Site Plan and Design Review
Staff Report and Recommendation

Community Development Department, Planning Division

REPORT DATE:	June 29, 2020
HEARING DATE:	July 6, 2020
LAND USE REQUEST:	Site plan approval and design review of a proposed 8-building 196-unit apartment complex
FILE NUMBER:	311-20-000042-PLNG
PROJECT NAME:	The Reserve at Fernhill Apartments
PROPERTY LOCATION:	1900 Block of Poplar Street
LEGAL DESCRIPTION:	Washington County Tax Lots 1S305BA00200, 1500, 1900, 2000, 2100, 2200, 2300, 2400, 2800, 3000, 3001, 3100, 3200, 3300, 3400, 3500, 3600 and 3700
APPLICANT:	3J Consulting (Andrew Tull) 9600 SW Nimbus Avenue, Suite 100 Beaverton, Oregon 97008
OWNER:	Albertson's LLC 250 Parkcenter Blvd, Boise, Idaho 83706
DEVELOPER:	J.T. Smith Companies (Jesse Nemec) 5285 Meadows Road, Suite 171 Lake Oswego, Oregon 97035
COMPREHENSIVE PLAN MAP DESIGNATIONS:	Community Commercial (CC) Medium Density Residential (MDR)
ZONING MAP DESIGNATIONS:	Community Commercial (CC) Residential Medium Density (RML)
APPLICABLE STANDARDS AND CRITERIA:	City of Forest Grove Development Code §17.2.300 et. seq. *Design Review* §17.2.400 et. seq. *Site Development Review* §17.3.100 - .140 *Residential Zones* §17.3.300 - .340 *Commercial and Mixed Use Zones* §17.5.130 *Trees on Developable Land* §17.6.015 et. seq. *Lot Line Adjustments* §17.7.040 *Fence Standards*

APPLICABLE STANDARDS AND CRITERIA:	§17.7.200 et. seq. *Solid Waste and Recycling* §17.8.000 et. seq. *General Development Standards* City of Forest Grove Design Guideline Handbook Focus Area III *Multi-Unit Residential Focus Area*
REVIEWING STAFF:	James Reitz (AICP) Senior Planner
RECOMMENDATION:	Staff recommends approval with conditions

I. LAND USE HISTORY

Up to the mid-1990s, the site had been developed with single-family homes and a gas station. The site was then purchased by Albertson's Foods with the intent of building a shopping center, and the homes and all other improvements were removed. The shopping center project never advanced, and the site has remained vacant ever since.

In anticipation of this submittal, the applicant filed a request to vacate the 19th Place right-of-way. That application was approved by the City Council on June 8, 2020.

Because the proposed project would exceed 5 units, the Design Guidelines require Planning Commission review pursuant to Type III review procedures. Because this activity requires design review, all associated reviews (in this case, site plan approval) are also subject to Planning Commission review, pursuant to DC §17.1.205.

The application was submitted on April 16, 2020. It was deemed complete on May 18, 2020.

Public notice for this application was mailed to property owners and residents within 300 feet of the site on June 15, 2020 as required by DC §17.1.610. Notice of this request was also provided to the Plans Review Board, published in the *News-Times,* and provided to ODOT. ODOT was notified because, while the site would not take access from an ODOT facility, it would abut an ODOT facility (Hwy 47) and would be located within ¼ mile of the intersection of Hwy 47 and Hwy 8, which is also an ODOT facility.

Comments and conditions received from the Plans Review Board are listed in Exhibits D-G. ODOT's review comments are discussed in the Traffic Analysis and Street Improvements section below.

As of the writing of this report, no comments have been received from the public, although Wauna Credit Union did submit a letter previously in response to the 19th Avenue vacation request, noting concerns about increased traffic.

II. PROJECT DESCRIPTION AND ANALYSIS

1. Description of Proposal: The proposal would result in the construction of 8 buildings housing 196 apartment units.

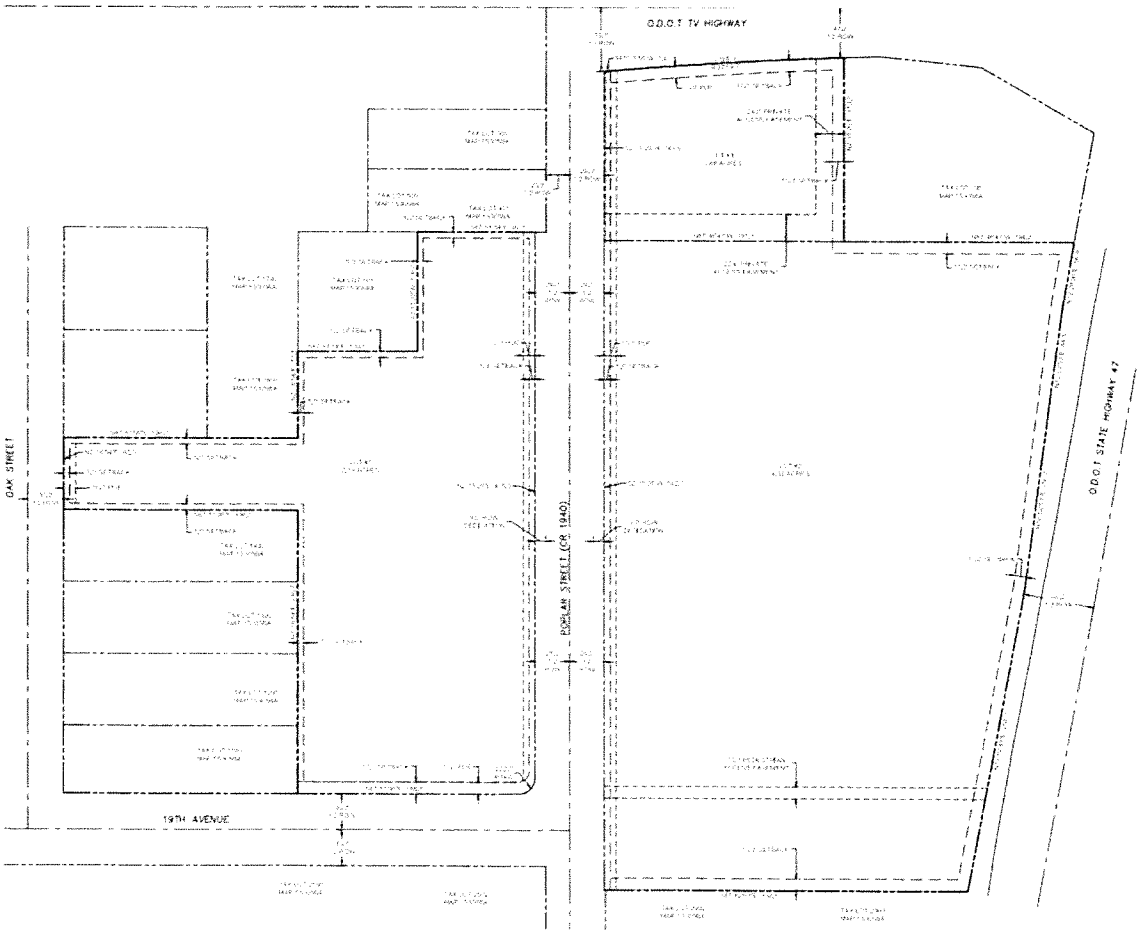
    - Each of the proposed buildings would be three stories in height.

- There would be a clubhouse, a pool and spa, a children's play structure and swing set, a dog park and a sport court.
- The clubhouse would be located in Building 7 and would include a workout room, common area, and the leasing office.
- The parking areas would have a total of 300 on-site parking spaces (an average of 1.53 spaces per unit).

The site would be completely built-out with this project. The applicant intends to construct the project in a single phase.

2. Site Examination: The apartment site totals 6.58 acres and abuts 19th Avenue, Oak Street, Poplar Street, and the Highway 47 bypass; it is identified as Lot 1 and Lot 2 in the application materials Sheet C180. It is vacant, as all the homes previously extant were removed in the late 1990s. Many trees remain from when the area was a residential neighborhood.

   The overall site is presently comprised of 18 parcels, totaling 7.26 acres. The applicant has proposed to consolidate the 18 parcels into 3: Lot 1 on the west side of Poplar Street, and Lot 2 on the east side. The parcel abutting Pacific Avenue (Lot 3) would not be developed with apartments, but would be set aside for future commercial development. However, part of its potential residential density is proposed to be transferred to the other lots.



Proposed Lot Configuration: Post-Consolidation

3. Existing Comprehensive Plan Designation and Zoning of Site and Area

LOCATION	COMPREHENSIVE PLAN DESIGNATION	ZONE DISTRICT	LAND USE
Site	Community Commercial (CC) & Medium Density Residential (MDR)	Community Commercial (CC) & Residential Multi-Family Low Density (RML)	Vacant Land
North	Community Commercial (CC)	Community Commercial (CC)	Vacant Land & Wauna Credit Union
South	Medium Density Residential (MDR)	Residential Multi-Family Low Density (RML)	Single-Family Residential
East	Community Commercial (CC)	Community Commercial (CC)	Ace Hardware (beyond bypass)
West	Community Commercial (CC)	Community Commercial (CC)	Single-Family Residential & Mixed Commercial

Site Design: The site plan consists of 8 apartment buildings; 3 buildings would be sited on the west side of Poplar Street (on Lot 1), and the remainder on the east side (on Lot 2). The main office, recreation room and one of the mailbox clusters would be located in Building 7, centrally located on Lot 2. The pool, spa and tot lot would be located near the main office. The sport court would be located to the south of Building 7, adjacent to one of the car parks and the Hwy 47 Bypass. A dog park would be located on the west side of Poplar Street, adjacent to Building 3.

Buildings would be setback 10-to-12 feet from the Poplar Street and 19th Avenue rights-of-way. Side and rear yard setbacks would be 10-to-15 feet, except for Building 3, which at its closest point would be located only 5 feet from the west property line.

Parking would be provided to the interior of the site, except for the car park adjacent to the south property line. The buildings would be connected with pedestrian walk-ways. Walkways would also connect with the sidewalks on Poplar Street and 19th Avenue, as well as to the walkway / bike path along the Highway 47 bypass. A walkway would extend from Oak Street east through the project site, across Poplar Street, and to the main office.

Open space would be located primarily on Lot 2. It would be developed with the pool, spa, tot lot, and sport court.

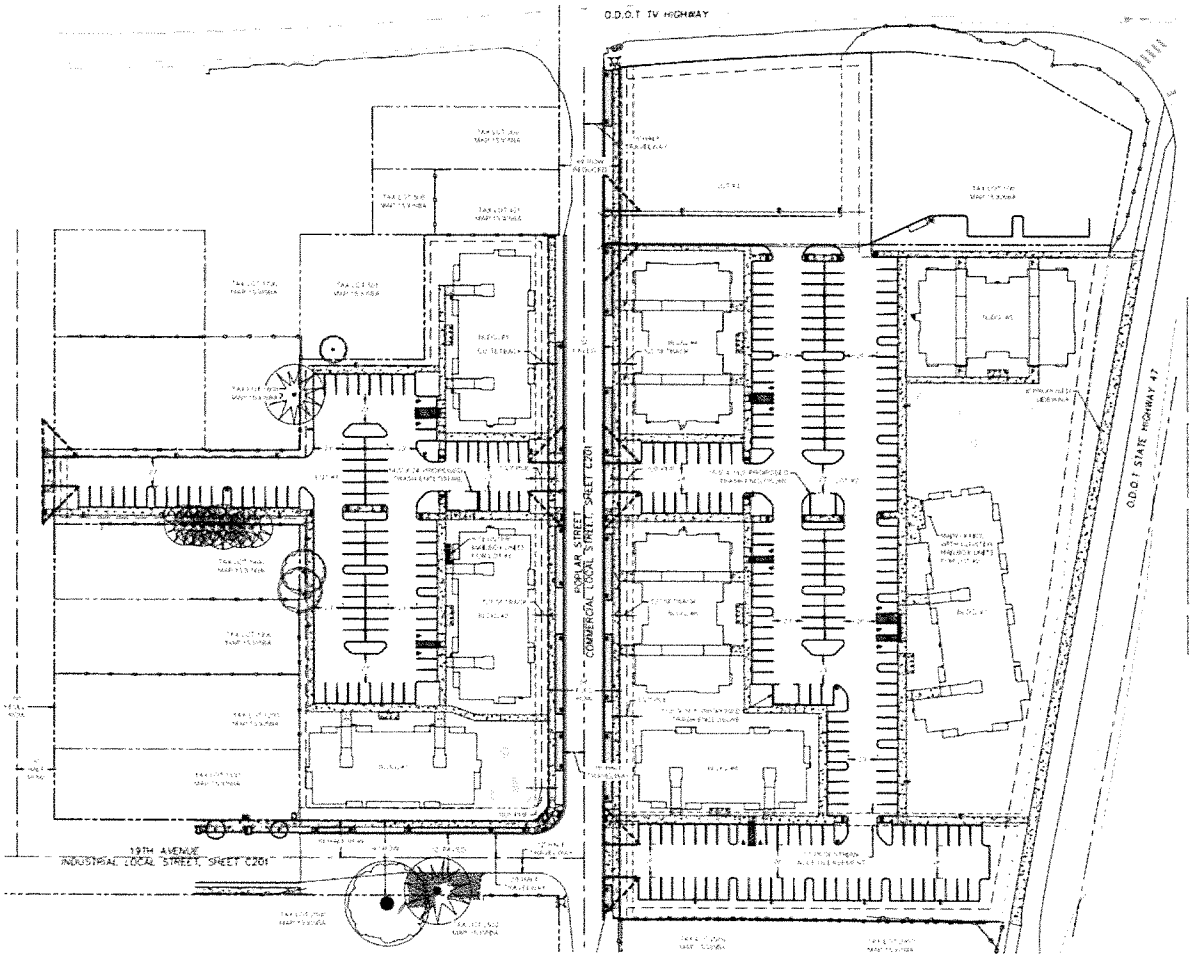
Poplar Street and 19th Avenue would be improved with this project. Further discussion follows in the Traffic Analysis and Street Improvements section below.

4. Setbacks and Height Requirements:

- The site is located in primarily in the Community Commercial (CC) zoning district. The buildings would all be constructed in the CC zoning district. No front, side, or rear setbacks apply in this district.
- The buildings would be setback 11-12 feet from the Poplar Street property lines, and 10 feet from the 19th Avenue property line.
- Building 3 would be located about 5 feet from the west property line.
- The buildings near the north property lines would be setback about 15 feet.

- At its closest point, Building 7 would be located 10 feet from the Hwy 47 Bypass right-of-way. Building 5 would be located 14 ½ feet from the property line.
- One existing parcel at 1845 Poplar Street is located in the RML zoning district. It is located at the south end of the project site. This portion of the site would be used exclusively for parking and landscaping; no buildings or any other structures are proposed.
- The height limit in the CC zone district is 45 feet. The height of the three-story apartment buildings would be 44 feet 8 inches at the roof peak.

Summary and Conclusion: As the height of the proposed buildings would all be less than the maximum allowed, and as there are no setbacks required in the CC zoning district, staff concludes that the heights and setbacks are acceptable and no conditions of approval appear to be necessary.



Overall Site Plan

5. Density: Once the lot consolidation process is complete, and right-of-way is dedicated along Poplar Street, the total site area will be 7.26 acres, inclusive of all three lots. Because it abuts Pacific Avenue, the applicant proposes to reserve Lot 3 for commercial development.

   Since Lot 3 would be developed with commercial uses, the applicant proposes to transfer some of its potential residential density to Lots 1 and 2. At 0.68 acres, Lot 3 could be developed with up to 20 units.

Lots 1 and 2 total 6.58 acres in area. Most of that (5.99 acres) is located in the CC zoning district, where the minimum and maximum residential density is 16.22 to 30.00 Dwelling Units per Acre (DUA) respectively. The allowable density would therefore be between 97 and 180 units.

The southern-most part of the site (1845 Poplar Street) is located in the RML zoning district, where the minimum and maximum density is 9.60 to 12.00 DUA respectively. This area totals 0.59 acres. The allowable density would therefore be between 6 and 7 units.

In total, the allowable density for Lots 1 and 2 would be between 103 and 187 units. The application proposes 196 units, the difference of which (9 units) would be transferred from Lot 3.

To ensure that Lot 3 is not subsequently over-developed with residential units at a later date, the applicant proposes to record a deed restriction to limit future density to not more than 11 units. Staff has included this deed restriction as a proposed **condition** of approval.

Summary and Conclusion: With the condition to record a deed restriction on Lot 3, the minimum and maximum density for the overall site would be met.

6. Compatibility:

- Most of the site is located in and bounded by land in the Community Commercial zoning district. A portion of the south end of the site is located in the RML zoning district.
- The site is bounded on the north (east of Poplar Street) by vacant land and the Wauna Credit Union site. The vacant parcel is proposed to be held in reserve for a commercial use, to be determined.
- The site is bounded on the north (west of Poplar Street) by a single-family home and a vacant lot. The vacant lot has been approved for a new commercial building that would include a MOD Pizza and a Starbucks.
- The site is bounded on the east by the Highway 47 Bypass.
- The site is bounded on the west by single-family homes, also located in the CC zoning district.
- The site is bounded on the south by two single-family homes, located in the RML zoning district.

The primary areas of concern would be where the project site abuts existing residential development along the west and south property lines. As can be seen on the proposed landscape plan (Sheets L103 and L104) the site closest to these homes would be mostly developed with car parks.

- The car park on Lot 1 would be separated from the west property line by a landscaped area about 10 feet wide that would also include a walkway.

- Building 3 on Lot 1 would, at its closest point, be setback about 5 feet from the west property line, and that area landscaped with shrubs and small trees. Most of the building would be setback several additional feet. The adjacent parcel at 3411-3435 19th Avenue is developed with a 5-unit single-family detached condominium complex while 1909 Oak Street is developed with a single-family home. While there are no building setbacks required in the CC zoning district,

and the abutting properties are all located in the same district, the Planning Commission may want to consider a condition to shift Building 3 to the east, and increase the landscaped area accordingly. Note that shifting the building would reduce the area devoted to the dog park. Staff has prepared an **optional condition** for the Commission's consideration.

- The car park on Lot 2 would be separated from the south property line by a landscape area about 15 feet wide. The landscaping would consist of shrubs, small and large trees, and groundcover. Additional landscaping could be installed in this location to provide even more visual separation between this project and the adjacent single-family homes (see Parking section, below).

- Development of a vacant site with an apartment complex might result in off-site noise impacts. However, if any noise issues did arise, Forest Grove Code (FGC) §91.030 et. seq. *Noise Regulations* would regulate the intensity of allowable noise in both daytime and evening hours. §91.034 *Maximum Permissible Sound Levels* caps the allowable volume in Noise Sensitive Areas (i.e., areas within residential and institutional zones) at 60 db during the daytime (7 a.m. to 10 p.m.) and 50 db at night (10 p.m. to 7 a.m.) Because the City has an existing ordinance in place to respond to potential noise complaints, staff concludes that there should be no significant neighborhood noise compatibility issues.

- Fencing would be installed around the children's play area, sport court, pool and spa area, and the dog park. No perimeter fencing is proposed or required. The Planning Commission may want to consider a condition to require fencing, particularly along east property line, as those residences might be more likely to be the target of "crimes of opportunity" i.e., the theft of personal items left outside by persons using the Hwy 47 walkway.

  The Planning Commission has required "good-neighbor" wood fences in other apartment projects. However, a wood fence in this location would likely be a tagging target, as evidenced by the tagging on other wood fencing located farther south along the Hwy 47 walkway.

  One common alternative to a wood fence is a coated chain link fence, like those installed around water quality facilities. While functional – and more attractive than their uncoated counterparts – they still project a certain institutional quality and perhaps are not the best choice for a residential project.

  Other possible alternatives include various types of wire fencing like in these examples …


… or ornamental metal panel fencing like in these examples.


Either alternative would result in some physical separation without providing a potential canvas for new graffiti. Staff has prepared on **optional condition** for Planning Commission consideration that would require installation of fencing along the east property line of the project, using some type of wire or metal panel material.

- The project will be required to comply with DC §17.8.750 *Lighting Standards for Multi-Unit Development* and DC §17.8.755 *Pedestrian Lighting Standards,* as noted in Exhibit D - *Development Code Standards and Specifications.* Compliance with these provisions should minimize any off-site light splay.

- Three trash/recycling enclosures are proposed, all located to the interior of the project. They would be constructed of concrete block. Since the adjacent apartment buildings would have windows on all elevations, residents on the second and third floors would have a direct line of sight into the enclosures. To minimize weather and wildlife intrusions as well as to provide more visual screening, the trash and recycling enclosures will be roofed.

Summary and Conclusions:

- Lot 2 adjacent to the south property line would be developed with a car park and a 15-foot-wide landscaped area. Because of the width of the area and its use strictly for landscaping, no compatibility issues in this location are antici-pated and no conditions of approval appear necessary.

- Lot 1 adjacent to the west property line would be developed mostly with a car park. The area along the property line would be improved with landscaping and a walkway. Because this area would only be improved with landscaping and a

walkway, no compatibility issues in this location are anticipated and no conditions of approval appear necessary.

- Building 3 on Lot 1 would, at its closest point, be located about 5 feet from the west property line. There are no setbacks required in the CC zoning district, and the abutting properties are all located in the same district. However, to improve compatibility, the Planning Commission may want to consider a **condition** to shift Building 3 to the east, and increase the landscaped area accordingly.

7. Traffic Analysis and Street Improvements:

According to the ITE *Trip Generation Report 10th Edition*, low rise apartments generate 7.36 Average Daily Trips (ADT) per unit. With 196 units, 1,442 trips per day would be expected. The weekday AM peak hour would see 91 trips, while the weekday PM peak hour would see 108 trips.

The actual number might be less since the site is a short distance from Pacific Avenue, which means the residents would have access to frequent-service transit and thus might drive less than the ITE report forecasts.

Submitted with the application was a Traffic Impact Analysis (TIA; see Exhibit B). The study looked at the following intersections:

1. Pacific Avenue/Maple Street
2. Pacific Avenue/Oak Street
3. Pacific Avenue/Poplar Street
4. Pacific Avenue/OR 47
5. Maple Street/19th Avenue
6. OR 47/19th Avenue
7. OR 47/Maple Street

The study evaluated these transportation issues:

- Existing land-use and transportation-system conditions at the study intersections during the weekday AM and PM peak hours;
- Approved but not yet constructed developments and transportation improvements planned in the study area;
- Year 2022 background traffic conditions (without the proposed development) at the study intersections during the weekday AM and PM peak hours;
- Trip generation and distribution estimates for the proposed development;
- Year 2022 total traffic conditions (with full build-out and occupancy of the proposed development) during the weekday AM and PM peak hours; and
- On-site driveway operations.

The study reached these conclusions and offered these recommendations:

The results of this study indicate that the proposed Reserve at Fernhill development can be constructed while maintaining acceptable traffic operations at the study intersections, assuming provision of the recommended mitigation measures. The findings of this analysis and our recommendations are discussed below.

Existing Traffic Conditions

The OR 47/Maple Street intersection currently exceeds its applicable mobility target.

- *The northbound left-turn movement at the OR 47/Maple Street intersection currently operates with a v/c ratio of 1.0 during the weekday PM peak hour, which exceeds ODOT's applicable mobility target for the intersection. The Forest Grove TSP includes a project to construct improvements (e.g. a traffic signal) at the intersection. The City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. The improvements currently being considered include a J-hook, traffic signal, and roundabout.*
- *The other study intersections currently operate acceptably during the weekday AM and PM peak hours.*
- *A review of historical crash data showed the OR 47/Maple Street intersection crash rate exceeds the 90th percentile ODOT crash rate.*
- *The City is currently working with ODOT and County staff to identify a preferred improvement at the intersection.*
- *A review of the ODOT Safety Priority Index System (SPIS) indicates that the OR 47/Pacific Avenue and OR 47/Maple Street intersections are in the top 5% of crash sites and the Pacific Avenue/Oak Street intersection is in the top 10% of crash sites. Several of the studied intersections are near capacity standards for existing traffic.*
- *A 2016 SPIS investigation report for the OR 47/Maple Street intersection recommends an eastbound right-turn storage lane and new sidewalks on Fernhill Road. As noted above, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. No other SPIS investigation reports are available for the intersections, including more recent reports for the OR 47/Maple Street intersection.*

Year 2022 Background Traffic Conditions

- *The Pacific Avenue/Oak Street and OR 47/Maple Street intersections are projected to exceed their respective mobility standards and targets.*
- *The southbound approach to the Pacific Avenue/Oak Street intersection is projected to operate at LOS E during the weekday PM peak hour. The City currently does not have plans to address traffic operations at the intersection and a traffic signal is not expected to be warranted per ODOT's preliminary signal warrants.*
- *The northbound left-turn movement at the OR 47/Maple Street intersection is projected to be greater than 1.0 during the weekday PM peak hour. As previously noted, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection.*

Year 2022 Total Traffic Conditions

- *The Pacific Avenue/Oak Street and OR 47/Maple Street intersections are projected to continue to exceed their applicable mobility standards and targets.*
- *The southbound approach to the Pacific Avenue/Oak Street intersection is projected to continue to operate at LOS E during the weekday PM peak hour; however, the proposed development is not expected to contribute trips to the southbound approach. Given that 1) all movements associated with the southbound approach operate under capacity, 2) no trips are added to the approach, 3) a traffic signal is not expected to be warranted per ODOT's preliminary signal warrants and 4) alternative access is available via Poplar Street and Maple Street, no mitigation measures are recommended at the intersection in conjunction with site development.*
- *The northbound left-turn movement at the OR 47/Maple Street intersection is projected to continue to operate with a v/c ratio of greater than 1.0 during the weekday PM peak hour; however, the proposed development is not expected to contribute trips to the movement. Also, as previously noted, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. Given that 1) all other movements at the intersection operate below capacity, 2) no trips are added to the critical northbound left-turn movement, and 3) there is a planned improvement identified in the financially constrained project list in the current Forest Grove TSP and the City is working on a preferred improvement, no mitigation measures are recommended at the intersection in conjunction with site development.*

Site Access Operations

- *All site driveways are expected to operate acceptably under stop control.*
- *Vehicle queues at the driveways are expected to be less than one vehicle entering and exiting the site.*

Recommendations

- *Landscaping, above-ground utilities, and signing should be located and maintained along the site frontage and throughout the site in a manner that preserves adequate intersection sight distance.*

ODOT's Development Review staff also examined the TIA. In an e-mail received on May 20, 2020, ODOT staff submitted these comments:

- *ODOT has reviewed the TIA submitted for the Reserve at Fernhill Development and the draft Washington County Study for the OR 47/Maple Street intersection. Since the development will be adding trips to this already failing intersection, ODOT recommends that the City require a proportionate share contribution towards the planned project.*

- *Also, ODOT recommends that frontage improvements be required along the property's OR 47 frontage consistent with the Wauna Credit Union plans that have been approved by ODOT.*

Staff concurs with these recommendations. The City will be collecting approximately $1.2 million in Transportation Development Tax (TDT) revenues from this project, a portion of which could be dedicated to the Hwy 47/Maple Street intersection improvement. Because 19th Avenue is a Collector street, additional funds could be dedicated to its completion between Oak and Poplar streets (see below).

In regards to the Highway 47 frontage improvements, the proposed site plan already incorporates the replacement of the deteriorating asphalt path with a new, 8-foot-wide concrete pathway. While already noted on the site plan, this improvement has also been included as a **condition** of approval.

Poplar Street: The site abuts Poplar Street, a designated Local street. Because the project abuts both sides of the street, it will be fully improved concurrent with this project. This will be a 32-foot-wide street in a 58-foot-wide right-of-way. Parking will be allowed on both sides without restriction. In addition, the applicant is working with the Light and Power Department to underground the utility lines.

19th Avenue: Part of the site abuts 19th Avenue, a designated Collector street. This segment is presently unimproved. The applicant will be responsible for constructing "half-street" improvements abutting the site, including curb, gutter sidewalk and street trees.

The City is interested in having the developer construct a full-width improvement to this section, with reimbursement coming from Traffic Impact Fees (TIF) and/or TDT credits for the southerly half-street section. Constructing a full-width street would complete the street network in this area and improve traffic and pedestrian circulation opportunities.

Summary and Conclusion: With the street improvements noted above, traffic access and circulation requirements would be met.

8. Sidewalks and Pedestrian Walkways:

- No sidewalks presently exist along either Poplar Street or 19th Avenue. They will be installed concurrent with this project.
- Concrete pedestrian walkways are proposed to connect all the units with the car parks, play areas and public sidewalks. DC §17.8.115(4) requires a minimum walkway width of four feet. The proposed walkways would be at least 5 feet wide.
- A walkway would extend from Oak Street all the way through both Lots 1 and 2 to the office located in Building 7. It would cross Poplar Street at about the mid-point of the block. Because residents of buildings 1-3 on Lot 1 could be expected to routinely cross over Poplar Street to visit the office or use the recreational facilities located on Lot 2, the City will be requiring the construction of a bulb-out (and possibly a crosswalk) at this location when Poplar Street is reconstructed. A bulb-out would also have the added benefit of slowing vehicular traffic. To ensure safe traffic operations, the bulb-out will be required to comply with Engineering and Fire department standards and specifications.

Summary and Conclusion: Public sidewalks and private walkways will be constructed in compliance with City standards. No additional conditions appear to be necessary.

9. Parking: DC §17.8.515 Table 8-5 *Parking Requirements* regulates the minimum number of parking stalls required (there are no maximums for residential uses). For multi-family housing, 1.00 spaces are required for each studio unit, 1.25 spaces are required for each 1-bedroom unit, 1.50 spaces for each 2-bedroom unit, and 1.75 for each three bedroom unit. Overall, the project would average about 1.53 spaces per unit.

96 1-bedroom units	1.25 spaces/unit	120 spaces required
82 2-bedroom units	1.50 spaces/unit	123 spaces required
18 3-bedroom units	1.75 spaces/unit	32 spaces required
196 units total		275 spaces required

The project would have 300 off-street spaces, 25 more than the Development Code minimum. Some of the spaces may be made available for car share use; others may be equipped with electric charging stations. There are no maximum limits on parking for residential projects.

With the construction of 19th Avenue and Poplar Street, about 43 on-street spaces would also be available adjacent to the site.

Summary and Conclusion: As the minimum number of parking spaces required would be exceeded, and there is no maximum limit, no conditions of approval appear necessary.

10. Environmental Quality:

- The Preliminary Geo-Technical Report noted possible soil contamination (diesel) on Lot 3, once the site of a gas station. Further development of Lot 3 may require remediation measures, but no development of Lot 3 is proposed at this time. There is no City record of any prominent environmental conditions on Lots 1 or 2.

- The Preliminary Storm Water Report identified 4 drainage basins over the site:

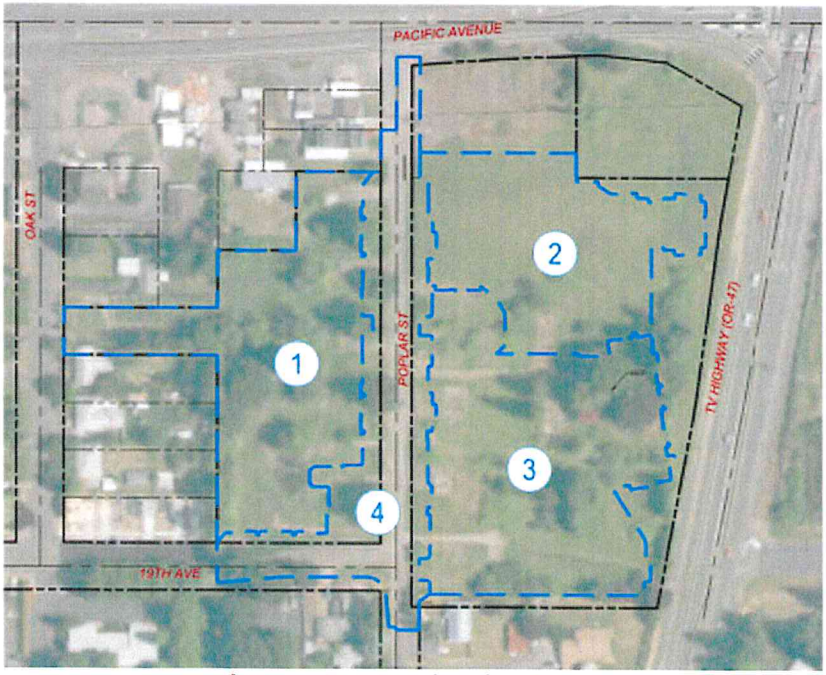


Figure 3 – Post-Developed Basin Map

Basins 1-3: *Due to minimal drop available to accommodate storm water infrastructure, Low Impact Development Approaches (LIDA) are infeasible for Basins 1 through 3. Therefore, these basins will discharge to proprietary treatment devices (catch basins and vaults) that are equipped with media filters.*

Proposed StreamFilter Catch Basins and BayFilter Vaults (downstream of standard catch basins are distributed across Basin 1 through 3. These proprietary structures are equipped with ADS BayFilter media cartridges, which are designed to treat runoff from contributing impervious area (CIA).

Basin 4: *Pertaining to Basin 4, flow-through planters are proposed along Poplar Street and 19th Avenue to treat storm water runoff. The planters will be distributed such that the contributing impervious area for each planter will be equal to or less than 15,000 square feet; as a result, the planters will be sized per the CWS D&C using a sizing factor 0.06.*

6,286 square feet of impervious area within Basin 4 will discharge from the site untreated. These areas include small areas around the project site to be modified and a large area along 19th Avenue that will not discharge to proposed treatment facilities. There is no existing curb along the south edge of 19th Avenue, which nullifies the possibility of implementing a flow-through planter; furthermore, there is not enough space in the existing landscaped area to the south to accommodate a swale. A Fee-In-Lieu is proposed for all untreated impervious area.

Water quality approaches for Basin 4 will include Flow-Through Planters and Fee-In-Lieu. The planters will be based on a sizing factor of 0.06, which is multiplied by each planter's CIA. As the proposed surface improvements along Poplar Street and 19th Avenue are finalized, the locations and sizes of the proposed planters will be determined and will be fully detailed in the Final Storm Water Report.

The total CIA discharging to planters is 37,101 sf. The total CIA discharging from the site untreated is 6,286 square feet and a Fee-In-Lieu is proposed.

Summary and Conclusion: Staff concurs with these conclusions and recommendations, and no additional approval conditions appear necessary. It may be possible to treat all of the runoff within Basin 4, when 19th Avenue is improved. That option will be considered during the street improvement design process.

- Additional landscaping is proposed to be installed (see below) that may improve air quality and reduce glare and heat.

11. Parks and Open Space: The nearest City park is Joseph Gale Park at 3014 18th Avenue. From the 19th Avenue / Poplar Street intersection, the park is about 2,200 feet (or 4/10 of a mile) distant. It is within walking distance this project.

DC §17.8.205 requires that all multi-family dwellings with 20 or more units provide a children's play area, surrounded by a fence at least 30 inches high. Because this complex would have more than 20 units, these provisions would apply.

All units would have access to a sport court and a swimming pool. As the complex would have both two- and three-bedroom units, it is reasonable to conclude that some units would be occupied by families with small children. For their use, the site plan includes a swing set and a play structure.

An outdoor pool and spa would be located nearby, separated from the play structure area by a fence.

In addition, in what may be a first for "pet parents" in Forest Grove, a private dog park would be constructed on Lot 1 near the Poplar Street/19th Avenue intersection.

12. Landscaping: Proposed landscaping would be varied and extensive, including 12 tree varieties and 16 varieties of shrubs and groundcovers, as well as turf. Landscaping appears to comply with the provisions of DC §17.8.205 and §17.8.545.

    There are many trees both on and adjacent to the site. Each has been examined by a certified arborist. All of the on-site trees are proposed to be removed. They exhibit a wide variety of species including natives such Douglas firs and western red cedars to various exotics to fruit trees, typical of what would be planted in a residential neighborhood, as this site once was.

    Several trees are located off-site but adjacent to the perimeter. Because of their proximity to the property line, tree protection measures are required, pursuant to DC §17.5.115(B), as listed in Exhibit D *Development Code Standards and Specifications.*

13. Public Utilities: The application has been reviewed by the Engineering, Fire, Light and Power, Police, and Public Works departments. All departments have indicated that existing public utilities to serve the site are adequate. Specific comments and conditions from the Engineering, Fire and Light & Power departments are listed in Exhibits E-G. The Police and Public Works departments registered no comments or conditions.

14. Site Development Approval Criteria: DC §17.2.450 *Site Development Review Criteria* are as follows:

    The Planning Commission shall review and approve, conditionally approve, or deny the site development plan based on the following criteria:

    A. The site development plan complies with all applicable standards of the base zoning district, any overlay district, and the applicable general development standards of Article 8.

       Finding: The site will be comprised of three parcels, two of which would be developed with apartments. The applicant will be required to submit a copy of the recorded survey and legal description prior to filing for permits for any building within 10 feet of an existing property line.

Finding: The site plan consists of 8 apartment buildings, along with a pool and spa, sport court, children's play area, and dog park.

Finding: Parking would be provided throughout the site, and all the buildings connected with pedestrian walkways. Walkways would also connect with the sidewalks on Poplar Street, 19th Avenue and the Highway 47 Bypass.

Finding: The site is mostly located in the Community Commercial (CC) zone district. No front, side, or rear setbacks apply. Buildings would be set back at least 11 feet from the Poplar Street right-of-way line, and 10 feet from the 19th Avenue r.o.w. line. Building 7 would be set back 10 feet from the Highway 47 r.o.w. line, while Building 5 would be 14 ½ feet from it. The north and south yard building setbacks would be at least 10 feet. Building 3 would be set back 5 feet from the west property line. As no building setbacks are required in the CC zone district, no conditions of approval appear necessary.

Finding: Car park set backs are at least 5 feet abutting any property line. The site plan indicates compliance with this standard.

Finding: Once the consolidation process is complete and additional right-of-way is dedicated along Poplar Street, the site area will be 7.26 acres. Of that, 6.58 acres are located in the CC zone district, where the minimum and maximum residential density is 16.22 to 30.00 DUA respectively. The allowable density would therefore be between 97 and 180 units.

The southern-most part of the site (1845 Poplar Street) is located in the RML zoning district, where the minimum and maximum density is 9.60 to 12.00 DUA respectively. This area totals 0.59 acres. The allowable density would therefore be between 6 and 7 units.

In total, the allowable density for Lots 1 and 2 would be between 103 and 187 units. The application proposes 196 units. Because it fronts Pacific Avenue, the applicant proposes to reserve and market Lot 3 for commercial purposes. At 0.68 acres, it could be developed with between 16 and 20 units. The applicant proposes to transfer 9 of those units to elsewhere within the project site.

To ensure that Lot 3 is not subsequently over-developed with residential units at a later date, the applicant proposes to record a deed restriction to limit future density to not more than 11 units. This deed restriction has been included as a condition of approval.

Finding: The height limit in the CC zone district is 45 feet. The height of the three-story apartment buildings would be about 44 feet at the roof peak. As the height of the proposed buildings would all be less than the maximum, this criterion is satisfied.

Finding: The project would have 300 off-street spaces, 25 more than the Development Code minimum. There are no maximum limits on parking for residential projects.

Finding: Submitted with the application was a Traffic Impact Analysis (TIA). The TIA concluded that the project would not unduly impact the capacity or safety of the existing roadway and pedestrian network in the area. The TIA recommended one approval condition, to wit:

- *Landscaping, above-ground utilities, and signing should be located and maintained along the site frontage and throughout the site in a manner that preserves adequate intersection sight distance.*

The above recommendation has been incorporated into the project's approval conditions.

Finding: ODOT's Development Review staff was provided a copy of the Traffic Impact Analysis (TIA). In an e-mail received on May 20, 2020, ODOT staff submitted these comments:

- *ODOT has reviewed the TIA submitted for the Reserve at Fernhill Development and the draft Washington County Study for the OR 47/Maple Street intersection. Since the development will be adding trips to this already failing intersection, ODOT recommends that the City require a proportionate share contribution towards the planned project.*
- *Also, ODOT recommends that frontage improvements be required along the property's OR 47 frontage consistent with the Wauna Credit Union plans that have been approved by ODOT.*

The City will be collecting approximately $1.2 million in Transportation Development Tax (TDT) revenues from this project, a portion of which could be dedicated to the Hwy 47/Maple Street intersection improvement.

In regards to the Highway 47 frontage improvements, the proposed site plan already incorporates the replacement of the deteriorating asphalt path with a new, 8-foot-wide concrete pathway. While already noted on the site plan, this improvement has also been included as a condition of approval.

Summary and Conclusion: With the conditions noted above, the proposed density, setbacks, building heights, access and parking would meet or exceed Development Code standards.

B. The site development plan ensures reasonable compatibility with surrounding uses as it relates to the following factors:

1. Building mass and scale do not result in substantial visual and privacy impacts to nearby residential properties; and

   Finding: Building 3 on Lot 1 would, at its closest point, be setback about 5 feet from the west property line, and that area landscaped with shrubs and small trees. Most of the building would be setback several additional feet. The parcel at 3411-3435 19th Avenue is developed with a 5-unit single-family detached condominium complex and 1909 Oak Street is developed with a single-family home. While there are no building setbacks required in the CC zoning district, and the abutting properties are all located in the same district, it would be possible to shift Building 3 to the east, and thus present less of an impact on the privacy of the adjoining properties.

2. Proposed structures, parking lots, outdoor use areas or other site improvements that could cause substantial off-site impacts such as noise, glare and

odors are oriented away from nearby residential uses and/or adequately mitigated through other design techniques.

Finding: As a primarily residential project, off-site noise impacts are not anticipated. Should noise become a complaint issue, the City has in place a noise control ordinance that could be used to abate the nuisance.

Finding: On-building, pathway and car park lighting is proposed. Lighting will be required to comply with the provisions of DC §§17.8.755(C) and (D).

Finding: Trash and recycling enclosures would be centrally located on Lots 1 and 2, well away from any property lines. They would be roofed structures constructed of concrete block, so potential odor transmission to nearby residential uses should be minimized.

C. The site development plan preserves or adequately mitigates impacts to unique or distinctive natural features including, but not limited to:

1. Significant on-site vegetation and trees;
2. Prominent topographic features; and
3. Sensitive natural resource areas such as wetlands, creek corridors and riparian areas.

Finding: The site does not have any prominent topographic features, wetlands, creek corridors or riparian areas. Existing on-site trees have been examined by a certified arborist. Due to their condition, all are proposed for removal.

D. The site development plan preserves or adequately mitigates impacts to designated historic resources.

Finding: No designated historic resources are present on or adjacent to the site. This criterion does not apply.

E. The site development plan provides adequate right-of-way and improvements to abutting streets to meet the street standards of the City. This may include, but not be limited to, improvements to the right-of-way, sidewalks, bikeways, and other facilities needed because of anticipated vehicular and pedestrian traffic generation.

Finding: Poplar Street is of inadequate right-of-way width and improvement. The applicant will be dedicating r.o.w. to provide a width of 58 feet. The applicant will be improving the street to a 32-foot width, with curbs, gutters, sidewalks and street trees. The applicant will also install new underground electrical service.

Finding: The 19th Avenue r.o.w. is of adequate width, but is not improved adjacent to the site. The applicant will be responsible for the construction of a "half-street". In cooperation with the City, a full-width improvement may be constructed, with the use of City TIF/TDT funds.

Finding: The project may affect the operations of the Hwy 47/Maple Street intersection. The City will be collecting approximately $1.2 million in Transportation Development Tax (TDT) revenues from this project, a portion of which could be dedicated to the Hwy 47/Maple Street intersection improvement.

Finding: The Highway 47 frontage adjacent to the site will be improved by replacing the deteriorating asphalt path with a new, 8-foot-wide concrete pathway.

F. The site development plan promotes safe, attractive and usable pedestrian facilities that connect building entrances, public sidewalks, bicycle and auto parking spaces, transit facilities, and other parts of a site or abutting properties that may attract pedestrians.

Finding: DC §17.8.115(4) requires a minimum walkway width of four feet. Concrete pedestrian walkways are proposed to connect each unit to the car park and public sidewalk. Additional walkways would connect to the play area, trash enclosure, and garages. All walkways would be at least five feet wide. This criterion is met.

Finding: In regards to the Highway 47 frontage improvements adjacent to the site, the deteriorating asphalt path will be replaced with a new, 8-foot-wide concrete pathway.

Finding: A walkway would extend from Oak Street all the way through both Lots 1 and 2 to the office located in Building 7. It would cross Poplar Street at about the mid-point of the block. Residents of buildings 1-3 on Lot 1 could be expected to routinely cross over Poplar Street to visit the office or use the recreational facilities located on Lot 2. To provide a safer crossing of Poplar Street, a bulb-out and possibly a crosswalk will be constructed at this location. A bulb-out would also have the added benefit of slowing vehicular traffic.

III. DESIGN GUIDELINES

Design Review Criteria: Projects subject to design review shall be evaluated based on the following:

A. The development standards of the applicable zoning district and any overlay district;
B. The general development standards of Article 8.
C. Departures from code requirements may be permitted as part of a Track 2 Design Review Process, when the following criteria are met:

1. The design guidelines contained in the applicable section of the "Design Guideline Handbook" are adequately addressed.
2. The applicant demonstrates that the overall development would result in a development that better meets the intent of the design guidelines than a design that simply meets the Code.

The Design Guideline Handbook Section III *Multi-Unit Residential Design Guidelines* has two options for design review: Track 1 *Development Standards* and Track 2 *Design Guidelines.* The following analyzes the application compared to Track 1 standards unless otherwise noted.

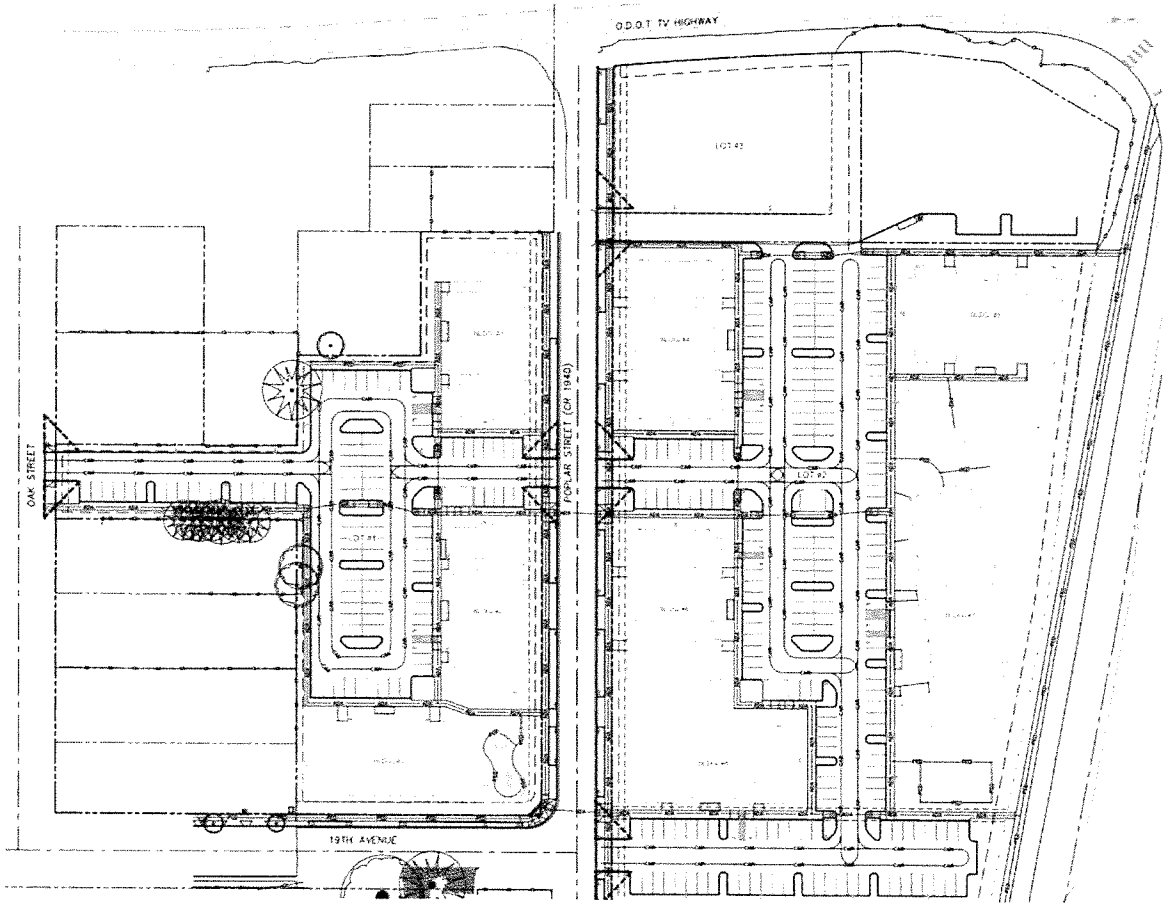
Site – Circulation

- *Continuous pedestrian connections required* – Pathways are proposed that would connect the buildings, car parks, play area, and the public sidewalks.

- *Pathways at least 10 feet from dwellings* – The distance between pathways and buildings varies. Some buildings meet this guideline, while for others the pathways would be located closer. However, the pathways would comply with this recommended Design Guideline*: "Provide comprehensive, pleasant and direct pedestrian pathways linking buildings, open space and parking areas."* Shifting the buildings away from pathways would crowd the buildings closer together, thus reducing useable yard areas for the residents, and/or would shift the buildings closer to perimeter property lines, thus increasing the potential adverse impacts on neighboring properties. Maintaining greater useable yard areas and setbacks from the perimeter would be preferable to strict adherence to this standard.
- The *minimum pathway width of 5 feet* – All proposed pathways would be at least five in width.

Site – Parking

- *Include 18-foot-wide landscape planter bays in parking areas > 10,000 square feet* – The proposed car park and aisles would exceed 10,000 square feet in area, therefore, this provision applies. Planter bays of 9 x 32 feet are scattered throughout the complex; this standard is met.
- *Sidewalk system shall connect all front doors to the car park* – Walkways are provided throughout the site with multiple connections to the car park.



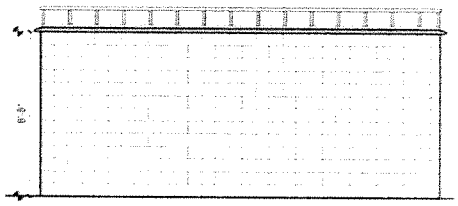
Site Circulation Plan

Site – Pedestrian Environment

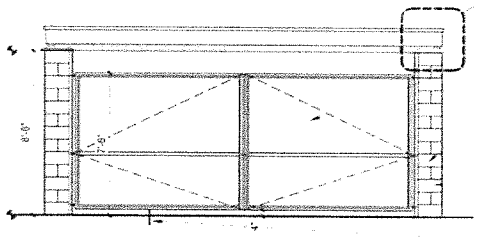
- *Residential front doors shall be setback at least 2 feet from the public sidewalk* –All residential front doors would be located more than 10 feet from the public sidewalk.
- *Primary entrance doors shall not be sliding glass, or solid metal without glazing* – Entry doors will be standard doors.
- *Residential porch height < 4 feet* – No porches are proposed.
- *Residences with entry porches: porches shall be not be less than 40 square feet* - No porches are proposed.
- *Residences shall not be < 4 feet below grade* – The new buildings will be erected at grade.

Site – Screening / Service Areas

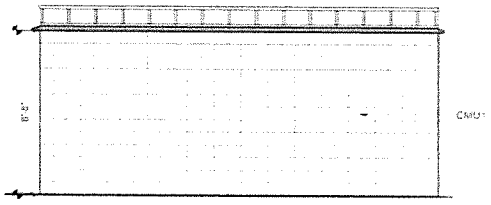
- *All mechanical equipment shall be screened* – The apartment units will have standard residential-sized appliances located inside. Additional mechanical equipment will be located in the building attics.
- *Service / refuse collection areas shall be not < 20 feet from the right-of-way* – The refuse collection areas would be located more than 50 feet from the Poplar Street right-of-way.
- *Refuse collection area to be screened from above* – The refuse collection areas would be walled and roofed structures.
- *All rooftop mechanical equipment shall be screened* – None proposed; not applicable.



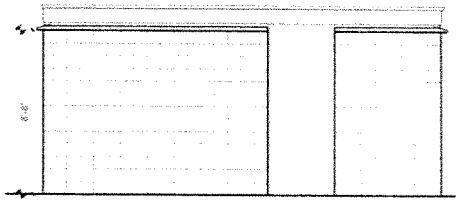
TRASH ENCLOSURE EAST ELEVATION



4 TRASH ENCLOSURE NORTH ELEVATION



TRASH ENCLOSURE WEST ELEVATION

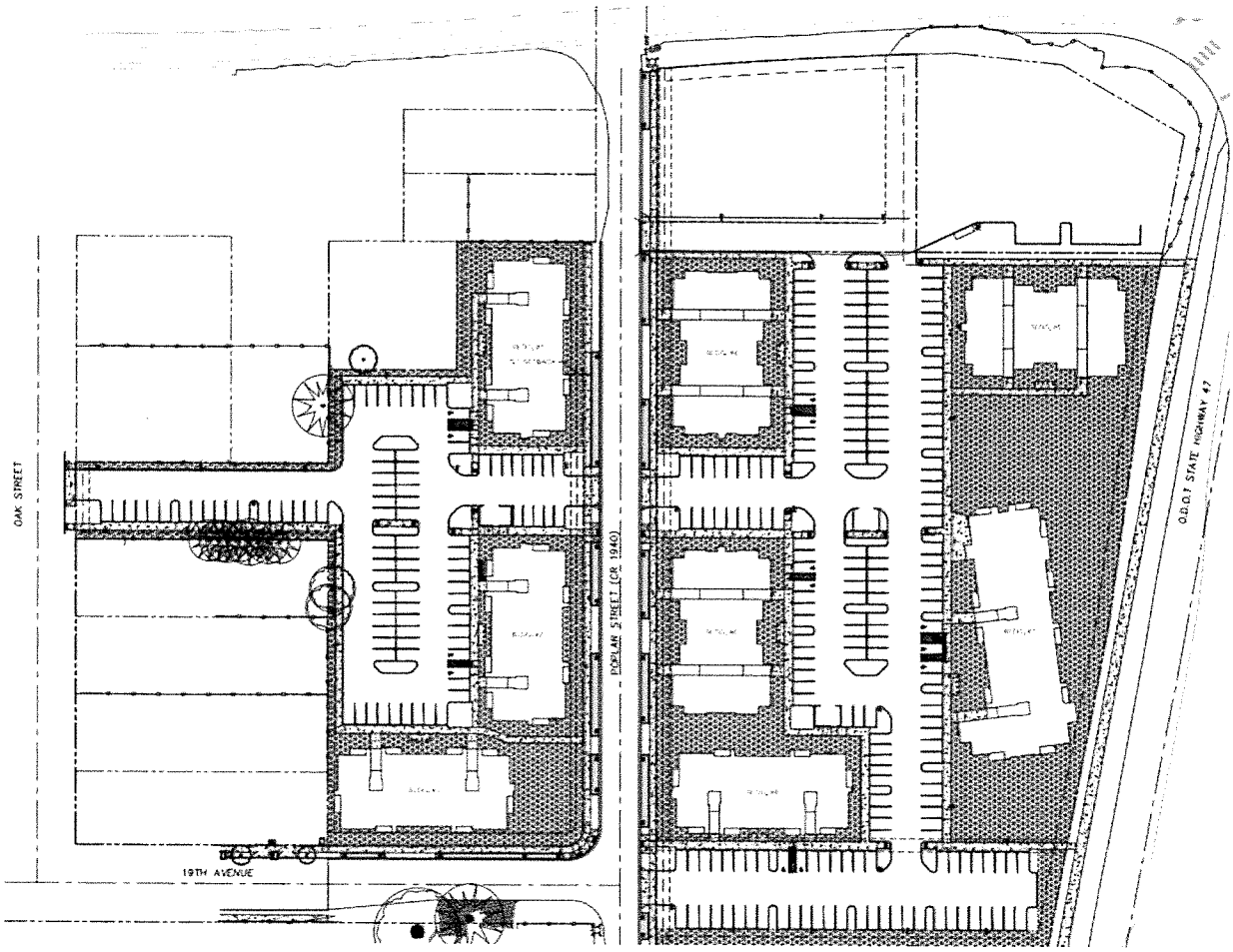


5 TRASH ENCLOSURE SOUTH ELEVATION

Site – Landscaping

At least 75% of required landscaped areas shall be planted; at most 25% of required landscaped areas shall be hardscaped – Landscaping would include deciduous trees, shrubs, groundcover, and turf. Less than 25% of the required landscape areas would be hardscaped.

- *Buffering and Screening* – The development site abuts two residential properties on the south border. To provide buffering and screening, an expanded 15-foot-wide area will be created and landscaped with a variety of large and small trees, shrubs and groundcover.



Landscaped / Open Space Areas

Site – Crime Prevention Through Environmental Design

- *Plant materials by entries shall be < 5 feet in height by the entry* - Complies. Various shrub varieties are proposed near the entries, all of which can be kept pruned to a height of five feet and less.
- *Window areas facing common spaces, paths, and parking areas shall be at least 25 square feet each* – Dimensions of the individual window units vary; multiple windows will be present in all elevations. Given the multiplicity of windows facing the common spaces, the intent of this criterion is satisfied.
- *Entries shall be lighted* – All entries would be illuminated.
- *Gated residential areas are prohibited* – None are proposed.
- *Motion-activated lighting by the street is prohibited* – None are proposed.

Site – Open Space

- *At least 25% of the lot (excluding parking areas) shall be landscaped* – The site totals 7.26 acres. Open space and landscaped areas would comprise 2.13 acres or about 29% of the gross site area, including parking areas. This standard is met.
- *Apartment complexes with six units or more shall provide 100 square feet of recreation space per unit* – No specific Development Code section includes this provision. With 196 units, 19,600 square feet of recreation space would be necessary. Each unit would have a deck or patio of 60 square feet more or less (totaling 11,760 square feet). All units would have access to the 11,495-square-foot recreation area (children's play area, sport court, pool, spa and dog park). The combined recreation space would therefore be 23,255 square feet, which would comply with this guideline.
- *Apartment complexes with 21 or more units shall have a children's play area* – One play area is proposed.
- *At least 50 square feet of private open space shall be provided per unit* – Each unit would have a patio or deck of at least 60 square feet.
- *Private open space shall be separated from common open space with landscaping, fencing, or grade changes (including balconies)* – The patios and decks would be separated from the common areas with landscaping (ground floor) or deck railings.

Building – Massing and Form

- *Building dimensions > 150 feet shall have a minimum 3-foot off-set* – The buildings all have off-sets of at least 3 feet.
- *Every two dwelling units shall be off-set from the next by at least 4 feet* – Complies.
- *All habitable rooms shall have a window facing the car park and common areas* – Windows would face both the car park and the common areas.

Building – Compatibility

- *All buildings shall have a defined entry space of at least 16 square feet* –Complies.

Building – Safety

- *Line-of-sight shall be maintained between the building entries and the sidewalk or car park* – Complies.

Building – Privacy

- *Building entries shall be at least 3 feet from sidewalks and walkways* – Complies. The distance from all entries to any sidewalk or walkway would be at least 5 feet.
- *Bedroom and bathroom windows shall be off-set at least 4 feet from windows on adjacent buildings (unless privacy glazing is used)* – None of the bathrooms would be situated to align with adjacent unit windows.

Site – Lighting

- *All unit entries and walkways shall be lighted* – All entry areas will be lit.
- *Light poles shall not exceed 18 feet in height* – This standard is required by DC §17.8.750(D) *Lighting Standards for Multi-Unit Development.*
- *Concrete bases shall not exceed 8 inches in height* – This standard is required by DC §17.8.750(D).
- *Cut-off shields shall be installed* – These are required by DC §17.8.750(D).
- *Plastic interior-lighted signs are prohibited* – None are proposed.

Signs –

- *Residential nameplates allowed* – None proposed. Site identification signs will be required at each driveway.

Summary and Conclusions: The design guidelines have been addressed by the application as follows:

1) The facades of the new buildings include building overhangs, balconies and gables, all of which will serve to provide relief and shadow patterns.
2) The buildings would be three stories in height. Building projections and recesses are incorporated.
3) Exterior building materials would include vertical and lap siding, along with trim boards.
4) Proposed window designs would be coordinated with the building's architecture and would be sufficient in number to ensure ample visibility of the common areas.

The facades of the new buildings will include architectural detailing which will serve to provide relief and shadow patterns, including varied roof lines, sheltered entries, decks, and bay window bump-outs. The buildings would use a variety of quality durable materials including Hardie-Plank and Hardie-Panel siding. The proposed architecture complies with the design guidelines and standards.

IV. ALTERNATIVES

The Planning Commission may approve as submitted, approve with conditions, continue deliberations to a date certain, or deny this request.

V. RECOMMENDATION

Based on the information provided in the application and the findings above, staff recommends approval of the application for site design and design review for the proposed Reserve at Fernhill Apartments, with the following conditions:

1. The applicant is bound to the project description and all representations made by the applicant during the application and decision-making proceeding.
2. A deed restriction shall be recorded over Lot 3 to limit its future residential density to a maximum of 11 units. This limit shall not be exceeded unless the maximum residential density permitted in the CC zoning district is increased.
3. Landscaping, above-ground utilities, and signing shall be located and maintained along the site frontage and throughout the site in a manner that preserves adequate intersection sight distance.
4. Replace the deteriorating asphalt path along the Hwy 47 frontage with a new, 8-foot-wide concrete pathway.

OPTIONAL CONDITIONS

5. Building 3 shall be shifted 5 feet to the east.
6. Install a 4-to-6-foot-tall wire fence or decorative metal panel fence along the east property line.

VI. LIST OF EXHIBITS

The following exhibits were received, marked, and entered into the record as evidence for this application at the time this staff report was written. Exhibits received after the date of this report will be marked beginning with the next consecutive letter and will be entered into the record at the time the public hearing is opened, prior to oral testimony.

Exhibit A Site Plan and Design Review Application Materials

Exhibit B Traffic Impact Analysis (w/o appendices)

Exhibit C PowerPoint

Exhibit D Development Code Conditions

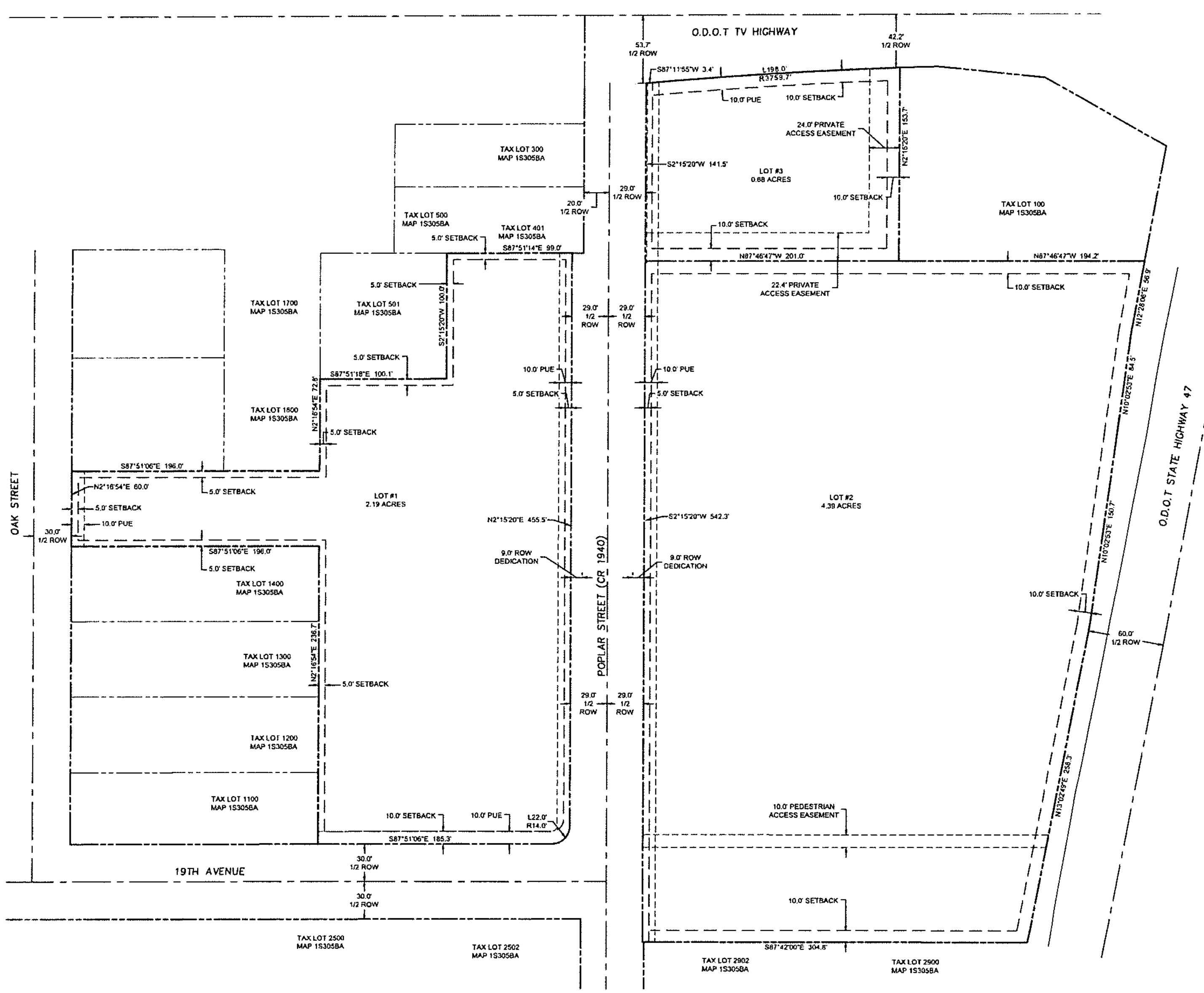
Exhibit E Engineering Department Special Conditions

Exhibit F Fire Department Conditions

Exhibit G Light and Power Department Conditions

EXHIBIT A

APPLICATION MATERIALS



LEGEND

- EXISTING PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING ROW CENTERLINE
- PROPOSED LOT LINE
- PROPOSED EASEMENT LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CENTERLINE
- PROPOSED SETBACK LINE

PRELIMINARY

REGISTERED PROFESSIONAL ENGINEER
OREGON
JESSE K. WELBORN
EXPIRES 06/30/22

PUBLISH DATE
APRIL 09, 2020
ISSUED FOR
LAND USE SET
REVISIONS

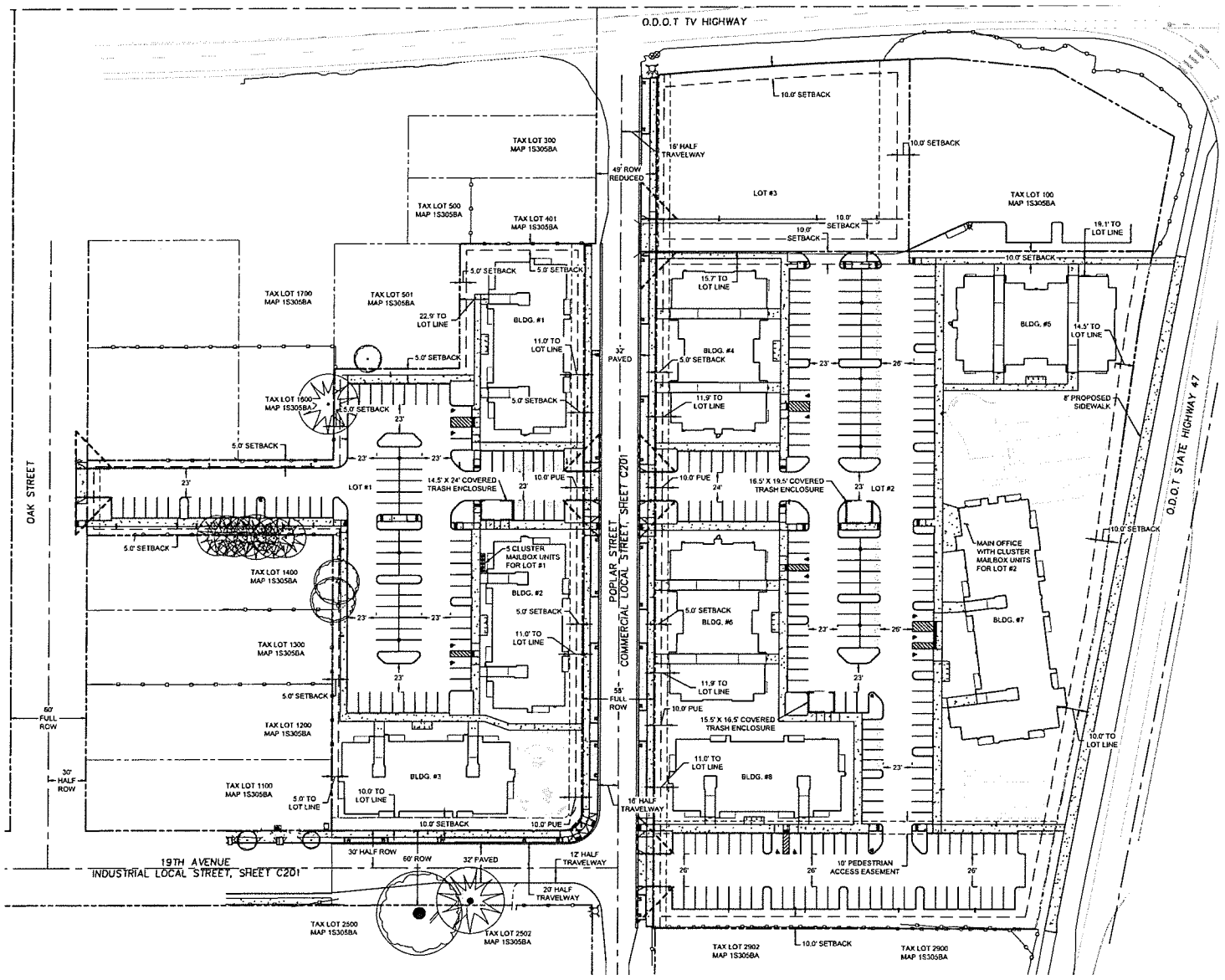
PRELIMINARY PLAT
RESERVE AT FERN HILL APARTMENTS
J.T. SMITH CO.
FOREST GROVE, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100, BEAVERTON, OR 97008

PROJECT INFORMATION
3J PROJECT # | 18564
TAX LOT(S) | 18 TAX LOTS
LAND USE # | TBD
DESIGNED BY | CRW JJS SRC JMF
CHECKED BY | AJM

SHEET NUMBER
C180

P:\18564-RESERVE AT FERN HILL\CAD\DD\18564-PRELIM PLAT.DWG



LEGEND

- EXISTING PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING ROW CENTERLINE
- EXISTING EDGE OF ASPHALT
- PROPOSED LOT LINE
- PROPOSED EASEMENT LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CENTERLINE
- PROPOSED SETBACK LINE
- PROPOSED CURB FACE
- PROPOSED CURB BACK
- PROPOSED LIP OF GUTTER
- PROPOSED CONCRETE
- PROPOSED CONCRETE SCORING
- PROPOSED BUILDING LINE
- VISION CLEARANCE TRIANGLE
- PROPOSED STRIPING
- PROPOSED BICYCLE RACKS
- PROPOSED LIGHTING
- ADA PARKING SYMBOL
- COMPACT PARKING SYMBOL

PARKING STATISTICS

PARKING TYPE	STALL COUNT	LENGTH (FT)	WIDTH (FT)	STALL ANGLE
STANDARD	250	18'	9.0'	90°
COMPACT	42	16'	8.0'	90°
ADA ACCESSIBLE	10	18'	9.0'	90°
ADA VAN ACCESSIBLE	3	18'	9.0'	90°
ON STREET PARALLEL	11	20'	8.0'	0°

PARKING STATISTICS CONT.

PRIVATE PARKING STALLS	305
PUBLIC PARKING STALLS	11
TOTAL PARKING STALLS	316
UNIT COUNT	196
PARKING RATIO	1.61

SETBACKS AND PUE

FRONT BUILDING SETBACK	5'
SIDE BUILDING SETBACK	10'
REAR BUILDING SETBACK	10'
PROPOSED ROW	60'
PROPOSED PUE	10'

BICYCLE PARKING

TOTAL STALLS	64
STALL DIMENSIONS	6' X 2'

N
W E
S

SCALE: 1" = 40'
0 40' 80' FT

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 2006
ERIC K. WELCORN
EXPIRES: 06/30/20

PRELIMINARY

PUBLISH DATE
APRIL 09, 2020
ISSUED FOR
LAND USE SET
REVISIONS

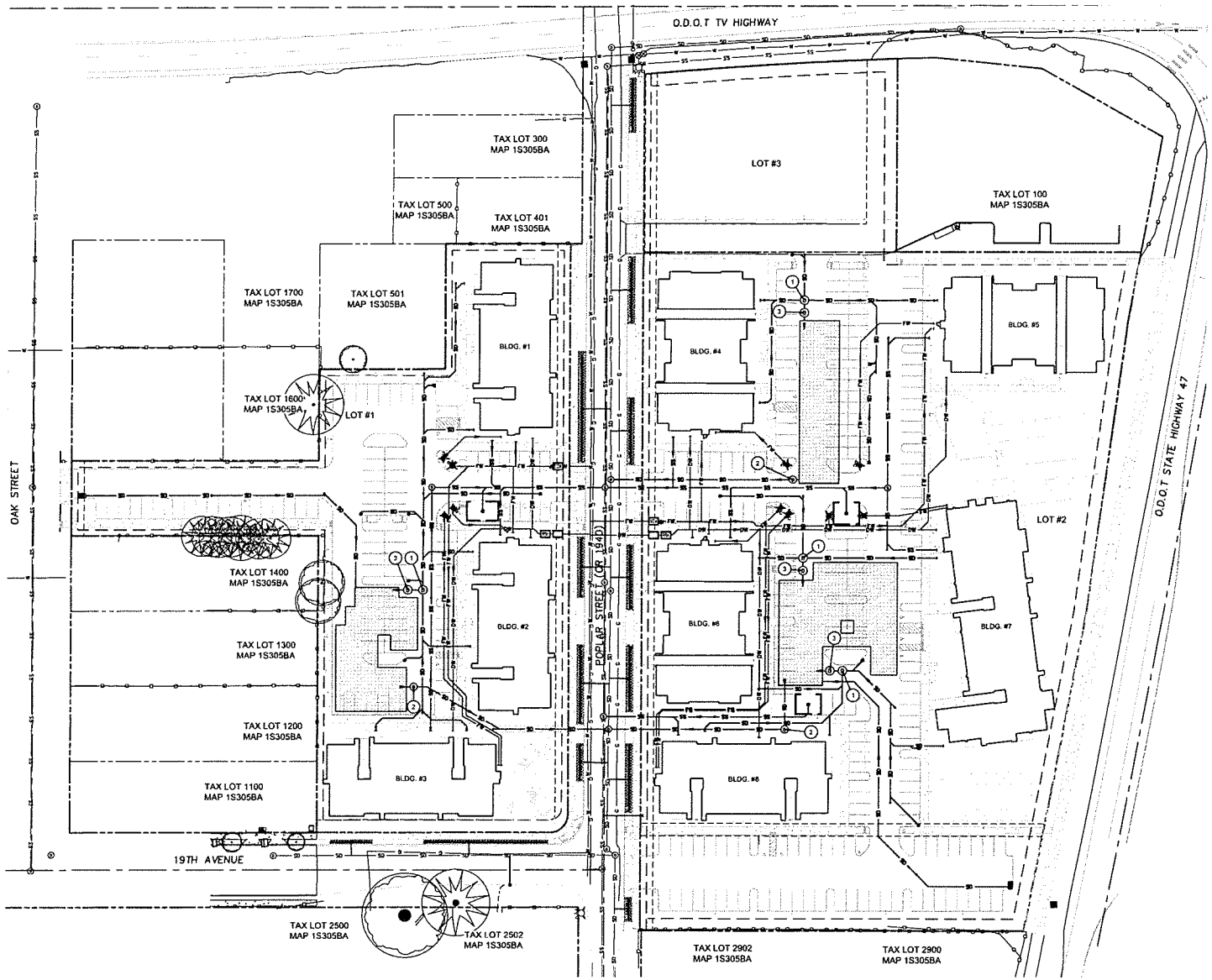
OVERALL SITE PLAN
RESERVE AT FERN HILL APARTMENTS
J.T. SMITH CO.
FOREST GROVE, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100, BEAVERTON, OR 97008

PROJECT INFORMATION
3J PROJECT # | 19564
LAND USE # | TBD
DESIGNED BY | CKW JJS SRC JMF
CHECKED BY | AJM

SHEET NUMBER
C200

P:\19564-RESERVE AT FERN HILL\CAD\DWG\19564-OVERALL STREET PLAN.DWG



LEGEND

- PROPOSED LOT LINE
- PROPOSED EASEMENT LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CENTERLINE
- PROPOSED RETAINING WALL
- PROPOSED STORM PIPE
- PROPOSED SANITARY PIPE
- PROPOSED FIRE WATER SERVICE
- PROPOSED DOMESTIC WATER SERVICE
- PROPOSED TREATMENT CATCH BASIN
- PROPOSED TRAPPED CATCH BASIN
- PIPE CAP / STUB
- PROPOSED DCDA
- PROPOSED RPBA
- PROPOSED WATER METER
- PROPOSED HYDRANT
- FIRE DPT CONNECTION
- POST INDICATOR VALVE
- PROPOSED SEWER MANHOLE
- PROPOSED SEWER CLEANOUT
- PROPOSED STORM MANHOLE
- PROPOSED STORM CLEANOUT
- PROPOSED WATER QUALITY PLANTER
- PROPOSED UNDERGROUND DETENTION

STORM DRAIN KEY NOTES

1. PROPOSED SUMPED WATER QUALITY MANHOLE
2. PROPOSED FLOW CONTROL MANHOLE
3. PROPOSED FILTERED WATER QUALITY MANHOLE

N
W E
S

SCALE: 1" = 40'
0 40' 80' FT

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 11, 2014
SEAN K. WELBORN
EXPIRES: 06/30/20
PRELIMINARY

PUBLISH DATE
APRIL 09, 2020
ISSUED FOR
LAND USE SET
REVISIONS

UTILITY PLAN
RESERVE AT FERN HILL APARTMENTS
J.T. SMITH CO
FOREST GROVE, OR

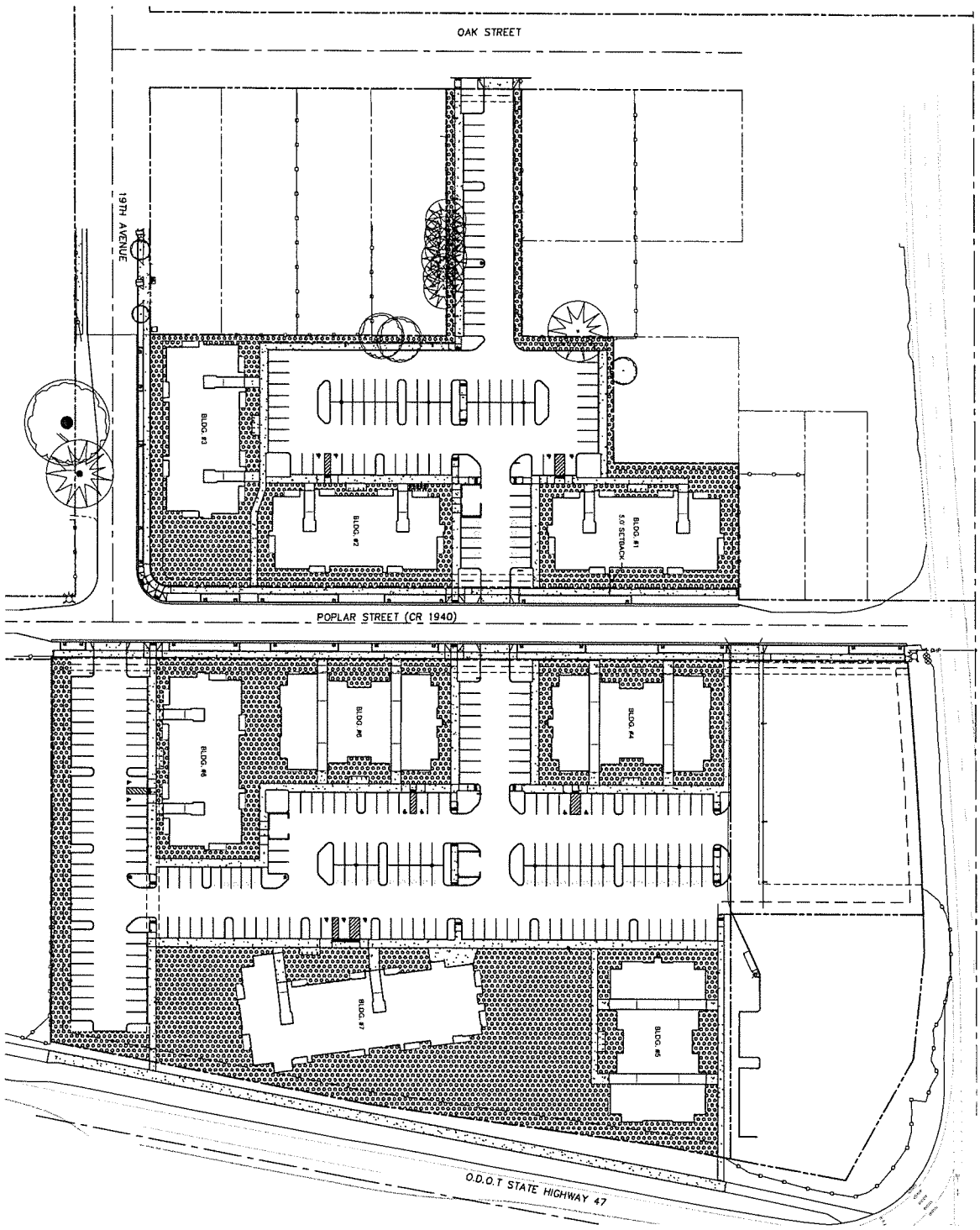
3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE. SUITE 100, BEAVERTON, OR 97008

PROJECT INFORMATION
3J PROJECT # | 19564
LAND USE # | TBD
DESIGNED BY | CRW AJS SRC JMF
CHECKED BY | AJM

SHEET NUMBER
C240

P:\19564 RESERVE AT FERN HILL\CAD\DWG\19564-UTILITY PLAN.DWG

P:\19564-RESERVE AT FERN HILL\CAD\DD\19564-OPEN SPACE.DWG



LEGEND

OPEN SPACE AREA

SITE STATISTICS	
SITE AREA	7.50 ACRES
OPEN SPACE AREA	1.83 ACRES
- OPEN SPACE PERCENTAGE	22%

SCALE: 1" = 40'

0 40' 80' FT

N

W E S

3J CONSULTING

CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING

9600 SW NIMBUS AVE., SUITE 100; BEAVERTON, OR 97008

PROJECT INFORMATION

3J PROJECT # | 19564
LANDSCAPE # | TBD
DESIGNED BY | CW/JR/SEC/MF
CHECKED BY | AJW

SHEET NUMBER

C250

OPEN SPACE PLAN

RESERVE AT FERN HILL APARTMENTS

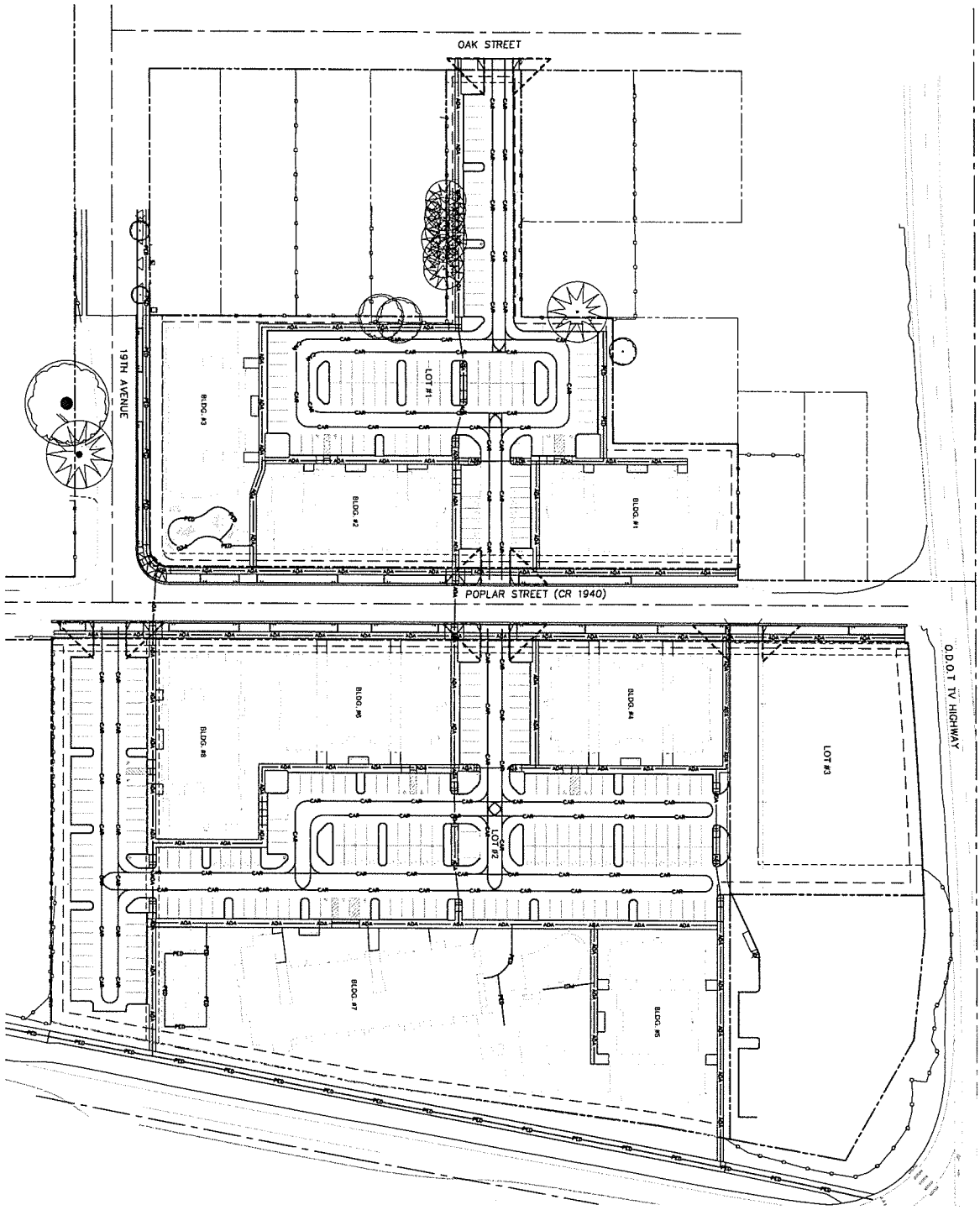
J.T. SMITH CO.
FOREST GROVE, OR

PUBLISH DATE
APRIL 09, 2020
ISSUED FOR
LAND USE SET
REVISIONS

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 11, 2014
ANDREW J. WILLIAMS
EXPIRES: 06/30/2021

PRELIMINARY

P:\19564-RESERVE AT FERN HILL\CAD\DWG\19564-CIRCULATION PLAN.DWG



LEGEND

- PED — PEDESTRIAN PATHWAY
- ADA — ADA PATHWAY
- CAR — VEHICLE PATHWAY
- VISION CLEARANCE TRIANGLE

SCALE: 1" = 40'

0 40' 80' FT

W S N E

SHEET NUMBER
C280

PROJECT INFORMATION
3J PROJECT # 19564
LANDSCAPE # TBD
DESIGNED BY | CAM AS SEC AMP
CHECKED BY | AMP

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100, BEAVERTON, OR 97008

SITE CIRCULATION PLAN

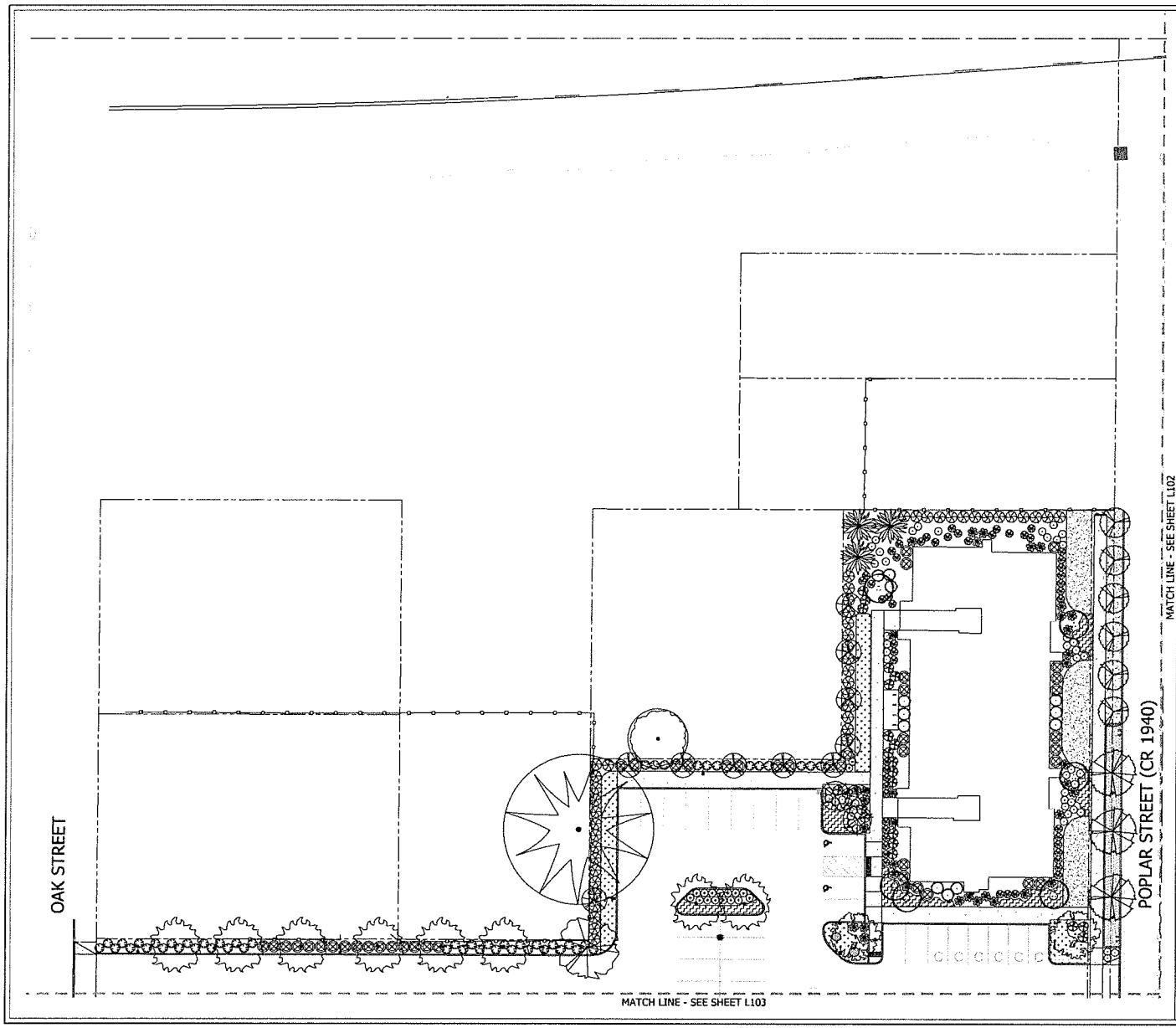
RESERVE AT FERN HILL APARTMENTS

J.T. SMITH CO.
FOREST GROVE, OR

PUBLISH DATE
APRIL 09, 2020
ISSUED FOR
LAND USE SET
REVISIONS

REGISTERED PROFESSIONAL ENGINEER
OREGON
MARK E. WILSON
EXPIRES: 06/30/20

PRELIMINARY



PLANT MATERIALS LISTING:

Botanical name
Common Name

SYM	TREES (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Acer circinatum Vine Maple (D)	21	5-6'	B&B	Multi-stem Collected
	Acer palmatum 'Sango Kaku' Coral Bark Maple (D)	3	6-7'	B&B	Landscape
		4	6-7'	B&B	Parking Lot
	Acer 'Armstrong' Armstrong Maple (D)	26	1.5" Cal.	B&B	Street Tree
	Fagus sylvatica 'Tricolor' Tricolor European Beech (D)	6	1.5" Cal.	B&B	Screening
		28	1.5" Cal.	B&B	Parking Lot
	Chamaecyparis obtusa 'Gracilis' Gracilis Hinoki Cypress (E)	20	6-7'	B&B	Landscape
	Betula nigra 'Heritage' Heritage Birch (D)	25	1.5" Cal.	B&B	Street Tree
	x Cupressocyparis leylandi 'Naylor's Blue' Naylor's Blue Cypress (E)	26	6-7'	B&B	Landscape
	Cercidiphyllum japonicum Katsura (D)	26	1.5" Cal.	B&B	Parking Lot
	Carpinus betulus 'Franz Fontaine' Franz Fontaine Columnar Hornbeam (D)	31	1.5" Cal.	B&B	Screening
		8	1.5" Cal.	B&B	Parking Lot
	Thuja (standish x plicata) 'Green Giant' Green Giant Arborvitae (E)	5	6-7'	B&B	Screening
	Zelkova serrata 'Village Green' Village Green Zelkova (D)	10	1.5" Cal.	B&B	Screening/ landscape
		5	1.5" Cal.	B&B	Parking Lot
	Styrax japonica Japanese Snowbell (D)	24	1.5" Cal.	B&B	Landscape
	Total Trees	268			

SYM	SHRUBS (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Berberis thunbergii 'Crimson Pygmy' Crimson Pygmy Barberry (D)	107	1 Gal	Can	
	Choisya ternata 'Sundance' Sundance Mexican Orange (E)	237	3 Gal	Can	
	Ilex glabra 'Compacta' Compact Inkberry (E)	178	3 Gal	Can	
	Cornus sericea 'Kelseyi' Kelseyi Dwarf Redtwig Dogwood (D)	396	1 Gal	Can	
	Euonymus japonicus 'Aureovariegatus' Gold Spot Euonymus (E)	107	5 Gal	Can	
	Hemerocallis 'Stella d'oro' Stella d'oro Daylily (D)	63	1 gal	Can	
	Hydrangea paniculata 'Littlelime' Littlelime Hydrangea (D)	169	2 Gal	Can	
	Prunus 'Otto Luken' Ottoluken Laurel (E)	190	18-24"	B&B	Free of disease
	Polystichum munitum Sword Fern (E)	4	1 Gal	Can	
	Euonymus alata 'Compactus' Compact Winged Euonymus (D)	39	5 Gal	Can	
	Rhododendron 'PJM Elite' PJM Elite Rhododendron (E)	18	18-24"	Can	
	Rosa 'Pink Supreme Carpet' Pink Supreme Carpet Rose (D)	82	1 Gal	Can	
	Sarrocacca confusa Fragrant Box (E)	240	2 Gal	Can	
	Viburnum tinus 'Robustum' Roundleaf Laurustinus (E)	253	5 Gal	Can	
	Total Shrubs	2,083			

SYM	GROUND COVER (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Rubus calycinoides 'Emerald Carpet' Creeping Raspberry (E)	2,565	4"	Pots	24" O.C.
	Polystichum munitum Sword Fern (E)	1,420	1 gal	Can	24" O.C.
	Water Quality Planters (3,686 SF)				
	Juncus patens 40%	1,696	.5 Gal.	Can	12" O.C.
	Carex obnupta 40%	1,695	.5 Gal.	Can	12" O.C.
	Cornus kelseyi 20%	848	.5 Gal.	Can	12" O.C.
	Lawn (seed)	25,620 SF			
	3/4" minus crushed rock pathway - 3" depth minimum	850 SF			
	Clean Wood Chips 6" minimum depth	1,120 SF			

SCALE: 1" = 20'-0"

20' 10' 0' 20' 40'

MEARS DESIGN GROUP
LANDSCAPE ARCHITECTURE & PLANNING
PO Box 23338 | Tigard, Oregon | 97281
Phone: 503.901.4516 | Fax: 503.924.4068

REGISTERED LANDSCAPE ARCHITECT
OREGON
TIMOTHY J. MEARS
2003
NOT FOR CONSTRUCTION

RESERVE AT FERN HILL MULTIFAMILY

LANDSCAPE PLAN

J.T. SMITH COMPANIES
FOREST GROVE, OREGON

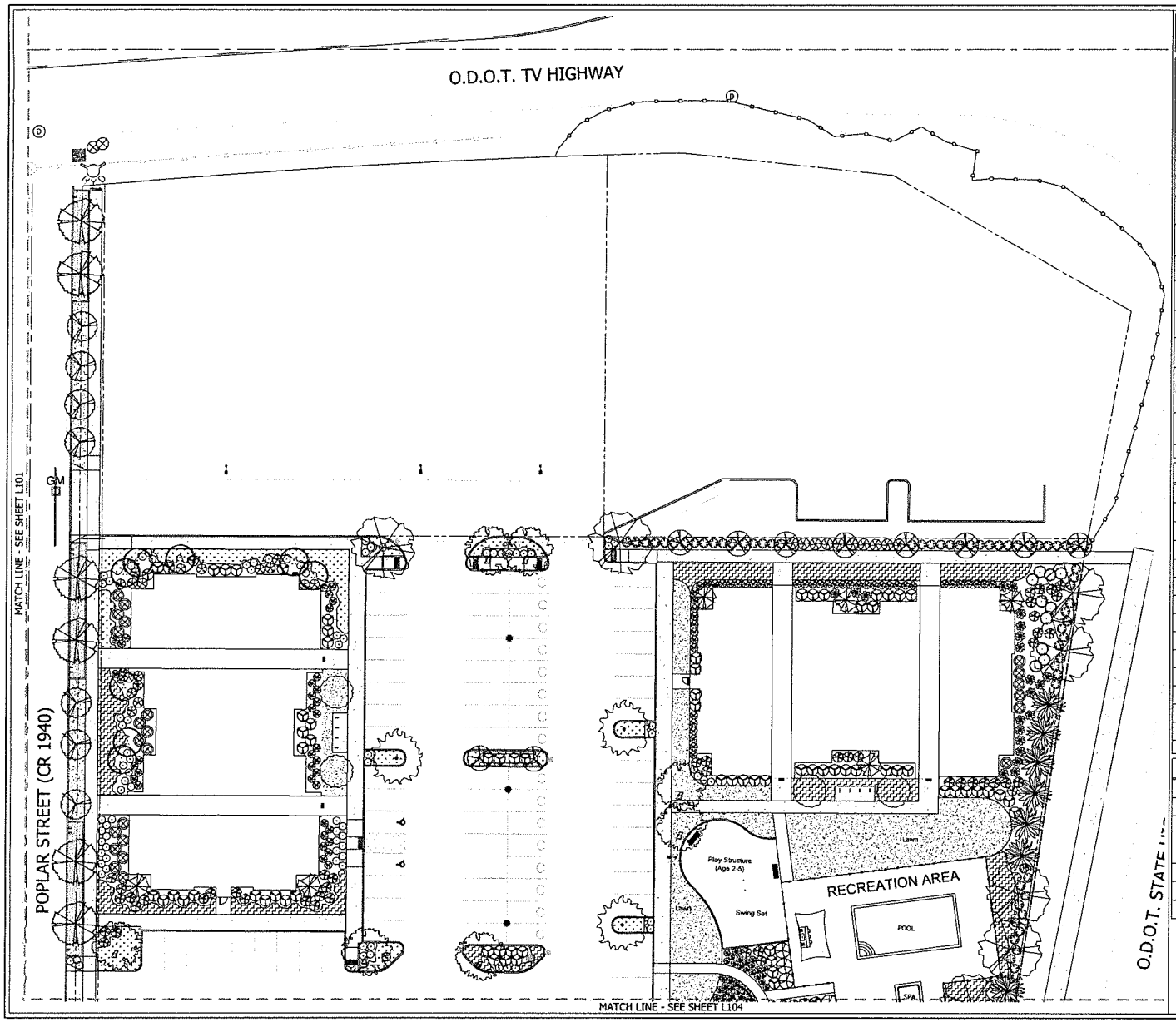
REVISIONS

REV.	DATE	DESCRIPTION
	4/2020	Design Changes

SHEET NAME:
PLANTING PLAN

DRAWN BY:	CL
CHECKED BY:	TM
ISSUE DATE:	1.28.2020
JOB NO:	1901

SHEET:
L101
of 6



PLANT MATERIALS LISTING:

Botanical name
Common Name

SYM	TREES (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Acer circinatum Vine Maple (D)	21	5-6'	B&B	Multi-stem Collected
	Acer palmatum 'Sango Kaku' Coral Bark Maple (D)	3	6-7'	B&B	Landscape
		4	6-7'	B&B	Parking Lot
	Acer 'Armstrong' Armstrong Maple (D)	26	1.5" Cal.	B&B	Street Tree
	Fagus sylvatica 'Tricolor' Tricolor European Beech (D)	6	1.5" Cal.	B&B	Screening
		28	1.5" Cal.	B&B	Parking Lot
	Chamaecyparis obtusa 'Gracilis' Gracilis Hinoki Cypress (E)	20	6-7'	B&B	Landscape
	Betula nigra 'Heritage' Heritage Birch (D)	25	1.5" Cal.	B&B	Street Tree
	x Cupressocyparis leylandii 'Naylor's Blue' Naylor's Blue Cypress (E)	26	6-7'	B&B	Landscape
	Cercidiphyllum japonicum Katsura (D)	26	1.5" Cal.	B&B	Parking Lot
	Carpinus betulus 'Franz Fontaine' Franz Fontaine Columnar Hornbeam (D)	31	1.5" Cal.	B&B	Screening
		8	1.5" Cal.	B&B	Parking Lot
	Thuja (standish x plicata) 'Green Giant' Green Giant Arborvitae (E)	5	6-7'	B&B	Screening
	Zelkova serrata 'Village Green' Village Green Zelkova (D)	10	1.5" Cal.	B&B	Screening/ landscape
		5	1.5" Cal.	B&B	Parking Lot
	Styrax japonica Japanese Snowbell (D)	24	1.5" Cal.	B&B	Landscape
	Total Trees	268			

SYM	SHRUBS (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Berberis thunbergii 'Crimson Pygmy' Crimson Pygmy Barberry (D)	107	1 Gal	Can	
	Choisya ternata 'Sundance' Sundance Mexican Orange (E)	237	3 Gal	Can	
	Ilex glabra 'Compacta' Compact Inkberry (E)	178	3 Gal	Can	
	Cornus sericea 'Kelseyi' Kelseyi Dwarf Redtwig Dogwood (D)	396	1 Gal	Can	
	Euonymus japonicus 'Aureovariegatus' Gold Spot Euonymus (E)	107	5 Gal	Can	
	Hemerocallis 'Stella d'oro' Stella d'oro Daylily (D)	63	1 gal	Can	
	Hydrangea paniculata 'Littleline' Littleline Hydrangea (D)	169	2 Gal	Can	
	Prunus 'Otto Luken' Ottoluken Laurel (E)	190	18-24"	B&B	Free of disease
	Polystichum munitum Sword Fern (E)	4	1 Gal	Can	
	Euonymus alata 'Compactus' Compact Winged Euonymus (D)	39	5 Gal	Can	
	Rhododendron 'PJM Elite' PJM Elite Rhododendron (E)	18	18-24"	Can	
	Rosa 'Pink Supreme Carpet' Pink Supreme Carpet Rose (D)	82	1 Gal	Can	
	Sarcococca confusa Fragrant Box (E)	240	2 Gal	Can	
	Viburnum tinus 'Robustum' Roundleaf Laurustinus (E)	253	5 Gal	Can	
	Total Shrubs	2,083			

SYM	GROUND COVER (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Rubus calycinoides 'Emerald Carpet' Creeping Raspberry (E)	2,565	4"	Pots	24" O.C.
	Polystichum munitum Sword Fern (E)	1,420	1 gal	Can	24" O.C.
	Water Quality Planters (3,686 SF)				
	Juncus patens 40%	1,696	.5 Gal.	Can	12" O.C.
	Carex obnupta 40%	1,695	.5 Gal.	Can	12" O.C.
	Cornus kelseyi 20%	848	.5 Gal.	Can	12" O.C.
	Lawns (seed)	25,620 SF			
	3/4" minus crushed rock pathway - 3" depth minimum	850 SF			
	Clean Wood Chips 6" minimum depth	1,120 SF			

SCALE: 1" = 20'-0"

20' 10' 0' 20' 40'

MEARS DESIGN GROUP
LANDSCAPE ARCHITECTURE & PLANNING
PO Box 23330 | Portland, Oregon | 97281
Phone: 503.901.4516 | Fax: 503.924.4688

REGISTERED LANDSCAPE ARCHITECT
OREGON
JULY 9, 2001
TIMOTHY J. MEARS
RENEWAL: 12/31/2020

RESERVE AT FERN HILL MULTIFAMILY

LANDSCAPE PLAN

J.T. SMITH COMPANIES
FOREST GROVE, OREGON

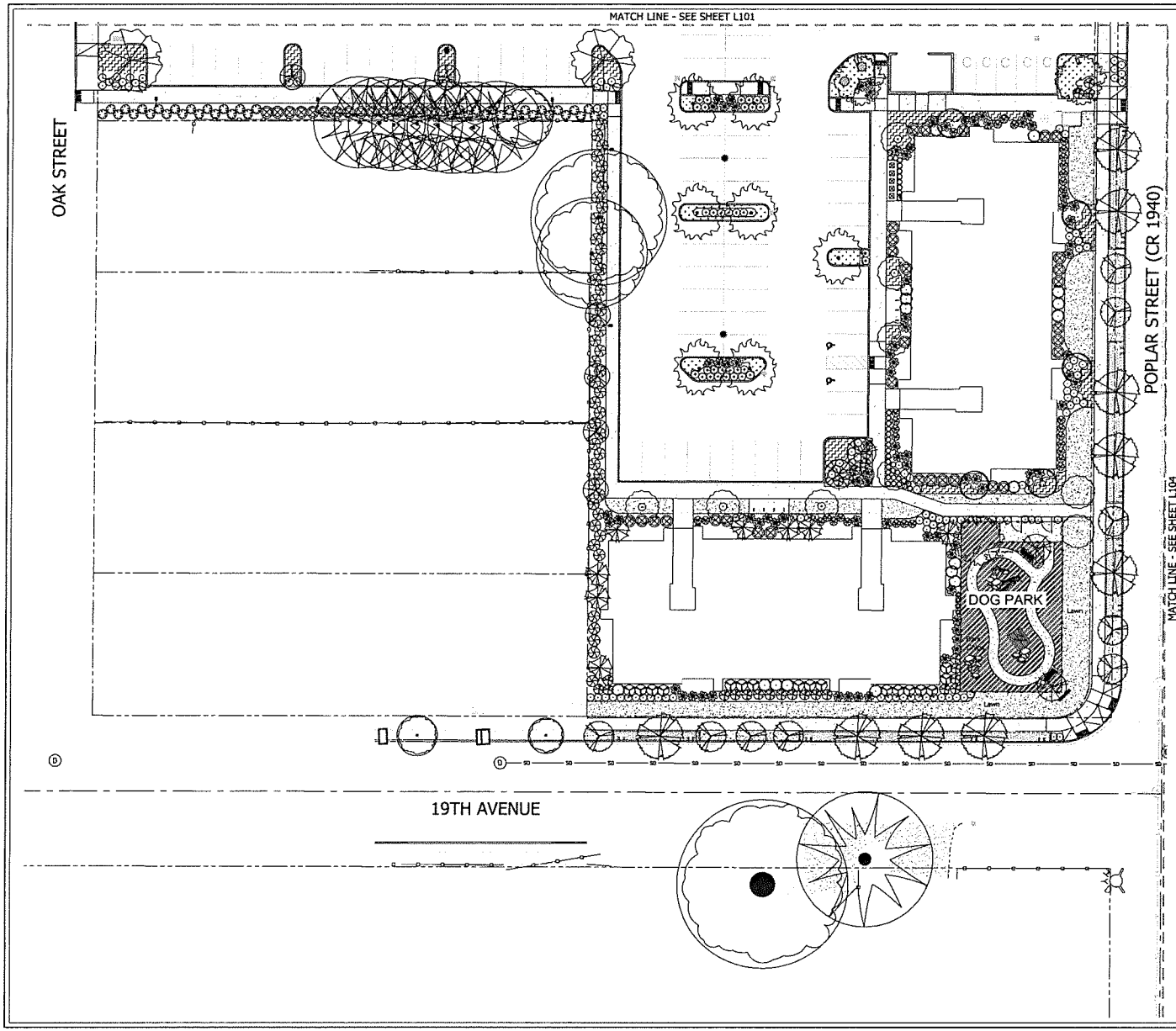
REVISIONS

REV	DATE	DESCRIPTION
	4/6/2020	Design Changes

SHEET NAME: PLANTING PLAN

DRAWN BY: CL
CHECKED BY: TM
ISSUE DATE: 12/6/2020
JOB NO.: 2061

SHEET: L102
OF 6



PLANT MATERIALS LISTING:

Botanical name
Common Name

SYM	TREES (D)eciduous/(E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Acer circinatum Vine Maple (D)	21	5-6'	B&B	Multi-stem Collected
	Acer palmatum 'Sango Kaku' Coral Bark Maple (D)	3	6-7'	B&B	Landscape
		4	6-7'	B&B	Parking Lot
	Acer 'Armstrong' Armstrong Maple (D)	26	1.5" Cal.	B&B	Street Tree
	Fagus sylvatica 'Tricolor' Tricolor European Beech	6	1.5" Cal.	B&B	Screening
	(D)	28	1.5" Cal.	B&B	Parking Lot
	Chamaecyparis obtusa 'Gracilis' Gracilis Hinoki Cypress (E)	20	6-7'	B&B	Landscape
	Betula nigra 'Heritage' Heritage Birch (D)	25	1.5" Cal.	B&B	Street Tree
	x Cupressocyparis leylandii Naylor's Blue' Naylor's Blue Cypress (E)	26	6-7'	B&B	Landscape
	Cercidiphyllum Japonicum Katsura (D)	26	1.5" Cal.	B&B	Parking Lot
	Carpinus betulus 'Franz Fontaine' Franz Fontaine Columnar Hornbeam	31	1.5" Cal.	B&B	Screening
	(D)	8	1.5" Cal.	B&B	Parking Lot
	Thuja (standish x plicata) 'Green Giant' Green Giant Arborvitae (E)	5	6-7'	B&B	Screening
	Zelkova serrata 'Village Green' Village Green Zelkova	10	1.5" Cal.	B&B	Screening/ landscape
	(D)	5	1.5" Cal.	B&B	Parking Lot
	Styrax japonica Japanese Snowbell (D)	24	1.5" Cal.	B&B	Landscape
	Total Trees	268			

SYM	SHRUBS (D)eciduous/(E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Berberis thunbergii 'Crimson Pygmy' Crimson Pygmy Barberry (D)	107	1 Gal	Can	
	Choisya ternata 'Sundance' Sundance Mexican Orange (E)	237	3 Gal	Can	
	Ilex glabra 'Compacta' Compact Inkberry (E)	178	3 Gal	Can	
	Cornus sericea 'Kelseyi' Kelseyi Dwarf Redtwig Dogwood (D)	396	1 Gal	Can	
	Euonymus japonicus 'Aureovariegatus' Gold Spot Euonymus (E)	107	5 Gal	Can	
	Hemerocallis 'Stella d'oro' Stella d'oro Daylily (D)	63	1 gal	Can	
	Hydrangea paniculata 'Littleline' Littleline Hydrangea (D)	169	2 Gal	Can	
	Prunus 'Otto Luken' Ottoluken Laurel (E)	190	18-24"	B&B	Free of disease
	Polystichum munitum Sword Fern (E)	4	1 Gal	Can	
	Euonymus alata 'Compactus' Compact Winged Euonymus (D)	39	5 Gal	Can	
	Rhododendron 'PJM Elite' PJM Elite Rhododendron (E)	18	18-24"	Can	
	Rosa 'Pink Supreme Carpet' Pink Supreme Carpet Rose (D)	82	1 Gal	Can	
	Sarcococca confusa Fragrant Box (E)	240	2 Gal	Can	
	Viburnum tinus 'Robustum' Roundleaf Laurustinus (E)	253	5 Gal	Can	
	Total Shrubs	2,083			

SYM	GROUND COVER (D)eciduous/(E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Rubus calycinoides 'Emerald Carpet' Creeping Raspberry (E)	2,565	4"	Pots	24" O.C.
	Polystichum munitum Sword Fern (E)	1,420	1 gal	Can	24" O.C.
	Water Quality Planters (3,686 SF)				
	Juncus patens 40%	1,696	.5 Gal.	Can	12" O.C.
	Carex obnupta 40%	1,695	.5 Gal.	Can	12" O.C.
	Cornus kelseyi 20%	848	.5 Gal.	Can	12" O.C.
	Lawn (seed)	25,620 SF			
	3/4" minus crushed rock pathway - 3" depth minimum	650 SF			
	Clean Wood Chips 6" minimum depth	1,120 SF			

SCALE: 1" = 20'-0"

20' 10' 0' 20' 40'

MEARS DESIGN GROUP
LANDSCAPE ARCHITECTURE & PLANNING
PO Box 23338 | Portland, Oregon | 97281
Phone: 503.861.4516 | Fax: 503.924.4688

REGISTERED LANDSCAPE ARCHITECT
OREGON
JULY 9, 2003
PRELIMINARY NOT FOR CONSTRUCTION

RESERVE AT FERN HILL MULTIFAMILY

LANDSCAPE PLAN

J.T. SMITH COMPANIES
FOREST GROVE, OREGON

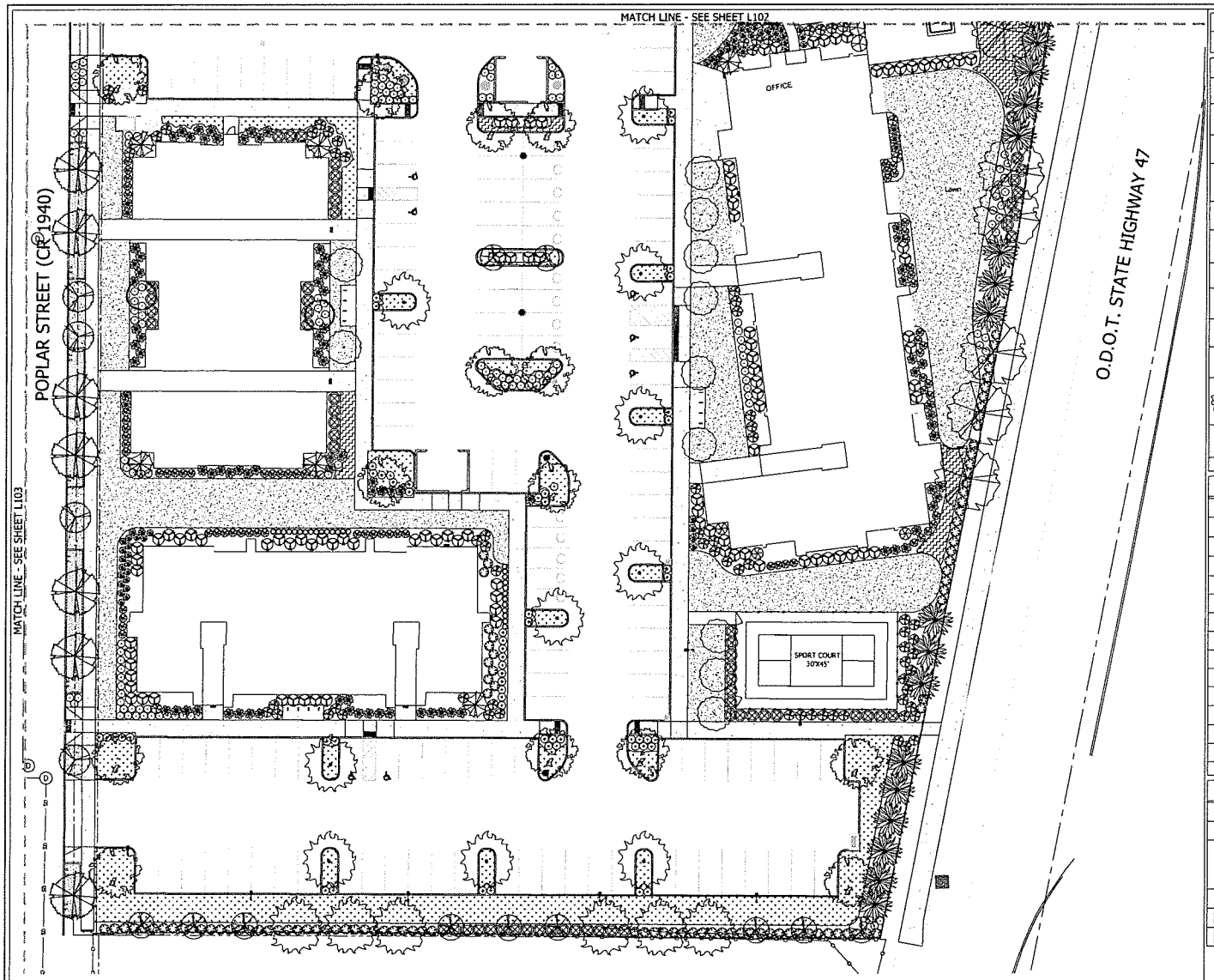
REVISIONS

REV	DATE	DESCRIPTION
	10/2005	Design Changes

SHEET NAME: PLANTING PLAN

DRAWN BY: CL
CHECKED BY: TM
ISSUE DATE: 1/28/2005
JOB NO.: 2051

SHEET: L103
OF 6



PLANT MATERIALS LISTING:

Botanical name
Common Name

SYM	TREES (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Acer circinatum Vine Maple (D)	21	5-6'	B&B	Multi-stem Collected
	Acer palmatum 'Sango Kaku' Coral Bark Maple (D)	3	6-7'	B&B	Landscape
		4	6-7'	B&B	Parking Lot
	Acer 'Armstrong' Armstrong Maple (D)	26	1.5" Cal.	B&B	Street Tree
	Fagus sylvatica 'Tricolor' Tricolor European Beech (D)	6	1.5" Cal.	B&B	Screening
		28	1.5" Cal.	B&B	Parking Lot
	Chamaecyparis obtusa 'Gracilis' Gracilis Hinoki Cypress (E)	20	6-7'	B&B	Landscape
	Betula nigra 'Heritage' Heritage Birch (D)	25	1.5" Cal.	B&B	Street Tree
	x Cupressocyparis leylandi 'Naylor's Blue' Naylor's Blue Cypress (E)	26	6-7'	B&B	Landscape
	Cercidiphyllum japonicum Katsura (D)	26	1.5" Cal.	B&B	Parking Lot
	Carpinus betulus 'Franz Fontaine' Franz Fontaine Columnar Hornbeam (D)	31	1.5" Cal.	B&B	Screening
		8	1.5" Cal.	B&B	Parking Lot
	Thuja (standish x plicata) 'Green Giant' Green Giant Arborvitae (E)	5	6-7'	B&B	Screening
	Zelkova serrata 'Village Green' Village Green Zelkova (D)	10	1.5" Cal.	B&B	Screening/ landscape
		5	1.5" Cal.	B&B	Parking Lot
	Styrax japonica Japanese Snowbell (D)	24	1.5" Cal.	B&B	Landscape
	Total Trees	268			

SYM	SHRUBS (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Berberis thunbergii 'Crimson Pygmy' Crimson Pygmy Barberry (D)	107	1 Gal	Can	
	Choisya ternata 'Sundance' Sundance Mexican Orange (E)	237	3 Gal	Can	
	Ilex glabra 'Compacta' Compact Inkberry (E)	178	3 Gal	Can	
	Cornus sericea 'Kelseyi' Kelseyi Dwarf Redtwig Dogwood (D)	396	1 Gal	Can	
	Euonymus japonicus 'Aureovariegatus' Gold Spot Euonymus (E)	107	5 Gal	Can	
	Hemerocallis 'Stella d'oro' Stella d'oro Daylily (D)	63	1 gal	Can	
	Hydrangea paniculata 'Littleime' Littleime Hydrangea (D)	169	2 Gal	Can	
	Prunus 'Otto Luken' Ottoluken Laurel (E)	190	18-24"	B&B	Free of disease
	Polystichum munitum Sword Fern (E)	4	1 Gal	Can	
	Euonymus alata 'Compactus' Compact Winged Euonymus (D)	39	5 Gal	Can	
	Rhododendron 'PJM Elite' PJM Elite Rhododendron (E)	18	18-24"	Can	
	Rosa 'Pink Supreme Carpet' Pink Supreme Carpet Rose (D)	62	1 Gal	Can	
	Sarcococca confusa Fragrant Box (E)	240	2 Gal	Can	
	Viburnum tinus 'Robustum' Roundleaf Laurustinus (E)	253	5 Gal	Can	
	Total Shrubs	2,083			

SYM	GROUND COVER (D)eciduous/ (E)vergreen	QTY.	SIZE	CONDITION	REMARKS
	Rubus calycinoides 'Emerald Carpet' Creeping Raspberry (E)	2,565	4"	Pots	24" O.C.
	Polystichum munitum Sword Fern (E)	1,420	1 gal	Can	24" O.C.
	Water Quality Planters (3,686 SF)				
	Juncus patens 40%	1,696	.5 Gal.	Can	12" O.C.
	Carex obnupta 40%	1,695	.5 Gal.	Can	12" O.C.
	Cornus kelseyi 20%	848	.5 Gal.	Can	12" O.C.
	Lawn (seed)	25,620 SF			
	3/4" minus crushed rock pathway - 3" depth minimum	850 SF			
	Clean Wood Chips 6" minimum depth	1,120 SF			

SCALE: 1" = 20'-0"
20' 10' 0' 20' 40'

MEARS DESIGN GROUP
LANDSCAPE, ARCHITECTURE & PLANNING
PO Box 23338 | Portland, Oregon | 97281
Phone: 503.601.4516 | Fax: 503.924.4688

REGISTERED LANDSCAPE ARCHITECT
OREGON
JULY 9, 2003
CHRISTOPHER D. MEARS
EXPIRES: 12/31/2020

PRELIMINARY NOT FOR CONSTRUCTION

RESERVE AT FERN HILL MULTIFAMILY

LANDSCAPE PLAN

J.T. SMITH COMPANIES
FOREST GROVE, OREGON

REVISIONS

REV.	DATE	DESCRIPTION
	4/6/2020	Design Changes

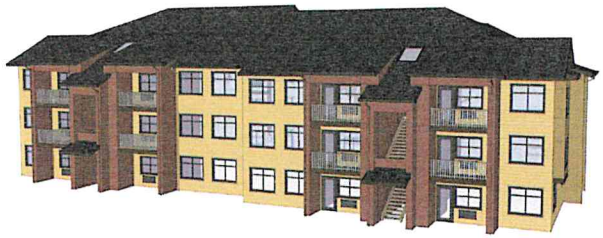
SHEET NAME: PLANTING PLAN

DRAWN BY: CL
CHECKED BY: TM
ISSUE DATE: 1/08/2020
JOB NO.: 2001

SHEET: L104
OF 6

MULTI-FAMILY HOUSING: CONCEPT A2

ELEVATIONS & PERSPECTIVE



MAIN PERSPECTIVE

BACK ELEVATION

TYPICAL END ELEVATION

ENTRY ELEVATION

0 5 10 20 50ft

Scale: 1" = 20'-0" (11x17)

PLOT/ISSUE DATE
04-08-2020

DESCRIPTION
LAND USE SET

REVISIONS

J.E. SMITH

RESERVE AT FERN HILL APARTMENTS
J.T. SMITH CO.
FOREST GROVE, OR

LRS ARCHITECTS

3J CONSULTING

PROJECT INFORMATION
PROJECT # 2020ST (LRS)
LAND USE # TBD
DESIGNED BY DH
CHECKED BY JW

SHEET NUMBER
A - 2.1

MULTI-FAMILY HOUSING: CONCEPT A3

ELEVATIONS & PERSPECTIVE

MAIN PERSPECTIVE

BACK ELEVATION

TYPICAL END ELEVATION

ENTRY ELEVATION

0 5 10 20 50ft

Scale: 1" = 20'-0" (11x17)

PUBLISH DATE
04-08-2020

ISSUED FOR
LAND USE SET

REVISIONS

J.T. SMITH COMPANIES

RESERVE AT FERN HILL APARTMENTS

J.T. SMITH CO.
FOREST GROVE, OR

LRS ARCHITECTS

3J CONSULTING

PROJECT INFORMATION
PROJECT # | 220057 (LRS)
LAND USE # | TBD
DESIGNED BY | DH
DRAWN BY | JW

SHEET NUMBER
A - 3.1

MULTI-FAMILY HOUSING: CONCEPT A4

ELEVATIONS & PERSPECTIVE

MAIN PERSPECTIVE

BACK ELEVATION

TYPICAL END ELEVATION

ENTRY ELEVATION

0 5 10 20 50ft

Scale: 1" = 20'-0" (11x17)

PUBLISH DATE
04-08-2020

ISSUED FOR
LAND USE SET

REVISIONS

J.T. SMITH COMPANIES

RESERVE AT FERN HILL APARTMENTS
J.T. SMITH CO.
FOREST GROVE, OR

LRS ARCHITECTS

3J CONSULTING

PROJECT INFORMATION
PROJECT #: 220067 (LRS)
LAND USE #: TBD
DESIGNED BY: EN
DRAWN BY: EW
CHECKED BY: EW

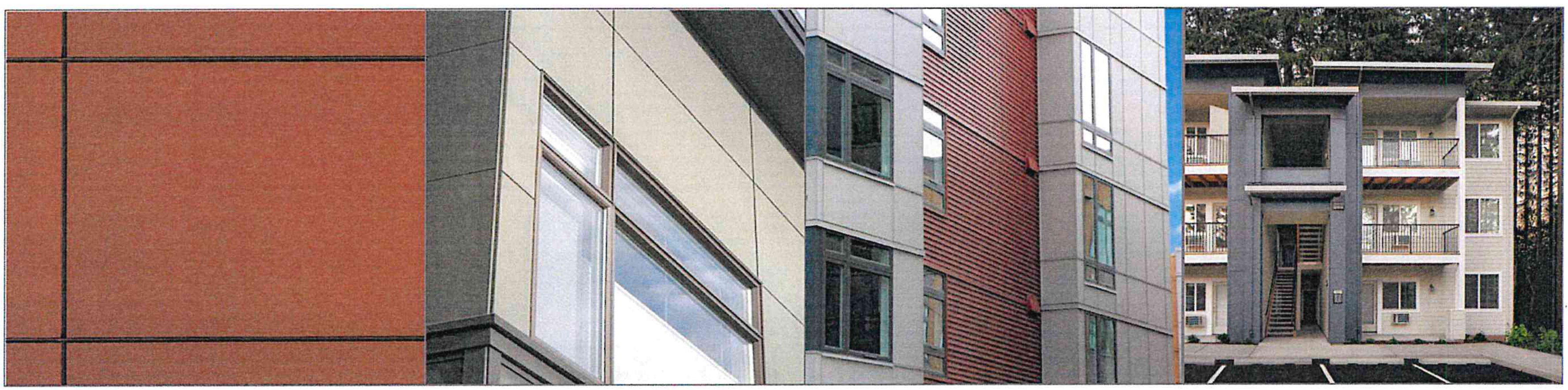
SHEET NUMBER
A - 1.1

MATERIALS BOARD

MAIN MATERIALS AND PRECEDENTS

*NOTE: FINAL COLORS TO BE DETERMINED

LAP SIDING



CEMENTITIOUS PANEL

PUBLISH DATE
04-08-2020
ISSUED FOR
LAND USE SET
REVISIONS

J.T. SMITH COMPANIES

RESERVE AT FERN HILL APARTMENTS
J.T. SMITH CO.
FOREST GROVE, OR

LRS ARCHITECTS

3J CONSULTING

PROJECT INFORMATION

SHEET NUMBER
A - 4

EXHIBIT B

TRAFFIC IMPACT ANALYSIS

(Without Appendices)

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
503.228.5230 503.273.8169

MEMORANDUM

Date:	February 11, 2020	Project #: 24462.0
To:	James Reitz, City of Forest Grove Avi Tayar, P.E., Oregon Department of Transportation	
From:	Matthew Bell, Ali Razmpa, and Chris Brehmer, P.E., Kittelson & Associates, Inc.	
Project:	The Reserve at Fernhill Development	
Subject:	Traffic Impact Analysis	

INTRODUCTION

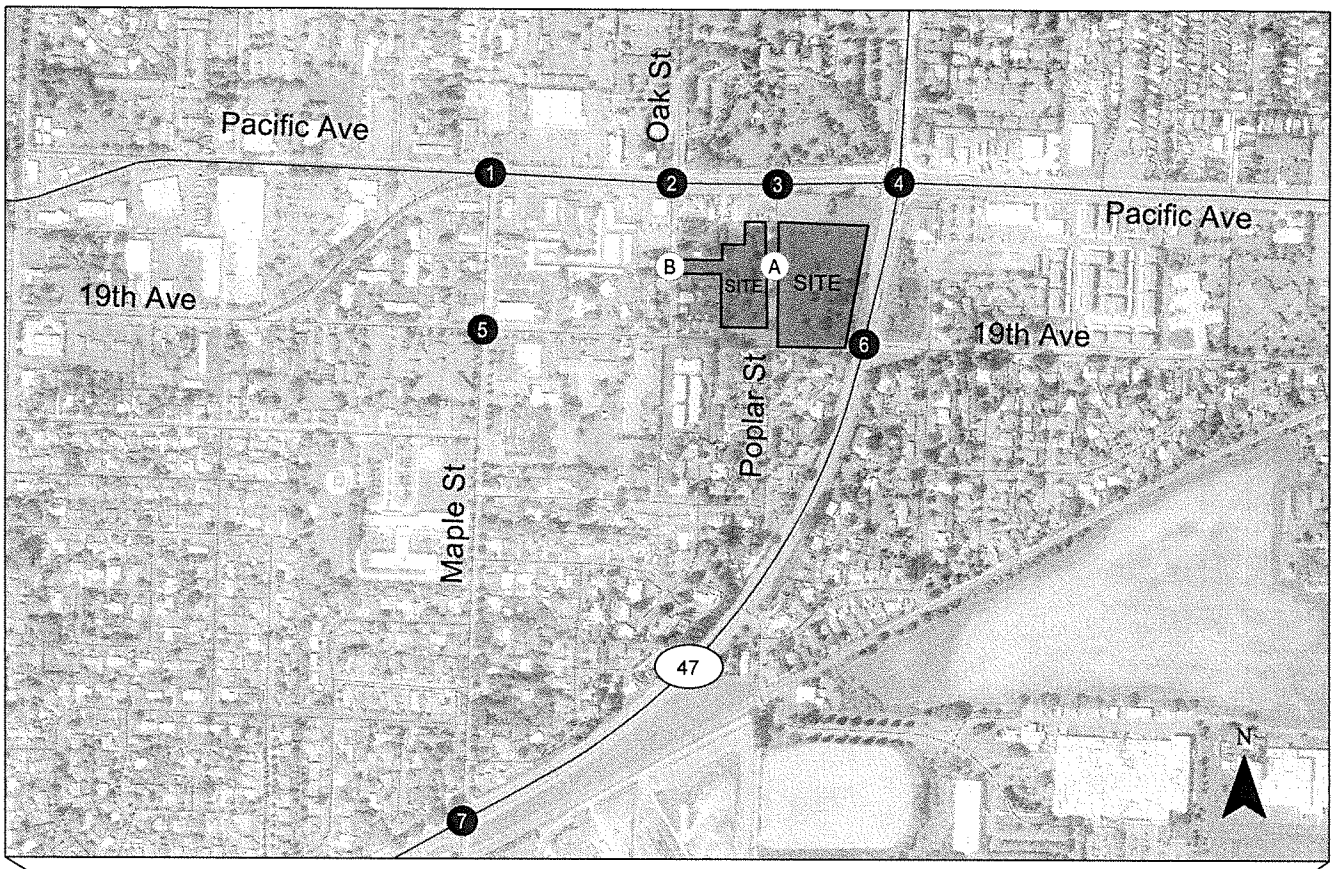
JT Smith is proposing to develop the 6.65-acre site located at the southwest corner of the OR 47/Pacific Avenue intersection in Forest Grove, Oregon. Figure 1 illustrates the site vicinity map. The proposed development site is located within the Forest Grove city limits, it is zoned Community Commercial (CC), and it is vacant. The proposed development plan includes construction of up to 196 apartment units and 310 parking stalls. Access to the proposed development is planned to be provided via two driveways on Poplar Street (one to the west and one to the east, aligned) and one driveway on Oak Street. Figure 2 illustrates the preliminary site plan. Construction of the proposed development is expected to begin in 2020 with full build-out and occupancy in 2022.

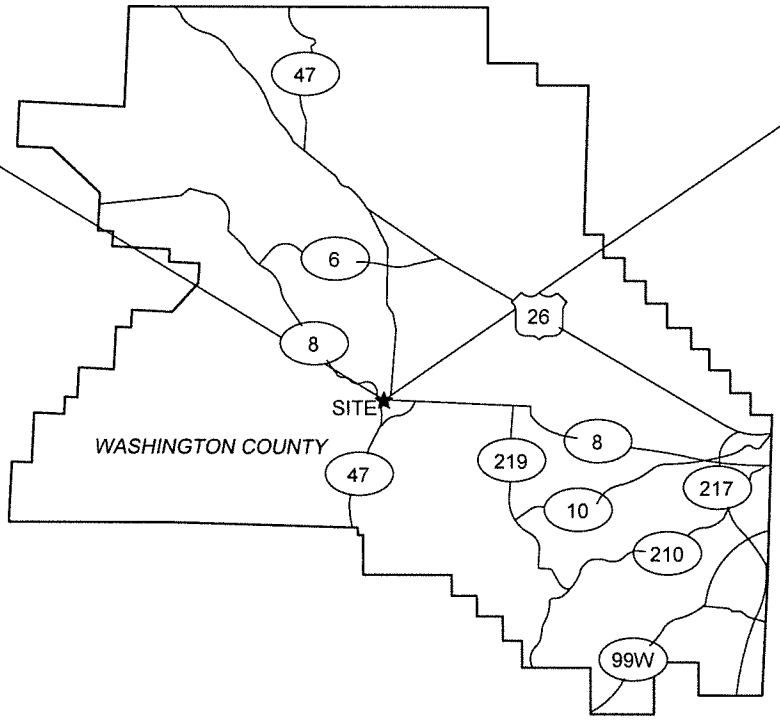
The results of this study indicate that the proposed Reserve at Fernhill development can be constructed while maintaining acceptable traffic operations at the study intersections, assuming provision of the recommended mitigation measures. The recommended mitigation measures include:

- Landscaping, above ground utilities, and signing should be located and maintained along the site frontage and throughout the site in a manner that provides adequate intersection sight distance.

SCOPE OF THE REPORT

This analysis determines the transportation-related impacts associated with the proposed Reserve at Fernhill development and was prepared in accordance with City of Forest Grove and Oregon Department of Transportation (ODOT) requirements for a traffic impact analysis (TIA). The study intersections for the TIA were selected based on discussions with City and ODOT staff. The study intersections include several intersections along Pacific Avenue and OR 47 as well as all site-access points. *Appendix "A" contains the TIA scoping memo, which was reviewed by the City and ODOT.*





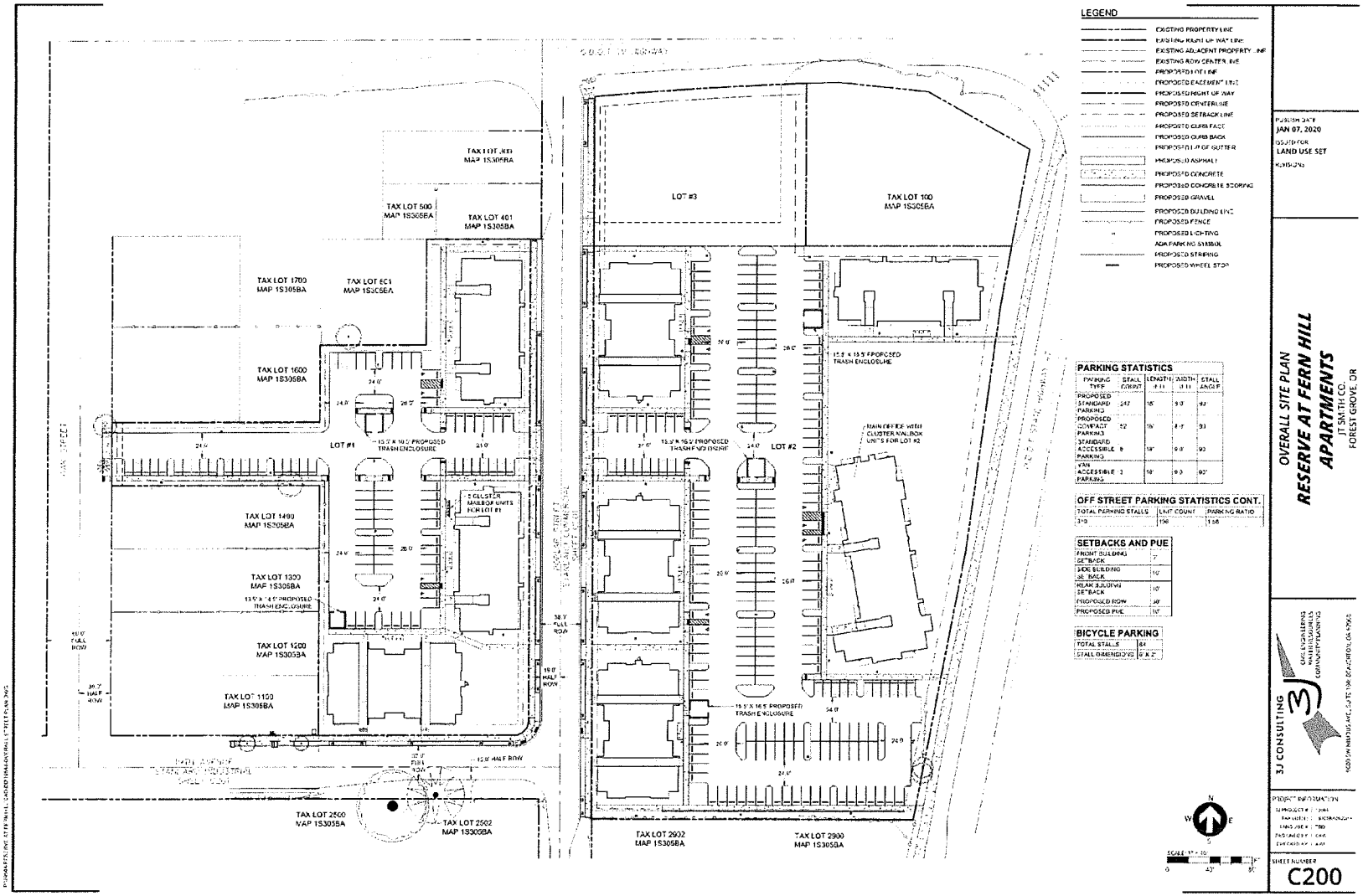
(##) - Study Intersections
(##) - Site Driveways

Site Vicinity Map
Forest Grove, Oregon

Figure
1

H:\24\24462 - Forest Grove Apartments\report\figs\24462-Figure 1.dwg Feb 11, 2020 - 11:21am - mbell Layout Tab: Site Vicinity Map

KITTELSON & ASSOCIATES



Received: 2020/01/08

Preliminary Site Plan
Forest Grove, Oregon

Figure
2

H:\24\24462 - Forest Grove Apartments\report\fig\24462-Figure 1.dwg Feb 11, 2020 - 11:21am - mbell Layout Tab: Proposed Site Plan

KITTELSON & ASSOCIATES

Based on scoping direction, the study intersections include the proposed site driveways and the following:

1. Pacific Avenue/Maple Street
2. Pacific Avenue/Oak Street
3. Pacific Avenue/Poplar Street
4. Pacific Avenue/OR 47
5. Maple Street/19th Avenue
6. OR 47/19th Avenue
7. OR 47/Maple Street

This report evaluates these transportation issues:

- Existing land-use and transportation-system conditions at the study intersections during the weekday AM and PM peak hours;
- Approved but not yet constructed developments and transportation improvements planned in the study area;
- Year 2022 background traffic conditions (without the proposed development) at the study intersections during the weekday AM and PM peak hours;
- Trip generation and distribution estimates for the proposed development;
- Year 2022 total traffic conditions (with full build-out and occupancy of the proposed development) during the weekday AM and PM peak hours; and
- On-site driveway operations.

Performance Measures and Mobility Targets

Traffic operations at the study intersections along OR 47 were evaluated based on the applicable mobility targets identified in Table 7 of the Oregon Highway Plan (OHP – Reference 1). The OHP identifies mobility targets for all signalized and unsignalized intersections along OR 47 as well as policies that provide guidance on the application of the mobility targets. Per Table 7 of the OHP, ODOT defines a maximum volume-to-capacity ratio for OR 47 of 0.99.

Traffic operations at the remaining study intersections and site access driveways were evaluated based on the applicable performance measures identified in the Forest Grove Transportation System Plan (TSP – Reference 2). Per the TSP, Level-of-Service (LOS) "D" is acceptable at the worst approach to two-way stop-controlled intersections and intersection LOS "D" at signalized intersections.

Analysis Tools and Methodology

All analyses described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual, 6th Edition* (HCM – Reference 3). Vistro 7 was used to conduct the analysis. Vistro 7 is a software tool that provides operations analysis in accordance with HCM methodologies.

All analyses used the peak 15-minute flow rates that occurred during the weekday morning and evening peak hours. Using the peak 15-minute flow rates ensures that this analysis is based on a reasonable worst-case scenario.

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current physical and operational characteristics of key roadways within the study area. These conditions will be compared with future conditions later in this report.

SITE CONDITIONS AND ADJACENT LAND USES

The proposed development site is located within the Forest Grove city limits, it is zoned Community Commercial (CC), and it is vacant. Adjacent land uses include additional CC to the north, south, east, and west along Pacific Avenue, per the *City of Forest Grove Zoning Map* (Reference 4).

TRANSPORTATION FACILITIES

Table 1 summarizes the characteristics of roadways within the site vicinity.

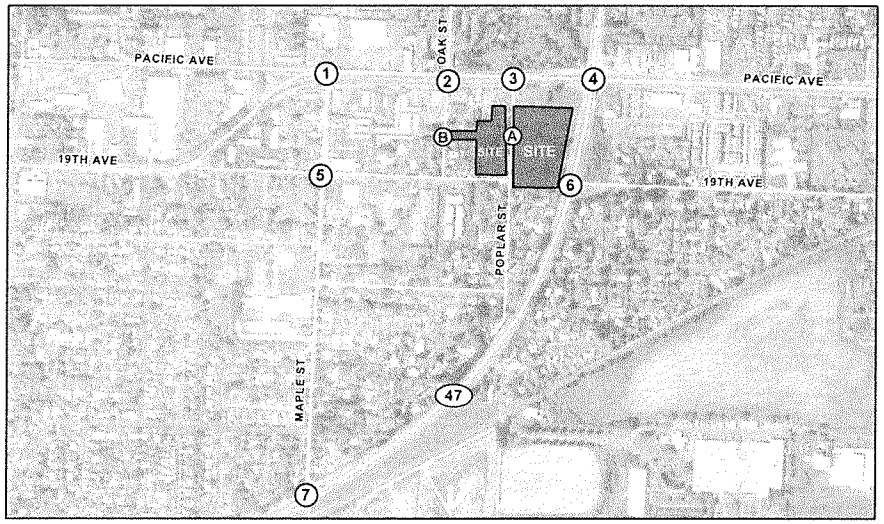
Table 1: Existing Transportation Facilities

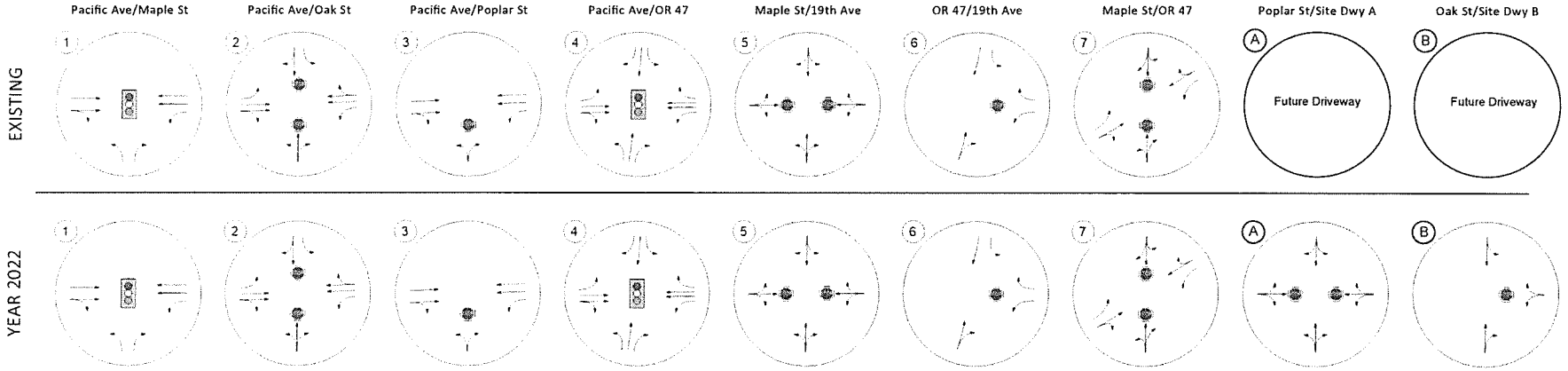
Roadway	Functional Classification[1]	Number of Lanes	Posted Speed (mph)	Sidewalks	Bicycle Lanes	On-Street Parking
OR 47	Principal Arterial	3 Lanes	45/55[4]	Multi-Use Path[5]	Multi-Use Path[5]	No
Pacific Avenue	Arterial	5 Lanes	35	Partial[6]	Yes	No
Poplar Street	Local	2 Lanes	25	No	No	No
Oak Street	Local[2]	2 Lanes	25	Partial[7]	No	Yes
Maple Street	Collector	2 Lanes	25	Yes	No	Yes
19th Avenue	Collector[3]	2 Lanes	25	Yes	No	Yes

1. Per City of Forest Grove Transportation System Plan (TSP – Reference 2).
2. Oak Street is classified as a collector north of Pacific Avenue and a local street south of Pacific Avenue.
3. 19th Avenue is classified as a collector from 19th Way to Oak Street and a neighborhood route east of OR 47.
4. The posted speed limit on OR 47 is 45 mph near Pacific Avenue and 55 mph near Maple Street.
5. A multi-use path is provided on the west side of OR 47, south of Pacific Avenue.
6. Sidewalks on the south side of Pacific Avenue terminate along the site frontage.
7. Intermittent sidewalks are provided on both sides south of the roadway, north and south of Pacific Avenue.

Roadway Facilities

Pacific Avenue is located along the north side of the proposed development site. Pacific Avenue has a five-lane cross section adjacent to the site frontage, with striped left-turn lanes at Maple Street, Oak Street, and OR 47. Pacific Avenue connects the site to downtown Hillsboro to the east and downtown Forest Grove to the west. OR 47 is located along the east side of the proposed development site. OR 47 has a three-lane cross section adjacent to the site frontage, with striped left-turn lanes at Pacific Avenue, 19th Street and Maple Street. OR 47 connects the site to rural Washington County to the north and south. Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections.





(##)- Study Intersections
(X)- Site Driveways
- Traffic Signal
- Stop Control

Existing and Future Year 2022 Lane Configurations and Traffic Control Devices Forest Grove, Oregon

Figure **3**

KITTELSON & ASSOCIATES

Pedestrian and Bicycle Facilities

Sidewalks are provided on both sides of Pacific Avenue; the sidewalks on the south side of Pacific Avenue terminate along the site frontage. A multi-use path is provided on the west side of OR 47, south of Pacific Avenue. Marked crosswalks are provided at the OR 47/Pacific Avenue intersection, which includes a pedestrian-actuated signal complete with pedestrian signal heads and pedestrian pushbuttons.

Transit Facilities

Local transit service is provided in the site vicinity by TriMet. TriMet Line 57 (TV Hwy/Forest Grove) connects Forest Grove, Cornelius, Hillsboro, Aloha, and Beaverton via Pacific Avenue, Baseline Road, TV Highway, and Canyon Road. Line 57 operates seven days a week, 24 hours a day, and on approximately 15-minute headways most of the day. The stops closest to the site are located on Pacific Avenue at Oak Street.

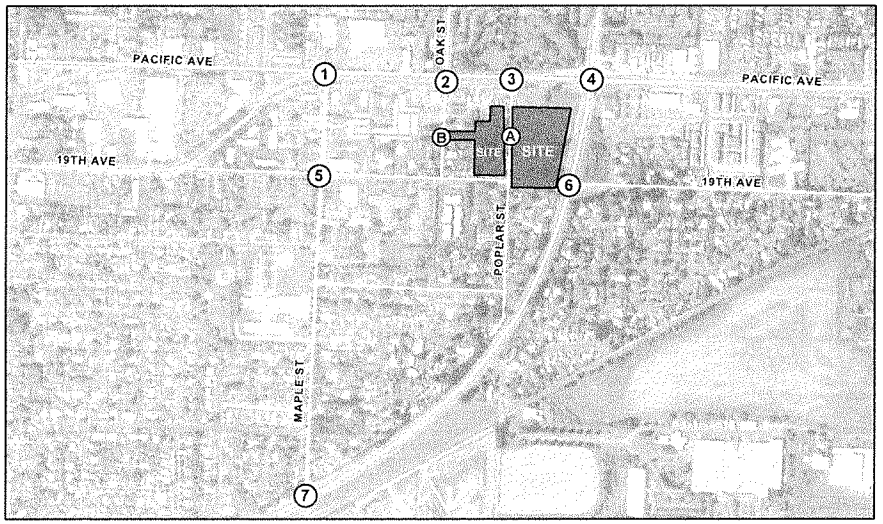
TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

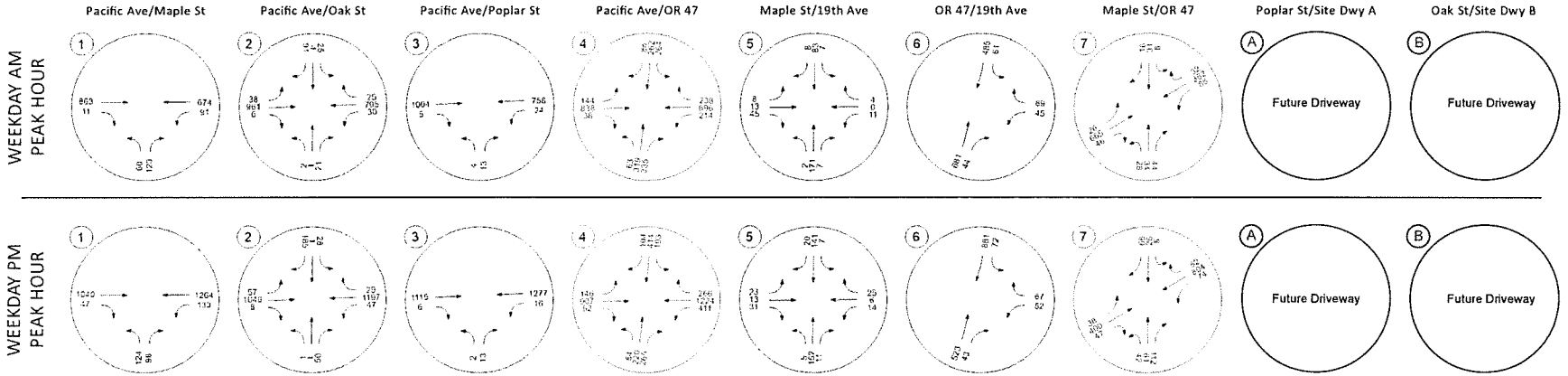
Turning movement counts were conducted at the study intersections in December 2019 when school was in-session and no inclement weather was present that affected typical traffic patterns. The counts were conducted on a typical mid-week day during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak time periods. The system-wide morning and evening peak hours were found to occur from 7:20 to 8:20 AM and 4:05 to 5:05 PM, respectively. Figure 4 summarizes the turning movement counts for the weekday morning and evening peak hours. *Appendix "B" contains the traffic count worksheets used in this study.*

The traffic volumes shown along OR 47 were seasonally adjusted to 30th Highest Hour Design Volumes (30 HV) in accordance with the Seasonal Trend Table methodology identified in the ODOT Analysis Procedures Manual (APM – Reference 5). The Commuter trend was used as a basis for the adjustment consistent with the Forest Grove TSP and subsequent planning efforts. Following the methods in the APM and a commuter trend, a seasonal adjustment factor of 1.12 was identified for counts taken in the beginning of December. All other traffic volumes shown on City streets were not adjusted.

Traffic Operations

Table 2 summarizes the results of the existing traffic conditions analysis. As shown, most of the study intersections currently operate acceptably during the weekday AM and PM peak hours per their respective mobility standards and targets. The OR 47/Maple Street intersection currently exceeds its applicable mobility target as discussed further below. *Appendix "C" contains the existing traffic conditions worksheets.*





(##)- Study Intersections
(X)- Site Driveways

Existing Traffic Volumes
Weekday AM & PM Peak Hours
Forest Grove, Oregon

Figure **4**

KITTELSON & ASSOCIATES

H:\24\24549 - RMB Subdivision Traffic Impact Study\vistro\figures

Table 2: Existing Traffic Conditions, Weekday AM and PM Peak Hours

Study Intersection		Control Type	Operating Requirement	AM Peak Hour			PM Peak Hour		
				CM	v/c	LOS	CM	v/c	LOS
1	Pacific Avenue/ Maple Street	Signal	City Standard of LOS ≤ D for overall intersection	N/A	0.60	A	N/A	0.67	A
2[1]	Pacific Avenue/ Oak Street	TWSC	City Standard of LOS ≤ D for critical approach	SB	N/A	C	SB	N/A	D
3	Pacific Avenue/ Poplar Street	TWSC	City Standard of LOS ≤ D for critical approach	NB	N/A	C	NB	N/A	C
4	OR 47/ Pacific Avenue	Signal	ODOT Mobility target of V/C ≤ 0.99 for overall intersection	N/A	0.79	C	N/A	0.92	E
5	Maple Street/ 19th Avenue	TWSC	City Standard of LOS ≤ D for critical approach	WB	N/A	B	EB	N/A	B
6	OR 47/ 19th Avenue	TWSC	ODOT Mobility target of V/C ≤ 0.99 for critical lane group	WBL	0.34	E	WBL	0.58	F
7	OR 47/ Maple Street	TWSC	ODOT Mobility target of V/C ≤ 0.99 for critical lane group	NBL	0.38	F	NBL	1.00	F

TWSC: Two-Way Stop Control;
CM: Critical Movement (Unsignalized, ODOT); Critical Approach (Unsignalized, City)
v/c: Volume to Capacity (intersection v/c signalized)
LOS: Level-of-Service (intersection LOS signalized, CM LOS unsignalized, ODOT, approach LOS unsignalized, City)

OR 47/Maple Street

The northbound left-turn movement at the OR 47/Maple Street intersection currently operates with a v/c ratio of 1.0 during the weekday PM peak hour, which exceeds ODOT's applicable mobility target for the intersection. The Forest Grove TSP includes a project to construct improvements (e.g. a traffic signal) at the intersection. The City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. The improvements currently being considered include a J-hook, traffic signal, and roundabout.

Traffic Safety

The crash history of the study intersections was reviewed in an effort to identify potential safety issues that could impact access to the site. Crash data was obtained from ODOT for the five-year period from January 1, 2013 through December 31, 2017. Table 3 summarizes the crash data for the study intersections, including the number, type and severity of crashes over the five-year period. Crash rates per million entering vehicles (MEV) were developed for each study intersection. The crash rates were compared to the 90th percentile rates for similar facilities provided in Table 4-1 of the ODOT APM. Per the APM, an intersection with a crash rate equal to or greater than the corresponding 90th percentile rate is recommended for further review.

[1] The Vistro model developed for the Pacific Avenue/Oak Street intersection was calibrated to reflect existing traffic conditions during the weekday AM and PM peak hours. The model was calibrated by adjusting the critical headway factors for the northbound and southbound left and through movements to achieve average vehicle delays observed in the field.

Table 3: Study Intersection Crash Summary (January 1, 2013 through December 31, 2017)

Intersection	Crash Type					Crash Severity			Total	Crash Rates (Crashes /MEV)	ODOT 90th Percentile Rate
	Rear-End	Turn	Angle	Ped/ Bike	Other	PDO[1]	Injury	Fatal			
Pacific Avenue/Maple Street	3	1				2	2		4	0.08	0.509
Pacific Avenue/Oak Street	4	3		2		5	4		9	0.19	0.408
Pacific Avenue/Poplar Street		1				1			1	0.02	0.293
OR 47/Pacific Avenue	39	7	2		3	20	31		51	0.65	0.860
Maple Street/19th Avenue	1			1			2		2	0.24	0.408
OR 47/19th Avenue		4			1	3	2		5	0.17	0.293
OR 47/Maple Street	4	10	10			13	11		24	0.76	0.408

Source: ODOT
MEV=Million Entering Vehicles

As shown in Table 3, the OR 47/Maple Street intersection crash rate exceeds the 90th percentile crash rate. Of the 24 crashes reported at the intersection, four were reported as rear-end crashes, ten were reported as turn movement crashes, and ten were reported as angle crashes. As previously noted, the Forest Grove TSP includes a project to construct improvements (e.g. a traffic signal) at this intersection. None of the remaining intersection crash histories revealed any specific patterns or trends that would suggest inherent geometric or operational deficiencies. *Appendix "D" contains the detailed crash summary worksheets.*

The ODOT Safety Priority Index System (SPIS) was also reviewed to identify potential sites where safety issues warrant further investigation. The SPIS was developed by ODOT to identify hazardous sites on state highways through consideration of crash frequency, crash rate, and crash severity. Sites identified within the top 5 percent are investigated by ODOT staff and reported to the Federal Highway Administration (FHWA). Per the most recent SPIS list, the OR 47/Pacific Avenue and OR 47/Maple Street intersections are in the top 5 percent of crash sites and the Pacific Avenue/Oak Street intersection is in the top 10 percent.

The 2016 SPIS investigation report for the OR 47/Maple Street intersection indicates that a Road Safety Audit (RSA) was conducted along OR 47 in 2014 by ODOT Region 1. The SPIS investigation report recommends an eastbound right-turn storage lane to accommodate queues from the railroad and new sidewalks along the east side of Fern Hill Road from the railroad crossing to OR 47. No other SPIS investigation reports are available for the intersections, including a more recent report for the OR 47/Maple Street intersection. As previously noted, the Forest Grove TSP includes a project to construct improvements (e.g. a traffic signal) at this intersection.

TRAFFIC IMPACT ANALYSIS

The traffic impact analysis identifies how the study area's transportation system will operate in the year the proposed development is expected to be fully built, 2022. The impact of traffic generated by the proposed development was examined as follows:

- Developments and transportation improvements planned in the site vicinity were identified and reviewed in coordination with City staff.
- Year 2022 background traffic conditions were analyzed at the study intersections during weekday AM and PM peak hours.
- Site-generated trips were estimated for the proposed development.
- A trip distribution pattern was developed, and the site-generated trips were distributed to the study area roadways and assigned to the study intersections.
- Year 2022 total traffic conditions were analyzed at the study intersections and site driveways during the weekday AM and PM peak hours, assuming full build-out and occupancy of the proposed development.
- On-site circulation issues and site-access operations were evaluated.

YEAR 2022 BACKGROUND TRAFFIC CONDITIONS

The year 2022 background traffic conditions analysis identifies how the study area's transportation system will operate without the proposed development. This analysis includes traffic attributed to general growth in the region but does not include traffic from the proposed development.

Planned Developments and Transportation Improvements

Kittelson identified and reviewed the planned developments and transportation improvements expected to be built within the study area prior to 2022. Per discussions with ODOT and City staff, no planned development and one transportation improvement is expected to be complete within the study period.

OR 47/Maple Street Traffic Signal

As previously noted, the Forest Grove TSP includes a project to construct improvements (e.g. a traffic signal) at the intersection. The City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. The improvements currently being considered include a J-hook, traffic signal, and roundabout. Given that a preferred improvement has not been identified, no improvements were included in the analysis.

Traffic Volumes

The growth rate used in this analysis was determined based on information provided in the Forest Grove TSP regarding regional traffic growth in the study area. The Forest Grove TSP identifies regional traffic growth rates that vary from 1.74 percent per year to 1.84 percent per year. Ultimately, a 2.0 percent annual growth rate was applied to the 2019 traffic volumes to develop the year 2022 background traffic volumes. This growth rate was confirmed with City and ODOT staff during the scoping process. Figure 5 illustrates the forecast year 2022 background traffic volumes during the weekday AM and PM peak hours.

Traffic Operations

Table 4 summarizes the results of the year 2022 background traffic conditions analysis. As shown, the Pacific Avenue/Oak Street and OR 47/Maple Street intersections are projected to exceed their respective

mobility standards and targets. The remaining study intersections are forecast to operate acceptably during the weekday AM and PM peak hours. *Appendix "E" contains the year 2022 background traffic conditions worksheets.*

Table 4: Year 2022 Background Traffic Conditions, Weekday AM and PM Peak Hours

Study Intersection		Control Type	Operating Requirement	AM Peak Hour			PM Peak Hour		
				CM	V/C	LOS	CM[2]	V/C	LOS[3]
1	Pacific Avenue/ Maple Street	Signal	City Standard of LOS ≤ D for overall intersection	N/A	0.62	A	N/A	0.69	A
2[2]	Pacific Avenue/ Oak Street	TWSC	City Standard of LOS ≤ D for critical approach	SB	N/A	C	SB	N/A	E
3	Pacific Avenue/ Poplar Street	TWSC	City Standard of LOS ≤ D for critical approach	NB	N/A	C	NB	N/A	C
4	OR 47/ Pacific Avenue	Signal	ODOT Mobility target of V/C ≤ 0.99 for overall intersection	N/A	0.82	C	N/A	0.97	E
5	Maple Street/ 19th Avenue	TWSC	City Standard of LOS ≤ D for critical approach	WB	N/A	B	EB	N/A	B
6	OR 47/ 19th Avenue	TWSC	ODOT Mobility target of V/C ≤ 0.99 for critical lane group	WBL	0.43	F	WBL	0.72	F
7	OR 47/ Maple Street	TWSC	ODOT Mobility target of V/C ≤ 0.99 for critical lane group	NBL	0.52	F	NBL	1.41	F

TWSC: Two-Way Stop Control;
CM: Critical Movement (Unsignalized, ODOT); Critical Approach (Unsignalized, City)
v/c: Volume to Capacity (intersection v/c signalized)
LOS: Level-of-Service (intersection LOS signalized, CM LOS unsignalized, ODOT, approach LOS unsignalized, City)

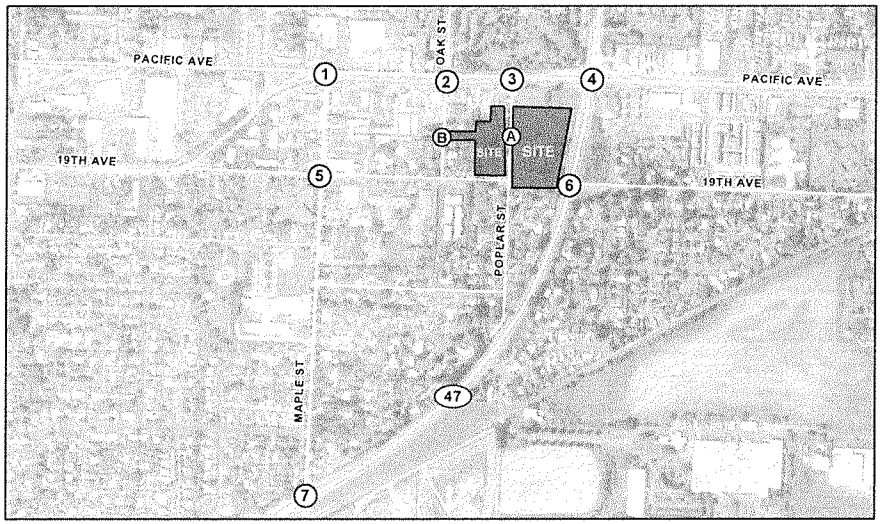
Pacific Avenue/Oak Street

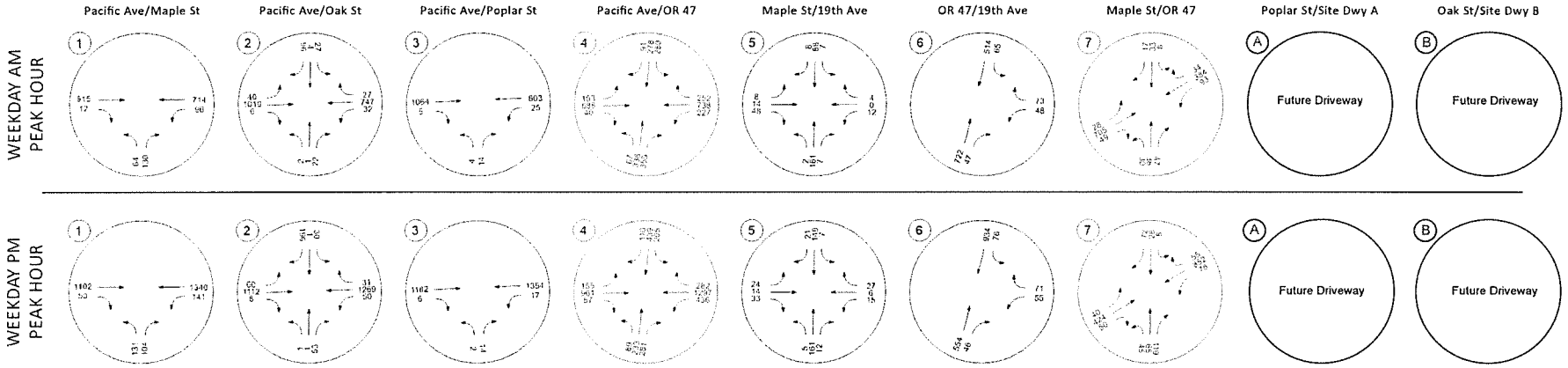
The southbound approach to the Pacific Avenue/Oak Street intersection is projected to operate at LOS E during the weekday PM peak hour, which exceeds the City's applicable mobility standard (the individual movements at the southbound approach are projected to operate at approximately half their capacity). The City currently does not have plans to address traffic operations at the intersection and a traffic signal is not expected to be warranted per ODOT's preliminary signal warrants.

OR 47/Maple Street

The northbound left-turn movement at the OR 47/Maple Street intersection is projected to operate with a v/c ratio of greater than 1.0 during the weekday PM peak hour, which exceeds ODOT's applicable mobility target for the intersection. As previously noted, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. The improvements currently being considered include a J-hook, traffic signal, and roundabout.

[2] The Vistro model developed for the Pacific Avenue/Oak Street intersection was calibrated by adjusting the critical headway factors for the northbound and southbound left and through movements similar to existing traffic conditions.





(##)- Study Intersections
(X)- Site Driveways

Year 2022 Background Traffic Volumes
Weekday AM & PM Peak Hours
Forest Grove, Oregon

Figure **5**

KITTELSON & ASSOCIATES

H:\24\24549 - RMB Subdivision Traffic Impact Study\vistral\figures

PROPOSED DEVELOPMENT PLAN

The proposed development plan includes construction of up to 196 apartment units and 310 parking stalls. Access to the proposed development is planned to be provided via two driveways on both sides of Poplar Street (aligned and approximately 380 feet south of Pacific Avenue) and one driveway on Oak Street (approximately 360 feet south of Pacific Avenue). Construction of the proposed development is expected to begin in 2020 with full build-out and occupancy in 2022.

Trip Generation

A trip generation estimate was prepared for the proposed development based on information provided in the standard reference manual, *Trip Generation, 10th Edition,* published by the Institute of Transportation Engineers (ITE – Reference 6). ITE land use code 220 (Low-Rise Apartments) was used as a basis for the estimate. Table 5 summarizes the estimates for the daily, weekday AM and weekday PM peak hours.

Table 5: Trip Generation Estimate

Land Use	ITE Code	Size (SF)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Low-Rise Apartments	220	196	1,442	91	21	70	108	68	40

Site Trip Distribution/Trip Assignment

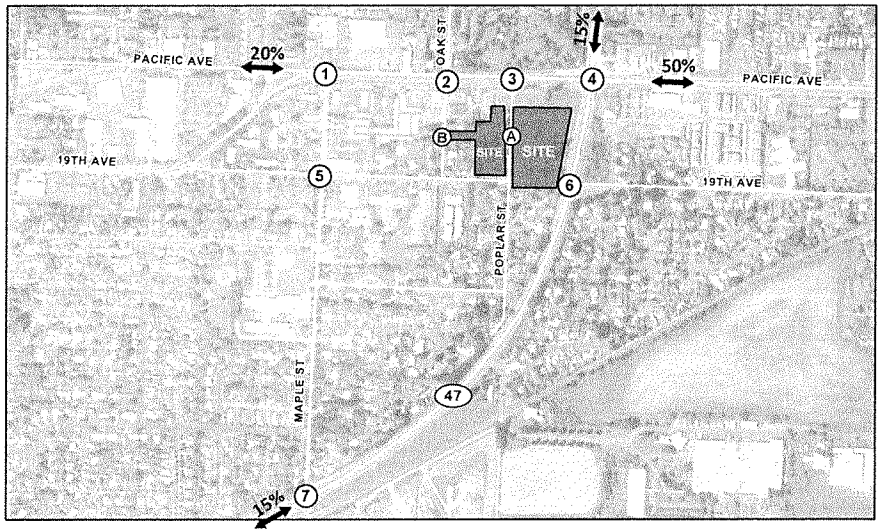
The site-generated trips were distributed onto the study area roadways based on a review of existing traffic patterns and the location of major trip origins and destinations in the Forest Grove and Washington County area. Figure 6 illustrates the estimated trip distribution pattern for the proposed development. Figure 6 also illustrates the site-generated trips that are expected to use the study intersections during the weekday AM and PM peak hours.

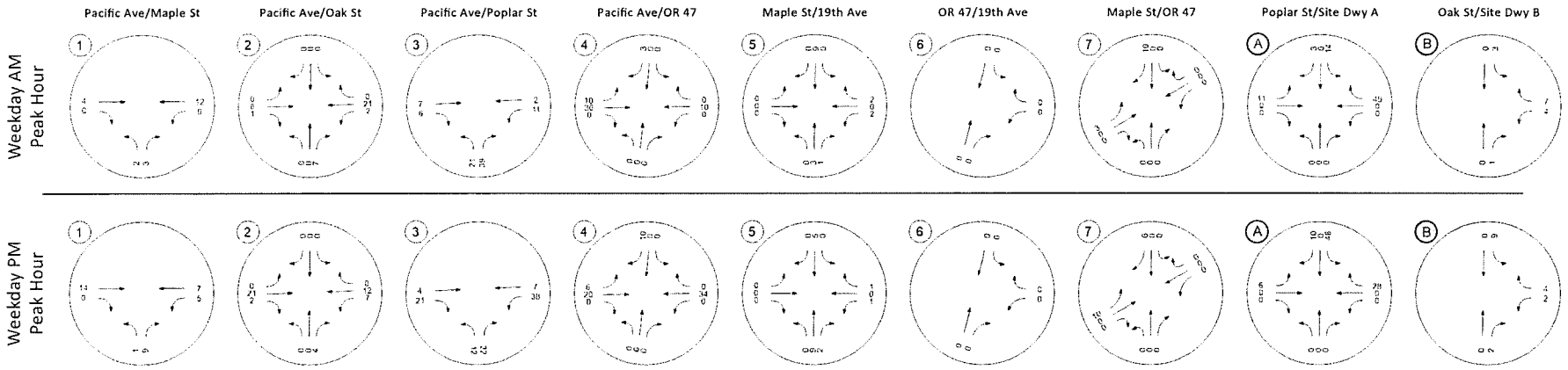
YEAR 2022 TOTAL TRAFFIC CONDITIONS

The year 2022 total traffic conditions analysis forecasts how the study area's transportation system will operate with traffic generated by full build-out and occupancy of the proposed development. The year 2022 background traffic volumes shown in Figure 5 were added to the site-generated traffic shown in Figure 6 to arrive at the year 2022 total traffic volumes that are shown in Figure 7.

Traffic Operations

The weekday AM and PM peak hour turning movement volumes shown in Figure 7 were used to conduct an operational analysis at the study intersections to determine year 2022 total traffic conditions. Table 6 summarizes the results of the year 2022 total traffic conditions analysis. As shown, the Pacific Avenue/Oak Street and OR 47/Maple Street intersections are projected to continue to exceed their respective mobility standards and targets. The remaining study intersections and site driveways are forecast to operate acceptably during the weekday AM and PM peak hours. *Appendix "F" contains the year 2022 total traffic conditions worksheets.*



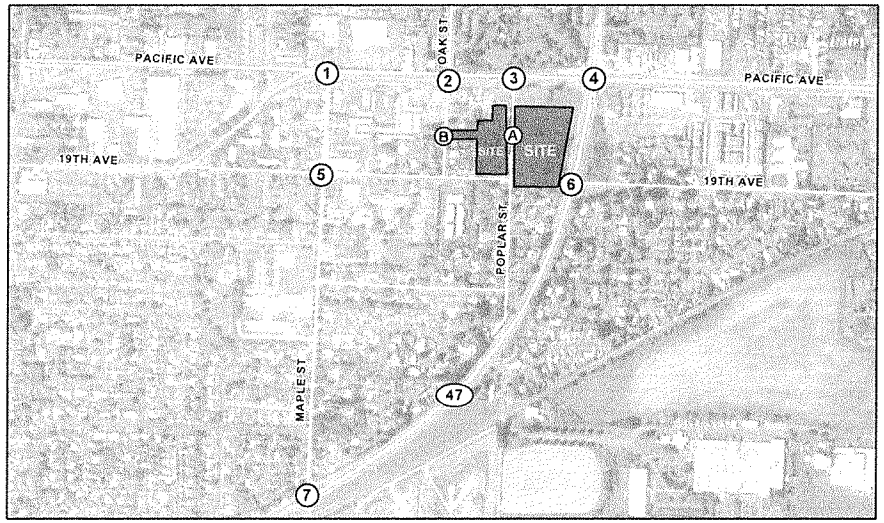


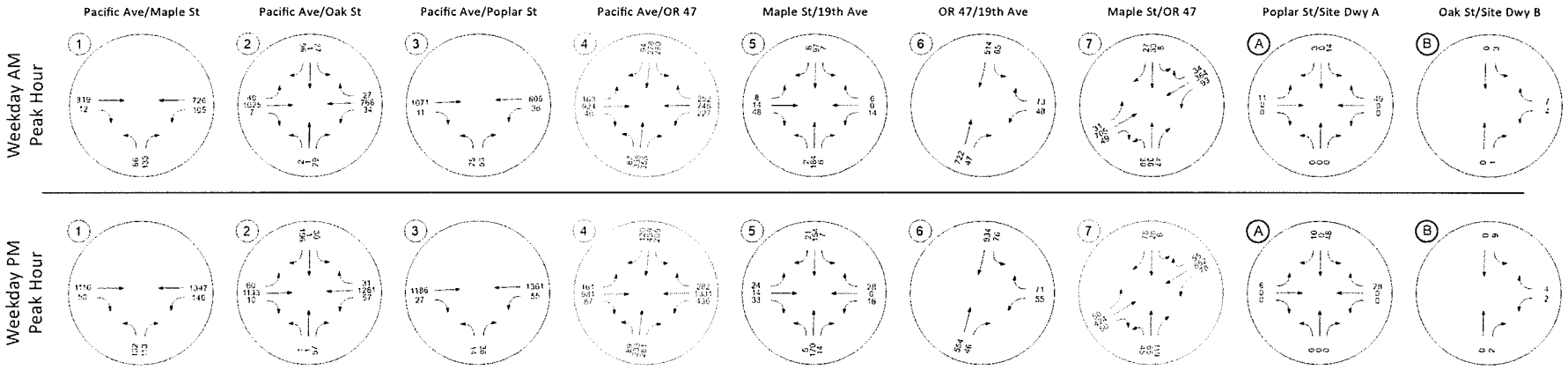
(##)- Study Intersections
(X)- Site Driveways

Estimated Trip Distribution Patterns and Site-Generated Trips
Weekday AM & PM Peak Hours
Forest Grove, Oregon

Figure **6**

KITTELSON & ASSOCIATES





(##)- Study Intersections
(X)- Site Driveways

Year 2022 Total Traffic Volumes
Weekday AM & PM Peak Hours
Forest Grove, Oregon

Figure **7**

KITTELSON & ASSOCIATES

Table 6: Year 2022 Total Traffic Conditions, Weekday AM and PM Peak Hours

Study Intersection		Control Type	Operating Requirement	AM Peak Hour			PM Peak Hour		
				CM	V/C	LOS	CM	V/C	LOS
1	Pacific Avenue/ Maple Street	Signal	City Standard of LOS ≤ D for overall intersection	N/A	0.63	A	N/A	0.70	A
2[3]	Pacific Avenue/ Oak Street	TWSC	City Standard of LOS ≤ D for critical approach	SB	N/A	C	SB	N/A	E
3	Pacific Avenue/ Poplar Street	TWSC	City Standard of LOS ≤ D for critical approach	NB	N/A	C	NB	N/A	C
4	OR 47/ Pacific Avenue	Signal	ODOT Mobility target of V/C ≤ 0.99 for overall intersection	N/A	0.83	D	N/A	0.98	E
5	Maple Street/ 19th Avenue	TWSC	City Standard of LOS ≤ D for critical approach	WB	N/A	B	EB	N/A	B
6	OR 47/ 19th Avenue	TWSC	ODOT Mobility target of V/C ≤ 0.99 for critical lane group	WBL	0.43	F	WBL	0.72	F
7	OR 47/ Maple Street	TWSC	ODOT Mobility target of V/C ≤ 0.99 for critical lane group	NBL	0.55	F	NBL	1.54	F
8	Poplar Street/ Site Driveway B	TWSC	City Standard of LOS ≤ D for critical approach	EB	N/A	A	EB	N/A	A
9	Oak Street/ Site Driveway C	TWSC	City Standard of LOS ≤ D for critical approach	WB	N/A	A	WB	N/A	A

TWSC: Two-Way Stop Control;
CM: Critical Movement (Unsignalized, ODOT); Critical Approach (Unsignalized, City)
v/c: Volume to Capacity (intersection v/c signalized)
LOS: Level-of-Service (intersection LOS signalized, CM LOS unsignalized, ODOT, approach LOS unsignalized, City)

Pacific Avenue/Oak Street

The southbound approach to the Pacific Avenue/Oak Street intersection is projected to continue to operate at LOS E during the weekday PM peak hour; however, the proposed development is not expected to contribute trips to the southbound approach. Given that 1) all movements associated with the southbound approach operate under capacity, 2) no trips are added to the approach, 3) a traffic signal is not expected to be warranted per ODOT's preliminary signal warrants and 4) alternative access is available via Poplar Street and Maple Street, no mitigation measures are recommended at the intersection in conjunction with site development.

OR 47/Maple Street

The northbound left-turn movement at the OR 47/Maple Street intersection is projected to continue to operate with a v/c ratio of greater than 1.0 during the weekday PM peak hour; however, the proposed development it is not expected to contribute trips to the movement. Also, as previously noted, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. The improvements currently being considered include a J-hook, traffic signal, and roundabout. Given that 1) all other movements at the intersection operate below capacity, 2) no trips are added to the critical

[3] The Vistro model developed for the Pacific Avenue/Oak Street intersection was calibrated by adjusting the critical headway factors for the northbound and southbound left and through movements similar to existing traffic conditions.

northbound left-turn movement, 3) there is a planned improvement identified in the financially constrained project list in the current Forest Grove TSP, and 4) the City is working with ODOT and the County on a preferred improvement, no mitigation measures are recommended at the intersection in conjunction with site development.

QUEUING ANALYSIS

A queuing analysis was performed at the signalized study intersections under existing, background, and total traffic conditions. Table 7 summarizes the 95th-percentile queues for the respective weekday AM and PM peak hours. The results shown in Table 7 reflect the peak 15-minutes of the peak hours, with queues rounded to the nearest vehicle length (approximately 25 feet), and queues shown only for movements that experience delays from exclusive left-turn lanes. The queue storage lengths reflect the striped storage for each movement.

Table 7: Queuing Analysis (Weekday AM and PM Peak Hours)

Intersection	Movement	Queue Storage (feet)	95th-percentile Queue (feet)						Queue Storage Adequate?
			Existing		2020 Background		2020 Total		
			AM	PM	AM	PM	AM	PM	
Pacific Avenue/ Maple Street	NB LT	85	25	75	25	75	25	75	Yes
	WB LT	300	50	75	50	75	50	100	Yes
Pacific Avenue/ OR 47	NB LT	300	50	75	50	75	50	75	Yes
	SB LT	270	225	175	275	175	275	200	No*
	EB LT	115	100	175	125	200	125	200	No*
	WB LT	360	175	950	225	1,125	225	1,125	No*

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, LT = Left, TH = TH, RT = Right,
* Additional storage is available in the adjacent two-way left-turn lane.

As shown in Table 7, the southbound, eastbound, and westbound left-turn queues at the OR 47/Pacific Avenue intersection are expected to exceed the striped storage under existing, background, and total traffic conditions during the weekday AM and/or PM peak hours. Additional southbound and eastbound left-turn storage is available in the form of existing two-way left-turn lanes so queues are not expected to impede traffic along OR 47 or Pacific Avenue. Additional westbound left-turn storage is also available, with the existing raised median treatment on Pacific Avenue extending approximately 500 feet and then transitioning to a two-way left-turn lane. The projected westbound left-turn queue is expected to extend past several driveways and local street connections. However, it is not expected to grow as a result of the proposed site development and the proposed development is not expected to add any trips to the westbound left-turn lane. Therefore, no mitigation is recommended to address queueing conditions in conjunction with the proposed development. *All queuing analysis worksheets are included with the operational analysis worksheets in the appendix.*

ON-SITE CIRCULATION/SITE-ACCESS OPERATIONS

Figure 2 illustrates the proposed development plan. As shown, access to the proposed development is planned to be provided via two driveways on both sides of Poplar Street (aligned and approximately 380 feet south of Pacific Avenue) and one driveway on Oak Street (approximately 360 feet south of Pacific

Avenue). Per the year 2022 total traffic analysis described above, both driveways are expected to operate acceptably under stop control with the proposed development during the weekday AM and PM peak hours. Vehicle queues at the driveways are expected to be less than one vehicle entering and exiting the site. Further, the driveways are not projected to be blocked by the queues associated with the Pacific Avenue/Poplar Street and Pacific Avenue/Oak Street intersections or other driveways along Poplar Street and Oak Street.

Intersection sight distance is also expected to satisfy applicable City requirements at the proposed driveways and will be documented in the project civil engineering plans. Landscaping, above ground utilities, and signing should be located and maintained along the site frontage and throughout the site in a manner that provides adequate intersection sight distance the future.

CONCLUSIONS AND RECOMMENDATIONS

The results of this study indicate that the proposed Reserve at Fernhill development can be constructed while maintaining acceptable traffic operations at the study intersections, assuming provision of the recommended mitigation measures. The findings of this analysis and our recommendations are discussed below.

FINDINGS

Existing Traffic Conditions

- The OR 47/Maple Street intersection currently exceeds its applicable mobility target.
    - The northbound left-turn movement at the OR 47/Maple Street intersection currently operates with a v/c ratio of 1.0 during the weekday PM peak hour, which exceeds ODOT's applicable mobility target for the intersection. The Forest Grove TSP includes a project to construct improvements (e.g. a traffic signal) at the intersection. The City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. The improvements currently being considered include a J-hook, traffic signal, and roundabout.
- The other study intersections currently operate acceptably during the weekday AM and PM peak hours.
- A review of historical crash data showed the OR 47/Maple Street intersection crash rate exceeds the 90th percentile ODOT crash rate.
    - The City is currently working with ODOT and County staff to identify a preferred improvement at the intersection.
- A review of the ODOT Safety Priority Index System (SPIS) indicates that the OR 47/Pacific Avenue and OR 47/Maple Street intersections are in the top 5 percent of crash sites and the Pacific Avenue/Oak Street intersection is in the top 10 percent of crash sites.

- A 2016 SPIS investigation report for the OR 47/Maple Street intersection recommends an eastbound right-turn storage lane and new sidewalks on Fernhill Road. As noted above, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. No other SPIS investigation reports are available for the intersections, including more recent reports for the OR 47/Maples Street intersection.

Year 2022 Background Traffic Conditions

- The Pacific Avenue/Oak Street and OR 47/Maple Street intersections are projected to exceed their respective mobility standards and targets.
  - The southbound approach to the Pacific Avenue/Oak Street intersection is projected to operate at LOS E during the weekday PM peak hour. The City currently does not have plans to address traffic operations at the intersection and a traffic signal is not expected to be warranted per ODOT's preliminary signal warrants.
  - The northbound left-turn movement at the OR 47/Maple Street intersection is projected to be greater than 1.0 during the weekday PM peak hour. As previously noted, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection.

Year 2022 Total Traffic Conditions

- The Pacific Avenue/Oak Street and OR 47/Maple Street intersections are projected to continue to exceed their applicable mobility standards and targets.
  - The southbound approach to the Pacific Avenue/Oak Street intersection is projected to continue to operate at LOS E during the weekday PM peak hour; however, the proposed development is not expected to contribute trips to the southbound approach. Given that 1) all movements associated with the southbound approach operate under capacity, 2) no trips are added to the approach, 3) a traffic signal is not expected to be warranted per ODOT's preliminary signal warrants and 4) alternative access is available via Poplar Street and Maple Street, no mitigation measures are recommended at the intersection in conjunction with site development given.
  - The northbound left-turn movement at the OR 47/Maple Street intersection is projected to continue to operate with a v/c ratio of greater than 1.0 during the weekday PM peak hour; however, the proposed development is not expected to contribute trips to the movement. Also, as previously noted, the City is currently working with ODOT and County staff to identify a preferred improvement at the intersection. Given that 1) all other movements at the intersection operate below capacity, 2) no trips are added to the critical northbound left-turn movement, and 3) there is a planned improvement identified in the financially constrained project list in the current Forest Grove TSP and the City is working on a preferred improvement, no mitigation measures are recommended at the intersection in conjunction with site development.

Site Access Operations

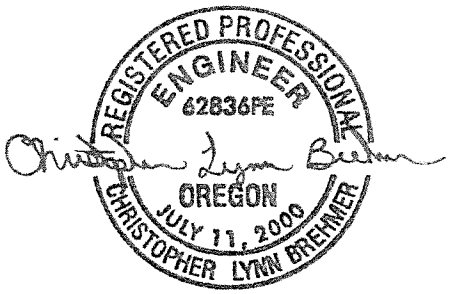
- All site driveways are expected to operate acceptably under stop control.
- Vehicle queues at the driveways are expected to be less than one vehicle entering and exiting the site.

RECOMMENDATIONS

- Landscaping, above ground utilities, and signing should be located and maintained along the site frontage and throughout the site in a manner that preserves adequate intersection sight distance.

REFERENCES

1. Oregon Department of Transportation. *Oregon Highway Plan*. 2015.
2. City of Forest Grove *City of Forest Grove Transportation System Plan*. January 2014.
3. Transportation Research Board. *Highway Capacity Manual, 6th Edition*. 2016.
4. City of Forest Grove. *City of Forest Grove Zoning Map*. May 2009.
5. Institute of Transportation Engineers. *Trip Generation Manual, 10th Edition*. September 2017.



Expires: 12-31-2021

EXHIBIT C

POWER POINT

FOREST GROVE OREGON

The Reserve at Fernhill Apartments Site & Design Review

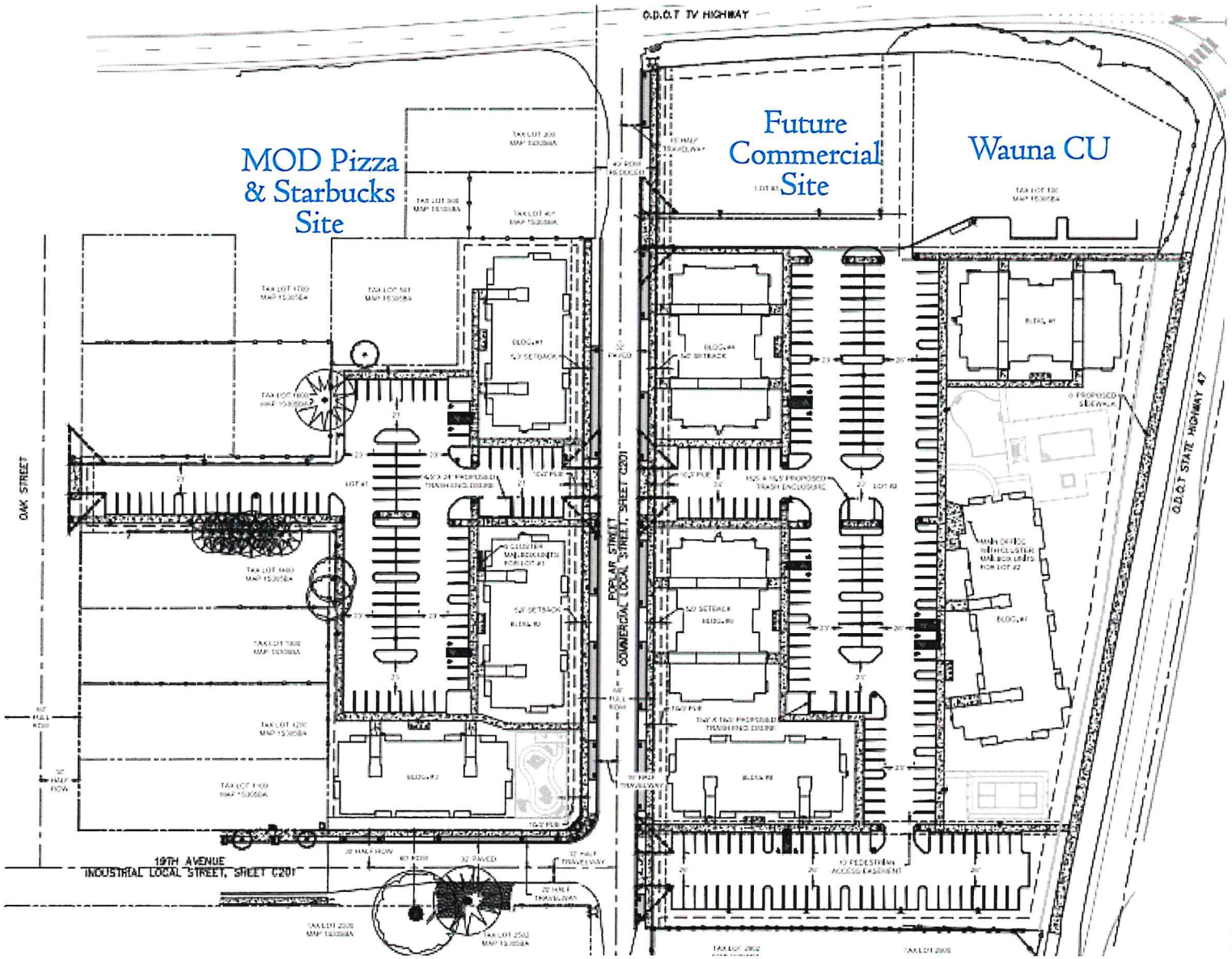
James Reitz, AICP
Senior Planner

07/06/20

Aerial View – Site & Vicinity

FOREST GROVE OREGON

Site Plan



FOREST GROVE OREGON

Building Elevations

ENTRY ELEVATION

FOREST GROVE OREGON

Building Elevations

BACK ELEVATION

FOREST GROVE OREGON

Building Elevations

TYPICAL END ELEVATION

FOREST GROVE OREGON

Building Materials

MATERIALS BOARD

MAIN MATERIALS AND PRECEDENTS

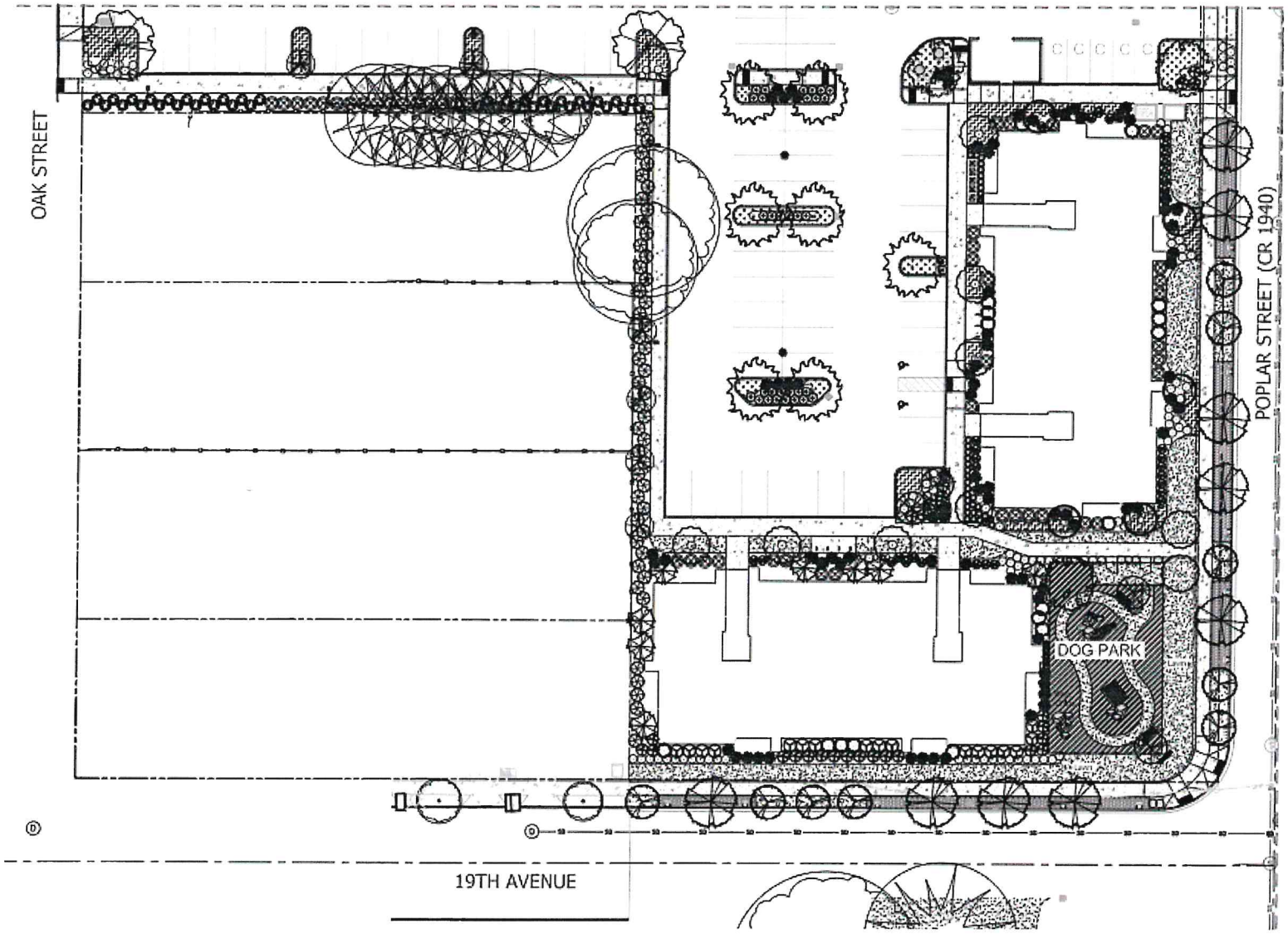
*NOTE: FINAL COLORS TO BE DETERMINED

LAP SIDING

CEMENTITIOUS PANEL

FOREST GROVE OREGON

Partial Landscape Plan



FOREST GROVE OREGON

Recommendation

Staff recommends approval of the site plan and design review permit for the Reserve at Fernhill Apartments with these conditions:

1. The applicant is bound to the project description and all representations made by the applicant during the application and decision-making proceeding.
2. The applicant shall comply with all applicable City building and development standards, including all dimensional standards and public works specifications.
3. A deed restriction shall be recorded over Lot 3 to limit its future residential density to a maximum of 11 units. This limit shall not be exceeded unless the maximum residential density permitted in the CC zoning district is increased.
4. Landscaping, above-ground utilities, and signing shall be located and maintained along the site frontage and throughout the site in a manner that preserves adequate intersection sight distance.
5. Replace the deteriorating asphalt path along the Hwy 47 frontage with a new, 8-foot-wide concrete pathway.

Optional Conditions:

A. Shift Building 3 five feet to the east.
B. Install a 4-to-6-foot-tall wire or decorative metal panel fence along the east property line.

EXHIBIT D

DEVELOPMENT CODE STANDARDS AND SPECIFICATIONS

EXHIBIT E

ENGINEERING DEPARTMENT SPECIAL CONDITIONS

EXHIBIT F

FIRE DEPARTMENT CONDITIONS

EXHIBIT G

LIGHT & POWER DEPARTMENT CONDITIONS

EXHIBIT D – DEVELOPMENT CODE STANDARDS & SPECIFICATIONS

1) The applicant shall comply with all applicable City building and development standards, including all dimensional standards and public works specifications.
2) Submit a copy of the recorded survey and legal description for the lot consolidation prior to requesting building permits (DC §17.6.040 *Recording Requirements).*
3) Public improvement, site grading and erosion control plans shall incorporate tree preservation and protection measures as per DC §17.5.130(3) *Trees on Developable Land.* Fencing shall be installed around all protected trees and signs erected indicating that the area within is to remain undisturbed during construction. No compaction equipment or material storage shall be permitted within tree protection areas. This plan shall be approved by the Community Development Director prior to the site grading permit.
4) All signage (including but not limited to, street names vehicular parking restrictions, and vehicular and pedestrian traffic protection and direction) for public rights-of-way and easements; pavement striping and marking; and pavement reflectors (including, but not limited to, blue fire hydrant markers), shall be shown on the approved plans and installed by the developer. To minimize conflict with driveway locations and street trees, signs shall be attached to street light poles wherever possible (DC §17.8.525 *Design Standards).*
5) Dedicate right-of-way to provide a 29-foot wide half-street width along Poplar Street adjacent to the project site (DC §17.8.610(E) *Minimum Rights-of-Way and Street Widths*).
6) A 10-foot-wide public utility and sidewalk easement shall be denoted along the front lines of all lots, parcels and tracts (DC §17.8.615 *Easements*). No easement is required abutting the Highway 47 Bypass right-of-way.
7) Additional easements as necessary shall be granted for the installation of electrical distribution facilities e.g. transformers, junction boxes, etc. (DC §17.8.615 *Easements*).
8) All utility connections shall be underground (DC §17.8.645(A) *Underground Utilities).*
9) All lighting shall comply with the provisions of DC §17.8.755(C) *Pedestrian Lighting Standards* and §17.8.755(D) *Lighting Standards for Multi-Unit Development.*

EXHIBIT E - ENGINEERING DEPARTMENT SPECIAL CONDITIONS

10) All required permits shall be secured by the developer prior to start of construction (i. e., both on-site and off-site construction permits).
11) Required public facilities shall be in place and accepted by the City Engineer prior to developer's receipt of final building approvals and/or certificate of occupancy for development.
12) Replace the existing asphalt pathway in ODOT right-of-way along Highway 47 bypass adjacent to the site with an eight (8) foot wide concrete sidewalk.
13) The City is interested in exploring the possibility of the developer constructing a full-width improvement to 19th Avenue from its current terminus west of Poplar Street to the intersection of Poplar Street, with reimbursement coming from TIF/TDT credits for the southerly half-street section.
14) Applicant shall participate in the Poplar Street storm water drainage system reimbursement district.

EXHIBIT F - FIRE DEPARTMENT CONDITIONS

15) Fire hydrants shall be installed as per City requirements and shall be equipped with two, 2 ½-inch ports and on 4-inch Storz fitting with a cap on the steamer port. Locations shall be identified with blue reflective pavement markers at the street centerline (Forest Grove Code (FGC) §153.07).
16) Install address and identification signs at the Poplar Street driveways (DC §17.8.830 *Commercial Signs* and FGC §150.098 *House Numbers).*

17) Install site maps near the Poplar Street driveways indicating the location of each building and the units within. The location and design of the site map shall be reviewed and approved by the Fire Marshal prior to installation (FGC §150.098 *House Numbers)*.
18) Each building shall be identified with digits at least 8 inches tall that contrasts with the background. Individual unit numbers shall be at least 4 inches in height and contrast with the background (FGC §150.098 *House Numbers)*.
19) Maintain a 28-foot inside and 48-foot outside vehicle turning radius throughout the complex.
20) Fire Department Connection (FDC) locations shall be approved by the Fire Marshal prior to construction.

EXHIBIT G - LIGHT & POWER DEPARTMENT CONDITIONS

21) Provide a CAD file of the site plan (including wet utilities).
22) Electrical loading and demand will need to be provided by the developer.
23) All lighting within the complex shall be customer-owned and will need to be designed by the developer.
24) The developer will be responsible for labor and material costs minus a credit allowance (TBD).
25) The developer will be responsible for all costs associated with undergrounding the primary feeder along Poplar Street.
26) The developer will be responsible for providing and installing all vaults and conduits.
27) A minimum distance of 8 feet shall be maintained between electrical transformers and any combustible structure, overhang, window or door. Consult Forest Grove Light and Power Department Electrical Service Requirements & Guidelines §1.09 *Clearances from Utility Equipment* and National Electrical Safety Code (NESC) Rule 012C for additional clearances and information.