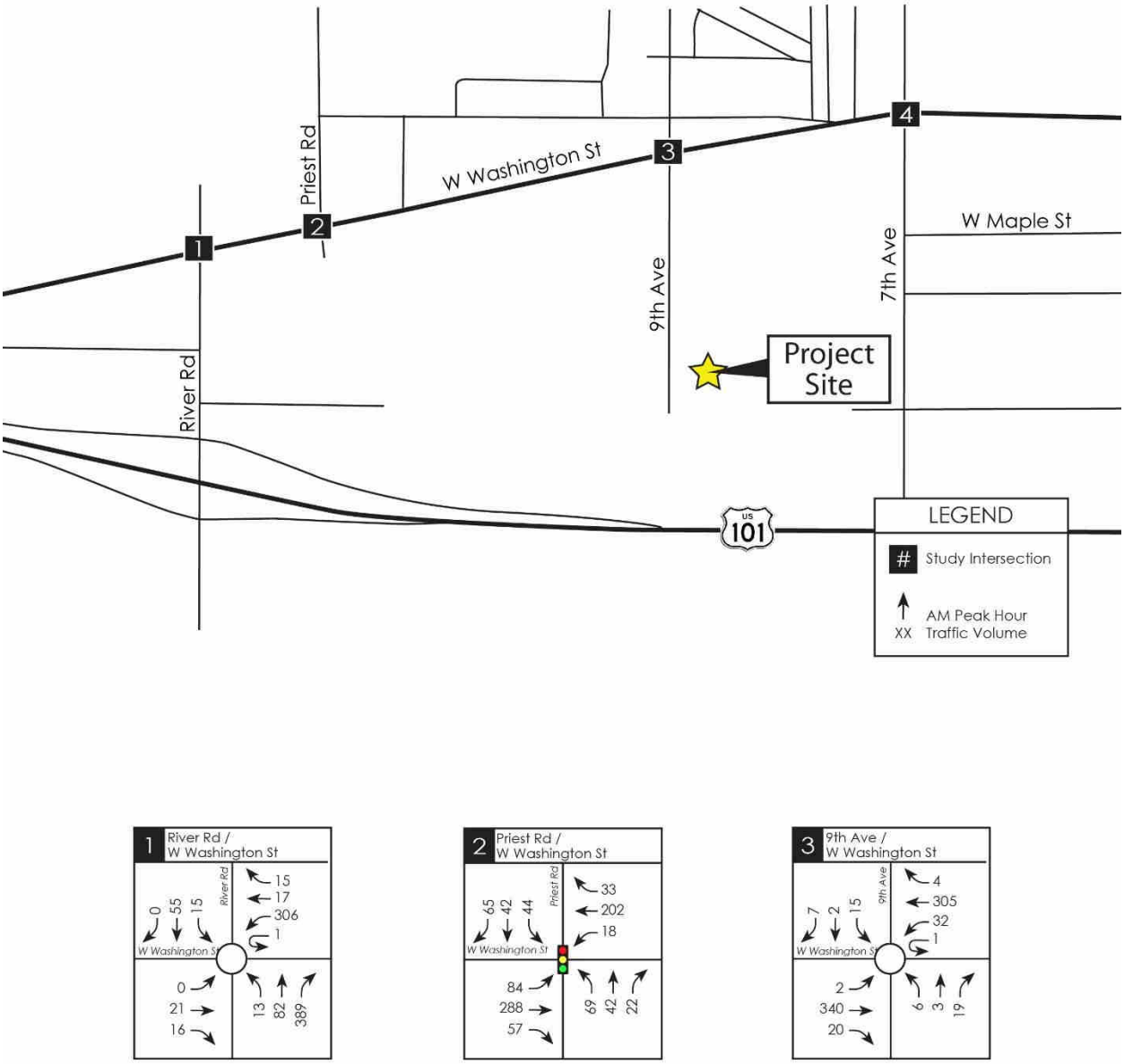

Figure 3: 2019 Existing Weekday AM Peak Hour Traffic Volumes

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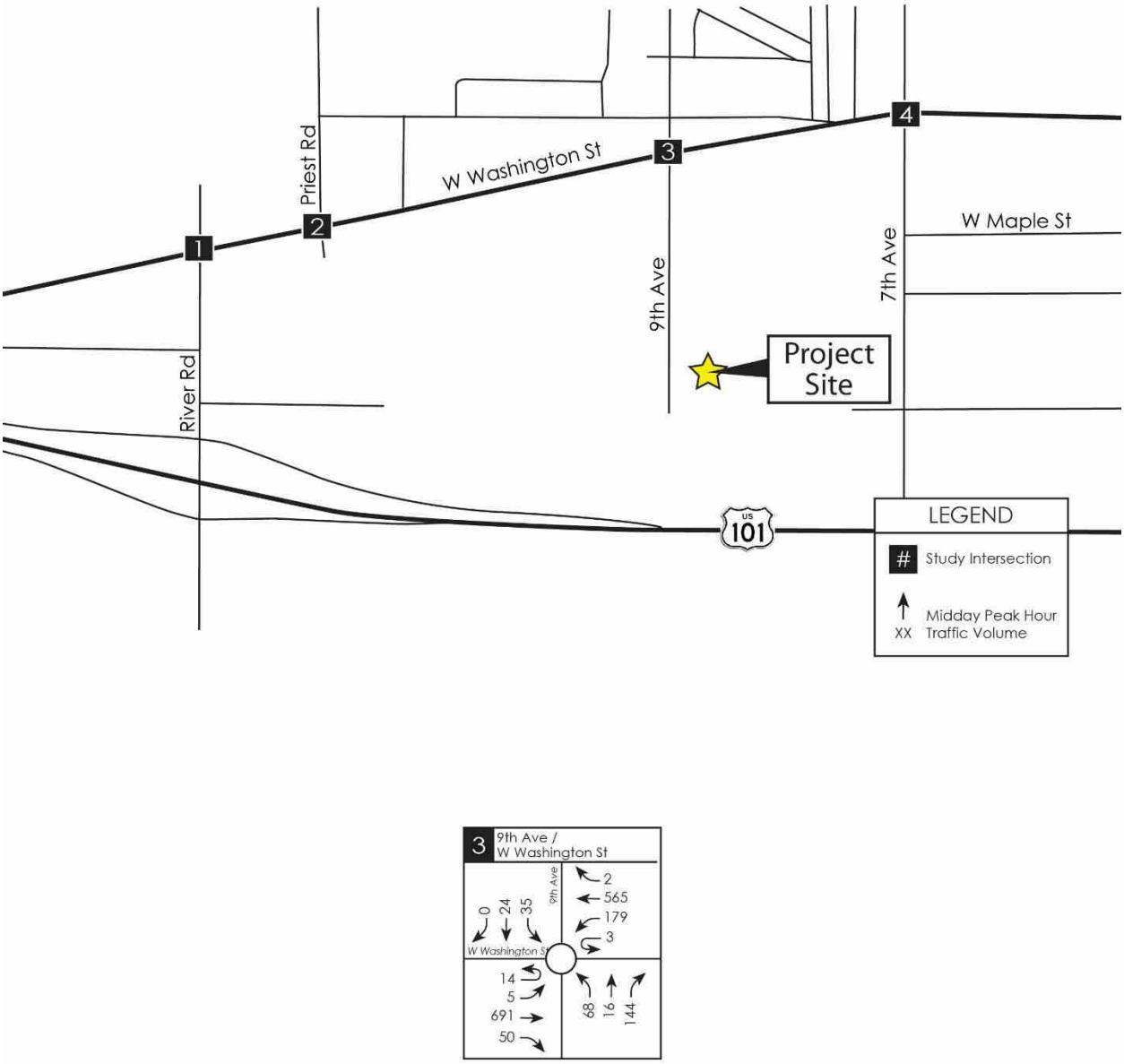

Figure 4 2019 Existing Weekday Midday Peak Hour Traffic Volumes

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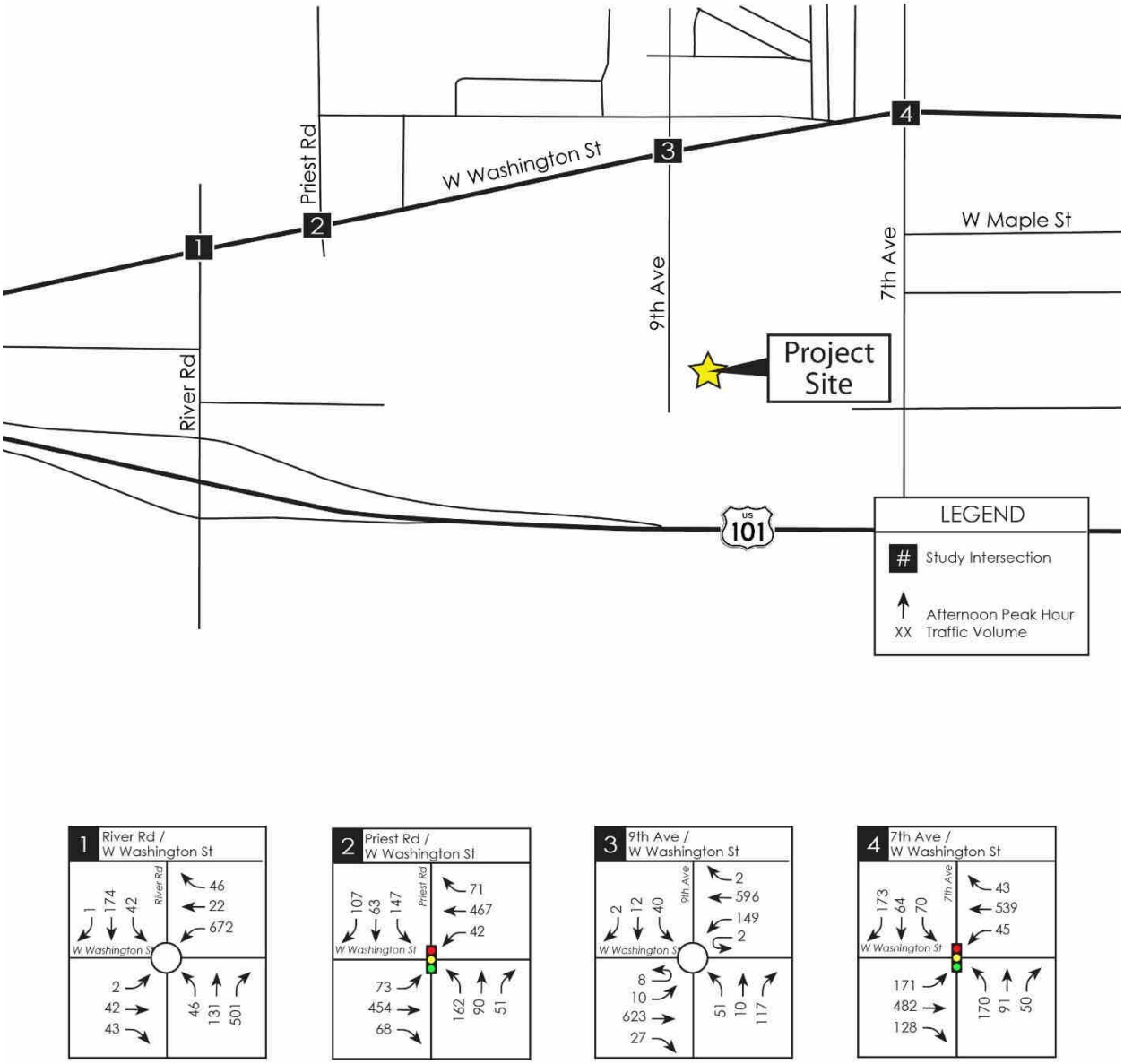

Figure 5: 2019 Existing Weekday Afternoon Peak Hour Traffic Volumes

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Intersection Level of Service (LOS)

Based on scoping discussions with the City of Sequim, existing weekday AM peak hour, Midday peak hour, and Afternoon peak hour level of service (LOS) analyses were conducted at the four off-site study intersections.

LOS calculations for the study intersections were based on methodology and procedures outlined in the latest *Highway Capacity Manual (6th Edition)* using *Synchro 10* and *Sidra 8* traffic analysis software. Existing signal timing used in the analysis was provided by WSDOT. The roadway network and signal timing assumed in the future year 2021 LOS analysis were based on existing conditions because there are no known transportation improvements at the study intersections by 2021.

Table 2 summarizes the 2019 existing weekday AM peak hour, Midday peak hour, and Afternoon peak hour LOS results at the study intersections. The detailed LOS worksheets and a description of the LOS methodology are included in Appendix B.

As shown in Table 2, all four of the signalized and roundabout study intersections currently operate at LOS C or better during the weekday AM peak hour, Midday peak hour, and Afternoon peak hour. The City's minimum standard is LOS D.

Table 2
2019 Existing LOS Summary at Study Intersections

Time Period / Study Intersection	LOS [1]	Delay (sec) [2]
AM PEAK HOUR		
1. Washington Street / River Road	A	3.5
2. Washington Street / Priest Road	B	15.9
3. Washington Street / 9th Ave	A	5.6
MIDDAY PEAK HOUR		
3. Washington Street / 9th Ave	B	14.1
AFTERNOON PEAK HOUR		
1. Washington Street / River Road	A	6.9
2. Washington Street / Priest Road	C	22.1
3. Washington Street / 9th Ave	B	11.0
4. Washington Street / 7th Ave	C	28.2

1. LOS = Level of Service
2. Delay refers to average control delay expressed in seconds per vehicle.

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TRAFFIC IMPACT ANALYSIS

Planned Transportation Improvements

Based on a review of the current Sequim *2020-2025 Transportation Improvement Program*, there are no planned improvements identified at the study intersections or roadways adjacent to the site.

Project Trip Generation

Based on information provided by the applicant, the proposed use is not consistent with a specific land use category established in the Institute of Transportation Engineers (ITE) *Trip Generation* manual. To estimate trip generation for the proposed Jamestown Outpatient Clinic, the owner of the facility provided detailed forecasts of employee trips and client/patient trips based on their operational plan on a typical weekday. The resulting new weekday daily and peak hour trip generation estimates associated with the proposed Clinic are summarized below in Table 3 with detailed hourly estimates provided in Appendix C.

Table 3
Jamestown Clinic Trip Generation Summary

		New Project-Generated Trips		
Weekday Time Period		In	Out	Total
Daily		185	185	370
AM Peak Hour	(8:30–9:30 a.m.)	16	13	29
Midday Peak Hour	(12:30–1:30 p.m.)	12	10	22
Project Peak Hour	(2:00–3:00 p.m.)	16	32	48
PM Peak Hour	(4:00–5:00 p.m.)	0	15	15

Project Trip Distribution

All traffic generated by the project will use 9th Ave and the existing roundabout intersection at Washington Street. Based on existing travel patterns and the anticipated location of the area to be served by the Jamestown Outpatient Clinic, the following summarizes the estimated trip distribution pattern of project trip generation:

- 60 % to/from West: 55% south via River Road and 5% north via Priest Road
- 40% to/from East: 25% east via Washington, 10% south via 7th Ave, 5% north via 7th Ave

Based on these trip distribution patterns, the weekday AM peak hour, Midday peak, and Afternoon peak hour project trips were assigned through the 4 study intersections. The resulting assignment of the AM, Midday, and Afternoon peak hour project trips at the study intersections is shown in Figure 6, Figure 7, and Figure 8 respectively.

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Future Year Traffic Volumes

The project is anticipated to be complete and operational in 2021. To estimate future year 2021 without-project AM peak hour, Midday peak hour, and Afternoon peak hour traffic volumes at the study intersections, an annual growth rate of 2 percent was applied to existing counts. The 2 percent annual growth rate was confirmed by the City as part of project scoping and is intended to account for historical background growth and approved pipeline projects in the vicinity.

The future year 2021 Without Project AM peak hour traffic volumes are illustrated in Figure 9, the 2021 Without Project Midday peak hour traffic volumes are illustrated in Figure 10, and the 2021 Without Project Afternoon peak hour traffic volumes are illustrated in Figure 11.

Future year 2021 with-project AM, Midday, and Afternoon peak hour traffic volumes were estimated by adding the trip assignment from the proposed project (shown in Figures 6-8) to the future year 2021 without-project traffic volumes (shown in Figures 9-11). The resulting 2021 with-project AM, Midday, and Afternoon peak hour traffic volumes at the study intersections are shown in Figure 12, Figure 13, and Figure 14, respectively.

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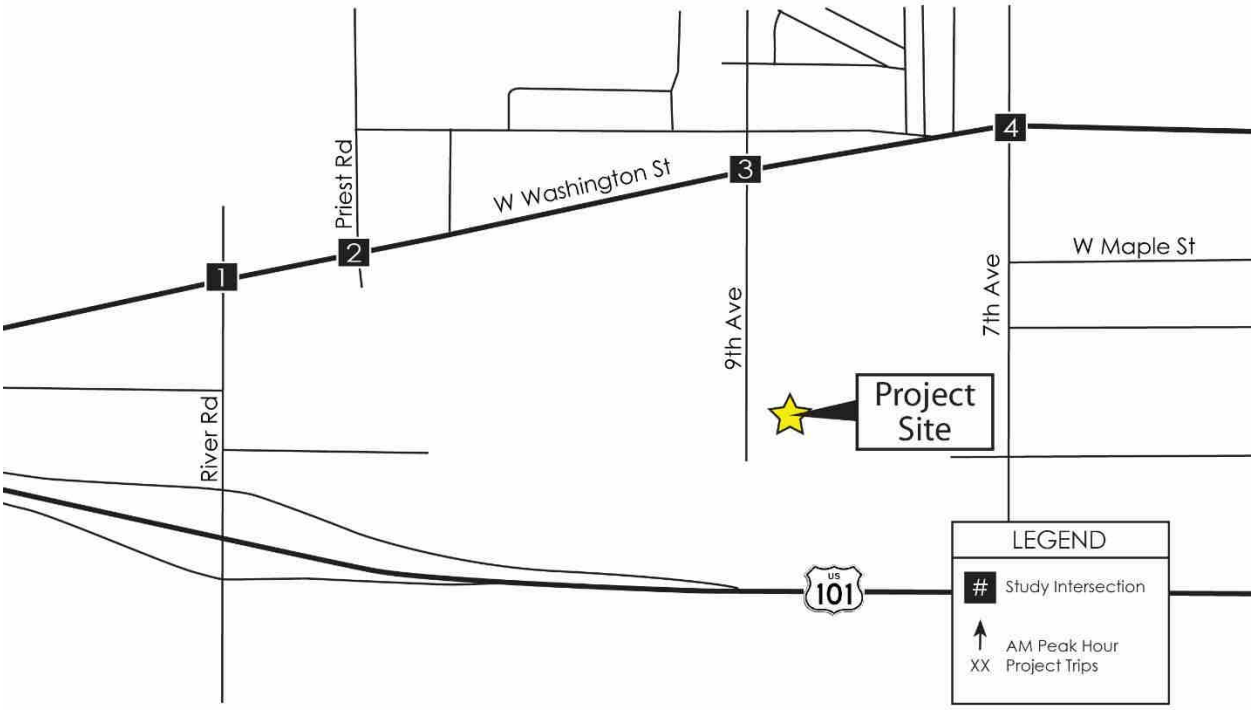

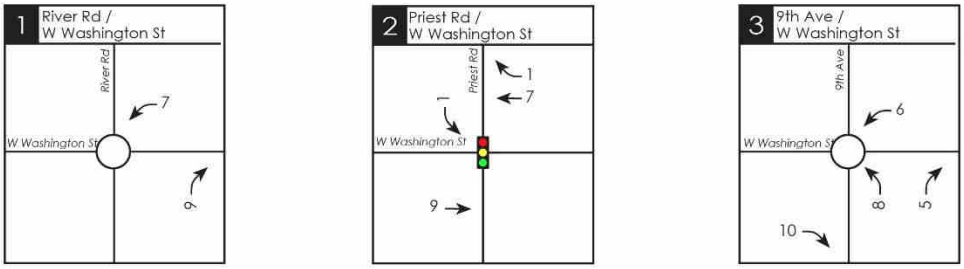

Figure 6: Weekday AM Peak Hour Project Trip Assignment

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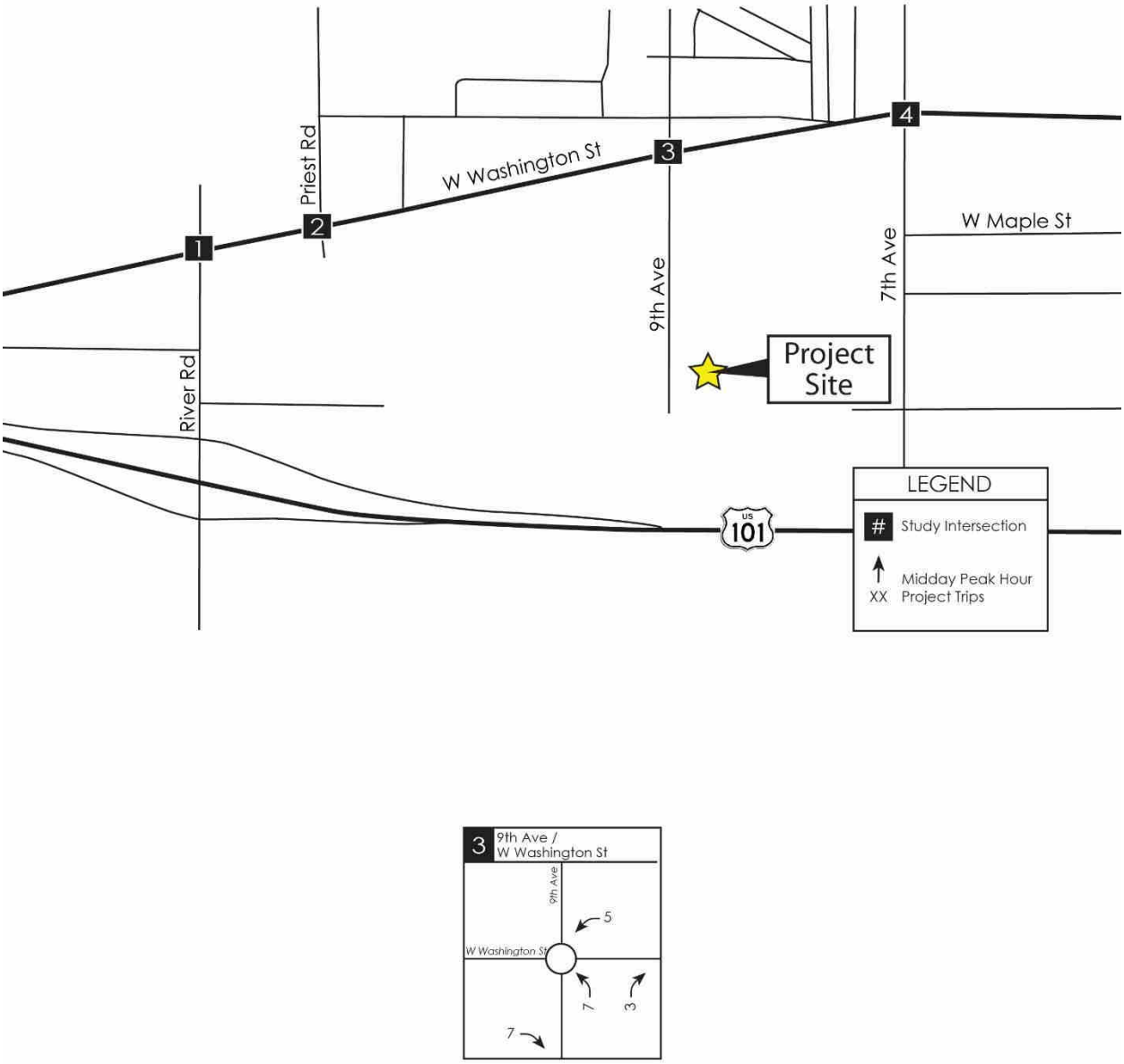

Figure 7: Weekday Midday Peak Hour Project Trip Assignment

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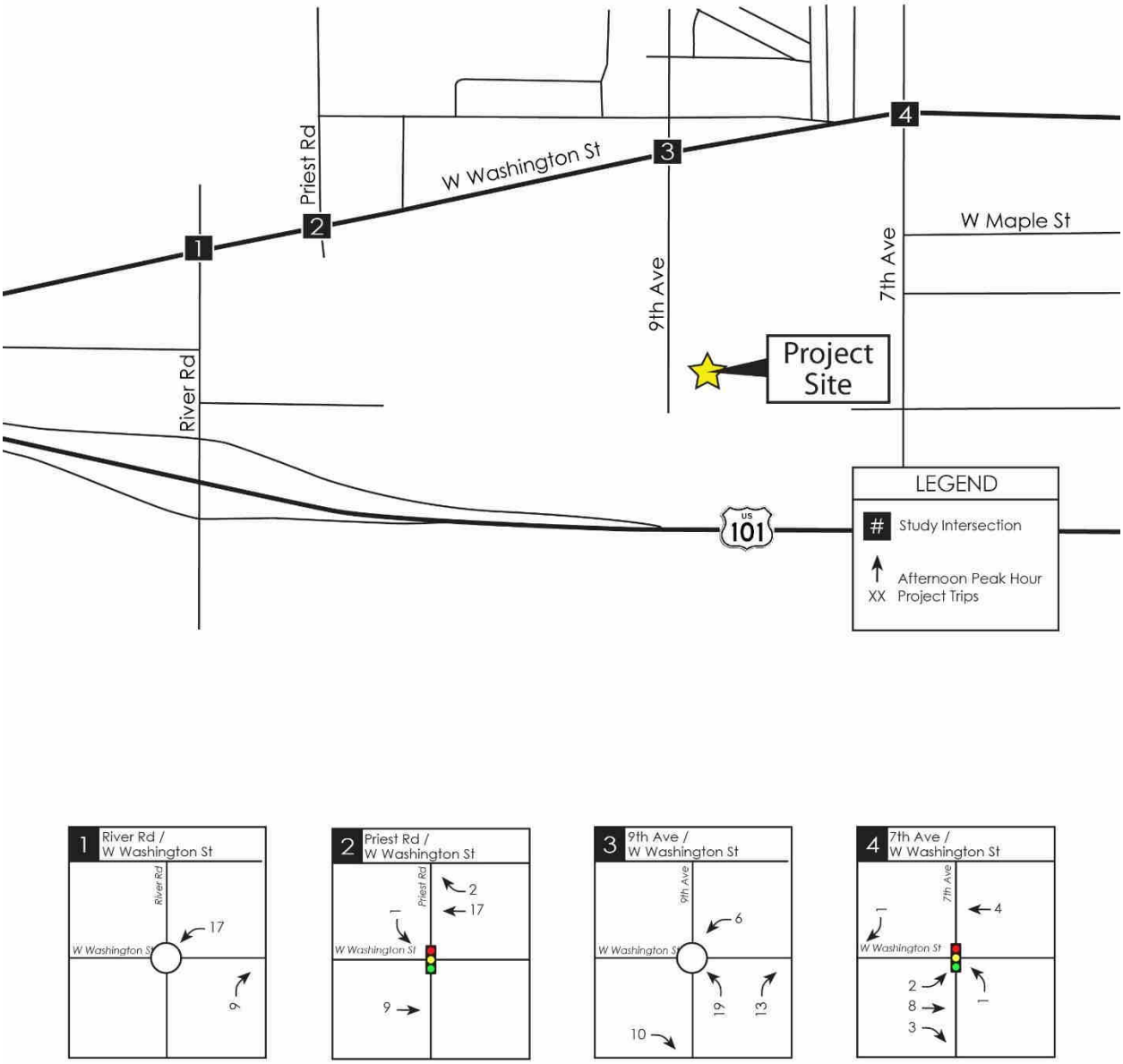

Figure 8: Weekday Afternoon Peak Hour Project Trip Assignment

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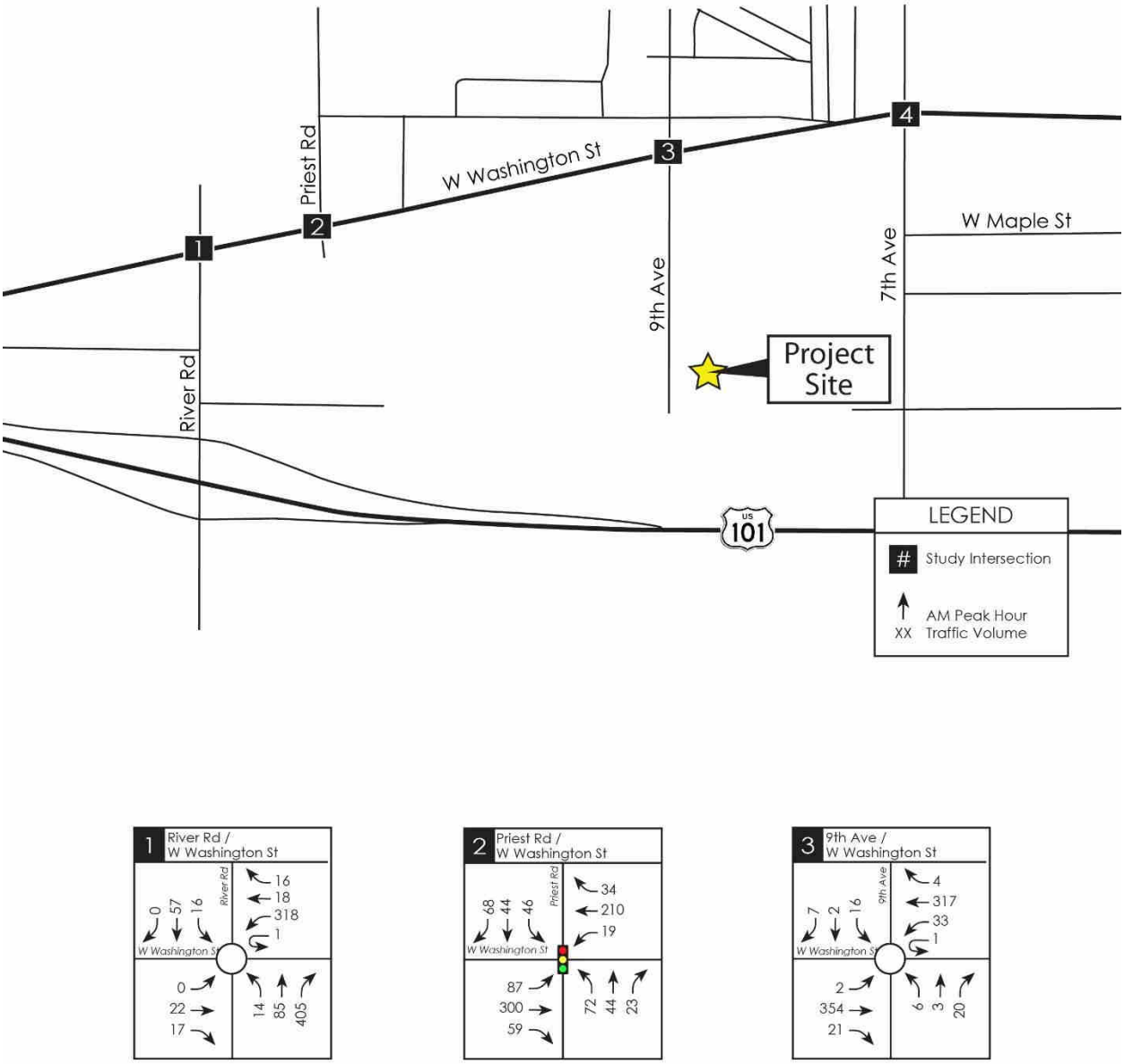

Figure 9 2021 Without Project Weekday AM Peak Hour Traffic Volumes

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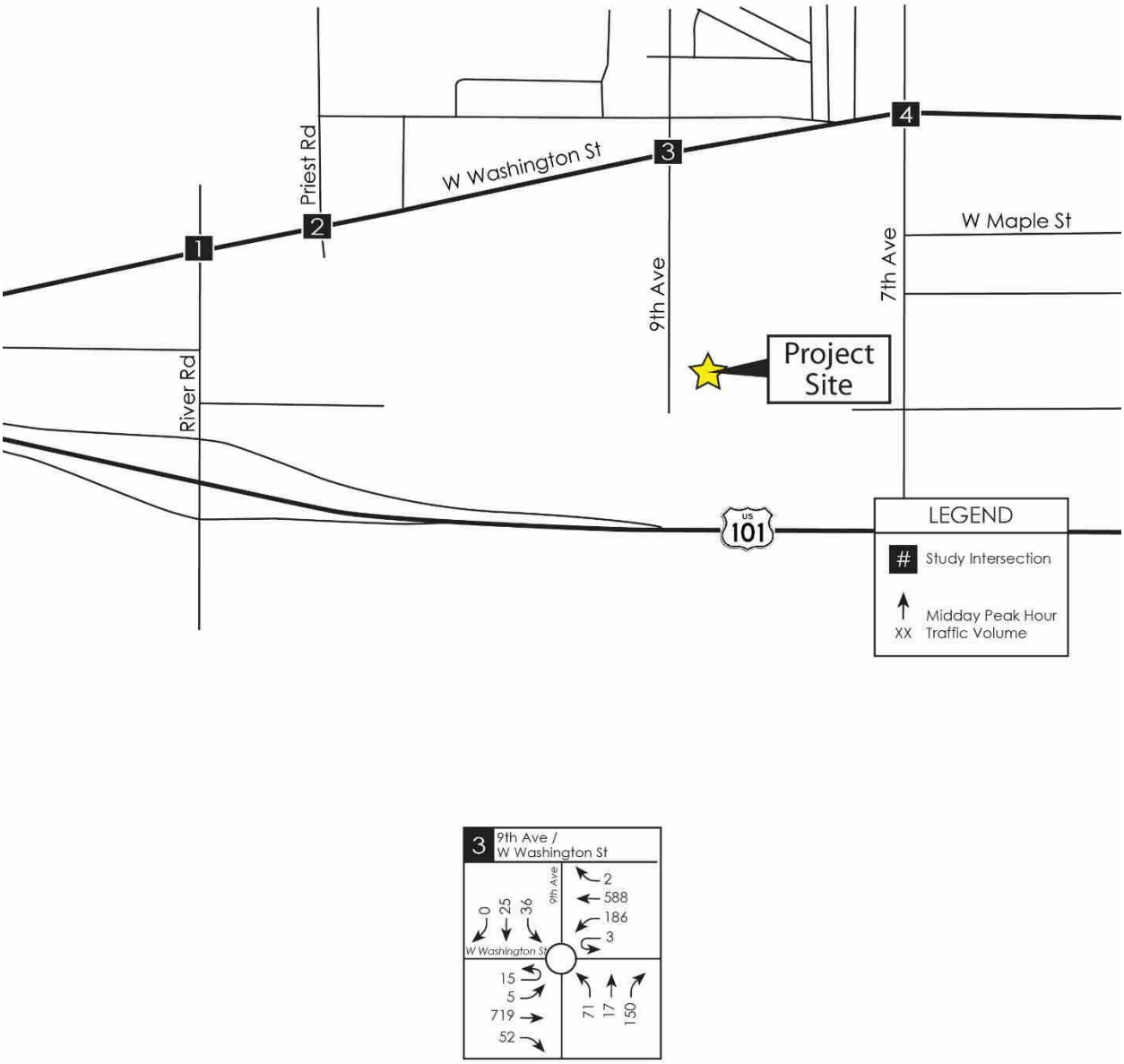

Figure 10 2021 Without Project Weekday Midday Peak Hour Traffic

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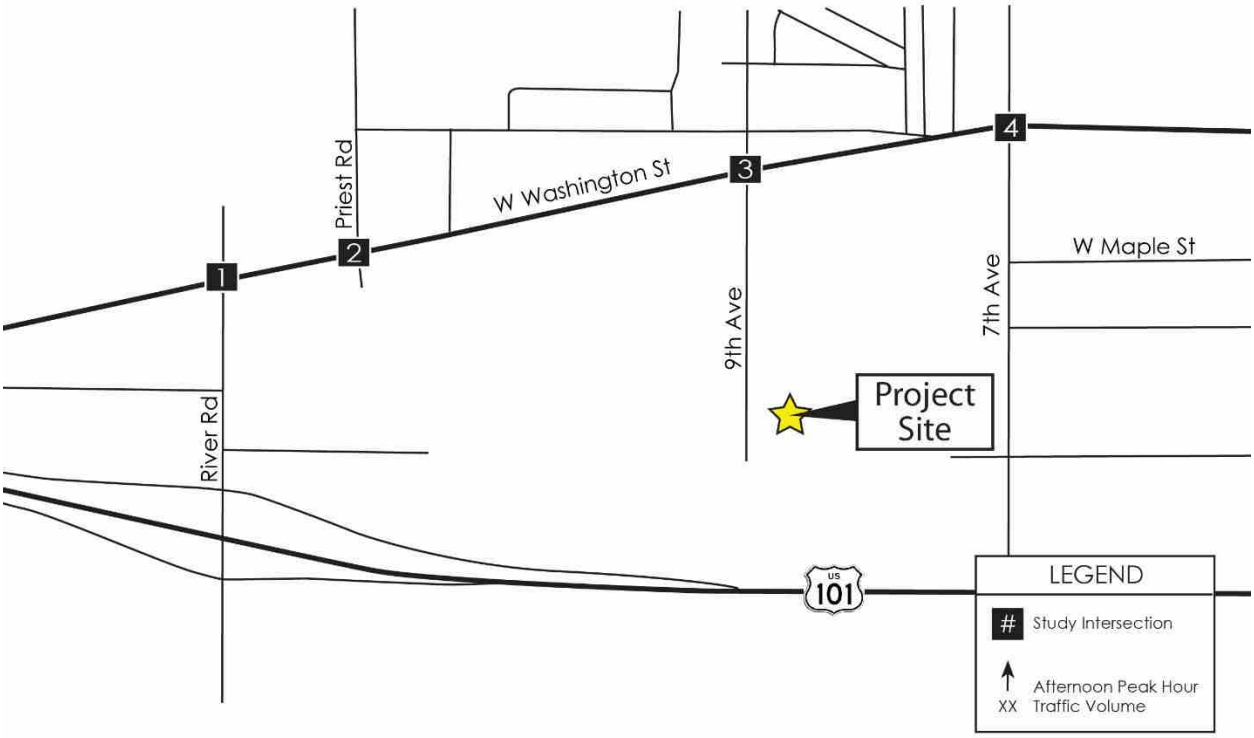

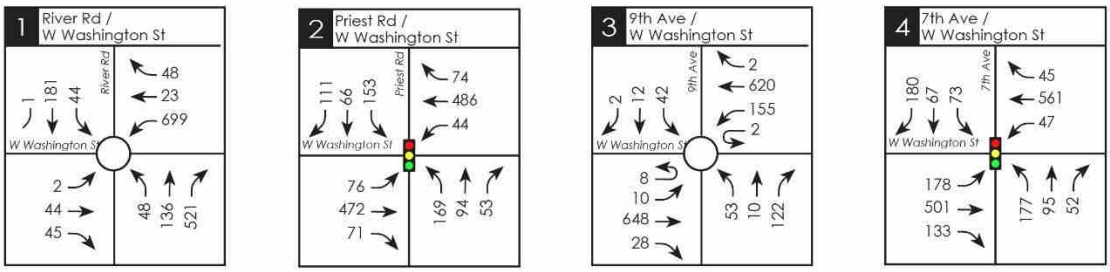

Figure 11 2021 Without Project Weekday Afternoon Peak Hour Traffic Volumes

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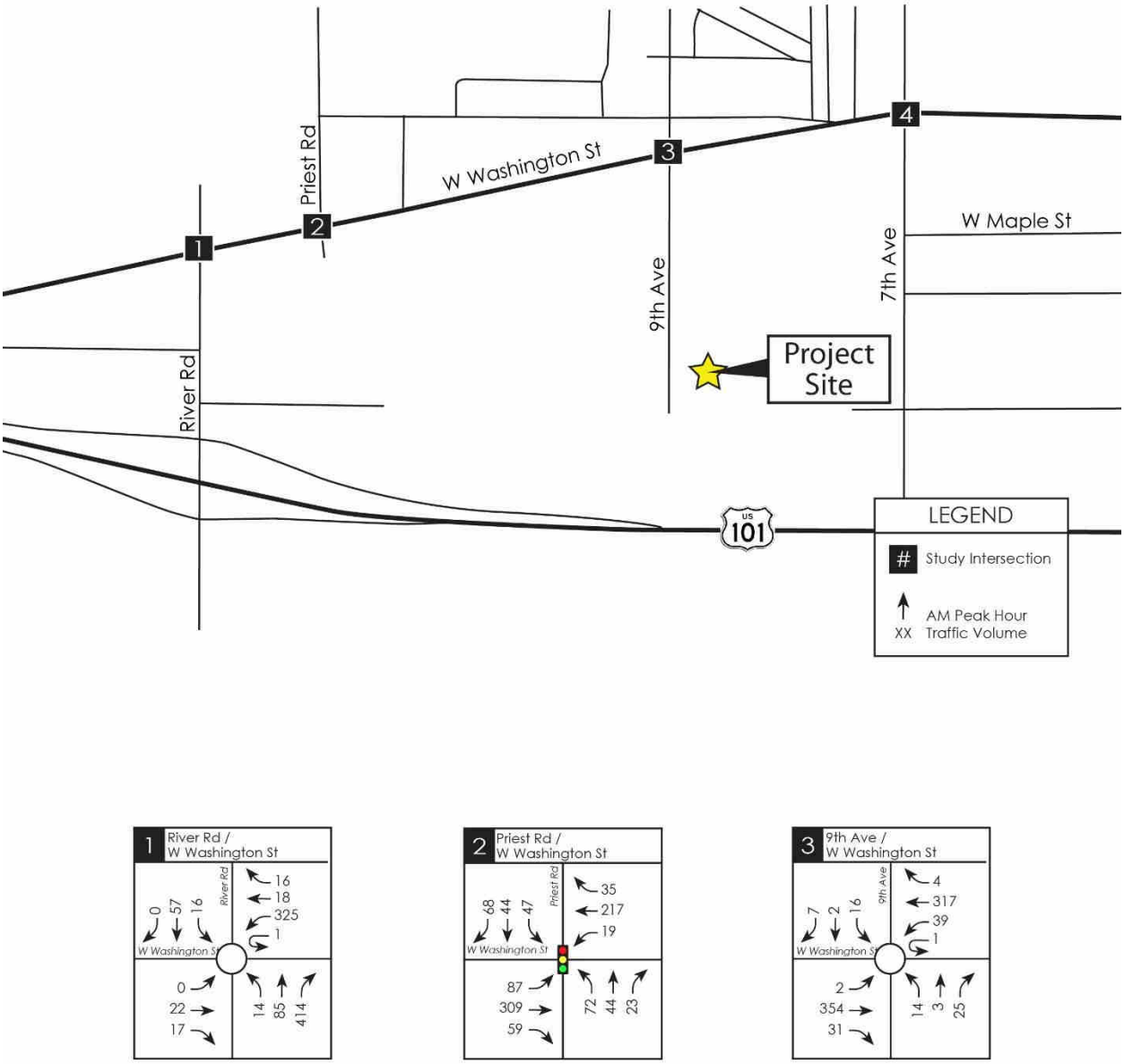

Figure 12: 2021 With Project Weekday AM Peak Hour Traffic Volumes

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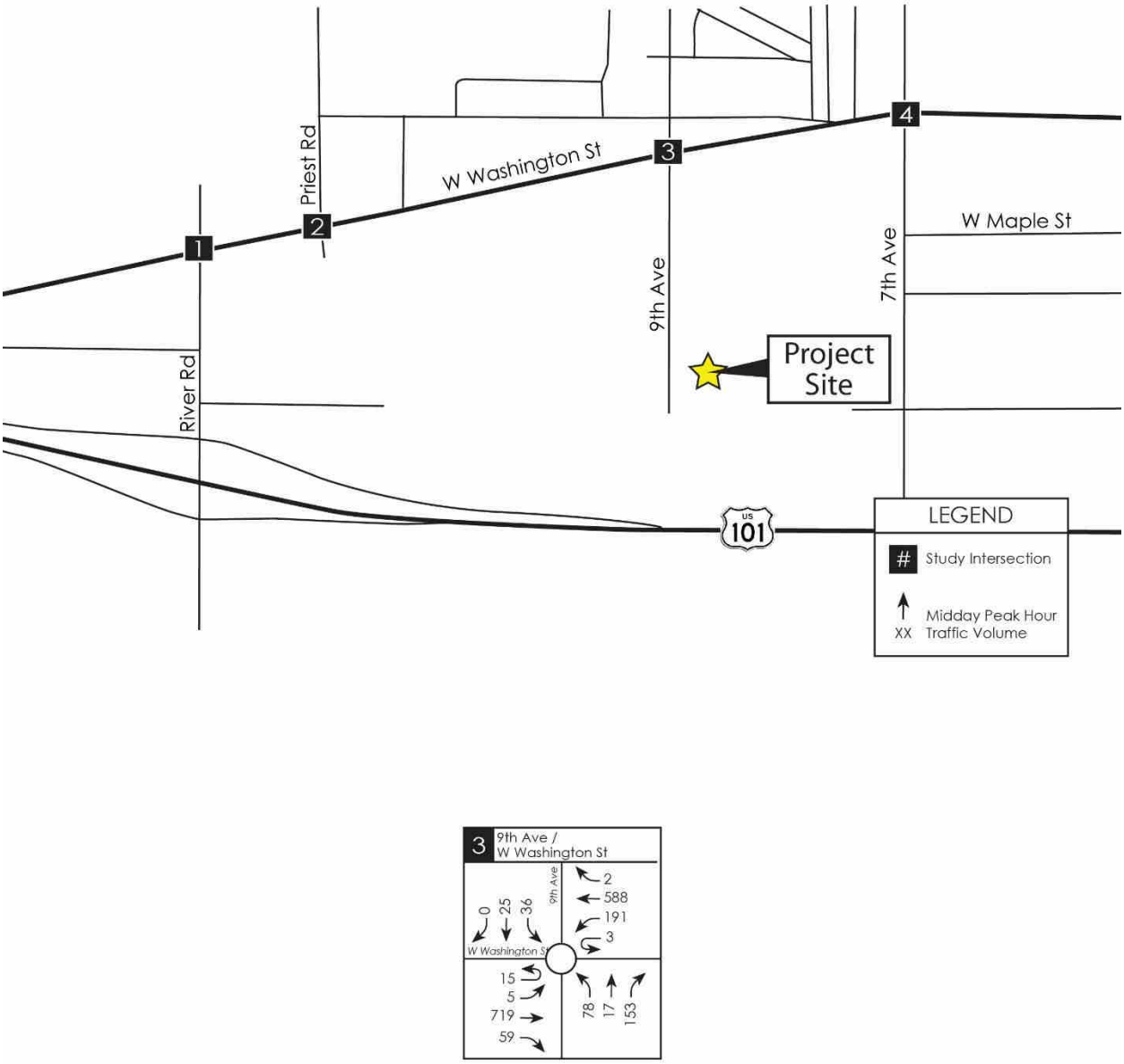

Figure 13: 2021 With Project Weekday Midday Peak Hour Traffic Volumes

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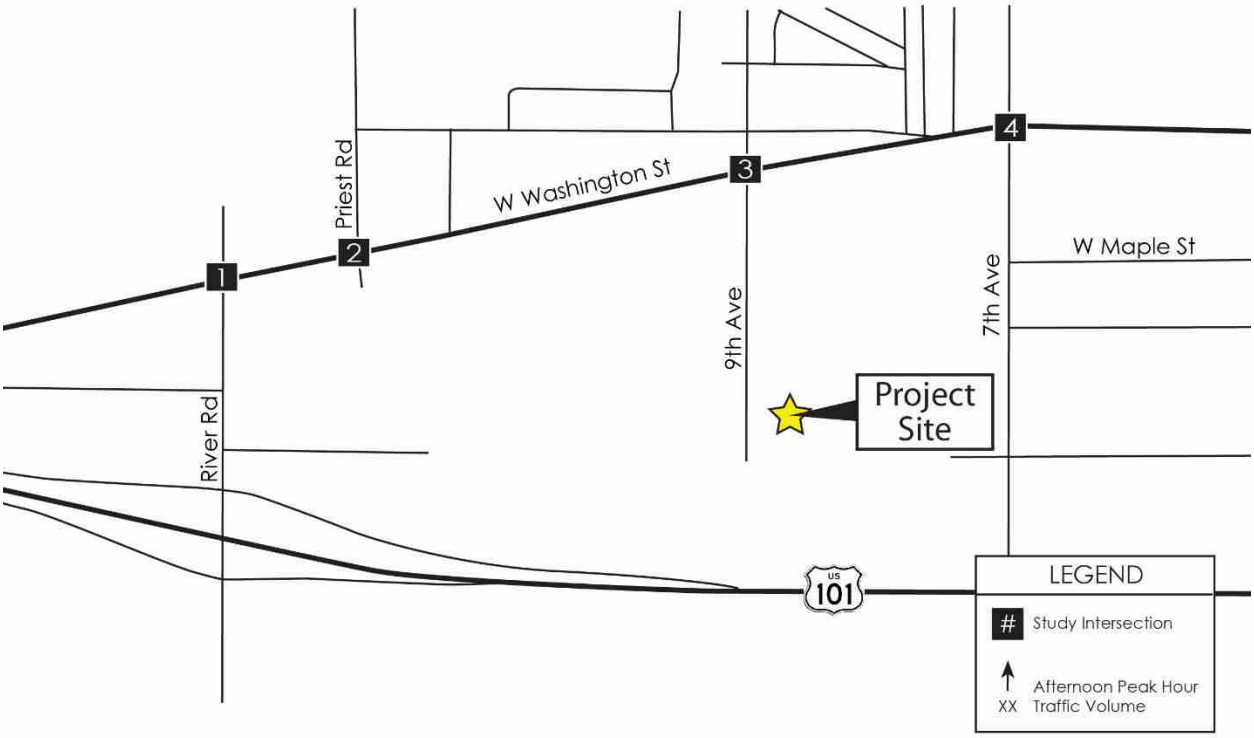

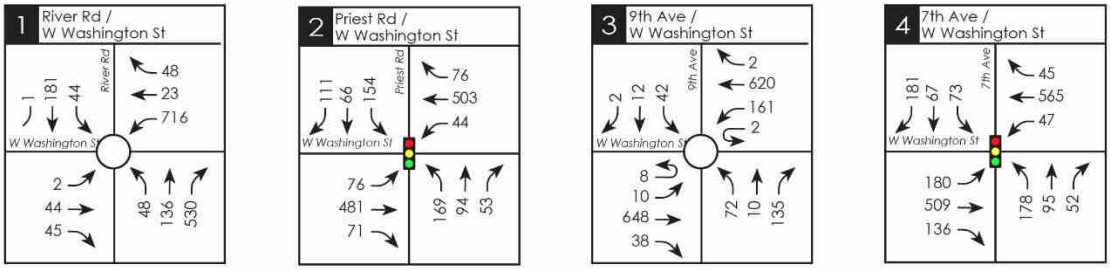

Figure 14: 2021 With Project Weekday Afternoon Peak Hour Traffic Volumes

N
NOT TO SCALE

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Future Level of Service

Future year 2021 peak hour level of service (LOS) analyses were conducted at the study intersections for Without Project and With-Project conditions. The roadway network and signal timing assumed in the year 2021 LOS analysis was assumed to be the same as existing conditions since no planned capacity improvements that are planned for construction by 2021.

The 2021 weekday AM peak hour, Midday peak hour, and Afternoon peak hour LOS results at the study intersections without and with the proposed project are summarized in Table 4. The LOS worksheets are included in Appendix B. The City's minimum intersection standard is LOS D.

As shown in Table 4, the signalized and roundabout study intersections are expected to operate at LOS C or better in 2021 without or with the proposed project during the time periods evaluated. The detailed LOS calculation worksheets are included in Appendix B.

Table 4
Future 2021 Peak Hour LOS Summary at Study Intersections

	2021 Without Project		2021 With Project	
Time Period / Study Intersection	LOS [1]	Delay (sec) [2]	LOS [1]	Delay (sec) [2]
AM PEAK HOUR				
1. Washington Street / River Road	A	3.6	A	3.7
2. Washington Street / Priest Road	B	16.2	B	16.2
3. Washington Street / 9th Ave	A	5.8	A	5.9
MIDDAY PEAK HOUR				
3. Washington Street / 9th Ave	C	15.8	C	16.4
AFTERNOON PEAK HOUR				
1. Washington Street / River Road	A	7.3	A	7.5
2. Washington Street / Priest Road	C	22.9	C	23.2
3. Washington Street / 9th Ave	B	11.8	B	12.4
4. Washington Street / 7th Ave	C	30.5	C	31.0

1. LOS = Level of Service
2. Delay refers to average control delay expressed in seconds per vehicle.

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MITIGATION MEASURES

To mitigate long-term transportation impacts, the City of Sequim administers a Traffic Impact Fee (TIF) to new developments to improve the transportation system to accommodate the increase in traffic generation by new development. The traffic impact fee for the proposed Jamestown Clinic will be determined by the City based on the size of the building area as a medical clinic use.

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Appendix A

Existing Traffic Count Data

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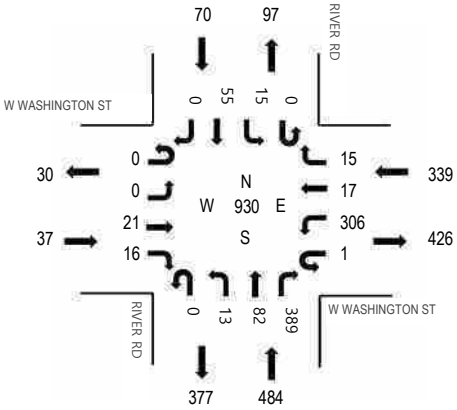
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

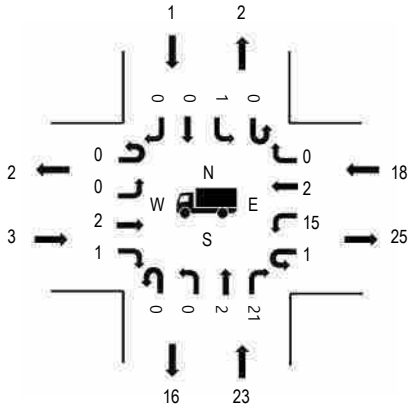
Location: 3 RIVER RD & W WASHINGTON ST AM
Date: Thursday, December 19, 2019
Peak Hour: 08:30 AM - 09:30 AM

Peak Hour

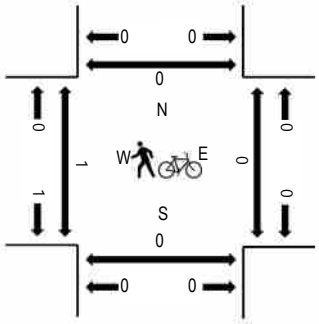
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	8.1%	0.71
WB	5.3%	0.83
NB	4.8%	0.90
SB	1.4%	0.80
All	4.8%	0.90

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				RIVER RD Northbound				RIVER RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
6:30 AM	0	0	0	0	0	22	0	1	0	2	6	39	0	1	9	0	80	436
6:45 AM	0	0	4	1	0	21	0	2	0	1	10	51	0	2	5	1	98	543
7:00 AM	0	0	4	2	0	35	3	2	0	1	12	51	0	2	8	0	120	673
7:15 AM	0	0	0	0	0	28	0	9	0	4	14	70	0	2	11	0	138	759
7:30 AM	0	0	0	3	0	52	0	3	0	2	21	97	0	2	7	0	187	867
7:45 AM	0	0	1	1	0	53	0	0	0	5	14	138	0	6	10	0	228	905
8:00 AM	0	0	2	2	0	82	1	2	0	5	13	81	0	3	14	1	206	916
8:15 AM	0	0	3	5	0	76	0	2	0	7	19	117	0	4	13	0	246	918
8:30 AM	0	0	6	1	0	81	3	2	0	4	24	91	0	5	8	0	225	930
8:45 AM	0	0	3	1	0	77	4	0	0	1	18	116	0	2	17	0	239	
9:00 AM	0	0	7	6	1	60	5	4	0	4	18	81	0	3	19	0	208	
9:15 AM	0	0	5	8	0	88	5	9	0	4	22	101	0	5	11	0	258	
Count Total	0	0	35	30	1	675	21	36	0	40	191	1,033	0	37	132	2	2,233	
Peak Hour	0	0	21	16	1	306	17	15	0	13	82	389	0	15	55	0	930	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:30 AM	0	3	1	0	4	6:30 AM	0	0	0	0	0
6:45 AM	0	0	2	0	2	6:45 AM	0	0	0	0	0
7:00 AM	1	4	6	1	12	7:00 AM	0	0	0	0	0
7:15 AM	0	3	0	0	3	7:15 AM	0	0	0	0	0
7:30 AM	1	7	2	0	10	7:30 AM	0	0	0	0	0
7:45 AM	2	8	6	1	17	7:45 AM	0	0	0	0	0
8:00 AM	0	2	1	1	4	8:00 AM	0	0	0	0	0
8:15 AM	1	4	5	0	10	8:15 AM	0	0	0	0	0
8:30 AM	0	2	6	0	8	8:30 AM	0	0	0	0	0

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8:45 AM	0	9	5	1	15	8:45 AM	0	0	0	0	0
9:00 AM	2	7	2	0	11	9:00 AM	1	0	0	0	1
9:15 AM	1	5	5	0	11	9:15 AM	0	0	0	0	0
Count Total	8	54	41	4	107	Count Total	1	0	0	0	1
Peak Hour	3	23	18	1	45	Peak Hour	1	0	0	0	1

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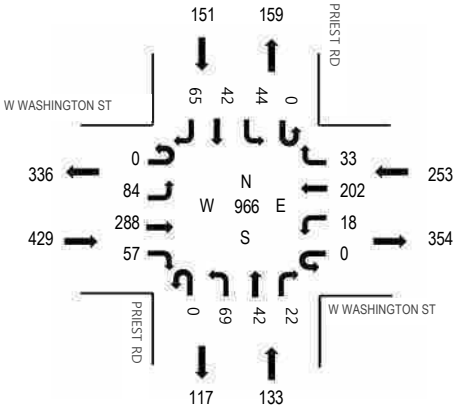
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

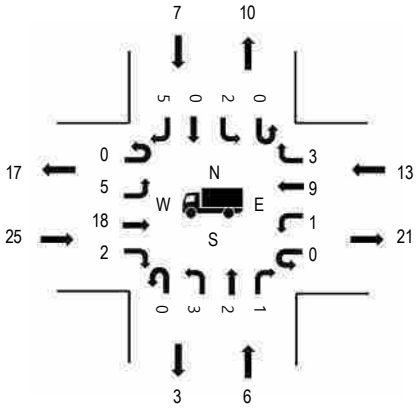
Location: 4 PRIEST RD & W WASHINGTON ST AM
Date: Thursday, December 19, 2019
Peak Hour: 08:30 AM - 09:30 AM

Peak Hour

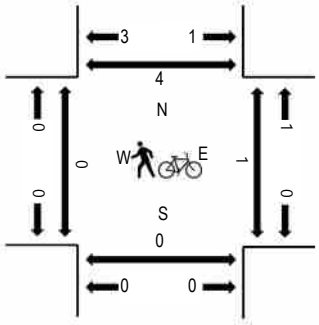
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	5.8%	0.89
WB	5.1%	0.89
NB	4.5%	0.62
SB	4.6%	0.84
All	5.3%	0.88

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				PRIEST RD Northbound				PRIEST RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
6:30 AM	0	5	30	7	0	0	13	1	0	2	3	1	0	3	4	9	78	407
6:45 AM	0	10	41	8	0	1	15	3	0	5	4	0	0	2	3	3	95	504
7:00 AM	0	14	38	5	0	0	24	1	0	5	1	0	0	2	5	11	106	630
7:15 AM	0	15	51	7	0	0	25	3	0	4	1	1	0	6	6	9	128	727
7:30 AM	0	28	66	7	0	1	33	2	0	8	4	1	0	9	2	14	175	829
7:45 AM	0	39	93	12	0	0	23	3	0	9	2	4	0	10	2	24	221	884
8:00 AM	0	17	63	10	0	3	36	3	0	11	5	0	0	6	11	38	203	907
8:15 AM	0	27	74	19	0	2	50	4	0	6	2	2	0	11	12	21	230	922
8:30 AM	0	23	69	14	0	1	57	6	0	20	9	2	0	8	9	12	230	966
8:45 AM	0	23	80	18	0	4	46	8	0	12	11	5	0	10	10	17	244	
9:00 AM	0	15	64	14	0	7	46	7	0	10	7	3	0	12	18	15	218	
9:15 AM	0	23	75	11	0	6	53	12	0	27	15	12	0	14	5	21	274	
Count Total	0	239	744	132	0	25	421	53	0	119	64	31	0	93	87	194	2,202	
Peak Hour	0	84	288	57	0	18	202	33	0	69	42	22	0	44	42	65	966	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:30 AM	2	0	0	1	3	6:30 AM	0	0	0	0	0
6:45 AM	0	0	2	1	3	6:45 AM	0	0	0	1	1
7:00 AM	6	0	4	1	11	7:00 AM	0	0	0	0	0
7:15 AM	1	0	1	0	2	7:15 AM	0	0	0	0	0
7:30 AM	8	0	1	1	10	7:30 AM	0	0	0	0	0
7:45 AM	10	2	3	3	18	7:45 AM	0	0	0	0	0
8:00 AM	1	1	1	0	3	8:00 AM	0	0	0	0	0
8:15 AM	6	0	3	4	13	8:15 AM	0	0	0	0	0
8:30 AM	2	0	5	1	8	8:30 AM	0	0	1	3	4

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8:45 AM	9	3	3	1	16	8:45 AM	0	0	0	0	0
9:00 AM	9	1	2	1	13	9:00 AM	0	0	0	1	1
9:15 AM	5	2	3	4	14	9:15 AM	0	0	0	0	0
Count Total	59	9	28	18	114	Count Total	0	0	1	5	6
Peak Hour	25	6	13	7	51	Peak Hour	0	0	1	4	5

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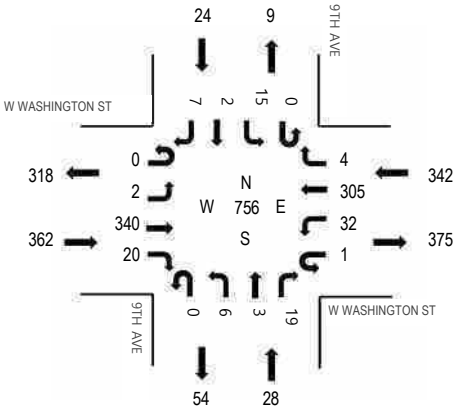
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

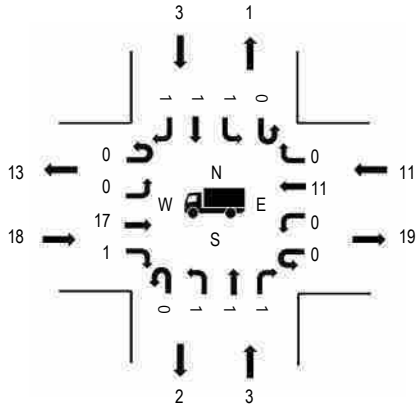
Location: 5 9TH AVE & W WASHINGTON ST AM
Date: Thursday, December 19, 2019
Peak Hour: 08:30 AM - 09:30 AM

Peak Hour

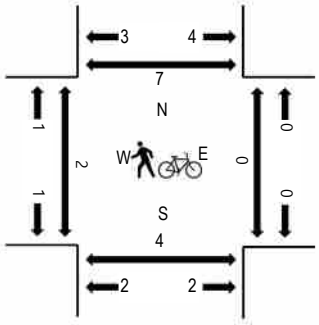
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	5.0%	0.85
WB	3.2%	0.87
NB	10.7%	0.58
SB	12.5%	0.86
All	4.6%	0.88

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				9TH AVE Northbound				9TH AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
6:30 AM	0	0	34	4	1	3	15	0	0	0	0	1	0	0	0	1	59	308
6:45 AM	0	0	44	1	0	1	16	0	0	2	0	2	0	2	1	1	70	364
7:00 AM	0	0	43	3	0	5	26	0	0	0	0	2	0	2	0	0	81	451
7:15 AM	0	0	58	2	0	2	30	0	0	0	0	4	0	1	0	1	98	518
7:30 AM	0	0	73	2	0	4	33	0	0	0	0	3	0	0	0	0	115	581
7:45 AM	0	0	100	9	0	4	32	1	0	2	0	4	0	4	1	0	157	647
8:00 AM	0	0	72	6	0	13	48	0	0	0	1	6	0	1	1	0	148	666
8:15 AM	0	0	81	4	0	6	61	0	0	4	0	4	0	1	0	0	161	702
8:30 AM	0	0	85	7	0	6	67	3	0	1	1	6	0	2	0	3	181	756
8:45 AM	0	0	87	2	0	7	70	1	0	1	0	2	0	3	2	1	176	
9:00 AM	0	1	68	6	0	8	82	0	0	2	2	8	0	5	0	2	184	
9:15 AM	0	1	100	5	1	11	86	0	0	2	0	3	0	5	0	1	215	
Count Total	0	2	845	51	2	70	566	5	0	14	4	45	0	26	5	10	1,645	
Peak Hour	0	2	340	20	1	32	305	4	0	6	3	19	0	15	2	7	756	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:30 AM	2	0	1	0	3	6:30 AM	0	0	0	0	0
6:45 AM	0	3	0	0	3	6:45 AM	0	0	0	1	1
7:00 AM	3	0	4	0	7	7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:30 AM	6	0	1	0	7	7:30 AM	0	1	0	0	1
7:45 AM	7	1	3	0	11	7:45 AM	1	0	0	0	1
8:00 AM	1	0	1	0	2	8:00 AM	1	0	0	0	1
8:15 AM	3	0	4	0	7	8:15 AM	0	0	0	1	1
8:30 AM	2	1	3	1	7	8:30 AM	0	1	0	1	2

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8:45 AM	6	0	4	1	11	8:45 AM	0	1	0	3	4
9:00 AM	6	2	2	1	11	9:00 AM	1	0	0	0	1
9:15 AM	4	0	2	0	6	9:15 AM	1	2	0	3	6
Count Total	40	7	25	3	75	Count Total	4	5	0	9	18
Peak Hour	18	3	11	3	35	Peak Hour	2	4	0	7	13

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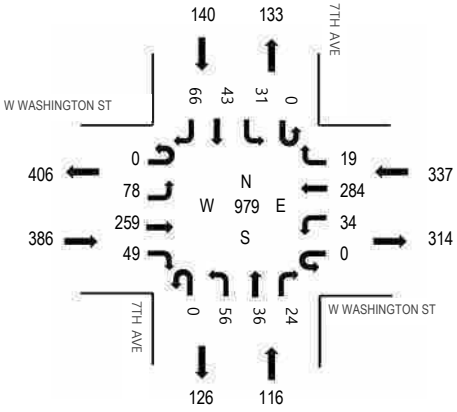
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

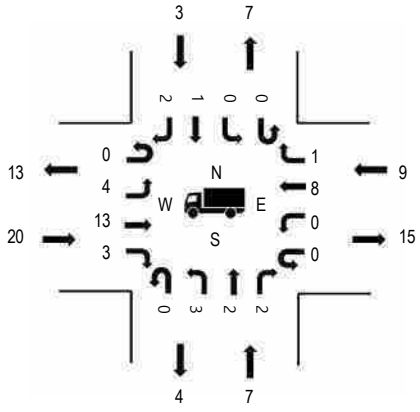
Location: 6 7TH AVE & W WASHINGTON ST AM
Date: Thursday, December 19, 2019
Peak Hour: 08:30 AM - 09:30 AM

Peak Hour

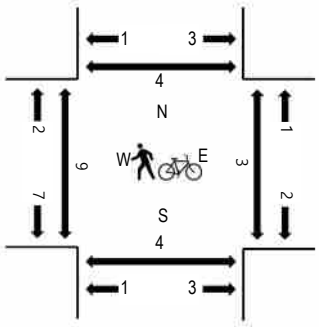
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	5.2%	0.91
WB	2.7%	0.84
NB	6.0%	0.83
SB	2.1%	0.92
All	4.0%	0.90

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				7TH AVE Northbound				7TH AVE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
6:30 AM	0	6	28	0	0	2	11	0	0	4	3	1	0	0	0	6	61	389
6:45 AM	0	6	44	5	0	3	13	0	0	5	4	3	0	4	6	7	100	476
7:00 AM	0	9	32	6	0	3	22	3	0	5	2	5	0	4	5	7	103	583
7:15 AM	0	12	43	5	0	3	30	4	0	5	6	4	0	7	4	2	125	701
7:30 AM	1	15	58	8	0	2	23	5	0	8	7	3	0	4	1	13	148	785
7:45 AM	0	10	83	10	0	2	43	4	0	4	21	9	0	6	9	6	207	878
8:00 AM	0	16	65	7	0	11	48	5	0	8	12	10	0	11	13	15	221	891
8:15 AM	0	14	71	8	0	7	50	5	0	7	12	6	0	4	12	13	209	916
8:30 AM	0	17	70	13	0	6	66	6	0	13	15	7	0	6	11	11	241	979
8:45 AM	0	21	53	12	0	8	57	3	0	11	8	10	0	9	10	18	220	
9:00 AM	0	16	67	11	0	11	75	5	0	14	7	2	0	10	10	18	246	
9:15 AM	0	24	69	13	0	9	86	5	0	18	6	5	0	6	12	19	272	
Count Total	1	166	683	98	0	67	524	45	0	102	103	65	0	71	93	135	2,153	
Peak Hour	0	78	259	49	0	34	284	19	0	56	36	24	0	31	43	66	979	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:30 AM	1	1	2	0	4	6:30 AM	0	0	0	1	1
6:45 AM	1	0	0	0	1	6:45 AM	1	0	0	2	3
7:00 AM	1	0	3	1	5	7:00 AM	0	0	0	1	1
7:15 AM	0	1	1	0	2	7:15 AM	0	0	0	3	3
7:30 AM	5	1	1	0	7	7:30 AM	0	0	0	1	1
7:45 AM	5	0	3	1	9	7:45 AM	0	1	2	0	3
8:00 AM	2	0	3	0	5	8:00 AM	0	0	0	0	0
8:15 AM	1	0	3	1	5	8:15 AM	0	0	0	1	1
8:30 AM	3	2	2	1	8	8:30 AM	0	0	1	0	1

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8:45 AM	5	2	4	0	11	8:45 AM	0	1	1	1	3
9:00 AM	8	3	0	2	13	9:00 AM	7	0	0	1	8
9:15 AM	4	0	3	0	7	9:15 AM	2	3	1	2	8
Count Total	36	10	25	6	77	Count Total	10	5	5	13	33
Peak Hour	20	7	9	3	39	Peak Hour	9	4	3	4	20

Received by City of Sequim
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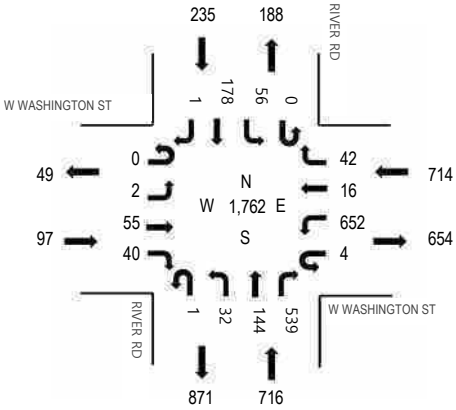
1-10-2020

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

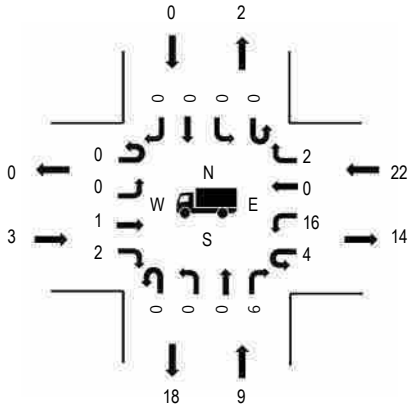
Location: 3 RIVER RD & W WASHINGTON ST Noon
Date: Thursday, December 19, 2019
Peak Hour: 11:45 AM - 12:45 PM

Peak Hour

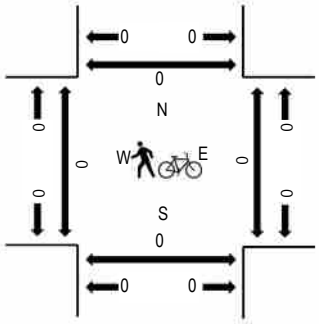
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	3.1%	0.84
WB	3.1%	0.99
NB	1.3%	0.97
SB	0.0%	0.88
All	1.9%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				RIVER RD Northbound				RIVER RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
11:30 AM	0	1	6	5	0	141	4	13	0	8	41	126	0	11	26	0	382	1,690
11:45 AM	0	0	13	7	1	162	3	12	0	10	34	140	0	13	34	0	429	1,762
12:00 PM	0	1	16	12	2	161	9	9	0	9	32	128	0	14	53	0	446	1,731
12:15 PM	0	0	11	11	0	161	0	14	1	6	38	134	0	18	39	0	433	1,727
12:30 PM	0	1	15	10	1	168	4	7	0	7	40	137	0	11	52	1	454	1,740
12:45 PM	0	1	3	7	0	125	4	10	0	8	32	156	0	14	38	0	398	
1:00 PM	0	0	19	9	0	151	3	12	0	9	28	145	0	13	53	0	442	
1:15 PM	0	1	10	11	0	166	1	13	0	20	36	132	0	12	44	0	446	
Count Total	0	5	93	72	4	1,235	28	90	1	77	281	1,098	0	106	339	1	3,430	
Peak Hour	0	2	55	40	4	652	16	42	1	32	144	539	0	56	178	1	1,762	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
11:30 AM	1	1	4	0	6	11:30 AM	0	0	0	0	0
11:45 AM	0	2	6	0	8	11:45 AM	0	0	0	0	0
12:00 PM	0	2	8	0	10	12:00 PM	0	0	0	0	0
12:15 PM	2	4	3	0	9	12:15 PM	0	0	0	0	0
12:30 PM	1	1	5	0	7	12:30 PM	0	0	0	0	0
12:45 PM	0	5	3	1	9	12:45 PM	0	0	0	0	0
1:00 PM	1	5	1	0	7	1:00 PM	0	0	0	0	0
1:15 PM	0	4	4	0	8	1:15 PM	0	0	0	0	0
Count Total	5	24	34	1	64	Count Total	0	0	0	0	0
Peak Hour	3	9	22	0	34	Peak Hour	0	0	0	0	0

Received by City of Sequim
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1-10-2020

All Traffic Data Services Inc.
(303) 216-2439
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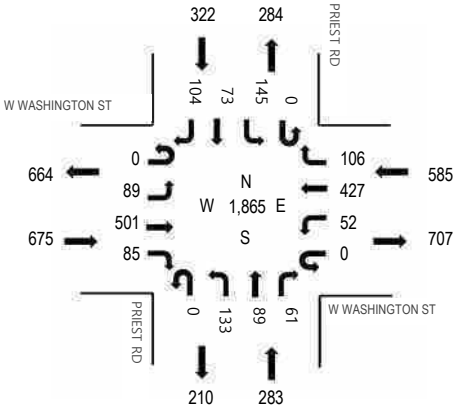
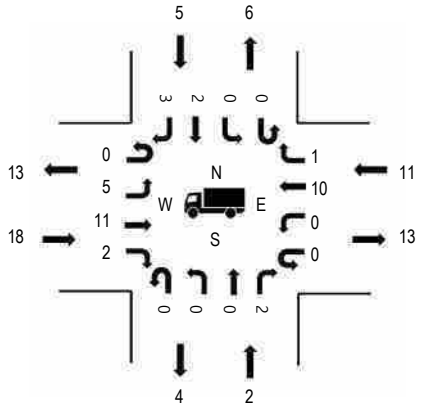
Location: 4 PRIEST RD & W WASHINGTON ST Noon
Date: Thursday, December 19, 2019
Peak Hour: 12:30 PM - 01:30 PM

Peak Hour

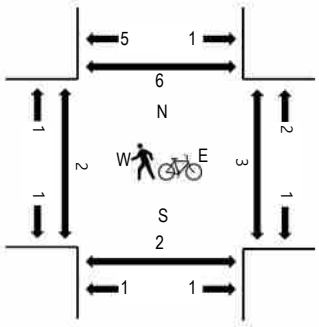
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	2.7%	0.94
WB	1.9%	0.94
NB	0.7%	0.86
SB	1.6%	0.85
All	1.9%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				PRIEST RD Northbound				PRIEST RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
11:30 AM	0	14	104	20	0	12	96	31	0	42	31	15	0	38	21	20	444	1,834
11:45 AM	1	13	122	26	0	10	114	20	0	42	20	14	0	41	13	25	461	1,864
12:00 PM	0	21	127	20	0	8	116	29	0	34	24	14	0	39	16	32	480	1,853
12:15 PM	0	20	111	24	0	9	112	14	0	34	24	13	0	39	24	25	449	1,854
12:30 PM	0	24	136	20	0	10	120	23	0	30	19	16	0	32	18	26	474	1,865
12:45 PM	0	25	119	19	0	17	89	26	0	29	25	18	0	45	14	24	450	
1:00 PM	0	17	134	24	0	16	108	32	0	43	24	15	0	30	17	21	481	
1:15 PM	0	23	112	22	0	9	110	25	0	31	21	12	0	38	24	33	460	
Count Total	1	157	965	175	0	91	865	200	0	285	188	117	0	302	147	206	3,699	
Peak Hour	0	89	501	85	0	52	427	106	0	133	89	61	0	145	73	104	1,865	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
11:30 AM	1	0	3	0	4	11:30 AM	1	1	2	3	7
11:45 AM	4	0	5	2	11	11:45 AM	0	0	0	1	1
12:00 PM	5	4	7	2	18	12:00 PM	1	0	1	1	3
12:15 PM	4	0	5	2	11	12:15 PM	0	1	6	2	9
12:30 PM	2	2	4	2	10	12:30 PM	2	2	0	4	8
12:45 PM	5	0	4	0	9	12:45 PM	0	0	0	0	0
1:00 PM	8	0	1	0	9	1:00 PM	0	0	3	2	5
1:15 PM	3	0	2	3	8	1:15 PM	0	0	0	0	0
Count Total	32	6	31	11	80	Count Total	4	4	12	13	33
Peak Hour	18	2	11	5	36	Peak Hour	2	2	3	6	13

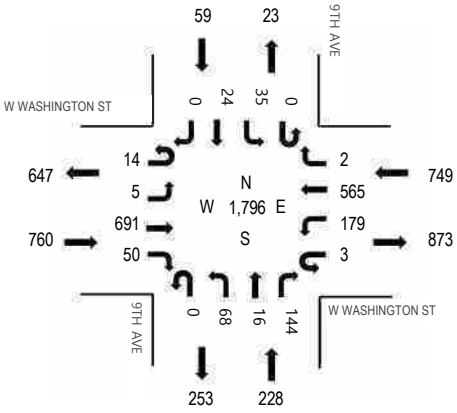
Received by City of Sequim
DCD / PUBLIC WORKS
1-10-2020

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

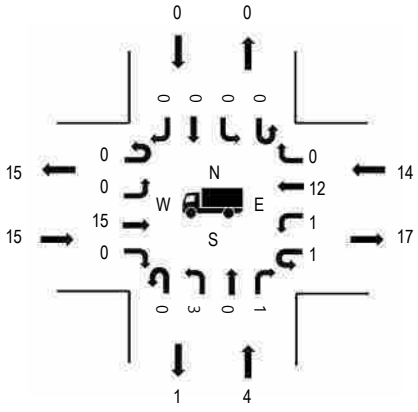
Location: 5 9TH AVE & W WASHINGTON ST Noon
Date: Thursday, December 19, 2019
Peak Hour: 12:30 PM - 01:30 PM

Peak Hour

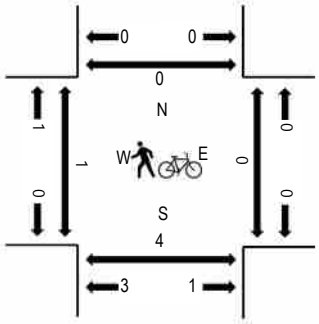
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	2.0%	0.95
WB	1.9%	0.95
NB	1.8%	0.79
SB	0.0%	0.70
All	1.8%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				9TH AVE Northbound				9TH AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
11:30 AM	3	0	170	9	0	28	140	0	0	17	0	25	0	3	3	2	400	1,664
11:45 AM	1	2	166	12	3	46	137	0	0	14	1	28	0	7	4	0	421	1,736
12:00 PM	5	1	162	10	1	43	154	1	0	14	1	27	0	7	7	0	433	1,755
12:15 PM	2	2	168	9	1	33	141	1	0	11	2	29	0	7	3	1	410	1,757
12:30 PM	3	1	181	14	1	54	124	1	0	18	5	49	0	10	11	0	472	1,796
12:45 PM	2	2	183	11	1	36	139	1	0	15	3	36	0	9	2	0	440	
1:00 PM	5	0	153	13	0	46	152	0	0	19	3	30	0	8	6	0	435	
1:15 PM	4	2	174	12	1	43	150	0	0	16	5	29	0	8	5	0	449	
Count Total	25	10	1,357	90	8	329	1,137	4	0	124	20	253	0	59	41	3	3,460	
Peak Hour	14	5	691	50	3	179	565	2	0	68	16	144	0	35	24	0	1,796	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
11:30 AM	2	0	4	0	6	11:30 AM	1	2	2	2	7
11:45 AM	4	0	7	0	11	11:45 AM	0	0	0	0	0
12:00 PM	7	2	8	0	17	12:00 PM	0	0	0	0	0
12:15 PM	4	0	4	0	8	12:15 PM	0	0	0	0	0
12:30 PM	4	3	3	0	10	12:30 PM	0	2	0	0	2
12:45 PM	5	0	3	0	8	12:45 PM	1	1	0	0	2
1:00 PM	5	0	2	0	7	1:00 PM	0	1	0	0	1
1:15 PM	1	1	6	0	8	1:15 PM	0	0	0	0	0
Count Total	32	6	37	0	75	Count Total	2	6	2	2	12
Peak Hour	15	4	14	0	33	Peak Hour	1	4	0	0	5

Received by City of Sequim
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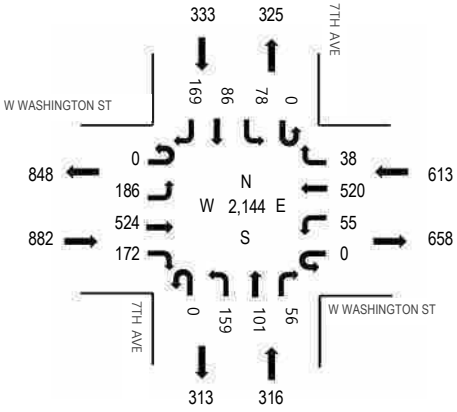
1-10-2020

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

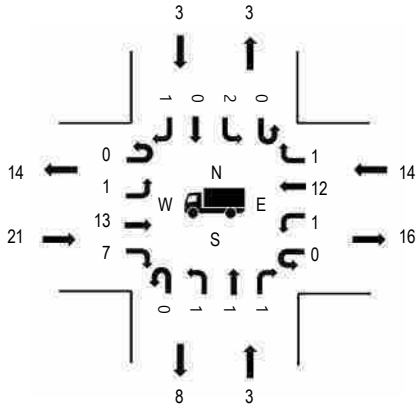
Location: 6 7TH AVE & W WASHINGTON ST Noon
Date: Thursday, December 19, 2019
Peak Hour: 12:15 PM - 01:15 PM

Peak Hour

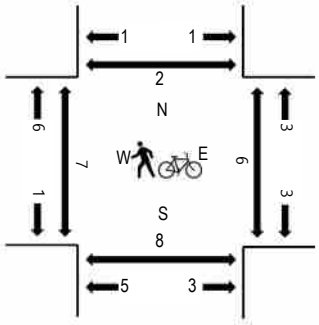
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	2.4%	0.95
WB	2.3%	0.94
NB	0.9%	0.95
SB	0.9%	0.90
All	1.9%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				7TH AVE Northbound				7TH AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
11:30 AM	0	50	118	28	0	13	123	13	0	34	21	21	0	21	18	43	503	2,046
11:45 AM	0	42	130	32	0	12	147	6	0	29	26	6	0	17	30	54	531	2,103
12:00 PM	0	38	117	26	0	18	140	5	0	42	14	10	0	14	17	50	491	2,104
12:15 PM	0	54	119	39	0	11	126	6	0	50	23	10	0	24	23	36	521	2,144
12:30 PM	0	46	125	59	0	17	137	9	0	35	29	11	0	18	22	52	560	2,140
12:45 PM	0	48	152	31	0	13	121	14	0	31	27	20	0	17	23	35	532	
1:00 PM	0	38	128	43	0	14	136	9	0	43	22	15	0	19	18	46	531	
1:15 PM	0	48	110	32	0	15	127	8	0	49	28	21	0	14	14	51	517	
Count Total	0	364	999	290	0	113	1,057	70	0	313	190	114	0	144	165	367	4,186	
Peak Hour	0	186	524	172	0	55	520	38	0	159	101	56	0	78	86	169	2,144	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
11:30 AM	2	1	3	1	7	11:30 AM	1	2	2	2	7
11:45 AM	3	0	6	1	10	11:45 AM	0	0	0	4	4
12:00 PM	7	3	4	1	15	12:00 PM	2	0	1	0	3
12:15 PM	3	1	6	1	11	12:15 PM	3	2	0	1	6
12:30 PM	6	2	3	1	12	12:30 PM	2	1	0	1	4
12:45 PM	7	0	4	1	12	12:45 PM	1	3	4	0	8
1:00 PM	5	0	1	0	6	1:00 PM	1	2	2	0	5
1:15 PM	1	4	3	0	8	1:15 PM	1	0	3	3	7
Count Total	34	11	30	6	81	Count Total	11	10	12	11	44
Peak Hour	21	3	14	3	41	Peak Hour	7	8	6	2	23

Received by City of Sequim
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1-10-2020

All Traffic Data Services Inc.
(303) 216-2439
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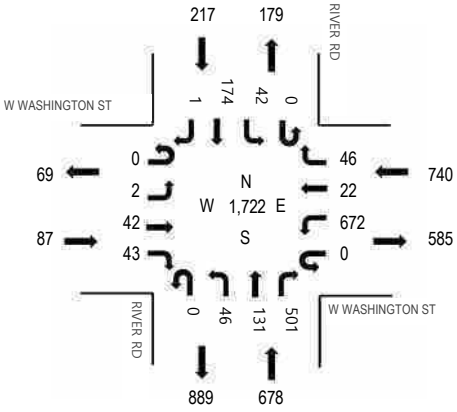
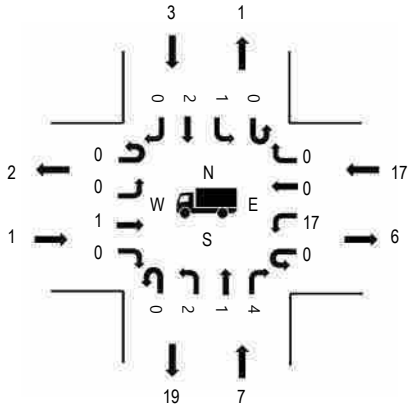
Location: 3 RIVER RD & W WASHINGTON ST PM
Date: Thursday, December 19, 2019
Peak Hour: 02:00 PM - 03:00 PM

Peak Hour

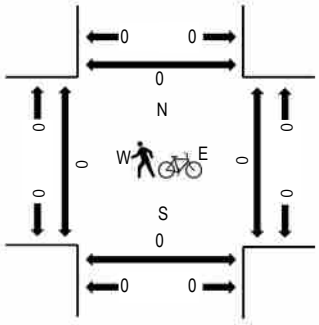
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	1.1%	0.84
WB	2.3%	0.95
NB	1.0%	0.91
SB	1.4%	0.92
All	1.6%	0.99

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				RIVER RD Northbound				RIVER RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	0	1	11	7	0	179	3	11	0	13	38	115	0	18	34	0	430	1,722
2:15 PM	0	0	12	14	0	163	4	14	0	10	37	126	0	8	47	0	435	
2:30 PM	0	0	8	11	0	152	9	11	0	13	33	140	0	10	40	1	428	
2:45 PM	0	1	11	11	0	178	6	10	0	10	23	120	0	6	53	0	429	
Count Total	0	2	42	43	0	672	22	46	0	46	131	501	0	42	174	1	1,722	
Peak Hour	0	2	42	43	0	672	22	46	0	46	131	501	0	42	174	1	1,722	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	0	4	6	1	11	2:00 PM	0	0	0	0	0
2:15 PM	1	0	4	1	6	2:15 PM	0	0	0	0	0
2:30 PM	0	2	4	0	6	2:30 PM	0	0	0	0	0
2:45 PM	0	1	3	1	5	2:45 PM	0	0	0	0	0
Count Total	1	7	17	3	28	Count Total	0	0	0	0	0
Peak Hour	1	7	17	3	28	Peak Hour	0	0	0	0	0

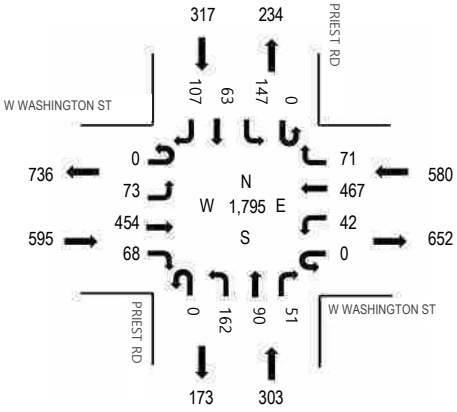
Received by City of Sequim
DCD / PUBLIC WORKS
1-10-2020

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

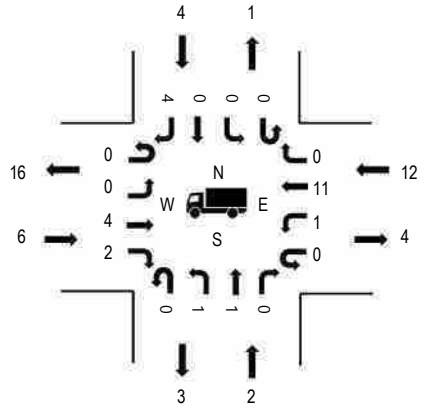
Location: 4 PRIEST RD & W WASHINGTON ST PM
Date: Thursday, December 19, 2019
Peak Hour: 02:00 PM - 03:00 PM

Peak Hour

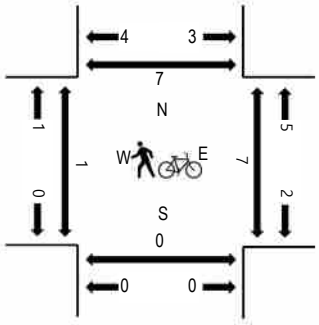
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	1.0%	0.90
WB	2.1%	0.89
NB	0.7%	0.86
SB	1.3%	0.91
All	1.3%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				PRIEST RD Northbound				PRIEST RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	0	17	115	19	0	8	119	16	0	47	26	15	0	43	16	20	461	1,795
2:15 PM	0	14	112	11	0	19	122	22	0	38	19	14	0	43	17	22	453	
2:30 PM	0	20	124	22	0	8	108	19	0	41	23	9	0	28	16	25	443	
2:45 PM	0	22	103	16	0	7	118	14	0	36	22	13	0	33	14	40	438	
Count Total	0	73	454	68	0	42	467	71	0	162	90	51	0	147	63	107	1,795	
Peak Hour	0	73	454	68	0	42	467	71	0	162	90	51	0	147	63	107	1,795	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	5	2	5	0	12	2:00 PM	0	0	3	3	6
2:15 PM	0	0	3	2	5	2:15 PM	0	0	2	2	4
2:30 PM	1	0	2	1	4	2:30 PM	1	0	2	2	5
2:45 PM	0	0	2	1	3	2:45 PM	0	0	0	0	0
Count Total	6	2	12	4	24	Count Total	1	0	7	7	15
Peak Hour	6	2	12	4	24	Peak Hour	1	0	7	7	15

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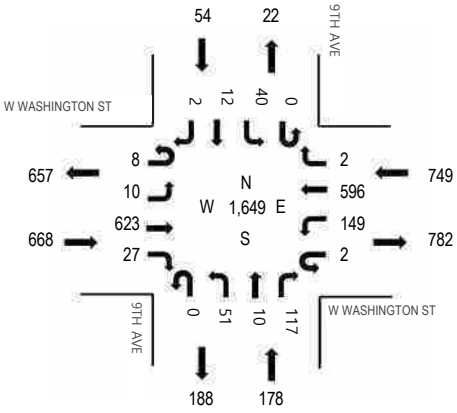
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

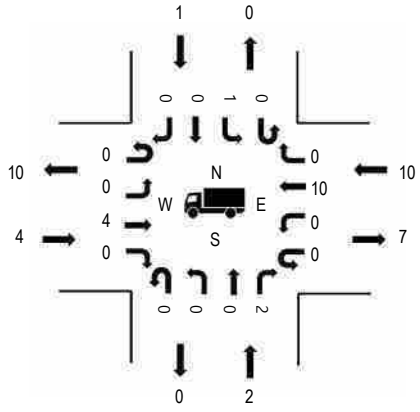
Location: 5 9TH AVE & W WASHINGTON ST PM
Date: Thursday, December 19, 2019
Peak Hour: 02:00 PM - 03:00 PM

Peak Hour

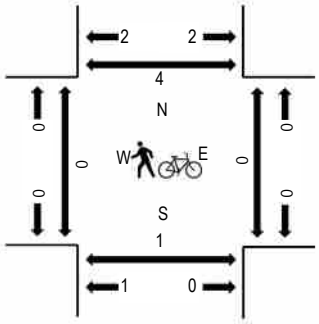
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.6%	0.93
WB	1.3%	0.94
NB	1.1%	0.86
SB	1.9%	0.75
All	1.0%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				9TH AVE Northbound				9TH AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	1	1	148	9	0	32	154	0	0	16	4	32	0	8	4	1	410	1,649
2:15 PM	4	6	164	5	0	31	157	2	0	12	1	32	0	14	4	0	432	
2:30 PM	2	2	146	7	1	53	146	0	0	10	1	32	0	10	1	0	411	
2:45 PM	1	1	165	6	1	33	139	0	0	13	4	21	0	8	3	1	396	
Count Total	8	10	623	27	2	149	596	2	0	51	10	117	0	40	12	2	1,649	
Peak Hour	8	10	623	27	2	149	596	2	0	51	10	117	0	40	12	2	1,649	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	1	2	4	0	7	2:00 PM	0	0	0	1	1
2:15 PM	1	0	3	0	4	2:15 PM	0	0	0	2	2
2:30 PM	1	0	1	0	2	2:30 PM	0	0	0	1	1
2:45 PM	1	0	2	1	4	2:45 PM	0	1	0	0	1
Count Total	4	2	10	1	17	Count Total	0	1	0	4	5
Peak Hour	4	2	10	1	17	Peak Hour	0	1	0	4	5

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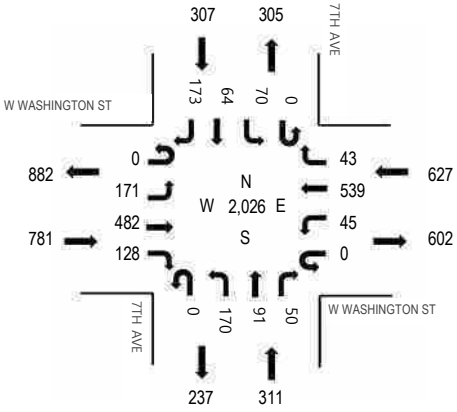
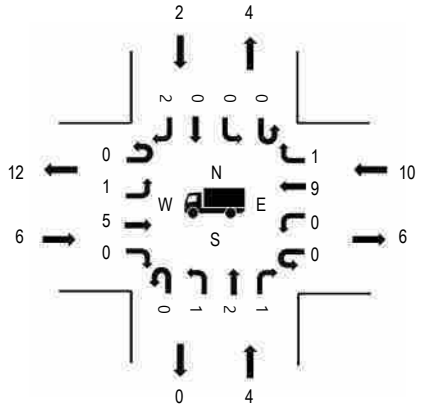
Location: 6 7TH AVE & W WASHINGTON ST PM
Date: Thursday, December 19, 2019
Peak Hour: 02:00 PM - 03:00 PM

Peak Hour

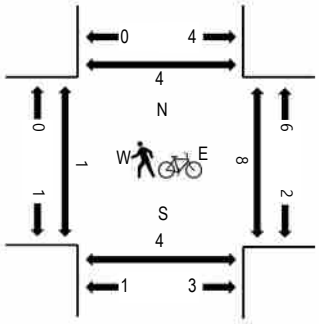
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.8%	0.92
WB	1.6%	0.98
NB	1.3%	0.89
SB	0.7%	0.91
All	1.1%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	W WASHINGTON ST Eastbound				W WASHINGTON ST Westbound				7TH AVE Northbound				7TH AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	0	41	102	34	0	10	133	12	0	48	19	12	0	10	13	45	479	2,026
2:15 PM	0	49	120	43	0	7	144	9	0	42	21	16	0	20	20	32	523	
2:30 PM	0	39	122	30	0	14	133	10	0	42	35	10	0	15	13	55	518	
2:45 PM	0	42	138	21	0	14	129	12	0	38	16	12	0	25	18	41	506	
Count Total	0	171	482	128	0	45	539	43	0	170	91	50	0	70	64	173	2,026	
Peak Hour	0	171	482	128	0	45	539	43	0	170	91	50	0	70	64	173	2,026	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	3	1	4	0	8	2:00 PM	0	0	2	0	2
2:15 PM	1	1	3	0	5	2:15 PM	0	1	0	3	4
2:30 PM	1	1	1	1	4	2:30 PM	1	3	4	0	8
2:45 PM	1	1	2	1	5	2:45 PM	0	0	2	1	3
Count Total	6	4	10	2	22	Count Total	1	4	8	4	17
Peak Hour	6	4	10	2	22	Peak Hour	1	4	8	4	17

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Appendix B

Level of Service (LOS) Methodology and Calculations

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Level of Service Methodology

Level of service calculations for intersections were based on methodology and procedures outlined in the 2016 *Highway Capacity Manual*, 6th edition (HCM 6), Transportation Research Board using *Synchro 10* traffic analysis software.

LOS generally refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes intersection LOS. At signalized intersections, LOS A represents free-flow conditions (motorists experience little or no delays), and LOS F represents forced-flow conditions where motorists experience an average delay in excess of 80 seconds per vehicle.

The LOS reported for signalized intersections represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only).

The LOS reported at unsignalized intersections is based on the average control delay and can be reported for each controlled minor approach, controlled minor lane group, and controlled major-street movement (and for the overall intersection at all-way stop-controlled intersections. Additional v/c ratio criteria apply to lane group or movement LOS only).

Table B1 outlines the current HCM 6 LOS criteria for signalized and unsignalized intersections based on these methodologies.

Table B1
LOS Criteria for Signalized and Unsignalized Intersections[1]

SIGNALIZED INTERSECTIONS			UNSIGNALIZED INTERSECTIONS		
	LOS by Volume-to Capacity (V/C) Ratio[2]			LOS by Volume-to Capacity (V/C) Ratio[3]	
Control Delay (sec/veh)	≤ 1.0	> 1.0	Control Delay (sec/veh)	≤ 1.0	> 1.0
≤ 10	A	F	≤ 10	A	F
> 10 to ≤ 20	B	F	> 10 to ≤ 15	B	F
> 20 to ≤ 35	C	F	> 15 to ≤ 25	C	F
> 35 to ≤ 55	D	F	> 25 to ≤ 35	D	F
> 55 to ≤ 80	E	F	> 35 to ≤ 50	E	F
> 80	F	F	> 50	F	F

1 Source: Highway Capacity Manual, 6th Edition, Transportation Research Board, 2016.

2 For approach-based and intersection-wide assessments at signals, LOS is defined solely by control delay.

3 For two-way stop-controlled intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole at two-way stop controlled intersections. For approach-based and intersection-wide assessments at all-way stop-controlled intersections, LOS is solely defined by control delay.

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2019 Existing

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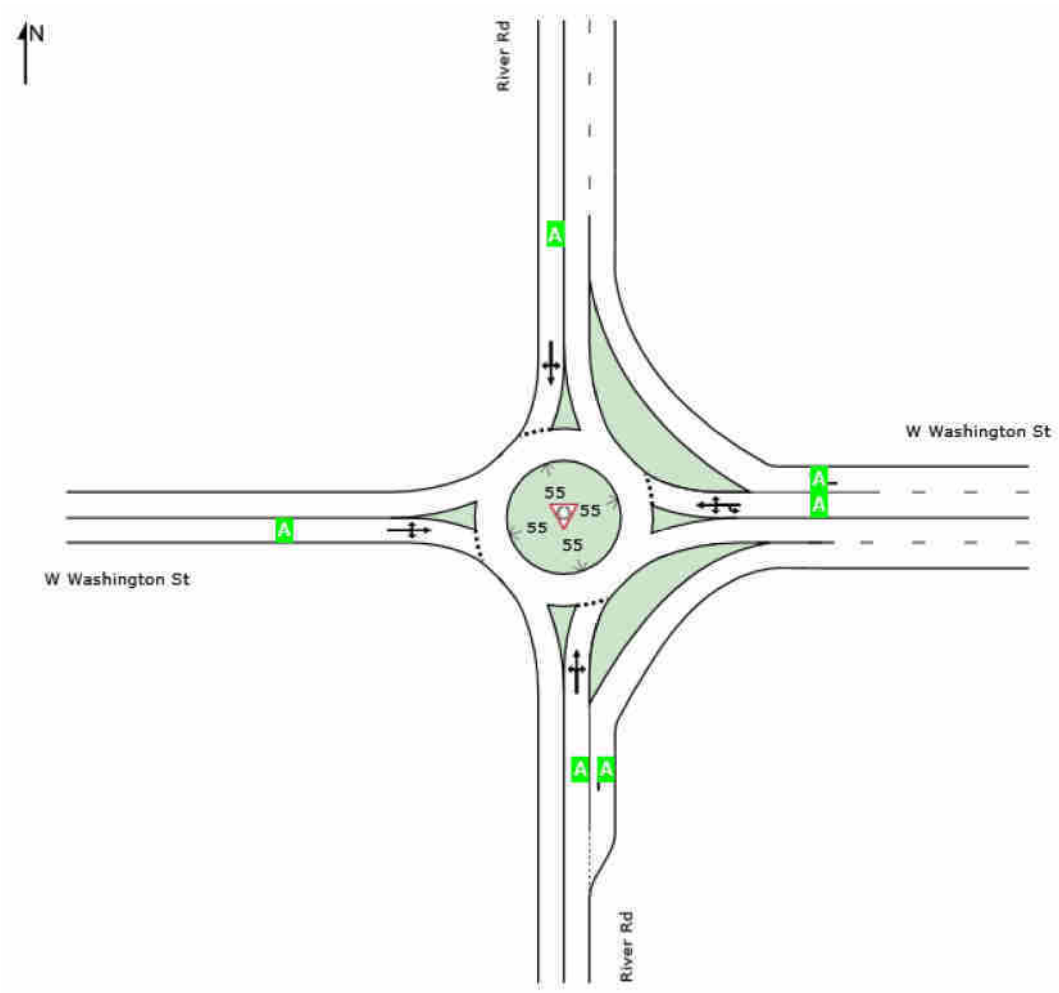
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 1 [2019 Existing AM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 1 [2019 Existing AM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: River Rd													
Lane 1[d]	243	4.0	1307	0.186	100	4.3	LOS A	0.8	21.3	Full	1600	0.0	0.0
Lane 2	295	5.4	1589	0.186	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	538	4.7		0.186		2.0	LOS A	0.8	21.3				
East: W Washington St													
Lane 1[d]	360	5.5	1217	0.296	100	5.7	LOS A	1.4	37.3	Full	1600	0.0	0.0
Lane 2	17	0.0	1675	0.010	3[5]	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	377	5.3		0.296		5.4	LOS A	1.4	37.3				
North: River Rd													
Lane 1[d]	79	1.4	910	0.087	100	4.8	LOS A	0.4	9.1	Full	1600	0.0	0.0
Approach	79	1.4		0.087		4.8	LOS A	0.4	9.1				
West: W Washington St													
Lane 1[d]	42	7.9	818	0.052	100	4.9	LOS A	0.2	5.1	Full	1600	0.0	0.0
Approach	42	7.9		0.052		4.9	LOS A	0.2	5.1				
Intersection	1036	4.8		0.296		3.5	LOS A	1.4	37.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
2: Priest Rd & W Washington St

12/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	288	57	18	202	33	69	42	22	44	42	65
Future Volume (vph)	84	288	57	18	202	33	69	42	22	44	42	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	100		100	0		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		1361			3367			353			649	
Travel Time (s)		30.9			76.5			9.6			17.7	
Confl. Peds. (#/hr)						4			1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	4%	6%	5%	9%	4%	5%	5%	5%	0%	8%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	22.0	22.0	10.5	23.0	23.0	10.0	21.0		10.0	26.0	
Total Split (s)	34.5	50.0	50.0	34.5	50.0	50.0	34.0	34.0		34.0	34.0	
Total Split (%)	22.6%	32.8%	32.8%	22.6%	32.8%	32.8%	22.3%	22.3%		22.3%	22.3%	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 152.5
Actuated Cycle Length: 57.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Priest Rd & W Washington St

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LANE LEVEL OF SERVICE

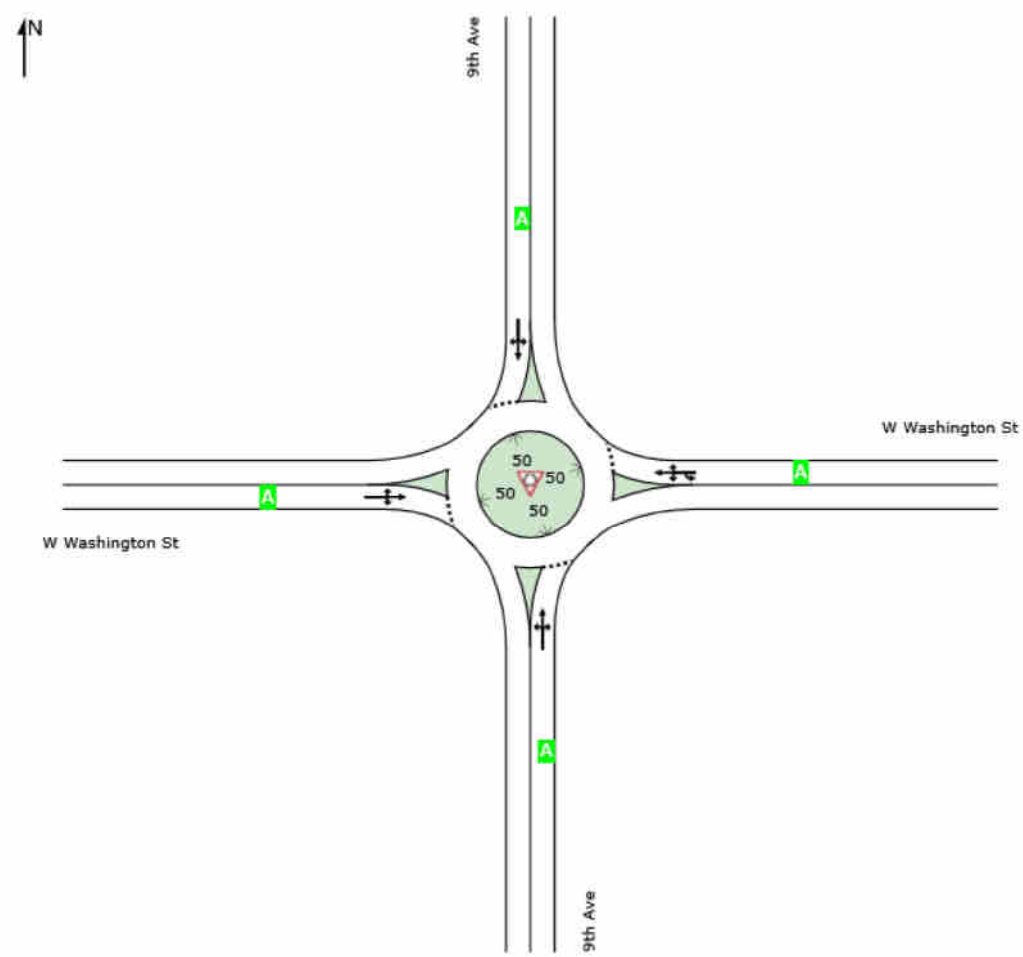
Lane Level of Service

Site: 3 [2019 Existing - AM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2019 Existing - AM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	32	10.7	805	0.040	100	4.9	LOS A	0.1	3.9	Full	1600	0.0	0.0
Approach	32	10.7		0.040		4.9	LOS A	0.1	3.9				
East: W Washington St													
Lane 1[d]	389	3.2	1317	0.295	100	5.3	LOS A	1.7	42.7	Full	1600	0.0	0.0
Approach	389	3.2		0.295		5.3	LOS A	1.7	42.7				
North: 9th Ave													
Lane 1[d]	27	12.5	811	0.034	100	4.8	LOS A	0.1	3.3	Full	1600	0.0	0.0
Approach	27	12.5		0.034		4.8	LOS A	0.1	3.3				
West: W Washington St													
Lane 1[d]	411	5.0	1237	0.332	100	6.0	LOS A	1.9	48.8	Full	1600	0.0	0.0
Approach	411	5.0		0.332		6.0	LOS A	1.9	48.8				
Intersection	859	4.6		0.332		5.6	LOS A	1.9	48.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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LANE LEVEL OF SERVICE

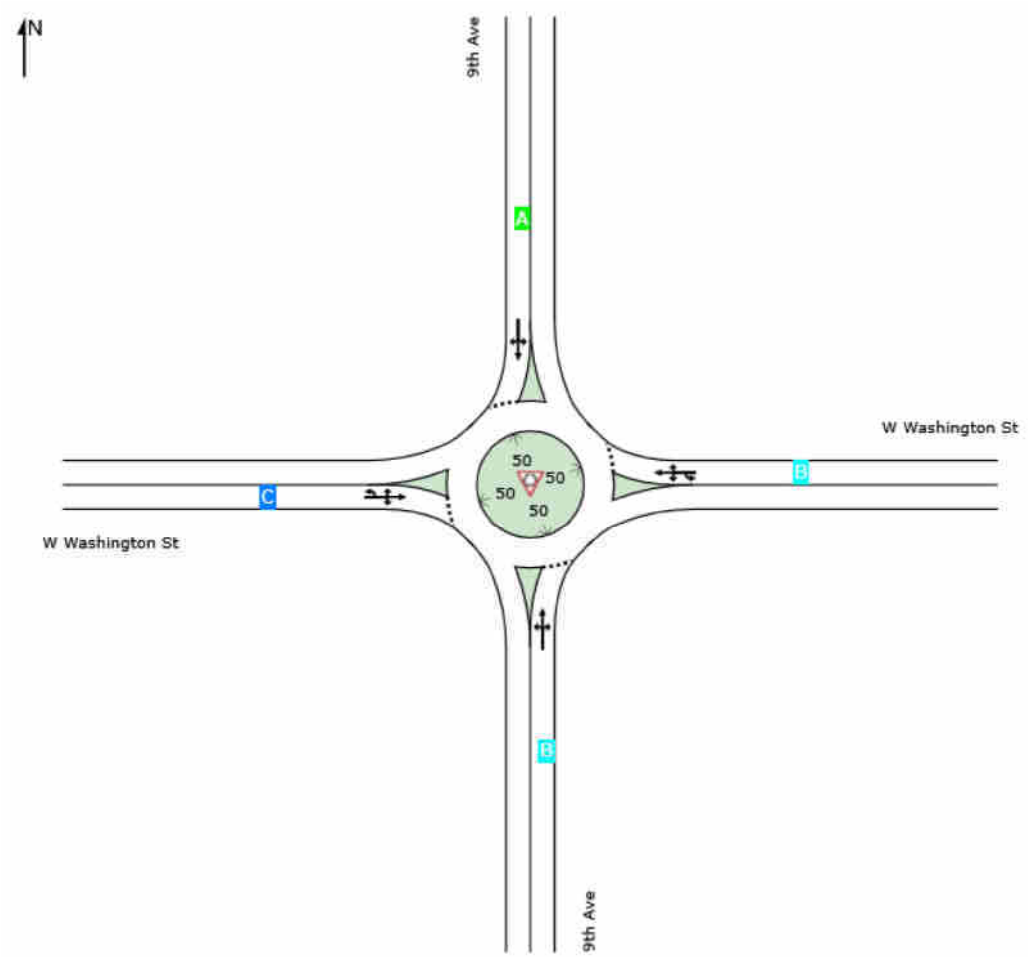
Lane Level of Service

Site: 3 [2019 Existing - Noon Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	A	C	B



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Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2019 Existing - Noon Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	240	1.8	596	0.402	100	12.1	LOS B	2.1	52.0	Full	1600	0.0	0.0
Approach	240	1.8		0.402		12.1	LOS B	2.1	52.0				
East: W Washington St													
Lane 1[d]	788	1.9	1208	0.653	100	11.6	LOS B	6.2	156.5	Full	1600	0.0	0.0
Approach	788	1.9		0.653		11.6	LOS B	6.2	156.5				
North: 9th Ave													
Lane 1[d]	63	0.0	556	0.114	100	7.9	LOS A	0.4	10.9	Full	1600	0.0	0.0
Approach	63	0.0		0.114		7.9	LOS A	0.4	10.9				
West: W Washington St													
Lane 1[d]	800	2.0	1042	0.768	100	17.7	LOS C	16.3	414.6	Full	1600	0.0	0.0
Approach	800	2.0		0.768		17.7	LOS C	16.3	414.6				
Intersection	1892	1.8		0.768		14.1	LOS B	16.3	414.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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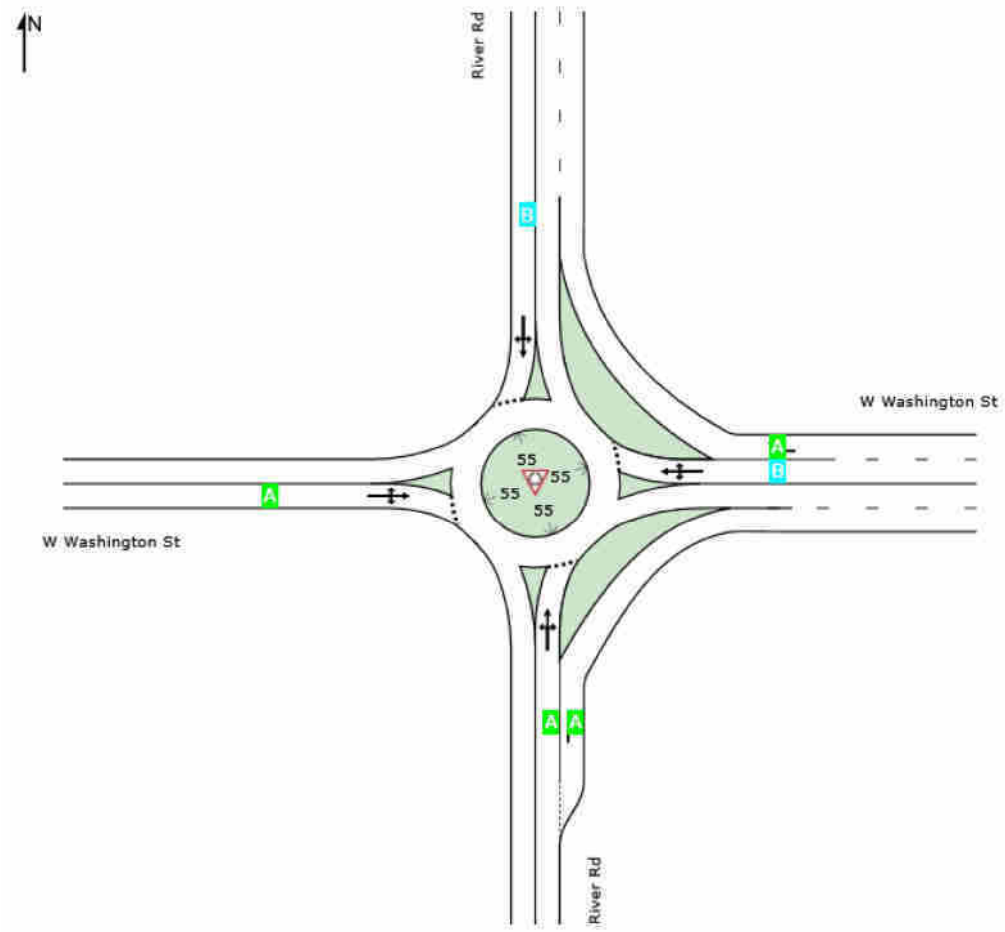
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 1 [2019 Existing PM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	B	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 1 [2019 Existing PM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: River Rd													
Lane 1[d]	300	1.3	1291	0.232	100	4.8	LOS A	1.1	28.0	Full	1600	0.0	0.0
Lane 2	385	0.8	1661	0.232	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	685	1.0		0.232		2.1	LOS A	1.1	28.0				
East: W Washington St													
Lane 1[d]	701	2.4	1172	0.598	100	10.5	LOS B	4.4	111.0	Full	1600	0.0	0.0
Lane 2	46	0.0	1675	0.028	5[5]	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	747	2.3		0.598		9.9	LOS A	4.4	111.0				
North: River Rd													
Lane 1[d]	219	1.3	623	0.352	100	10.6	LOS B	1.7	42.1	Full	1600	0.0	0.0
Approach	219	1.3		0.352		10.6	LOS B	1.7	42.1				
West: W Washington St													
Lane 1[d]	88	1.2	535	0.164	100	8.9	LOS A	0.6	15.9	Full	1600	0.0	0.0
Approach	88	1.2		0.164		8.9	LOS A	0.6	15.9				
Intersection	1739	1.6		0.598		6.9	LOS A	4.4	111.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
2: Priest Rd & W Washington St

01/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	454	68	42	467	71	162	90	51	147	63	107
Future Volume (vph)	73	454	68	42	467	71	162	90	51	147	63	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	100		100	0		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		1361			3367			353			649	
Travel Time (s)		30.9			76.5			9.6			17.7	
Confl. Peds. (#/hr)						7			7			1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	3%	2%	2%	0%	1%	1%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	22.0	22.0	10.5	23.0	23.0	10.0	21.0		10.0	26.0	
Total Split (s)	34.5	50.0	50.0	34.5	50.0	50.0	34.0	34.0		34.0	34.0	
Total Split (%)	22.6%	32.8%	32.8%	22.6%	32.8%	32.8%	22.3%	22.3%		22.3%	22.3%	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 152.5
Actuated Cycle Length: 86
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Priest Rd & W Washington St

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HCM 6th Signalized Intersection Summary
2: Priest Rd & W Washington St

01/09/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	454	68	42	467	71	162	90	51	147	63	107
Future Volume (veh/h)	73	454	68	42	467	71	162	90	51	147	63	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1870	1870	1900	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	75	468	0	43	481	0	167	93	53	152	65	110
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	1	3	2	2	0	1	1	1	0	0	0
Cap, veh/h	133	658	549	93	613	527	222	196	112	204	104	176
Arrive On Green	0.07	0.35	0.00	0.05	0.33	0.00	0.12	0.18	0.18	0.11	0.16	0.16
Sat Flow, veh/h	1810	1885	1572	1781	1870	1610	1795	1118	637	1810	633	1071
Grp Volume(v), veh/h	75	468	0	43	481	0	167	0	146	152	0	175
Grp Sat Flow(s),veh/h/ln	1810	1885	1572	1781	1870	1610	1795	0	1755	1810	0	1703
Q Serve(g_s), s	2.3	12.1	0.0	1.3	13.1	0.0	5.1	0.0	4.2	4.6	0.0	5.4
Cycle Q Clear(g_c), s	2.3	12.1	0.0	1.3	13.1	0.0	5.1	0.0	4.2	4.6	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.63
Lane Grp Cap(c), veh/h	133	658	549	93	613	527	222	0	308	204	0	280
V/C Ratio(X)	0.56	0.71	0.00	0.46	0.79	0.00	0.75	0.00	0.47	0.75	0.00	0.62
Avail Cap(c_a), veh/h	964	1507	1257	949	1495	1287	957	0	935	964	0	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.2	15.9	0.0	25.9	17.1	0.0	23.8	0.0	20.9	24.2	0.0	21.9
Incr Delay (d2), s/veh	3.7	1.4	0.0	3.6	2.3	0.0	5.1	0.0	1.1	5.4	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.8	0.0	0.6	5.3	0.0	2.3	0.0	1.7	2.2	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	17.3	0.0	29.5	19.4	0.0	28.9	0.0	22.0	29.6	0.0	24.2
LnGrp LOS	C	B	A	C	B	A	C	A	C	C	A	C
Approach Vol, veh/h		543			524			313			327	
Approach Delay, s/veh		18.9			20.2			25.7			26.7	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	23.4	10.3	13.9	7.4	24.6	11.0	13.3
Change Period (Y+Rc), s	4.5	5.0	4.0	4.0	4.5	5.0	4.0	4.0
Max Green Setting (Gmax), s	30.0	45.0	30.0	30.0	30.0	45.0	30.0	30.0
Max Q Clear Time (g_c+I1), s	4.3	15.1	6.6	6.2	3.3	14.1	7.1	7.4
Green Ext Time (p_c), s	0.2	3.3	0.4	0.8	0.1	3.2	0.4	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.1
HCM 6th LOS	C

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LANE LEVEL OF SERVICE

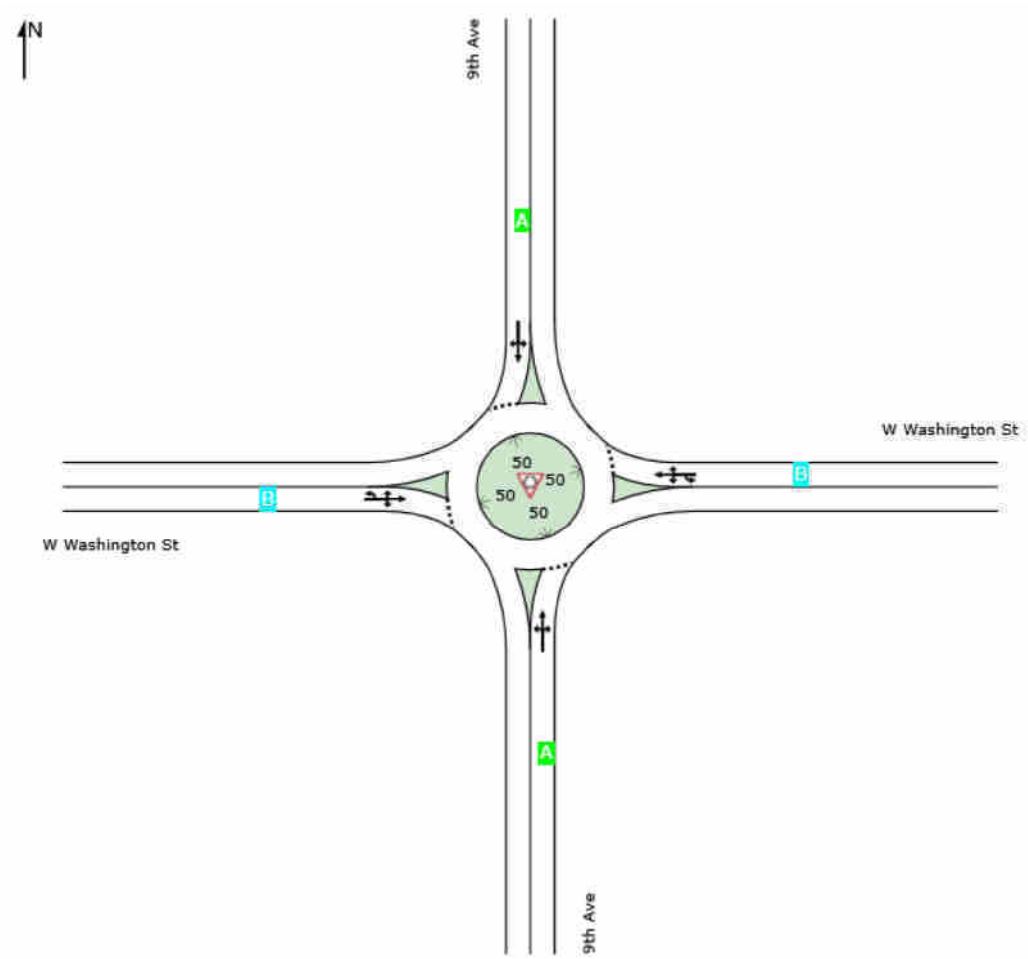
Lane Level of Service

Site: 3 [2019 Existing - PM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	A	B	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2019 Existing - PM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	187	1.1	652	0.287	100	9.2	LOS A	1.2	31.1	Full	1600	0.0	0.0
Approach	187	1.1		0.287		9.2	LOS A	1.2	31.1				
East: W Washington St													
Lane 1[d]	788	1.4	1251	0.630	100	10.8	LOS B	6.0	152.0	Full	1600	0.0	0.0
Approach	788	1.4		0.630		10.8	LOS B	6.0	152.0				
North: 9th Ave													
Lane 1[d]	57	1.9	564	0.101	100	7.6	LOS A	0.4	9.6	Full	1600	0.0	0.0
Approach	57	1.9		0.101		7.6	LOS A	0.4	9.6				
West: W Washington St													
Lane 1[d]	703	0.6	1102	0.638	100	12.0	LOS B	7.2	181.1	Full	1600	0.0	0.0
Approach	703	0.6		0.638		12.0	LOS B	7.2	181.1				
Intersection	1736	1.0		0.638		11.0	LOS B	7.2	181.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
4: 7th Ave & W Washington St

01/09/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	482	128	45	539	43	170	91	50	70	64	173
Future Volume (vph)	171	482	128	45	539	43	170	91	50	70	64	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		135	110		0	0		125	0		125
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		3367			552			426			322	
Travel Time (s)		76.5			12.5			11.6			8.8	
Confl. Peds. (#/hr)			4			4	1		8	8		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	1%	2%	2%	0%	0%	1%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Detector Phase	1	6	6	5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	28.5	28.5	10.5	27.5		30.5	30.5		31.5	31.5	
Total Split (s)	12.0	30.0	30.0	12.0	30.0		33.0	33.0		33.0	33.0	
Total Split (%)	16.0%	40.0%	40.0%	16.0%	40.0%		44.0%	44.0%		44.0%	44.0%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 18 (24%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 4: 7th Ave & W Washington St

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HCM 6th Signalized Intersection Summary
4: 7th Ave & W Washington St

01/09/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	482	128	45	539	43	170	91	50	70	64	173
Future Volume (veh/h)	171	482	128	45	539	43	170	91	50	70	64	173
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1900	1870	1870	1885	1870	1870	1900	1900	1900
Adj Flow Rate, veh/h	176	497	132	46	556	44	175	94	52	72	66	178
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	2	2	1	2	2	0	0	0
Cap, veh/h	180	870	740	89	703	56	312	348	193	404	139	375
Arrive On Green	0.10	0.46	0.46	0.05	0.41	0.41	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1795	1885	1603	1810	1710	135	1136	1126	623	1250	450	1213
Grp Volume(v), veh/h	176	497	132	46	0	600	175	0	146	72	0	244
Grp Sat Flow(s),veh/h/ln	1795	1885	1603	1810	0	1845	1136	0	1749	1250	0	1663
Q Serve(g_s), s	7.3	14.5	3.6	1.9	0.0	21.3	11.1	0.0	4.7	3.5	0.0	8.9
Cycle Q Clear(g_c), s	7.3	14.5	3.6	1.9	0.0	21.3	20.0	0.0	4.7	8.2	0.0	8.9
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.36	1.00		0.73
Lane Grp Cap(c), veh/h	180	870	740	89	0	758	312	0	541	404	0	514
V/C Ratio(X)	0.98	0.57	0.18	0.52	0.00	0.79	0.56	0.00	0.27	0.18	0.00	0.47
Avail Cap(c_a), veh/h	180	870	740	181	0	758	393	0	664	492	0	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.7	14.8	11.8	34.8	0.0	19.3	29.1	0.0	19.5	22.6	0.0	21.0
Incr Delay (d2), s/veh	53.9	2.2	0.4	3.4	0.0	8.3	1.2	0.0	0.2	0.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	6.1	1.3	0.9	0.0	10.1	3.0	0.0	1.9	1.0	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.5	16.9	12.3	38.2	0.0	27.6	30.2	0.0	19.7	22.8	0.0	21.5
LnGrp LOS	F	B	B	D	A	C	C	A	B	C	A	C
Approach Vol, veh/h		805			646			321			316	
Approach Delay, s/veh		31.6			28.3			25.5			21.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	35.3		27.7	8.2	39.1		27.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.5	25.5		28.5	7.5	25.5		28.5
Max Q Clear Time (g_c+I1), s	9.3	23.3		22.0	3.9	16.5		10.9
Green Ext Time (p_c), s	0.0	0.8		0.7	0.0	2.1		1.4

Intersection Summary	
HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

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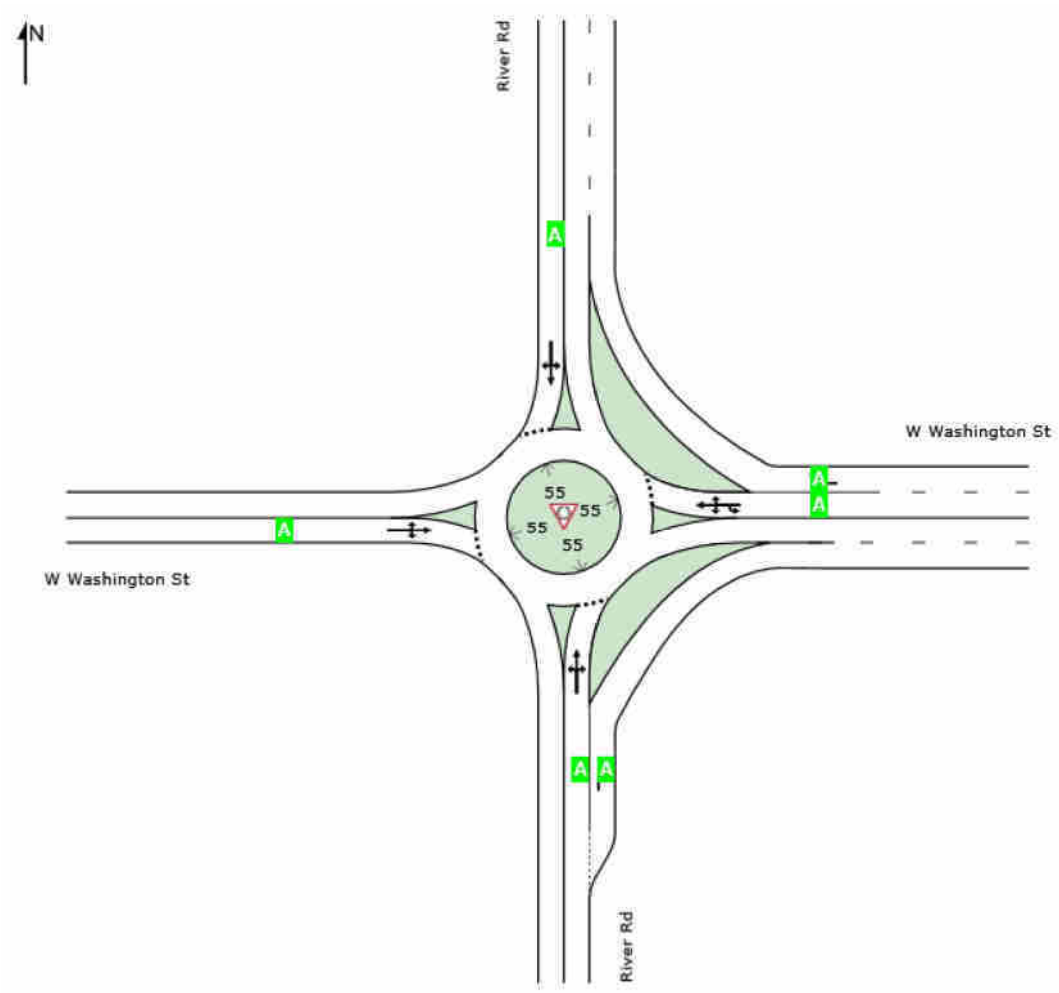
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 1 [2021 Without Project AM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 1 [2021 Without Project AM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: River Rd													
Lane 1[d]	252	3.9	1304	0.194	100	4.4	LOS A	0.9	22.4	Full	1600	0.0	0.0
Lane 2	308	5.4	1589	0.194	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	560	4.7		0.194		2.0	LOS A	0.9	22.4				
East: W Washington St													
Lane 1[d]	374	5.5	1212	0.309	100	5.8	LOS A	1.5	39.5	Full	1600	0.0	0.0
Lane 2	18	0.0	1675	0.011	3[5]	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	392	5.3		0.309		5.6	LOS A	1.5	39.5				
North: River Rd													
Lane 1[d]	82	1.4	895	0.092	100	4.9	LOS A	0.4	9.6	Full	1600	0.0	0.0
Approach	82	1.4		0.092		4.9	LOS A	0.4	9.6				
West: W Washington St													
Lane 1[d]	44	7.9	804	0.055	100	5.0	LOS A	0.2	5.5	Full	1600	0.0	0.0
Approach	44	7.9		0.055		5.0	LOS A	0.2	5.5				
Intersection	1079	4.8		0.309		3.6	LOS A	1.5	39.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
2: Priest Rd & W Washington St

12/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	300	59	19	210	34	72	44	23	46	44	68
Future Volume (vph)	87	300	59	19	210	34	72	44	23	46	44	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	100		100	0		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		1361			3367			353			649	
Travel Time (s)		30.9			76.5			9.6			17.7	
Confl. Peds. (#/hr)						4			1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	4%	6%	5%	9%	4%	5%	5%	5%	0%	8%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	22.0	22.0	10.5	23.0	23.0	10.0	21.0		10.0	26.0	
Total Split (s)	34.5	50.0	50.0	34.5	50.0	50.0	34.0	34.0		34.0	34.0	
Total Split (%)	22.6%	32.8%	32.8%	22.6%	32.8%	32.8%	22.3%	22.3%		22.3%	22.3%	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 152.5
Actuated Cycle Length: 58.5
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Priest Rd & W Washington St

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HCM 6th Signalized Intersection Summary
2: Priest Rd & W Washington St

12/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	300	59	19	210	34	72	44	23	46	44	68
Future Volume (veh/h)	87	300	59	19	210	34	72	44	23	46	44	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1841	1811	1826	1767	1841	1826	1826	1826	1900	1900
Adj Flow Rate, veh/h	99	341	0	22	239	0	82	50	26	52	50	77
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	6	6	4	6	5	9	4	5	5	5	0	0
Cap, veh/h	174	511	440	56	390	320	159	193	100	115	99	152
Arrive On Green	0.10	0.28	0.00	0.03	0.21	0.00	0.09	0.17	0.17	0.07	0.15	0.15
Sat Flow, veh/h	1725	1811	1560	1725	1826	1497	1753	1130	588	1739	674	1039
Grp Volume(v), veh/h	99	341	0	22	239	0	82	0	76	52	0	127
Grp Sat Flow(s),veh/h/ln	1725	1811	1560	1725	1826	1497	1753	0	1718	1739	0	1713
Q Serve(g_s), s	2.1	6.5	0.0	0.5	4.6	0.0	1.7	0.0	1.5	1.1	0.0	2.7
Cycle Q Clear(g_c), s	2.1	6.5	0.0	0.5	4.6	0.0	1.7	0.0	1.5	1.1	0.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.34	1.00		0.61
Lane Grp Cap(c), veh/h	174	511	440	56	390	320	159	0	293	115	0	251
V/C Ratio(X)	0.57	0.67	0.00	0.39	0.61	0.00	0.52	0.00	0.26	0.45	0.00	0.51
Avail Cap(c_a), veh/h	1326	2088	1798	1326	2105	1726	1347	0	1320	1336	0	1317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	12.4	0.0	18.5	13.9	0.0	16.9	0.0	14.0	17.5	0.0	15.4
Incr Delay (d2), s/veh	2.9	1.5	0.0	4.4	1.6	0.0	2.6	0.0	0.5	2.7	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.3	0.0	0.2	1.7	0.0	0.7	0.0	0.5	0.5	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.6	13.9	0.0	22.9	15.4	0.0	19.5	0.0	14.5	20.3	0.0	16.9
LnGrp LOS	B	B	A	C	B	A	B	A	B	C	A	B
Approach Vol, veh/h		440			261			158			179	
Approach Delay, s/veh		15.2			16.1			17.1			17.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	13.3	6.6	10.7	5.8	16.0	7.5	9.7
Change Period (Y+Rc), s	4.5	5.0	4.0	4.0	4.5	5.0	4.0	4.0
Max Green Setting (Gmax), s	30.0	45.0	30.0	30.0	30.0	45.0	30.0	30.0
Max Q Clear Time (g_c+I1), s	4.1	6.6	3.1	3.5	2.5	8.5	3.7	4.7
Green Ext Time (p_c), s	0.2	1.5	0.1	0.4	0.0	2.3	0.2	0.7

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

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LANE LEVEL OF SERVICE

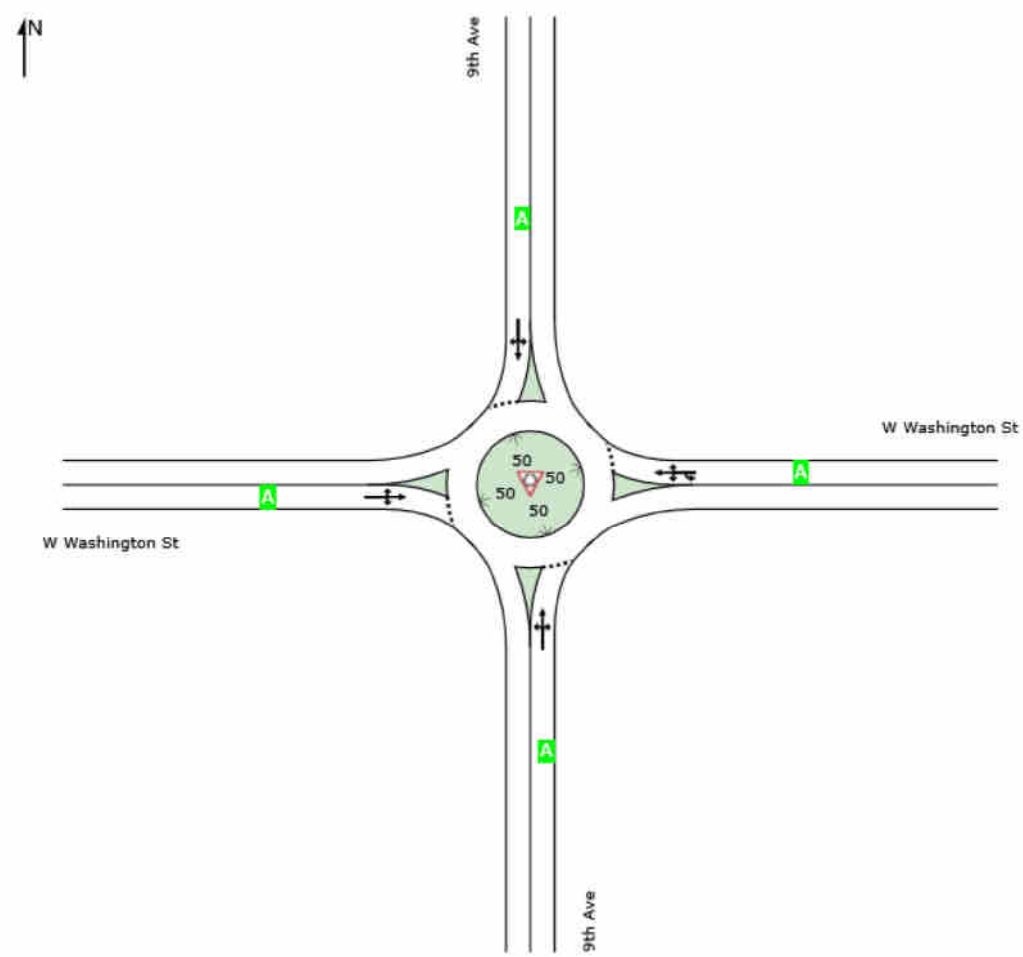
Lane Level of Service

Site: 3 [2021 Without Project - AM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2021 Without Project - AM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	33	10.6	792	0.042	100	4.9	LOS A	0.2	4.1	Full	1600	0.0	0.0
Approach	33	10.6		0.042		4.9	LOS A	0.2	4.1				
East: W Washington St													
Lane 1[d]	403	3.2	1317	0.306	100	5.5	LOS A	1.8	45.0	Full	1600	0.0	0.0
Approach	403	3.2		0.306		5.5	LOS A	1.8	45.0				
North: 9th Ave													
Lane 1[d]	28	12.3	800	0.036	100	4.8	LOS A	0.1	3.5	Full	1600	0.0	0.0
Approach	28	12.3		0.036		4.8	LOS A	0.1	3.5				
West: W Washington St													
Lane 1[d]	428	5.0	1234	0.347	100	6.2	LOS A	2.0	51.8	Full	1600	0.0	0.0
Approach	428	5.0		0.347		6.2	LOS A	2.0	51.8				
Intersection	893	4.6		0.347		5.8	LOS A	2.0	51.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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LANE LEVEL OF SERVICE

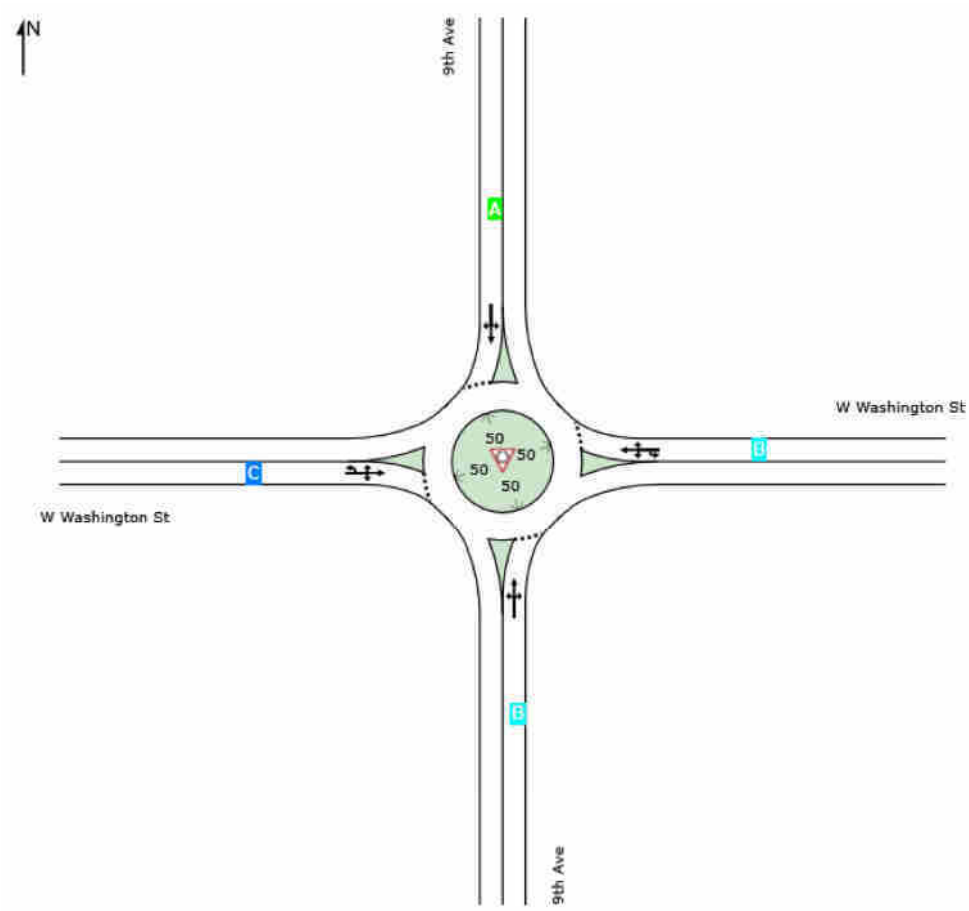
Lane Level of Service

Site: 3 [2021 Without Project - Noon Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	A	C	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2021 Without Project - Noon Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	251	1.8	577	0.434	100	13.1	LOS B	2.3	58.4	Full	1600	0.0	0.0
Approach	251	1.8		0.434		13.1	LOS B	2.3	58.4				
East: W Washington St													
Lane 1[d]	820	1.9	1202	0.682	100	12.6	LOS B	6.8	172.7	Full	1600	0.0	0.0
Approach	820	1.9		0.682		12.6	LOS B	6.8	172.7				
North: 9th Ave													
Lane 1[d]	65	0.0	536	0.122	100	8.3	LOS A	0.5	11.6	Full	1600	0.0	0.0
Approach	65	0.0		0.122		8.3	LOS A	0.5	11.6				
West: W Washington St													
Lane 1[d]	833	2.0	1032	0.807	100	20.3	LOS C	20.0	508.1	Full	1600	0.0	0.0
Approach	833	2.0		0.807		20.3	LOS C	20.0	508.1				
Intersection	1969	1.8		0.807		15.8	LOS C	20.0	508.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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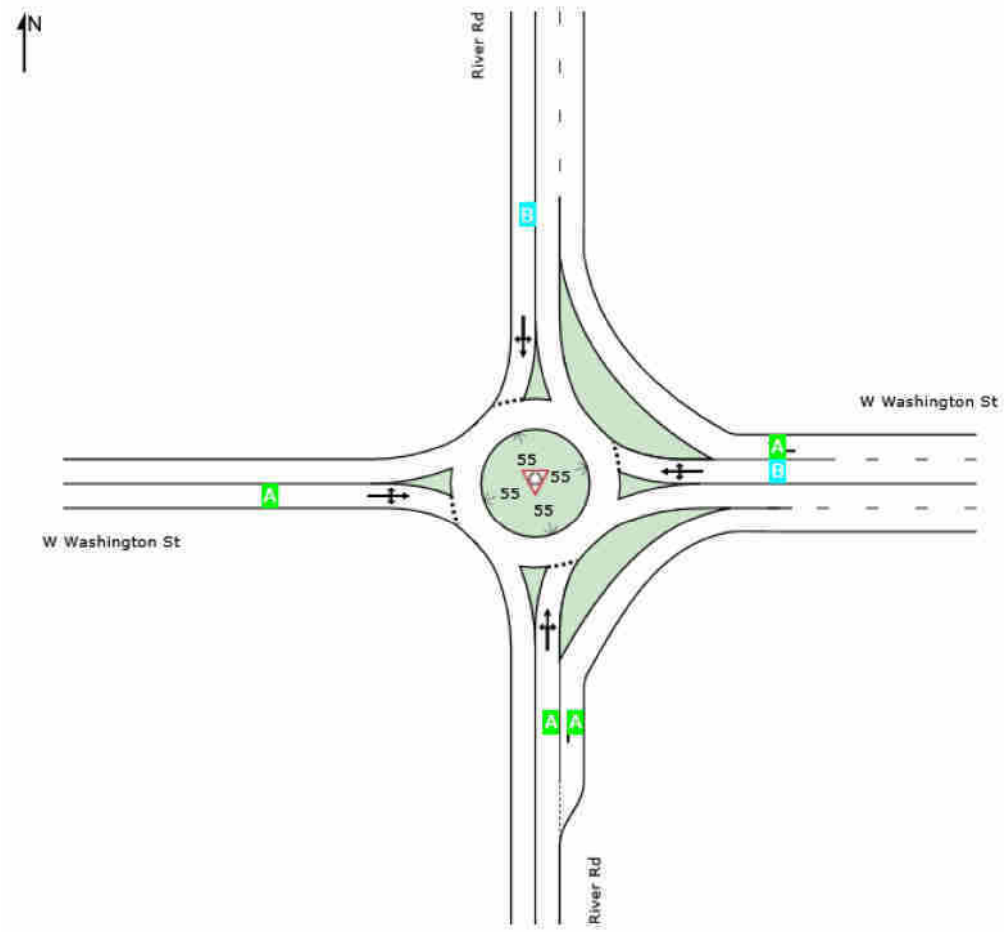
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 1 [2021 Without Project PM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	B	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 1 [2021 Without Project PM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: River Rd													
Lane 1[d]	311	1.3	1286	0.242	100	4.9	LOS A	1.2	29.4	Full	1600	0.0	0.0
Lane 2	401	0.8	1661	0.242	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	712	1.0		0.242		2.2	LOS A	1.2	29.4				
East: W Washington St													
Lane 1[d]	729	2.4	1164	0.627	100	11.3	LOS B	4.9	123.7	Full	1600	0.0	0.0
Lane 2	48	0.0	1675	0.029	5[5]	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	778	2.3		0.627		10.6	LOS B	4.9	123.7				
North: River Rd													
Lane 1[d]	228	1.3	604	0.378	100	11.4	LOS B	1.9	47.1	Full	1600	0.0	0.0
Approach	228	1.3		0.378		11.4	LOS B	1.9	47.1				
West: W Washington St													
Lane 1[d]	92	1.2	516	0.178	100	9.4	LOS A	0.7	17.2	Full	1600	0.0	0.0
Approach	92	1.2		0.178		9.4	LOS A	0.7	17.2				
Intersection	1810	1.6		0.627		7.3	LOS A	4.9	123.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
2: Priest Rd & W Washington St

01/07/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	472	71	44	486	74	169	94	53	153	66	111
Future Volume (vph)	76	472	71	44	486	74	169	94	53	153	66	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	100		100	0		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		1361			3367			353			649	
Travel Time (s)		30.9			76.5			9.6			17.7	
Confl. Peds. (#/hr)						7			7			1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	3%	2%	2%	0%	1%	1%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	22.0	22.0	10.5	23.0	23.0	10.0	21.0		10.0	26.0	
Total Split (s)	34.5	50.0	50.0	34.5	50.0	50.0	34.0	34.0		34.0	34.0	
Total Split (%)	22.6%	32.8%	32.8%	22.6%	32.8%	32.8%	22.3%	22.3%		22.3%	22.3%	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 152.5
Actuated Cycle Length: 90.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Priest Rd & W Washington St

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HCM 6th Signalized Intersection Summary
2: Priest Rd & W Washington St

01/07/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	472	71	44	486	74	169	94	53	153	66	111
Future Volume (veh/h)	76	472	71	44	486	74	169	94	53	153	66	111
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1870	1870	1900	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	78	487	0	45	501	0	174	97	55	158	68	114
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	1	3	2	2	0	1	1	1	0	0	0
Cap, veh/h	133	672	560	95	628	541	229	199	113	210	106	177
Arrive On Green	0.07	0.36	0.00	0.05	0.34	0.00	0.13	0.18	0.18	0.12	0.17	0.17
Sat Flow, veh/h	1810	1885	1572	1781	1870	1610	1795	1120	635	1810	637	1067
Grp Volume(v), veh/h	78	487	0	45	501	0	174	0	152	158	0	182
Grp Sat Flow(s),veh/h/ln	1810	1885	1572	1781	1870	1610	1795	0	1756	1810	0	1704
Q Serve(g_s), s	2.5	13.2	0.0	1.4	14.3	0.0	5.5	0.0	4.6	5.0	0.0	5.9
Cycle Q Clear(g_c), s	2.5	13.2	0.0	1.4	14.3	0.0	5.5	0.0	4.6	5.0	0.0	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.63
Lane Grp Cap(c), veh/h	133	672	560	95	628	541	229	0	312	210	0	283
V/C Ratio(X)	0.59	0.73	0.00	0.48	0.80	0.00	0.76	0.00	0.49	0.75	0.00	0.64
Avail Cap(c_a), veh/h	921	1439	1200	906	1427	1229	914	0	893	921	0	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	16.5	0.0	27.1	17.8	0.0	24.8	0.0	21.8	25.2	0.0	22.9
Incr Delay (d2), s/veh	4.1	1.5	0.0	3.7	2.4	0.0	5.1	0.0	1.2	5.3	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	5.3	0.0	0.7	5.9	0.0	2.6	0.0	1.9	2.4	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	18.0	0.0	30.8	20.1	0.0	30.0	0.0	23.0	30.6	0.0	25.4
LnGrp LOS	C	B	A	C	C	A	C	A	C	C	A	C
Approach Vol, veh/h		565			546			326			340	
Approach Delay, s/veh		19.7			21.0			26.7			27.8	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	24.8	10.8	14.5	7.6	26.0	11.5	13.8
Change Period (Y+Rc), s	4.5	5.0	4.0	4.0	4.5	5.0	4.0	4.0
Max Green Setting (Gmax), s	30.0	45.0	30.0	30.0	30.0	45.0	30.0	30.0
Max Q Clear Time (g_c+I1), s	4.5	16.3	7.0	6.6	3.4	15.2	7.5	7.9
Green Ext Time (p_c), s	0.2	3.5	0.4	0.9	0.1	3.4	0.5	1.1

Intersection Summary	
HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

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LANE LEVEL OF SERVICE

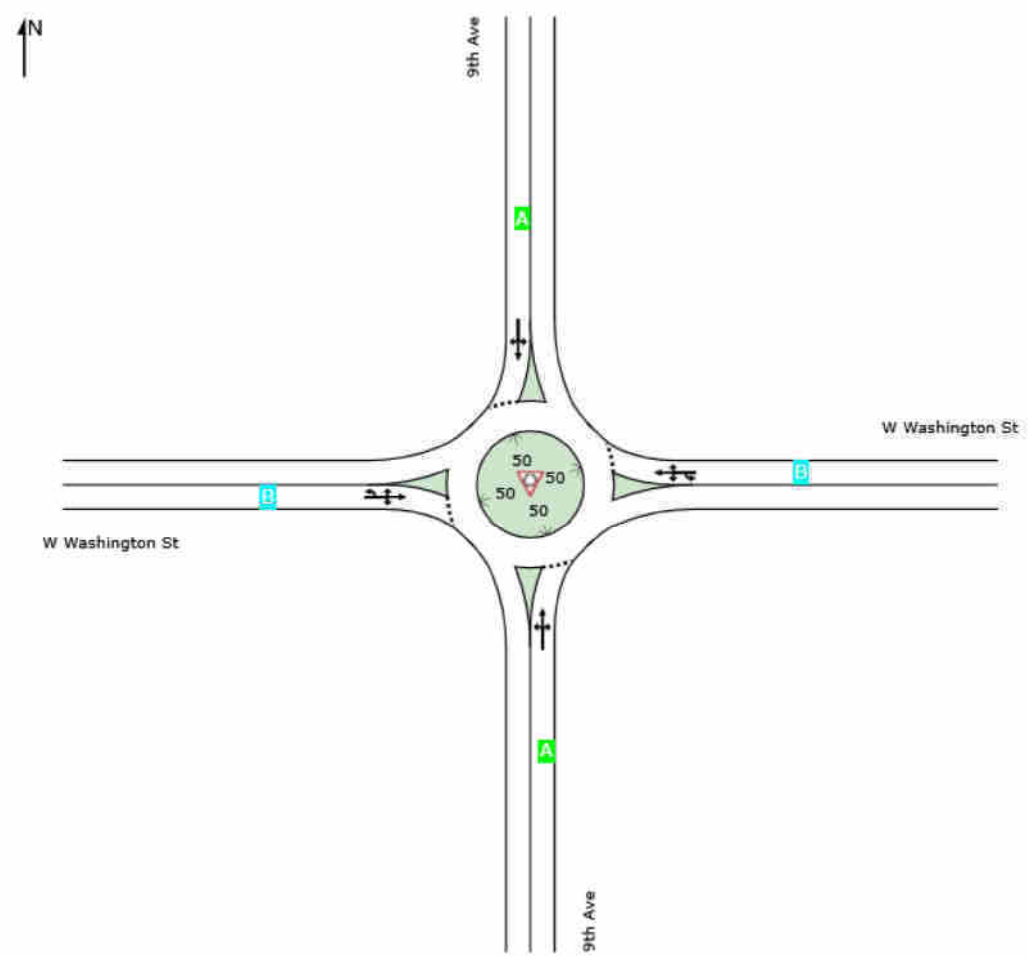
Lane Level of Service

Site: 3 [2021 Without Project - PM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	A	B	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2021 Without Project - PM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	195	1.1	633	0.308	100	9.7	LOS A	1.3	33.7	Full	1600	0.0	0.0
Approach	195	1.1		0.308		9.7	LOS A	1.3	33.7				
East: W Washington St													
Lane 1[d]	820	1.4	1248	0.657	100	11.5	LOS B	6.6	167.3	Full	1600	0.0	0.0
Approach	820	1.4		0.657		11.5	LOS B	6.6	167.3				
North: 9th Ave													
Lane 1[d]	59	1.9	545	0.108	100	8.0	LOS A	0.4	10.3	Full	1600	0.0	0.0
Approach	59	1.9		0.108		8.0	LOS A	0.4	10.3				
West: W Washington St													
Lane 1[d]	731	0.6	1093	0.669	100	13.0	LOS B	9.1	229.7	Full	1600	0.0	0.0
Approach	731	0.6		0.669		13.0	LOS B	9.1	229.7				
Intersection	1804	1.0		0.669		11.8	LOS B	9.1	229.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
4: 7th Ave & W Washington St

01/07/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	501	133	47	561	45	177	95	52	73	67	180
Future Volume (vph)	178	501	133	47	561	45	177	95	52	73	67	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		135	110		0	0		125	0		125
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		3367			552			426			322	
Travel Time (s)		76.5			12.5			11.6			8.8	
Confl. Peds. (#/hr)			4			4	1		8	8		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	1%	2%	2%	0%	0%	1%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Detector Phase	1	6	6	5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	28.5	28.5	10.5	27.5		30.5	30.5		31.5	31.5	
Total Split (s)	12.0	30.0	30.0	12.0	30.0		33.0	33.0		33.0	33.0	
Total Split (%)	16.0%	40.0%	40.0%	16.0%	40.0%		44.0%	44.0%		44.0%	44.0%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 18 (24%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 4: 7th Ave & W Washington St

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HCM 6th Signalized Intersection Summary
4: 7th Ave & W Washington St

01/07/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	501	133	47	561	45	177	95	52	73	67	180
Future Volume (veh/h)	178	501	133	47	561	45	177	95	52	73	67	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1900	1870	1870	1885	1870	1870	1900	1900	1900
Adj Flow Rate, veh/h	184	516	137	48	578	46	182	98	54	75	69	186
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	2	2	1	2	2	0	0	0
Cap, veh/h	180	849	722	92	685	55	316	360	198	412	144	387
Arrive On Green	0.10	0.45	0.45	0.05	0.40	0.40	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1795	1885	1603	1810	1709	136	1125	1128	621	1243	450	1213
Grp Volume(v), veh/h	184	516	137	48	0	624	182	0	152	75	0	255
Grp Sat Flow(s),veh/h/ln	1795	1885	1603	1810	0	1845	1125	0	1749	1243	0	1663
Q Serve(g_s), s	7.5	15.5	3.9	1.9	0.0	23.0	11.6	0.0	4.9	3.6	0.0	9.2
Cycle Q Clear(g_c), s	7.5	15.5	3.9	1.9	0.0	23.0	20.9	0.0	4.9	8.5	0.0	9.2
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.36	1.00		0.73
Lane Grp Cap(c), veh/h	180	849	722	92	0	740	316	0	558	412	0	531
V/C Ratio(X)	1.02	0.61	0.19	0.52	0.00	0.84	0.58	0.00	0.27	0.18	0.00	0.48
Avail Cap(c_a), veh/h	180	849	722	181	0	740	385	0	665	488	0	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	15.6	12.4	34.7	0.0	20.3	28.9	0.0	19.0	22.2	0.0	20.5
Incr Delay (d2), s/veh	64.7	2.4	0.4	3.4	0.0	11.3	1.2	0.0	0.2	0.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	6.7	1.4	0.9	0.0	11.4	3.2	0.0	1.9	1.0	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.5	18.0	12.8	38.1	0.0	31.6	30.2	0.0	19.2	22.3	0.0	21.0
LnGrp LOS	F	B	B	D	A	C	C	A	B	C	A	C
Approach Vol, veh/h		837			672			334			330	
Approach Delay, s/veh		34.9			32.1			25.2			21.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	34.6		28.4	8.3	38.3		28.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.5	25.5		28.5	7.5	25.5		28.5
Max Q Clear Time (g_c+I1), s	9.5	25.0		22.9	3.9	17.5		11.2
Green Ext Time (p_c), s	0.0	0.2		0.7	0.0	2.0		1.5

Intersection Summary			
HCM 6th Ctrl Delay			30.5
HCM 6th LOS			C

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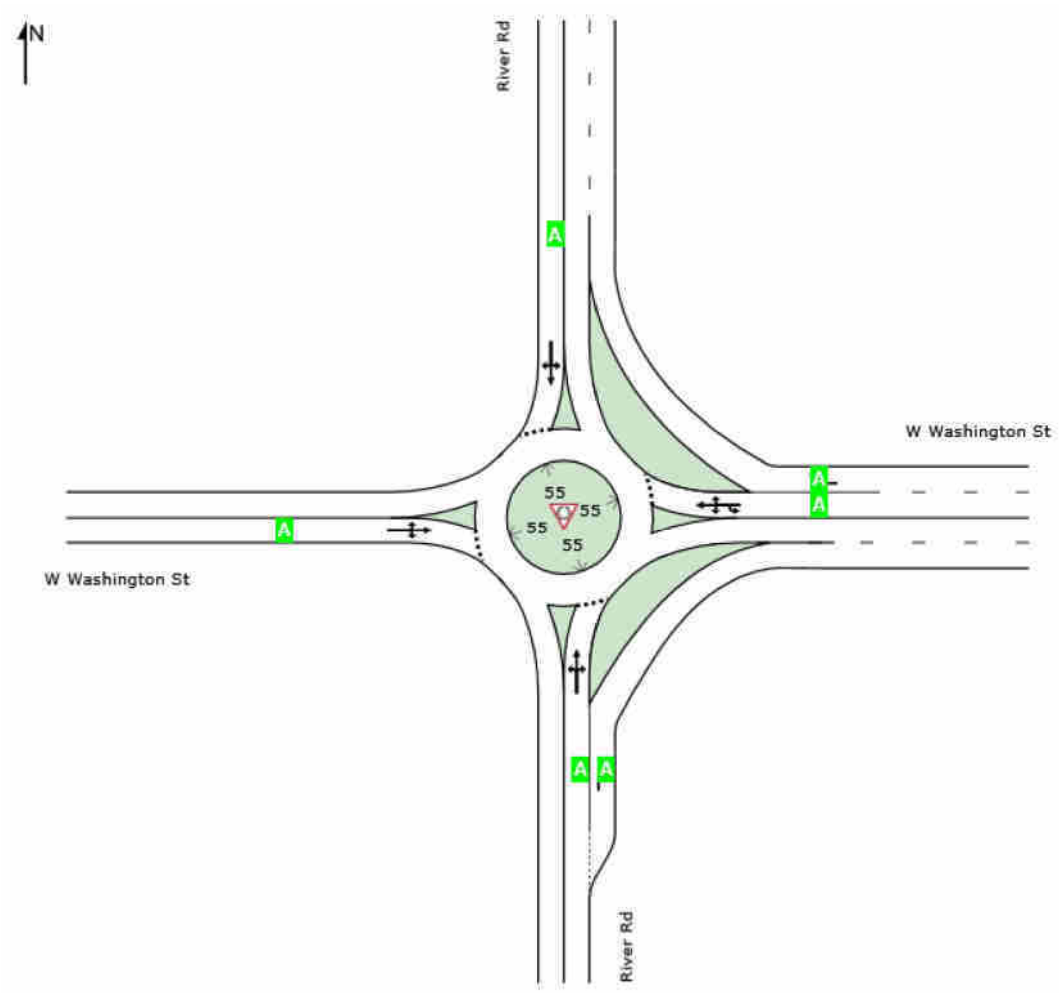
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 1 [2021 With Project AM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 1 [2021 With Project AM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: River Rd													
Lane 1[d]	257	4.0	1304	0.197	100	4.4	LOS A	0.9	22.8	Full	1600	0.0	0.0
Lane 2	313	5.4	1589	0.197	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	570	4.8		0.197		2.0	LOS A	0.9	22.8				
East: W Washington St													
Lane 1[d]	382	5.5	1212	0.315	100	5.9	LOS A	1.6	40.6	Full	1600	0.0	0.0
Lane 2	18	0.0	1675	0.011	3[5]	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	400	5.3		0.315		5.6	LOS A	1.6	40.6				
North: River Rd													
Lane 1[d]	82	1.4	887	0.093	100	4.9	LOS A	0.4	9.7	Full	1600	0.0	0.0
Approach	82	1.4		0.093		4.9	LOS A	0.4	9.7				
West: W Washington St													
Lane 1[d]	44	7.9	797	0.056	100	5.1	LOS A	0.2	5.5	Full	1600	0.0	0.0
Approach	44	7.9		0.056		5.1	LOS A	0.2	5.5				
Intersection	1097	4.8		0.315		3.7	LOS A	1.6	40.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
2: Priest Rd & W Washington St

12/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	309	59	19	217	35	72	44	23	47	44	68
Future Volume (vph)	87	309	59	19	217	35	72	44	23	47	44	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	100		100	0		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		1361			3367			353			649	
Travel Time (s)		30.9			76.5			9.6			17.7	
Confl. Peds. (#/hr)						4			1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	4%	6%	5%	9%	4%	5%	5%	5%	0%	8%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	22.0	22.0	10.5	23.0	23.0	10.0	21.0		10.0	26.0	
Total Split (s)	34.5	50.0	50.0	34.5	50.0	50.0	34.0	34.0		34.0	34.0	
Total Split (%)	22.6%	32.8%	32.8%	22.6%	32.8%	32.8%	22.3%	22.3%		22.3%	22.3%	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 152.5
Actuated Cycle Length: 59
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Priest Rd & W Washington St

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HCM 6th Signalized Intersection Summary
2: Priest Rd & W Washington St

12/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	309	59	19	217	35	72	44	23	47	44	68
Future Volume (veh/h)	87	309	59	19	217	35	72	44	23	47	44	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1841	1811	1826	1767	1841	1826	1826	1826	1900	1900
Adj Flow Rate, veh/h	99	351	0	22	247	0	82	50	26	53	50	77
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	6	6	4	6	5	9	4	5	5	5	0	0
Cap, veh/h	174	519	447	56	398	327	158	191	99	117	98	151
Arrive On Green	0.10	0.29	0.00	0.03	0.22	0.00	0.09	0.17	0.17	0.07	0.15	0.15
Sat Flow, veh/h	1725	1811	1560	1725	1826	1497	1753	1130	588	1739	674	1039
Grp Volume(v), veh/h	99	351	0	22	247	0	82	0	76	53	0	127
Grp Sat Flow(s),veh/h/ln	1725	1811	1560	1725	1826	1497	1753	0	1718	1739	0	1713
Q Serve(g_s), s	2.2	6.7	0.0	0.5	4.8	0.0	1.8	0.0	1.5	1.2	0.0	2.7
Cycle Q Clear(g_c), s	2.2	6.7	0.0	0.5	4.8	0.0	1.8	0.0	1.5	1.2	0.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.34	1.00		0.61
Lane Grp Cap(c), veh/h	174	519	447	56	398	327	158	0	290	117	0	249
V/C Ratio(X)	0.57	0.68	0.00	0.39	0.62	0.00	0.52	0.00	0.26	0.45	0.00	0.51
Avail Cap(c_a), veh/h	1316	2073	1785	1316	2090	1713	1338	0	1311	1327	0	1307
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	12.4	0.0	18.6	13.9	0.0	17.1	0.0	14.2	17.6	0.0	15.5
Incr Delay (d2), s/veh	2.9	1.6	0.0	4.4	1.6	0.0	2.6	0.0	0.5	2.7	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.4	0.0	0.2	1.8	0.0	0.7	0.0	0.5	0.5	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.8	14.0	0.0	23.0	15.5	0.0	19.7	0.0	14.7	20.4	0.0	17.1
LnGrp LOS	B	B	A	C	B	A	B	A	B	C	A	B
Approach Vol, veh/h		450			269			158			180	
Approach Delay, s/veh		15.2			16.1			17.3			18.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	13.6	6.6	10.6	5.8	16.3	7.5	9.7
Change Period (Y+Rc), s	4.5	5.0	4.0	4.0	4.5	5.0	4.0	4.0
Max Green Setting (Gmax), s	30.0	45.0	30.0	30.0	30.0	45.0	30.0	30.0
Max Q Clear Time (g_c+I1), s	4.2	6.8	3.2	3.5	2.5	8.7	3.8	4.7
Green Ext Time (p_c), s	0.2	1.6	0.1	0.4	0.0	2.3	0.2	0.7

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

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LANE LEVEL OF SERVICE

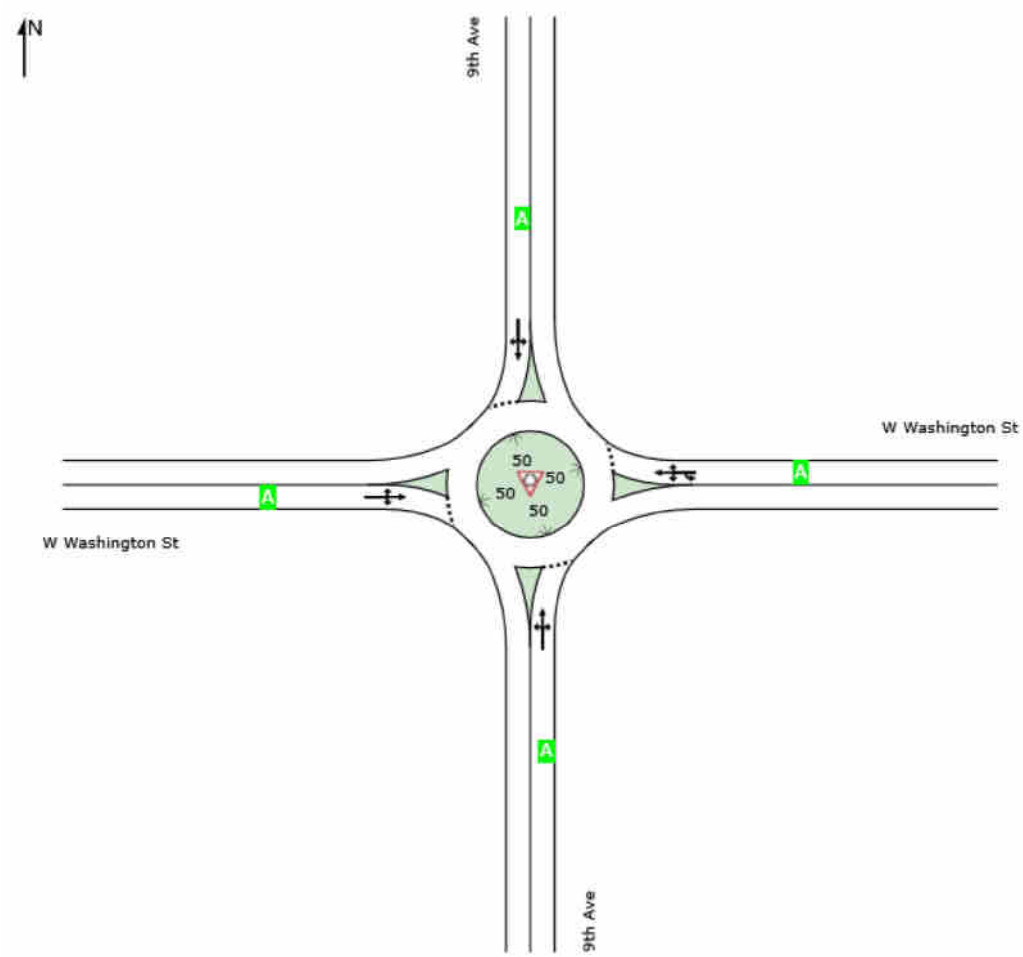
Lane Level of Service

Site: 3 [2021 With Project - AM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2021 With Project - AM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	48	11.1	788	0.061	100	5.2	LOS A	0.2	6.0	Full	1600	0.0	0.0
Approach	48	11.1		0.061		5.2	LOS A	0.2	6.0				
East: W Washington St													
Lane 1[d]	410	3.2	1303	0.315	100	5.6	LOS A	1.8	46.5	Full	1600	0.0	0.0
Approach	410	3.2		0.315		5.6	LOS A	1.8	46.5				
North: 9th Ave													
Lane 1[d]	28	12.3	786	0.036	100	4.9	LOS A	0.1	3.5	Full	1600	0.0	0.0
Approach	28	12.3		0.036		4.9	LOS A	0.1	3.5				
West: W Washington St													
Lane 1[d]	440	5.0	1226	0.359	100	6.4	LOS A	2.1	54.2	Full	1600	0.0	0.0
Approach	440	5.0		0.359		6.4	LOS A	2.1	54.2				
Intersection	926	4.7		0.359		5.9	LOS A	2.1	54.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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LANE LEVEL OF SERVICE

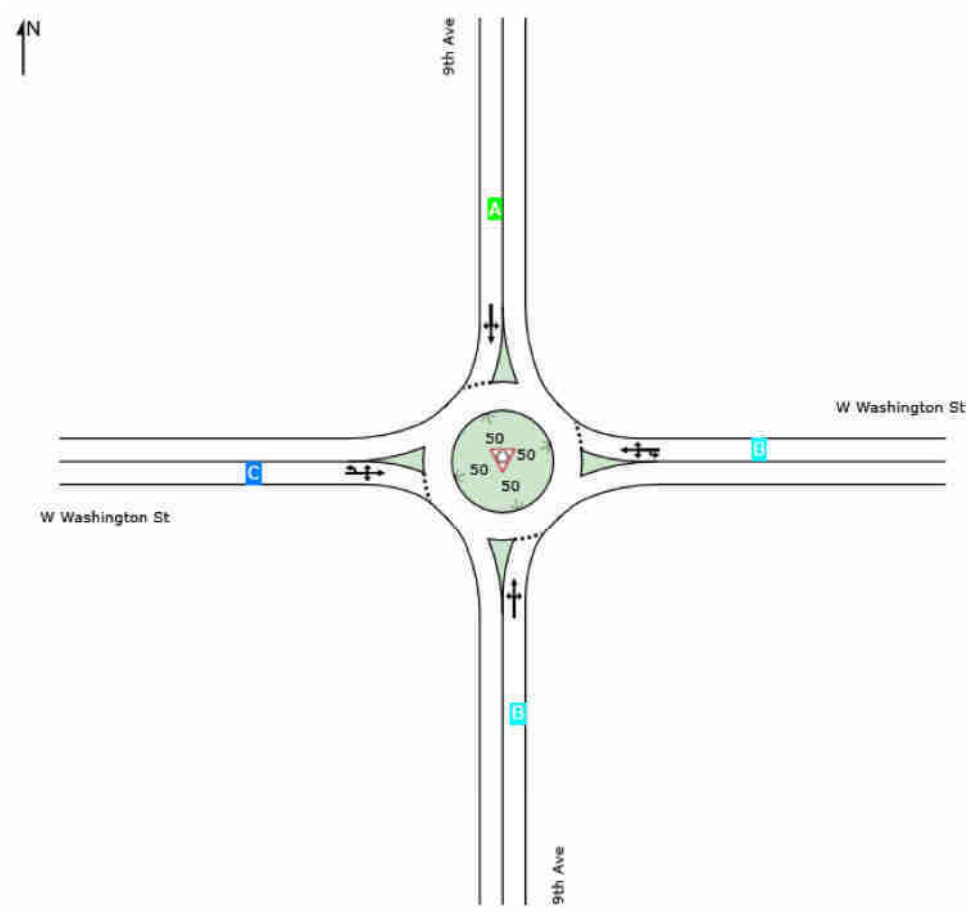
Lane Level of Service

Site: 3 [2021 With Project - Noon Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	A	C	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2021 With Project - Noon Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	261	1.8	577	0.453	100	13.6	LOS B	2.5	62.7	Full	1600	0.0	0.0
Approach	261	1.8		0.453		13.6	LOS B	2.5	62.7				
East: W Washington St													
Lane 1[d]	825	1.8	1192	0.692	100	13.0	LOS B	7.0	176.7	Full	1600	0.0	0.0
Approach	825	1.8		0.692		13.0	LOS B	7.0	176.7				
North: 9th Ave													
Lane 1[d]	65	0.0	529	0.123	100	8.4	LOS A	0.5	11.7	Full	1600	0.0	0.0
Approach	65	0.0		0.123		8.4	LOS A	0.5	11.7				
West: W Washington St													
Lane 1[d]	841	2.0	1027	0.819	100	21.2	LOS C	21.1	536.1	Full	1600	0.0	0.0
Approach	841	2.0		0.819		21.2	LOS C	21.1	536.1				
Intersection	1992	1.8		0.819		16.4	LOS C	21.1	536.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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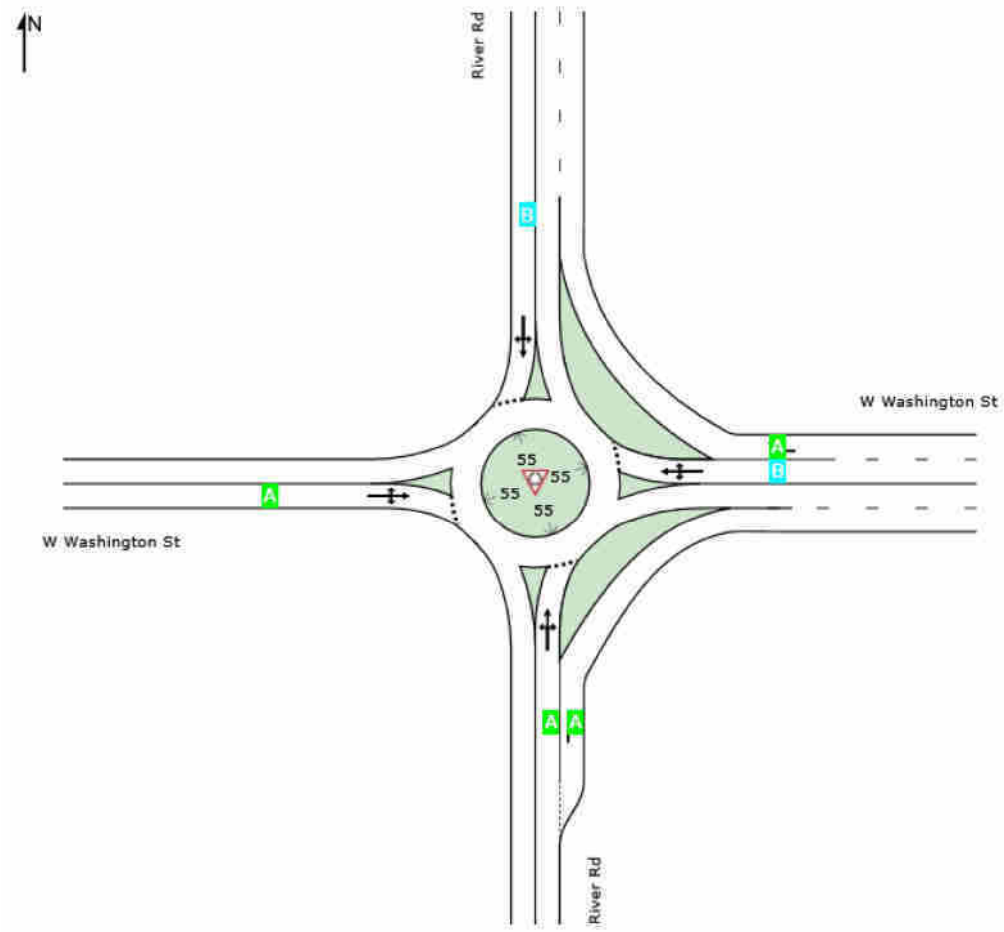
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 1 [2021 With Project PM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	B	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 1 [2021 With Project PM Peak Hour]

Jametown Clinic
River Rd / W Washington St
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: River Rd													
Lane 1[d]	315	1.3	1286	0.245	100	4.9	LOS A	1.2	29.9	Full	1600	0.0	0.0
Lane 2	406	0.8	1661	0.245	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	721	1.0		0.245		2.2	LOS A	1.2	29.9				
East: W Washington St													
Lane 1[d]	746	2.4	1164	0.641	100	11.7	LOS B	5.7	144.4	Full	1600	0.0	0.0
Lane 2	48	0.0	1675	0.029	5[5]	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	795	2.3		0.641		10.9	LOS B	5.7	144.4				
North: River Rd													
Lane 1[d]	228	1.3	593	0.385	100	11.8	LOS B	1.9	48.2	Full	1600	0.0	0.0
Approach	228	1.3		0.385		11.8	LOS B	1.9	48.2				
West: W Washington St													
Lane 1[d]	92	1.2	506	0.182	100	9.6	LOS A	0.7	17.5	Full	1600	0.0	0.0
Approach	92	1.2		0.182		9.6	LOS A	0.7	17.5				
Intersection	1836	1.6		0.641		7.5	LOS A	5.7	144.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
2: Priest Rd & W Washington St

01/07/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	481	71	44	503	76	169	94	53	154	66	111
Future Volume (vph)	76	481	71	44	503	76	169	94	53	154	66	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	100		100	0		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		1361			3367			353			649	
Travel Time (s)		30.9			76.5			9.6			17.7	
Confl. Peds. (#/hr)						7			7			1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	3%	2%	2%	0%	1%	1%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	22.0	22.0	10.5	23.0	23.0	10.0	21.0		10.0	26.0	
Total Split (s)	34.5	50.0	50.0	34.5	50.0	50.0	34.0	34.0		34.0	34.0	
Total Split (%)	22.6%	32.8%	32.8%	22.6%	32.8%	32.8%	22.3%	22.3%		22.3%	22.3%	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 152.5
Actuated Cycle Length: 92.3
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Priest Rd & W Washington St

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HCM 6th Signalized Intersection Summary
2: Priest Rd & W Washington St

01/07/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	481	71	44	503	76	169	94	53	154	66	111
Future Volume (veh/h)	76	481	71	44	503	76	169	94	53	154	66	111
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1856	1870	1870	1900	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	78	496	0	45	519	0	174	97	55	159	68	114
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	1	3	2	2	0	1	1	1	0	0	0
Cap, veh/h	131	688	574	94	645	555	229	197	112	211	105	176
Arrive On Green	0.07	0.36	0.00	0.05	0.34	0.00	0.13	0.18	0.18	0.12	0.17	0.17
Sat Flow, veh/h	1810	1885	1572	1781	1870	1610	1795	1120	635	1810	637	1067
Grp Volume(v), veh/h	78	496	0	45	519	0	174	0	152	159	0	182
Grp Sat Flow(s),veh/h/ln	1810	1885	1572	1781	1870	1610	1795	0	1756	1810	0	1704
Q Serve(g_s), s	2.5	13.7	0.0	1.5	15.2	0.0	5.6	0.0	4.7	5.1	0.0	6.0
Cycle Q Clear(g_c), s	2.5	13.7	0.0	1.5	15.2	0.0	5.6	0.0	4.7	5.1	0.0	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.63
Lane Grp Cap(c), veh/h	131	688	574	94	645	555	229	0	309	211	0	281
V/C Ratio(X)	0.59	0.72	0.00	0.48	0.80	0.00	0.76	0.00	0.49	0.75	0.00	0.65
Avail Cap(c_a), veh/h	900	1407	1174	886	1396	1202	893	0	874	900	0	848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.1	16.5	0.0	27.8	17.9	0.0	25.4	0.0	22.4	25.8	0.0	23.5
Incr Delay (d2), s/veh	4.2	1.4	0.0	3.8	2.4	0.0	5.2	0.0	1.2	5.4	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	5.5	0.0	0.7	6.2	0.0	2.6	0.0	2.0	2.4	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	18.0	0.0	31.5	20.3	0.0	30.6	0.0	23.6	31.2	0.0	26.0
LnGrp LOS	C	B	A	C	C	A	C	A	C	C	A	C
Approach Vol, veh/h		574			564			326			341	
Approach Delay, s/veh		19.8			21.2			27.4			28.4	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	25.8	11.0	14.6	7.7	27.0	11.7	13.9
Change Period (Y+Rc), s	4.5	5.0	4.0	4.0	4.5	5.0	4.0	4.0
Max Green Setting (Gmax), s	30.0	45.0	30.0	30.0	30.0	45.0	30.0	30.0
Max Q Clear Time (g_c+I1), s	4.5	17.2	7.1	6.7	3.5	15.7	7.6	8.0
Green Ext Time (p_c), s	0.2	3.6	0.4	0.9	0.1	3.4	0.5	1.1

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

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LANE LEVEL OF SERVICE

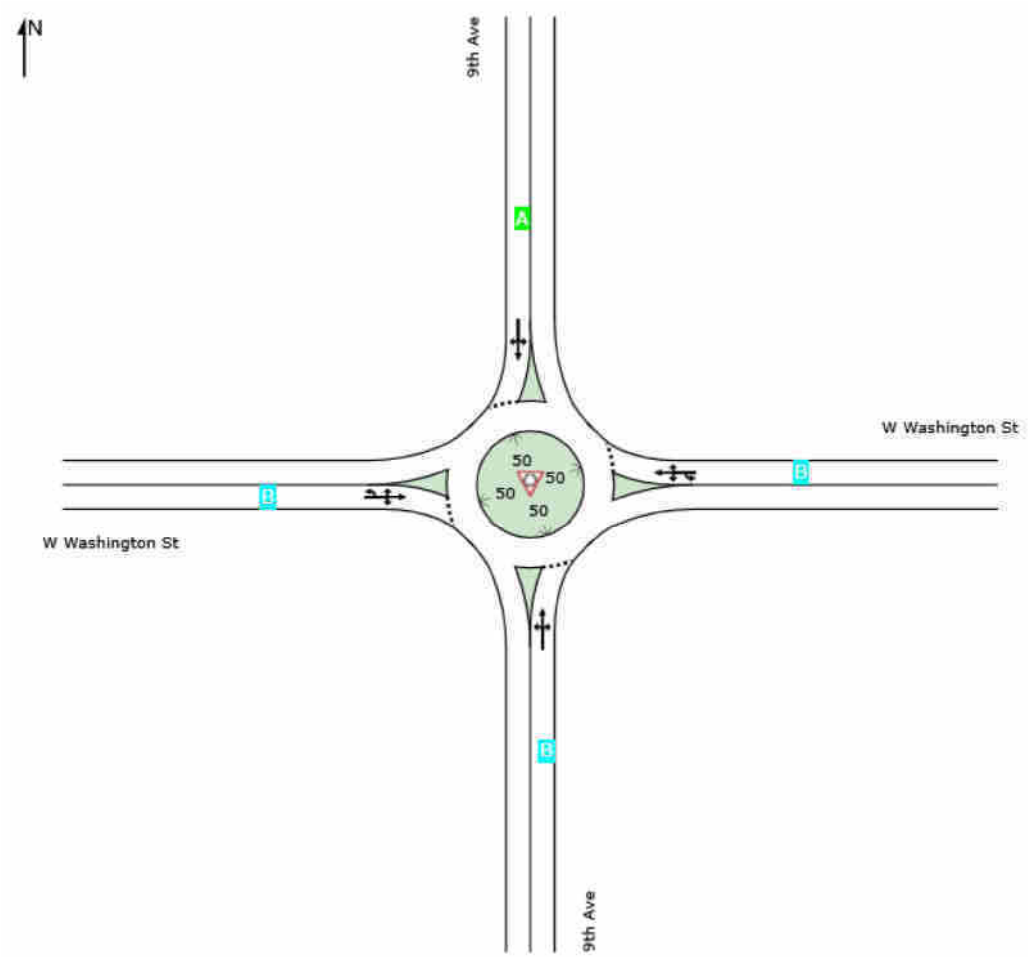
Lane Level of Service

Site: 3 [2021 With Project - PM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	A	B	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 3 [2021 With Project - PM Peak Hour]

Jamestown Clinic
9th Ave / W Washington St

Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 9th Ave													
Lane 1[d]	228	1.1	634	0.360	100	10.7	LOS B	1.7	44.0	Full	1600	0.0	0.0
Approach	228	1.1		0.360		10.7	LOS B	1.7	44.0				
East: W Washington St													
Lane 1[d]	826	1.3	1223	0.676	100	12.2	LOS B	6.9	173.5	Full	1600	0.0	0.0
Approach	826	1.3		0.676		12.2	LOS B	6.9	173.5				
North: 9th Ave													
Lane 1[d]	59	1.9	530	0.111	100	8.2	LOS A	0.4	10.5	Full	1600	0.0	0.0
Approach	59	1.9		0.111		8.2	LOS A	0.4	10.5				
West: W Washington St													
Lane 1[d]	741	0.6	1086	0.682	100	13.5	LOS B	10.1	253.7	Full	1600	0.0	0.0
Approach	741	0.6		0.682		13.5	LOS B	10.1	253.7				
Intersection	1855	1.0		0.682		12.4	LOS B	10.1	253.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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Lanes, Volumes, Timings
4: 7th Ave & W Washington St

01/07/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	509	136	47	565	45	178	95	52	73	67	181
Future Volume (vph)	180	509	136	47	565	45	178	95	52	73	67	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		135	110		0	0		125	0		125
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		3367			552			426			322	
Travel Time (s)		76.5			12.5			11.6			8.8	
Confl. Peds. (#/hr)			4			4	1		8	8		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	1%	2%	2%	0%	0%	1%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases			6				4			8		
Detector Phase	1	6	6	5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	28.5	28.5	10.5	27.5		30.5	30.5		31.5	31.5	
Total Split (s)	12.0	30.0	30.0	12.0	30.0		33.0	33.0		33.0	33.0	
Total Split (%)	16.0%	40.0%	40.0%	16.0%	40.0%		44.0%	44.0%		44.0%	44.0%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 18 (24%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 4: 7th Ave & W Washington St

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HCM 6th Signalized Intersection Summary
4: 7th Ave & W Washington St

01/07/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	509	136	47	565	45	178	95	52	73	67	181
Future Volume (veh/h)	180	509	136	47	565	45	178	95	52	73	67	181
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1900	1870	1870	1885	1870	1870	1900	1900	1900
Adj Flow Rate, veh/h	186	525	140	48	582	46	184	98	54	75	69	187
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	2	2	1	2	2	0	0	0
Cap, veh/h	180	846	719	92	683	54	318	362	199	415	144	390
Arrive On Green	0.10	0.45	0.45	0.05	0.40	0.40	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1795	1885	1603	1810	1710	135	1124	1128	621	1243	448	1215
Grp Volume(v), veh/h	186	525	140	48	0	628	184	0	152	75	0	256
Grp Sat Flow(s),veh/h/ln	1795	1885	1603	1810	0	1845	1124	0	1749	1243	0	1663
Q Serve(g_s), s	7.5	16.0	4.0	1.9	0.0	23.2	11.8	0.0	4.8	3.6	0.0	9.3
Cycle Q Clear(g_c), s	7.5	16.0	4.0	1.9	0.0	23.2	21.0	0.0	4.8	8.4	0.0	9.3
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.36	1.00		0.73
Lane Grp Cap(c), veh/h	180	846	719	92	0	737	318	0	561	415	0	534
V/C Ratio(X)	1.04	0.62	0.19	0.52	0.00	0.85	0.58	0.00	0.27	0.18	0.00	0.48
Avail Cap(c_a), veh/h	180	846	719	181	0	737	384	0	665	488	0	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	15.8	12.5	34.7	0.0	20.5	28.9	0.0	18.9	22.1	0.0	20.4
Incr Delay (d2), s/veh	67.9	2.6	0.5	3.4	0.0	12.0	1.2	0.0	0.2	0.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	6.9	1.4	0.9	0.0	11.6	3.2	0.0	1.9	1.0	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	101.6	18.4	12.9	38.1	0.0	32.5	30.1	0.0	19.1	22.2	0.0	20.9
LnGrp LOS	F	B	B	D	A	C	C	A	B	C	A	C
Approach Vol, veh/h		851			676			336			331	
Approach Delay, s/veh		35.7			32.9			25.2			21.2	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	34.4		28.6	8.3	38.1		28.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.5	25.5		28.5	7.5	25.5		28.5
Max Q Clear Time (g_c+I1), s	9.5	25.2		23.0	3.9	18.0		11.3
Green Ext Time (p_c), s	0.0	0.1		0.7	0.0	2.0		1.5

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

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Appendix C

Project Trip Generation Summary

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Jamestown Clinic - Sequim, WA

Trip Generation Estimate - Average Weekday

	Employee Vehicle Trips		Patient Vehicle Trips		Patient Trips - Jamestown Minivan		Trip Totals		
Time Period	**Enter**	**Exit**	**Enter**	**Exit**	**Enter**	**Exit**	**Enter**	**Exit**	**Total**
before 6:00 AM	15	0	0	0	0	0	15	0	**15**
6:00 - 6:30	6	0	6	0	1	0	13	0	**13**
6:30 - 7:00	7	0	7	6	2	0	16	6	**22**
7:00 - 7:30	6	0	7	7	0	1	13	8	**21**
7:30 - 8:00	6	0	6	7	0	2	12	9	**21**
8:00 - 8:30	0	0	5	6	3	0	8	6	**14**
8:30 - 9:00	0	0	5	5	3	0	8	5	**13**
9:00 - 9:30	0	0	6	5	2	3	8	8	**16**
9:30 - 10:00	0	0	7	6	1	3	8	9	**17**
10:00 - 10:30	1	0	7	7	1	2	9	9	**18**
10:30 - 11:00	1	1	6	7	2	1	9	9	**18**
11:00 - 11:30	2	1	5	6	2	1	9	8	**17**
11:30 - Noon	2	2	5	5	1	2	8	9	**17**
12:00 - 12:30	1	2	4	5	0	2	5	9	**14**
12:30 - 1:00	1	1	4	4	0	1	5	6	**11**
1:00 - 1:30	0	0	6	4	1	0	7	4	**11**
1:30 - 2:00	0	0	7	6	2	0	9	6	**15**
2:00 - 2:30	0	7	7	7	2	1	9	15	**24**
2:30 - 3:00	0	8	6	7	1	2	7	17	**24**
3:00 - 3:30	0	7	4	6	0	2	4	15	**19**
3:30 - 4:00	0	6	3	4	0	1	3	11	**14**
4:00 - 4:30	0	6	0	3	0	0	0	9	**9**
4:30 - 5:00	0	6	0	0	0	0	0	6	**6**
5:00 - 5:30	0	0	0	0	0	0	0	0	**0**
5:30 - 6:00	0	0	0	0	0	0	0	0	**0**
6:00 - 6:30	0	0	0	0	0	0	0	0	**0**
6:30 - 7:00	0	0	0	0	0	0	0	0	**0**
After 7:00 PM	0	0	0	0	0	0	0	0	**0**
TOTAL TRIPS	**48**	**47**	**113**	**113**	**24**	**24**	**185**	**184**	**369**

Hourly Trip Totals				
Hour	**Enter**	**Exit**	**Total**	
6:00-7:00 AM	29	6	**35**	
6:30-7:30 AM	29	14	**43**	
7:00-8:00 AM	25	17	**42**	
7:30-8:30 AM	**20**	**15**	**35**	
8:00-9:00 AM	16	11	**27**	
8:30-9:30 AM	16	13	**29**	**AM Peak Hour**
9:00-10:00 AM	16	17	**33**	
9:30-10:30 AM	17	18	**35**	
10:00-11:00 AM	18	18	**36**	
10:30-11:30 AM	18	17	**35**	
11:00-12:00 PM	17	17	**34**	
11:30-12:30 PM	13	18	**31**	
12:00-1:00 PM	**10**	**15**	**25**	
12:30-1:30 PM	12	10	**22**	**Midday Peak Hour**
1:00-2:00 PM	16	10	**26**	
1:30-2:30 PM	18	21	**39**	
2:00-3:00 PM	**16**	**32**	**48**	**Project Peak Hour (Aft)**
2:30-3:30 PM	11	32	**43**	
3:00-4:00 PM	7	26	**33**	
3:30-4:30 PM	3	20	**23**	
4:00-5:00 PM	**0**	**15**	**15**	**PM Peak Hour (street)**
4:30-5:30 PM	0	6	**6**	
5:00-6:00 PM	0	0	**0**	
5:30-6:30 PM	0	0	**0**	
6:00-7:00 PM	0	0	**0**	