



## COMMUNITY DEVELOPMENT

333 Broadalbin Street SW, PO Box 490, Albany, Oregon 97321-0144 | BUILDING 541-917-7553 | PLANNING 541-917-7550

# Staff Report

## Site Plan Review

Files: SP-28-19 & FP-09-19

May 15, 2020

### Summary

This staff report evaluates applications for Site Plan Review and Floodplain Development to construct a phased, 264-unit apartment complex with associated site improvements such as utilities, stormwater drainage, parking, landscaping, and other amenities. The site is in northeast Albany, southeast of the Knox Butte Road roundabout. The property is identified as 4350 Knox Butte Road SE, Linn County Assessor's Map No. 11S-03W-03C Tax Lot 100 (Attachment A).

The subject property is a 16.52-acre undeveloped parcel with residential neighborhoods nearby. The underlying zoning districts are MUC (Mixed-Use Commercial) and OS (Open Space). Natural Resource Overlays encumber a portion of the site. Floodplain (/FP), Significant Wetland (/SW), and Riparian Corridor Overlays (/RC) are located primarily along the east and south of the site, but the area of the property that is proposed for development avoids impacting these natural resource overlays. As presented in the proposed Site Overview Plan (Attachment B.1, Sheet SDR07), the applicant has proposed to develop only 13.23 acres on the central portion of the property, which is entirely within the MUC zone. Multi-family residential development is allowed through site plan review in the MUC zone.

The preliminary utility plans for public sanitary sewer, water, storm drainage, stormwater quality facilities, and fire safety standards show the development is feasible as proposed.

Site Plan Review criteria contained in Albany Development Code (ADC) 2.450, the Multi-Family Residential Design Standards under ADC 8.200-8.305, the Supplemental Residential Design Standards in Village Centers under 8.480-8.485, and the Floodplain Development Review criteria under 6.110 are addressed in this report. These criteria must be satisfied to grant approval for this application.

### Application Information

Proposal:	Site Plan Review and Floodplain Development Review to construct a 264-unit apartment complex (Brandis Meadows Apartments) with associated parking and common open space.
Review Body:	Staff (Type I-L review)
Report Prepared By:	Laura LaRoque, Senior Planner

Property Owner:	Brandis Village, LLC PO Box 3308, Salem, OR 97302
Applicant:	Montagne Development Group, LLC PO Box 3308, Salem, OR 97302
Engineer:	Mark Grenz; Multi/Tech Engineering, Inc. 1155 13th Street SE, Salem, OR 97302
Representative:	Brandie Dalton; Multi/Tech Engineering, Inc. 1155 13th Street SE, Salem, OR 97302
Address/Location	4350 Knox Butte Road SE, Albany, OR 97321
Map/Tax Lot:	Linn County Assessor's Map No. 11S-03W-03C; Tax Lot 100
Zoning:	MUC (Mixed Use Commercial), OS (Open Space), /FP (Floodplain Overlay), /SW (Significant Wetland Overlay) and /RC (Riparian Corridor Overlay) Districts
Comprehensive Plan	Village Center and Open Space
Total Land Area	16.52 gross acres and 13.23 acres to be developed
Existing Land Use:	Vacant
Neighborhood:	East Albany
Surrounding Zoning:	North: OS-Open Space and MUC – Mixed Use Residential (across Knox Butte Road) South: RS-6.5-Residential Single Family East: OS and RS-6.5-Residential Single Family West: OS and MUC
Surrounding Uses:	North: Unimproved South: Unimproved East: Single-Family Residential West: Unimproved
Prior History:	SP-04-19 and FP-04-19: Withdrawn – Brandis Meadow Apartments  PA-06-18: Partition a 23.84-acre parcel into two parcels. Parcel one is proposed to be 16.52 acres, parcel two is proposed to be 5.54 acres, and a 73-foot wide street right-of-way is proposed to be dedicated extending Timber Ridge Street through the site.  SD-08-06: Withdrawn - Brandis Village Subdivision Tentative Plat.

## Staff Decision

The applications for Site Plan Review and Floodplain Development referenced above is **Approved with Conditions** as described in this staff report.

## Notice Information

Notices were mailed to surrounding property owners within 300 feet of the subject property on March 26, 2020. At the time the comment period ended on April 9, 2020, the Albany Planning Division had received no written comments.

## Analysis of Development Code Criteria

Albany Development Code (ADC) criteria for Site Plan Review (ADC 2.450) and Floodplain Development Review (ADC 6.110 & 6.111) are addressed in this report for the proposed development. The criteria must be satisfied to grant approval for this application. Code criteria are written in **bold** followed by findings, conclusions, and conditions of approval where conditions are necessary to meet the review criteria.

### Site Plan Review Criteria (ADC 2.450)

#### Criterion 1

**Public utilities can accommodate the proposed development.**

#### Findings of Fact

##### *Sanitary Sewer*

- 1.1 City utility maps show a 12-inch public sanitary sewer main at the northwest corner of the subject property in Timber Ridge Street. No public sewer main exists in Knox Butte Road along the subject property's frontage.
- 1.2 Albany Municipal Code (AMC) 10.01.010(1) states that the objective of the AMC requirements pertaining to public sanitary sewers is to facilitate the orderly development and extension of the wastewater collection and treatment system, and to allow the use of fees and charges to recover the costs of construction, operation, maintenance, and administration of the wastewater collection and treatment system.
- 1.3 Albany Development Code (ADC) 12.470 requires all new development to extend and/or connect to the public sanitary sewer system if the property is within 300 feet of a public sewer line.
- 1.4 ADC 12.490 states that sewer collection mains must be extended along the full length of a property's frontage(s) along the right(s)-of-way or to a point identified by the City Engineer as necessary to accommodate likely system expansion. ADC 12.510 requires main extensions through the interior of a property to be developed where the City Engineer determines that the extension is needed to provide access to the public system for current or future service to upstream properties. Extension of the sewer across the frontage and/or through the interior of a property makes the system available to adjacent properties. Then, when the adjoining property connects, that property owner must extend the sewer in a similar manner, making the sewer available to the next properties. In this way, each property owner shares proportionately in the cost of extending sewer mains.
- 1.5 Where a property abuts more than one street or right-of-way, sewer mains shall be extended for the full length of the property frontages along the rights-of-way for all frontages, unless it is determined that the extensions on the frontages from which service is not being taken are not currently needed to provide service to other properties, and that those sewer mains may be completed at a future time. If the City Engineer authorizes a delay in construction of sewer mains, the property owner(s) must sign

a Petition for Improvements and Waiver of Remonstrance that commits the property to participate in a future local improvement district (AMC 10.01.100(5)(d)).

- 1.6 There are unserved properties to the east of the proposed development that need access to the public sanitary sewer system. Therefore, a public sanitary sewer extension will be required along the Knox Butte Road frontage of the subject property as a condition of this development. It is not anticipated that the public sanitary sewer in Timber Ridge Street will be extended beyond Burkhart Creek at the south boundary of the subject property. The owner of the subject property has signed a Petition for Improvements and Waiver of Remonstrance for the potential future extension of public sewer in Timber Ridge Street to Burkhart Creek if it is deemed necessary with future development.
- 1.7 The applicant's preliminary utility plan shows the extension of approximately 300 feet of public sanitary sewer in Timber Ridge Street to provide service to the proposed development.
- 1.8 The applicant's preliminary utility plan shows a connection to the existing public sanitary sewer system in Timber Ridge Street to serve the proposed apartment complex.

### *Water*

- 1.9 City utility maps show a 12-inch public water main in Timber Ridge Street at the northwest corner of the subject property, and a 24-inch public water main in Knox Butte Road that does not extend along the subject property's full frontage.
- 1.10 ADC 12.420 states that no new development is allowed on private well systems, except for construction of one single-family dwelling on an existing lot of record.
- 1.11 ADC 12.450 requires that all new development within the City, where appropriate, provide for the extension of existing water lines serving surrounding areas.
- 1.12 AMC 11.01.120 (2)(e) states that all required public water main extensions must extend to the furthest property line(s) of the development or parcel. Main extensions may be required through the interior of a property to be developed where the City Engineer determines that the extension is needed to provide current or future looping of water mains, or to provide current or future service to adjacent properties. When the owner of a property is required to connect to the public water system, the water main must be extended across the property's entire frontage and/or through the interior of the property. Extension of the water across the property's frontage and through the interior of the property makes the system available to adjacent properties. Then, when the adjoining property connects, that property owner must extend the water mains in a similar manner, making the water available to the next properties. In this way, each property owner shares proportionately in the cost of extending water mains.
- 1.13 AMC 11.01.120 (2)(c) states that the City shall have the sole right to determine size, location, and type of facility to be constructed. All engineering of public water facilities shall be based on both domestic and fire protection design criteria, and in accordance with the City's water facility plan. All public water system improvements to be built under a private contract require that the developer obtain a Permit for Private Construction of Public Improvements.
- 1.14 The City's Water Facility Plan shows the public water main in Knox Butte Road in this area as needing to be a 24-inch main, and the public water main in Timber Ridge Street in this area as needing to be a 12-inch main.

- 1.15 The applicant's preliminary utility plan shows the extension of a public water main in Timber Ridge Road to the southern extreme of the required street improvements.

### *Storm Drainage*

- 1.16 City utility maps show a system of catch basins/inlets and storm drainage piping around the roundabout at Timber Ridge Street and Knox Butte Road. No piped public storm drainage facilities exist east of the improved portion of Knox Butte Road adjacent to the subject property.
- 1.17 It is the property owner's responsibility to ensure that any proposed grading, fill, excavation, or other site work does not negatively impact drainage patterns to, or from, adjacent properties. In some situations, the applicant may propose private drainage systems to address potential negative impacts to surrounding properties. Private drainage systems that include piping will require the applicant to obtain a plumbing permit from the Building Division prior to construction. Private drainage systems crossing multiple lots will require reciprocal use and maintenance easements and must be shown on the final plat. In addition, any proposed drainage systems must be shown on the construction drawings. The type of private drainage system, as well as the location and method of connection to the public system must be reviewed and approved by the City of Albany's Engineering Division.
- 1.18 ADC 12.530 states that a development will be approved only where adequate provisions for storm and flood water run-off have been made, as determined by the City Engineer.
- 1.19 ADC 12.580 states that all new development within the City must, where appropriate, provide for the extension of existing storm sewer lines or drainageways serving surrounding areas. Extensions may be required along all frontages and/or through the interior of a property to be developed where the City Engineer determines that the extension is needed to provide service to upstream properties.
- 1.20 ADC 12.550 states that any public drainage facility proposed for a development must be designed large enough to accommodate the maximum potential run-off from its entire upstream drainage area, whether inside or outside of the development, as specified in the City's storm drainage facility plan or separate storm drainage studies.
- 1.21 ADC 12.560 states that where it is anticipated by the City Engineer that the additional run-off resulting from the development will overload an existing drainage facility, the review body will not approve the development until provisions have been made for improvement of the potential problem.
- 1.22 The applicant is required to submit a drainage plan, including support calculations, as defined in the City's Engineering Standards. The applicant is responsible for making provisions to control and/or convey storm drainage runoff originating from, and/or draining to, any proposed development in accordance with all City standards and policies as described in the City's Engineering Standards. In most circumstances, detention will be required unless it can be satisfactorily demonstrated by the applicant that there is no adverse impact.
- 1.23 The applicant has submitted a preliminary storm drainage report that shows how stormwater runoff will be collected on-site and discharged to the public drainage system (Burkhart Creek). Staff has reviewed the report and has found it to be generally acceptable, but final design details will be reviewed in conjunction with future required design and construction permits.

### *Stormwater Quality*

- 1.24 A post-construction stormwater quality permit shall be obtained for all new development and/or redevelopment projects on a parcel(s) equal to or greater than one acre, including all phases of the development. (AMC 12.45.030).
- 1.25 AMC 12.45.040 states the following: (1) A development may be exempted from the requirement of AMC 12.45.030 when one or more of the following conditions exist: (a) The development is for the construction of not more than three single-family or duplex dwelling(s) on an existing lot(s) of record; (b) The development creates and/or replaces less than 8,100 square feet of impervious surface, cumulatively; (c) The Director has determined that physical characteristics of the site (including current development) make effective on-site construction of the facilities impractical; and that an off-site post-construction stormwater quality fee has been paid per AMC 12.45.100; (d) The Director has determined that the site topography or soils makes it impractical or ineffective to construct the facilities on site or within planned improvements in the public right-of-way; and that an off-site post-construction stormwater quality fee has been paid per AMC 12.45.100.
- 1.26 AMC 12.45.080 states that applicants for a post-construction stormwater quality permit shall submit as a part of their permit application a post-construction stormwater quality plan. Each plan shall comply with the minimum standards outlined in the engineering standards, construction standards, and the provisions of this chapter. Each post-construction stormwater quality plan shall be reviewed, approved, and stamped by a professional licensed in Oregon as a civil or environmental engineer or landscape architect. (Ord. 5841 § 3, 2014).
- 1.27 AMC 12.45.130 states the following: (1) Private stormwater facilities operation and maintenance agreements are required for all private post-construction stormwater quality facilities that require a permit under this chapter; (2) Private stormwater facilities operations and maintenance agreements shall be recorded at the applicable County Recorder's Office and shall run with the land; (3) Redevelopment of a property already operating under a private stormwater facilities operation and maintenance agreement will require execution of a new agreement if the Director determines, in the exercise of reasonable discretion, that the redevelopment is likely to have a material impact upon the operation, maintenance, or effectiveness of the previously approved facilities.
- 1.28 The subject property is approximately 15 acres in size. Because the site is larger than one acre and more than 8,100 square feet of impervious surfaces will be created, a stormwater quality permit will be required for this project.

### *Fire Safety*

- 1.29 New development must meet fire safety standards for access and water supply, in accordance with the Oregon Fire Code (OFC), to ensure public safety standards are met. The Fire Department has reviewed the plans and found the proposal can feasibility meet fire safety standards. At the time of site improvement and building permits, the fire department reviews the plans again to ensure specific fire safety standards are met. These standards are described below.
- 1.30 The proposed project is located within a "Protected Area" as defined by OFC Appendix B, Section B102, and this area will be required to be served by a public water system. The development must provide Fire Flow capacity, as specified in Appendix B of the fire code.
- 1.31 Approved fire apparatus roadways must extend to within 150 feet of all exterior portions of any structure that will be built on the property as measured by an approved route of travel around the exterior of the structure. (OFC 503.1.1)

- 1.32 Turning radius for all fire apparatus access roads shall be provided and maintained at no less than 30 feet inner and 50 feet outer. (OFC 503.2.4 & Appendix D 103.3)
- 1.33 The location and spacing requirements for fire hydrants are based on four project-specific criteria:
  - a. The distance from the most remote exterior point of the building(s) to the closest available fire hydrant.
  - b. The calculated “fire flow” of the proposed building(s).
  - c. The spacing of the existing fire hydrants along the public and private fire apparatus roads serving the property.
  - d. The location of new required public or private fire apparatus access roads located adjacent to the proposed building(s) to be constructed.
- 1.34 Location of any fire department connections that will serve any fire sprinkler system(s) protecting the buildings shall be installed at a location approved by the Albany Fire Department and shall be provided with approved STORZ fitting. The fire department connections shall be located near the site entrance so as not to obstruct subsequent arriving fire apparatus and within 40 feet of a fire hydrant (public fire hydrants whenever possible). (OFC 903.3.7 and Albany Fire Department requirements).
- 1.35 Multiple-family residential projects having more than 200 dwelling units shall be provided with two separate and approved fire apparatus access roads regardless of where they are equipped with an approved automatic sprinkler system. Where two fire apparatus access roads are required, they shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses (OFC D106.2 & D106.3).

## Conclusions

- 1.1 Because the public sanitary sewer system does not extend to the eastern extent of the subject property’s Knox Butte Road frontage, the applicant must construct a public sewer main extension along Knox Butte Road.
- 1.2 The applicant must extend a public sanitary sewer main in Timber Ridge Street from the end of the existing main near Knox Butte Road to the northern entrance of the proposed development.
- 1.3 Because the public water system does not extend to the eastern extent of the subject property’s Knox Butte Road frontage, the applicant must construct a 24-inch public water main extension in Knox Butte Road.
- 1.4 The applicant must extend a 12-inch public water main in Timber Ridge Street from the end of the existing main near Knox Butte Road to a point near the south boundary of the subject property.
- 1.5 Because the site is larger than one acre and more than 8,100 square feet of impervious surfaces will be created, a stormwater quality permit will be required for this project.
- 1.6 The applicant submitted a storm drainage report with the site plan review application for this project. City staff reviewed the report and has found it to be generally acceptable, but final design details will be reviewed in conjunction with future required design and construction permits.

- 1.7 Because the public storm drainage improvements in Knox Butte Road do not extend along the full length of the subject property's frontage, public storm drainage facilities must be included in any required street improvements in Knox Butte Road.
- 1.8 The fire department has reviewed the plans and found the proposal can feasibly meet fire safety standards for construction of 200 units or more upon the construction of bridge for Timber Ridge Street across Burkhart Creek. At the time of site improvement and building permits, the final plans will be reviewed again to ensure the standards of the OFC are met.
- 1.9 This criterion can be met with the following conditions.

### Conditions of Approval

- Condition 1* Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public sanitary sewer main in Knox Butte Road to the east boundary of the property's frontage. Alternatively, the applicant may construct (or provide financial assurances for the construction) a public sewer main internal to the proposed development, which would serve the adjacent parcel to the northeast. Any public sewer constructed across private property shall be located within a permanent public easement a minimum of 20 feet in width. Additionally, said easement shall be located in the parking lot, private drive, or similar open area that permits unobstructed vehicle access for maintenance and inspection purposes. An all-weather access shall be provided to all public utility structures located outside of parking lots or private drives, with a minimum width of 12 feet.
- Condition 2* Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public sanitary sewer main in Timber Ridge Street from Knox Butte Road to the proposed northern access to the apartment complex (approximately 300 feet).
- Condition 3* Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public 24-inch water main in Knox Butte Road to the east boundary of the property's frontage.
- Condition 4* Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public 12-inch water main in Timber Ridge Street from Knox Butte Road to approximately the south boundary of the subject property.
- Condition 5* Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) public storm drainage improvements in Knox Butte Road in conjunction with any required street improvements in the Knox Butte Road right-of-way.
- Condition 6* Before the City will issue a final occupancy permit for any portion of the proposed project, the applicant must obtain a stormwater quality permit from the City and construct all required stormwater quality facilities according to City codes and standards.

## Criterion 2

**The proposed post-construction stormwater quality facilities (private and/or public) can accommodate the proposed development, consistent with Title 12 of the Albany Municipal Code.**

### Findings of Fact

- 2.1 Section 12.45.030 of the Albany Municipal Code states that a post-construction stormwater quality permit shall be obtained for all new development and/or redevelopment projects on a parcel(s) equal to or greater than one acre, including all phases of the development.
- 2.2 The applicant submitted a storm drainage plan that includes stormwater quality facilities for this development proposal. The Public Works Department reviewed the plans and determined that there are some details that do not meet City standards, but those details can be addressed at the time of the Site Improvement permit.

### Conclusions

- 2.1 The new development must provide stormwater quality facilities consistent with Title 12 of the Albany Municipal Code and the City's Engineering Standards.
- 2.2 This criterion is satisfied with Condition of Approval Six, which is listed under Site Plan Review Criterion One, above.

## Criterion 3

**The transportation system can safely and adequately accommodate the proposed development.**

### Findings of Fact

- 3.1 As shown on Attachment A, the subject property has frontage on Knox Butte Road and Timber Ridge Street. Access to the site is via two accessways to Timber Ridge Street. No access to Knox Butte Road is proposed with this development.
- 3.2 As shown on the Site Overview Plan (Attachment B.1, Sheet SDR07), Timber Ridge Street is proposed to run north-south along the west of the site from the roundabout at Knox Butte Road to Burkhardt Creek.
- 3.3 ADC 12.060 requires that all streets within and adjacent to new development be improved to City standards.
- 3.4 ADC 12.290 requires new development to install public sidewalk improvements on all public streets within and adjacent to the development.
- 3.5 The intersection of Knox Butte Road and Timber Ridge Street is a single lane roundabout constructed to City standards.
- 3.6 Knox Butte Road is classified as minor arterial street and is not fully constructed to City standards across the site's frontage. Portions of the site's frontage lack curb, gutter, and sidewalk. A condition of approval will require curb, gutter, and sidewalk improvements along the site's frontage along Knox Butte Road.
- 3.7 Timber Ridge Street is classified as a minor collector street and is unimproved. Public street right-of-way with a width of 73 feet was dedicated with a prior partition (PA-06-18) involving this parcel. A

condition of approval will require street improvements that include curb, gutter, and sidewalk on both sides; a vehicle travel lane in each direction; and on street bike lanes.

- 3.8 Albany's TSP includes three projects that adjoin this site. Project L24A would extend urban street improvements on Knox Butte Road across the frontage of this site. Project L15 would extend urban street improvements on Timber Ridge Street across the frontage of this site. Project M7 would construct a multiuse path along the south and east boundary of this site on land currently owned by the City. The applicant has proposed construction of Project L24A and L15 along the site's frontage on those improvements.
- 3.9 The applicant submitted two Traffic Impact Analysis (TIA) and Traffic Study Supplemental memorandum with the application. The studies were performed by Associated Transportation Engineering and Planning and are dated May 1, 2018, and November 11, 2019. The memorandum was also prepared by Associated Transportation Engineering and Planning and is dated March 22, 2020. The TIA assumed construction of this development with 264 multifamily units as well as an additional 44 townhomes. For that reason, the TIA overestimates the impact of just this development. This development is projected to generate approximately 89 vehicle trips per day during the peak AM traffic four and 111 during the peak PM traffic hour.
- 3.10 The TIA analyzed the operation of the street system at build-out of the development at year 2020, and at year 2025 (build-out + five years). Albany's intersection performance standards are: LOS D for traffic signals, roundabouts, and all way stops; a volume to capacity (v/c) ratio of 0.85 for the worst-case movement at two-way, stop-controlled intersections and driveway approaches to a public street.
- 3.11 The traffic study evaluated the peak hour performance of the following intersections:
- *Pacific Boulevard and Airport Road.* This intersection is under ODOT jurisdiction and is controlled by a traffic signal. ODOT's performance standard for the intersection is a v/c ratio of 0.85. At year 2025 the intersection was projected to operate with a v/c ratio of 0.825 and will meet ODOT's performance standard with no modification. ODOT has an improvement project for the intersection scheduled for construction in 2021. That project will result in additional improvement to the operation of the intersection.
  - *Knox Butte Road at Century Drive.* This intersection is under ODOT jurisdiction and is a two-way stop-controlled intersection. ODOT's performance standard for the intersection is a v/c ratio of 0.85 for the worst-case movement during the peak traffic hour. The intersection currently exceeds that standard. At year 2020 with the development in place the worst-case movement would operate with a v/c of 2.331 during the peak pm traffic hour. The v/c was projected to fall to 3.185 at year 2025.
  - *Knox Butte Road at Timber Street.* This intersection is under City jurisdiction and is controlled by a traffic signal. Albany's performance standard for the intersection is LOS D. At year 2025 the intersection was projected to operate at LOS A with no modification.
  - *Knox Butte Road at Clover Ridge Road.* This intersection is under City jurisdiction and is a two-way stop-controlled intersection. Albany's standard for the intersection is a v/c ratio of 0.85 for the worst-case movement. At year 2020 with project development the worst-case movement was projected to operate with a v/c ratio of 0.623. At year 2025 the worst-case movement was projected to operate with a v/c ratio of 0.889 with the current street geometry in place. Albany's

- TSP includes a project that will add a second westbound lane to Knox Butte Road on the west side of the intersection. With that improvement in place the projected 2025 traffic volumes would result in a v/c ratio of 0.84 for the worst-case movement.
- *Knox Butte Road at Goldfish Farm.* This intersection is under City jurisdiction and is a two-way stop-controlled intersection. Albany's standard for the intersection is a v/c ratio of 0.85 for the worst-case movement. At year 2020 with project development the worst-case movement was projected to operate with a v/c ratio of 0.779 and will meet City standards with no modification. At year 2025 the worst-case movement was projected to operate with a v/c ratio of 0.980.
  - *Knox Butte Road at Timber Ridge Street.* This intersection is under City jurisdiction and is a single lane roundabout. At year 2025 the intersection was projected to operate at LOS B and will meet the City's performance standard with no modification.
- 3.12 In addition to evaluating intersection performance, the TIA also included a warrant analysis for traffic signal installation at three intersections:
- *Knox Butte Road at Century Drive.* This intersection was found to meet traffic signal warrants for existing as well as future conditions. Albany's 2010 TSP includes a project to construct a temporary planned I-5 interchange project. Shortly after adoption of the TSP, ODOT declined Albany's offer to construct the temporary traffic signal. The City had offered to construct the signal based on concerns about intersection geometry and a preference that any change and/or upgrade be made at the time of interchange modification. ODOT has been working on refining a design for the interchange modification and construction funding is anticipated with upcoming state highway funding cycles.
  - *Knox Butte Road at Clover Ridge Road.* Based on the intersection's current geometry the intersection was projected to meet warrants for a traffic signal at year 2025. Albany's TSP, however, includes a project that will add a second westbound lane to Knox Butte Road on the west side of the intersection. With that improvement in place the intersection would meet the City's performance standards at year 2025 and warrants for a traffic signal would not be met.
  - *Knox Butte Road at Goldfish Farm Road.* The worst-case movement at this intersection was found to exceed the City performance standard at year 2025, but traffic signal warrants would not be met.
- 3.13 Access for both phase one and two of this development will be from Timber Ridge Street. The fire code limits the number of multifamily units that can be developed with a single access point and requires a secondary emergency vehicle access route when the number of units exceed that threshold. Phase one of this development will not trigger the need for a secondary emergency vehicle access, but phase two will. In recognition of this problem the developer has provided financial assurance for the construction of a bridge across Burkhart Creek, and the extension of an emergency vehicle access road linking Timber Ridge Street at the south boundary of this development with Dogwood Avenue.

## Conclusions

- 3.1 Albany's TSP identifies three projects adjoining the boundary of this site: urban street improvements to Knox Butte Road; the extension of Timber Street as a minor collector street along the site's west boundary; and construction of a multiuse path along south and east boundaries of the site on land currently owned by the City. The development proposal includes the street improvements envisioned by the TSP along the site's frontages on Knox Butte Road and Timber Ridge Street.

- 3.2 The multiuse path envisioned by the TSP along the site's south and east boundary is not included in the development proposal. The project description in the TSP notes that the intent of the path is to connect Timber Ridge Street with Timber Linn Park to the east. Because no right of way acquisition or path construction planning has occurred to the west of this site, a path constructed along the perimeter of this site would not connect to any existing pedestrian or bicycle facility improvements. Up to 70 percent of the cost of path improvements can be funded by the City through use of TSDC funds. This development will pay TSDC fees with issuance of building permits, and through that mechanism will contribute to the ultimate construction of the path.
- 3.3 ADC 12.060 and 12.290 require all public streets adjoining new development be improved to City standards. The adopted City standard for street improvement includes curb, gutter, and sidewalk. The street improvements included in the development proposal will satisfy this requirement.
- 3.4 The applicant submitted a traffic impact study with the application. With the exception of the Knox Butte Road/Century Drive intersection all study intersections and driveways were found to meet City performance standards at buildout of the development. The Knox Butte Road/Century Drive intersection is under ODOT jurisdiction and meets warrants for installation of a traffic signal under current conditions. For reasons relating to intersection geometry and safety concerns, ODOT has not previously supported construction of a traffic signal at this intersection and has plans to address operational issues with a future interchange modification project.
- 3.5 Based on fire code standards the development will need a secondary emergency vehicle access route prior to construction of phase two. The developer has provided financial assurance for construction of a bridge over Burkhart Creek and the extension of an emergency vehicle access road that will provide that route by linking Timber Ridge Street with Dogwood Avenue.
- 3.6 This criterion can be met with the following conditions.

### Condition of Approval

**Condition 7** Before the City will issue a building permit for phase one of this project, the applicant shall construct the following improvements:

- a. Public street improvements that include curb, gutter, and sidewalk improvements along the site's frontage on Knox Butte Road. The curb and gutter shall match existing improvements east of the roundabout and transition to an ultimate curb to curb width of 38 feet at the site's east boundary. Sidewalk width shall be a minimum of 6 feet and be setback from the curb with a landscape stripe having a minimum width of 6 feet.
- b. Public street improvements along phase one's frontage on Timber Ridge Street that include: curb, gutter, and sidewalk on both sides; a vehicle travel lane in each direction; and on street bike lanes. The curb to curb width shall match existing improvements south of the roundabout and transition to a curb to curb width of 34 feet. Sidewalk width shall be a minimum of 6 feet in width and setback from the curb by a landscape strip having a minimum width of 6 feet. Striping design shall be approved by the City Engineer and include two 11-foot vehicle lanes and 6-foot bike lanes.

**Criterion 8** Before the City will issue a building permit for phase two of this project, the applicant shall construct the following improvements:

- a. Public Street improvements along the development’s remaining frontage on Timber Ridge Street and across Burkhart Creek. The curb to curb width shall be 34 feet. Sidewalk width shall be a minimum of 6 feet in width and, with the exception of the bridge across the creek, be setback from the curb by a landscape strip having a minimum width of 6 feet. Striping design shall be approved by the City Engineer and include two 11-foot vehicle lanes and 6-foot bike lanes.
- b. Construction of a bridge for the Timber Ridge Street crossing of Burkhart Creek. The bridge width shall provide for two 11-foot vehicle lanes, two 6-foot bike lanes, and a sidewalk with a minimum width of 6 feet on each side.
- c. Construction of a gravel emergency vehicle access road on the south side of Burkhart Creek connecting Timber Ridge Street with Dogwood Avenue. The road shall have a minimum width of 20 feet and be designed to accommodate emergency vehicles.

**Criterion 4**

**Parking areas and entrance-exit points are designed to facilitate traffic and pedestrian safety and avoid congestion.**

**Findings of Fact**

*Access*

- 4.1 The applicant’s site plan proposes creation of two 26-foot-wide driveway connections to the Timber Ridge Street. The size and location of the proposed driveways comply with the size and spacing standards contained in ADC 12.100.
- 4.2 ADC 9.120(15) requires pedestrian access in all new off-street parking lots and additions to connect sidewalks adjacent to new development to the entrances of new buildings. Walkways are provided throughout the development to connect the building entrance to the parking lots. There are walkways connections to proposed sidewalks at the apartment complex entrance on future Timber Ridge Street and at the north end of the apartment complex to the existing sidewalk on the south side of Knox Butte Road.

*Parking*

- 4.3 Vehicle Parking: Based on Table 9-1 of the ADC the minimum parking requirement for the proposal is listed in the table below. Up to 40 percent of the parking spaces may be compact size.

Multiple Family Dwelling Type (Phase I and II)	Parking Ratio	Visitor Ratio	Units Provided	Parking Required	Parking Provided
Studio and 1 Bedroom Units	1 per unit	1/4 units	48	60	
2 Bedroom Units	1.5 per unit	1/4 units	180	315	
3 Bedroom Units	2 per unit	1/4 units	36	81	
<b>Totals</b>				456	<b>558</b>

Multiple Family Dwelling Type (Phase One)	Parking Ratio	Visitor Ratio	Units Provided	Parking Required	Parking Provided
Studio and 1 Bedroom Units	1 per unit	1/4 units	24	30	
2 Bedroom Units	1.5 per unit	1/4 units	132	231	
3 Bedroom Units	2 per unit	1/4 units	12	27	
<b>Totals</b>				288	<b>414</b>

Multiple Family Dwelling Type (Phase Two)	Parking Ratio	Visitor Ratio	Units Provided	Parking Required	Parking Provided
Studio and 1 Bedroom Units	1 per unit	1/4 units	24	30	
2 Bedroom Units	1.5 per unit	1/4 units	48	84	
3 Bedroom Units	2 per unit	1/4 units	24	54	
<b>Totals</b>				168	<b>144</b>

Based on this calculation, the proposal exceeds the minimum parking requirements by 102 stalls. Of the proposed 558 parking spaces, ten are proposed to meet Oregon Americans with Disabilities Act (ADA) standards, zero spaces are proposed to be compact spaces, 477 will be standard stall size, and 71 are garage spaces.

4.4 Parking Lot Design and Construction. ADC 9.120 includes standards for parking lots. Parking lots must have a durable, dust-free surface; a drainage system; perimeter curb; wheel bumpers; and striping. ADC 9.130 requires that all off-street parking lots must be designed in accordance with City standards for stalls and aisles as set forth in Table 9-2. These include dimensional standards for parking lots, and an analysis of the parking stall design is provided in the table below:

Parking Lot Design	Parking Angle	Stall Width	Aisle Width	Stall Depth	Bumper Overhang or Sidewalk Width
Requirement Standard	90°	9'	26'	18.5'	3' bumper overhang or 7.5' sidewalk
<b>Proposed Standard</b>	<b>90°</b>	<b>9'</b>	<b>26'</b>	<b>16.5' + 2' sidewalk overhang = 18.5'</b>	<b>7.5' sidewalk</b>

Based on this comparison of required design standards and the proposed design, the parking stall design meets the minimum dimensional standards. Parking lot landscaping is addressed under Criterion Five below.

4.5 Parking Lot Dead-End Backup: Table 9-2: Parking Lot Design and Supplemental Drawings show that the design dead-end backup areas must be at least five feet deep. Some of the dead-end back up areas do not meet this standard. The final site plan will need to show all parking lot design standards are met.

- 4.6 Parking Lot Access: Table 9-2: Parking Lot Design and Supplemental Drawings show that the design of driveways must include 20 feet of storage length for entering and exiting vehicles. The driveway entrances at Timber Ridge Street are 20 feet in depth, which meets this standard.
- 4.7 Bicycle Parking: Bicycle parking is calculated at a rate of one space for every four dwelling units and at least half of the required bicycle parking spaces must be sheltered, as listed in the table below:

Bicycle Parking Ratio for Multiple Family Dwellings	Dwelling Units Proposed	Bicycle Parking Required	Bicycle Parking Provided	Sheltered Bicycle Requirement	Sheltered Bicycle Provided
1 per 4 units	168 (Phase I)	42	<b>42</b>	50% or 21	<b>42</b>
1 per 4 units	96 (Phase II)	24	<b>24</b>	50% or 12	<b>24</b>
1 per 4 units	264 (Phase I and II)	66	<b>66</b>	50% or 33	<b>66</b>

The proposal meets the minimum required number of bicycle parking spaces. Bicycle parking is visible and centrally located to the proposed apartment buildings. As shown on the Preliminary Site Plan (Attachment B.2, Sheet SDR08), all of the spaces are sheltered, with minimum clearance provided in accordance with the design standards for bicycle parking under ADC 9.120(13).

- 4.8 ADC 9.120(14) requires on-site lighting to be arranged to reflect the light away from any adjacent or abutting properties. As shown on the Site Lighting Plan (Attachment B.4, Sheet SDR09), the parking lot lighting will be contained on-site.

### Conclusions

- 4.1 The applicant proposes construction of two new driveway connections to Timber Ridge Street. No driveway connections are proposed to Knox Butte Road.
- 4.2 The design and location of the proposed driveways comply with the standards contained in ADC 12.100.
- 4.3 Walkways are provided throughout the development. Two pedestrian connections are provided from the sidewalk to the apartment complex at each of the entrances to Timber Ridge Street and one pedestrian connection is provided from the sidewalk to the apartment complex at the entrances to Knox Butte Road.
- 4.4 The parking lot plan complies with the travel aisle, stall dimensions, and entry setback standards contained in Section 9.130 of the Development Code, but some of the dead-end back up areas do not meet the five-foot depth standard. The final site plan will need to show all parking lot design standards are met.
- 4.5 A total of 456 vehicle parking spaces are required and 558 parking spaces are proposed to be provided; none of those spaces are designed for compact vehicles. This meets the minimum amount required for on-site vehicle parking.
- 4.6 The applicant proposes to install 66 covered bicycle parking spaces, which meets the minimum number of bicycle parking space required to be provided on-site. The detail shown on the Preliminary Site Plan (Attachment B.3, Sheet SDR08) show the bicycle parking meets the minimum design standards of ADC 9.120(13).

- 4.7 The Site Lighting Plan (Attachment B.4, SDR09) shows the parking lot lighting is contained on-site in accordance with ADC 9.120(14).
- 4.8 This criterion can be met with the following conditions.

### Conditions of Approval

**Condition 9** Prior to issuance of a building permit, the applicant shall submit a revised site plan to the Community Development Department for review and approval, to meet the five-foot dead-end backup area requirement, consistent with the standards of Table 9-2: Parking Lot Design and Supplemental Drawings.

**Condition 10** All lighting must be directed down, contained on site, and shielded, full cut-off design.

### Criterion 5

**The design and operating characteristics of the proposed development are reasonably compatible with surrounding development and land uses, and any negative impacts have been sufficiently minimized.**

### Findings of Fact

- 5.1 Site Plan Review is intended to promote functional, safe, and attractive developments that maximize compatibility with surrounding developments and uses and with the natural environment. Site Plan Review is not intended to evaluate the proposed use or structural design of the proposal. Rather, the review focuses on the layout of a proposed development, including building placement, setbacks, parking areas, external storage areas, open areas, and landscaping. Where conflicts are identified, mitigation can be required through conditions of approval.
- 5.2 The subject property is a 16.52-acre vacant site that is located to the southeast of the Knox Butte Road roundabout, east of Timber Ridge Street. The property is identified as 4350 Knox Butte Road SE, Linn County Assessor's Map No. 11S-03W-03C; Tax Lot 100. A location map is presented in Attachment A.
- The proposal is to construct a phased, 264-unit apartment complex with associated site improvements such as streets, utilities, stormwater drainage, parking, landscaping, and other amenities (see Attachment B.3, Sheet SDR08). Phase One consists of Buildings 1 to 16 (168 units) with associated site improvements such as streets, utilities, stormwater drainage, recreation/manager office, trash refuse enclosure, recreation area, swimming pool, bicycle parking, parking stalls, travel aisles, and landscaping. Phase Two consists of Buildings 17 to 24 (96 units) with associated site improvements such as recreation area, bicycle parking, parking stalls, travel aisles, and landscaping. As presented in the proposed Site Overview Plan (Attachment B.1, Sheet SDR07), the applicant has proposed to develop only 13.23 acres on the central portion of the property to minimizing impacting to identified natural resource overlays.
- 5.3 The underlying zoning districts are MUC (Mixed-Use Commercial) and OS (Open Space). These zones are shown on the location map (Attachment A). There are also natural resource overlays following the riparian, floodplain, wetlands, and OS zone. The development area will be entirely within the MUC zone avoiding the natural resource overlays and OS zone. The proposed multi-family residential development is allowed through site plan review approval in the MUC zone.

5.4 The characteristic of this neighborhood is a mixture of uses, but primarily residential. As illustrated in Attachment A, the surrounding properties are zoned for residential use, except for the MUC zoned property to the north and west of the site. Single-family residential uses are located to the south and east of the property. A 137-unit apartment complex is located northwest of the site. The proposed multi-family residential use will operate similar to other residential uses in the neighborhood.

5.5 Setbacks, Building Height and Lot Coverage. ADC 5.090, Table 2, shows the development standards for mixed use districts.

Setbacks. In the MUC zoning district, the minimum and maximum setback from a front property line is 5 feet and 25 feet, respectively. The Site Overview Plan shows Buildings 3 - 5 setback from the (front) property line at Knox Butte Road 16.7 feet to 25 feet, and Buildings 1 - 2, 14 - 15, and 19 - 21 from the (front) property line at Timber Ridge Street 7 feet to 20 feet (Attachment B.1, Sheet SDR07).

Basic development standards for the MUC zone requires an interior setback of 10 feet for buildings up to three stories tall. In addition, multi-family development at least 30 feet in height must be setback at least 30 feet from interior property lines that abut neighboring single-family homes. This standard requires buildings in higher density zones to be setback one foot from the property line adjacent to a lower density zone, for every foot of building height. Building height is measured from the average grade to the top of the wall facing the property line or to the top of the highest window or door, whichever is higher. As shown on Elevation Plans (Attachments B.5 - B.16), the proposed new structures ranges from 14 feet (Garage Buildings 1 - 7), 22 feet (Office Building 12), 39 feet to 41.5 feet (Apartment Buildings 1-11, 13-24) in height when measured to the peak of the roof. Buildings 6 - 8 are setback 75 feet from the east interior property line and Buildings 21 - 24 are setback 35.4 feet to 90 feet from south interior property line. Building 21 is the closest building to an interior property. Building 21 has a wall height of 27.3 feet and is setback 35.4 feet from the south interior property.

Building Height. The maximum height in the MUC zoning district is 50 feet. As shown on Elevation Plans, the proposed new structures ranges from 14 feet (Garage Buildings 1 - 7), 22 feet (Office Building 12), and 39 feet to 41.5 feet (Apartment Buildings 1-11, 13-24) in height when measured to the peak of the roof (see Attachments B.5 - B.16).

Lot Coverage. The maximum lot coverage in the MUC zoning district is 80 percent. The total site area is 16.52 acres (719,698 square feet) in size. The Site Overview Plan (Attachment B.1, Sheet SDR07) shows the total proposed developable area is 13.23 acres (576,272 square feet), which includes landscaped areas, or 80 percent of the total site area.

5.6 Density. Multifamily development in the MUC zone minimum gross density ten units per acre per ADC 5.070 (17). There is no maximum density required for residential development in the MUC zone.

The applicant proposes to develop the 264-unit apartment complex entirely within the MUC zoned land area of the property. A total of 48 studio and one-bedroom units, 180 two-bedroom units, and 36 three-bedroom units are proposed on the 16.52-acre site. To meet the density requirement, a total of 165 units are required. The proposal exceeds the minimum density requirements of the MUC zone by 99 units.

5.7 Landscaping Required.

Landscaping for residential uses under ADC 9.140(1) requires that all front setbacks (exclusive of access ways and other permitted intrusions) be landscaped before an occupancy permit will be issued,

unless the landscaping is guaranteed in accordance with ADC 9.190. Minimum landscaping acceptable for every 50 lineal feet of street frontage is:

- (a) *One tree at least 6 feet tall;*
- (b) *Four 1-gallon shrubs or accent plants;*
- (c) *The remaining area treated with suitable ground cover, such as lawn, bark, rock, ivy, and evergreen shrubs.*

The frontage along **Knox Butte Road** measures 378 lineal feet for a total landscape area requirement of 1,625 square feet (324 times 5 feet). Specific required amounts are 7 trees at least 6 feet tall, 26 one-gallon shrubs or accent plants, and attractive ground cover for the remainder of the setback area as described in ADC 9.140(1)(c).

The frontage along **Timber Ridge Street** measures 1,048 lineal feet when subtracting the accessways (1,100 feet minus 52 feet equals 138.84 feet) for a total landscape area requirement of 5,240 square feet (1,048 times 5 feet). Specific required amounts are 21 trees at least 6 feet tall, 84 one-gallon shrubs or accent plants, and attractive ground cover for the remainder of the setback area as described in ADC 9.140(1)(c).

The Landscape Plan proposes landscaping in the front yard and throughout the apartment complex (see Attachment B.17 - B.21, Sheet L1.1 – L1.5). This plan show landscaping will be feasible to implement, but they do not provide details to confirm the code standards are met.

A final landscape plan consistent with the standards of ADC 9.140(1) will need to be submitted for review and approval by the Community Development Department before building permits can be issued.

5.8 Buffering and Screening Required. To reduce the impacts on adjacent uses of a different type, buffering and screening are required in accordance with the matrix in ADC 9.300. When buffering is required, ADC 9.240 states the minimum improvements are:

- a) *At least one row of trees. These trees will be not less than 10 feet high at the time of planting for deciduous trees and spaced not more than 30 feet apart and 5 feet high at the time of planting for evergreen trees and spaced not more than 15 feet apart.*
- b) *At least five 5-gallon shrubs or ten 1-gallon shrubs for each 1,000 square feet of required buffer area.*
- c) *The remaining area treated with attractive ground cover (e.g., lawn, bark, rock, ivy, evergreen shrubs).*

The Buffering and Screening Matrix in Table 9-4 shows that multi-family development and parking lots adjacent to arterial streets and dwellings in residential districts require ten feet of landscaped buffering without screening.

Timber Ridge Street is classified as a collector street, and the south and east perimeter is surrounded by the OS zone, which provides a buffer between the residential zone and the proposed development. Therefore, buffering is not applicable to these frontages.

Knox Butte Road is classified as a minor arterial street; therefore, this frontage also requires buffering at least 10 feet in width to be provided. The **Knox Butte Road** front property line measures 378 lineal feet for a total landscape buffer area of 3,780 square feet. Specific required amounts are one row of trees at least 10 feet tall at the time of planting for deciduous trees and spaced not more than 30 feet apart and at least 5 feet tall at the time of planting for evergreen trees and spaced not more than 15

feet apart, 19 five-gallon shrubs or 38 one-gallon shrubs or accent plants, and attractive ground cover for the remainder of the setback area as described in ADC 9.240.

The Landscape Plan (Attachment B.17 - B.21, Sheet L1.1 – L1.5) does not provide adequate detail to show the landscape buffering and screening standards are met. A final landscape plan will need to be submitted for review and approval by the Community Development Department to ensure the standards of ADC 9.240 -9.250 and ADC 9.385 are incorporated into these plans.

5.9 Landscaping Around and Within Parking Areas. Landscaping in parking lots is required to provide shade, reduce stormwater runoff, and direct traffic. Parking lots must be landscaped in accordance with the minimum standards of ADC 9.150, which are:

- (1) Planter Bays. *Parking areas shall be divided into bays of not more than 12 parking spaces. At both ends of each parking bay there shall be curbed planters at least 5 feet wide, excluding the curb. Each planter shall contain one canopy tree at least 10 feet high and decorative ground cover containing at least two shrubs for every 100 square feet of landscape area. Neither planter bays nor their contents may impede access on required public sidewalks or paths, or handicapped-accessible parking spaces.*
- (2) Entryway Landscaping. *Both sides of a parking lot entrance shall be bordered by a minimum 5-foot-wide landscape planter strip meeting the same landscaping provisions as planter bays, except that no sight-obscuring trees or shrubs are permitted.*
- (3) Parking Space Buffers. *Parking areas shall be separated from the exterior wall of a structure by pedestrian walkways or loading areas or by a 5-foot strip of landscaping materials*

The Landscape Plans propose landscaping throughout the parking lot (see Attachments B.17 - B.21, Sheet L1.1 – L1.5). These plans show landscaping will be feasible to implement, but they do not provide adequate detail to confirm the code standards are met. A final landscape plan consistent with the standards of ADC 9.150 will need to be submitted for review and approval by the Community Development Department before building permits can be issued.

5.10 Irrigation System. ADC 9.160 requires that all required landscape areas be provided with a piped underground irrigation system. The Landscape Plans (Attachment B.17 - B.21, L1.1 – L1.5) do not include irrigation plans; therefore, an irrigation plan consistent with the standards of ADC 9.160 will need to be provided, unless a licensed landscape architect or certified nurseryman submits written verification that the proposed plant materials do not require irrigation.

5.11 Environmental Standards. ADC 9.440 - 9.500 include environmental standards related to noise, visible emissions, vibrations, odors, glare, heat, insects, rodents, and hazardous waste. The design and operating characteristics of the proposed multi-family residential use is like other residential uses in the area.

Noise: Noise generated in association to the proposed use will include standard mechanical equipment and daytime on-site parking lot traffic. No noise is anticipated to exceed the noise source standards of ADC 9.440.

Visible Emissions: There will be no emissions or discharge from the development.

Vibrations: Vibrations that exceed 0.002g peak are not expected to be produced in association to the proposed use.

Odors: The proposed use is not anticipated to produce continuous, frequent, or repetitive odors or emissions.

Heat: This is not applicable to the operations on this site.

Insects and Rodents: The current and proposed materials and processes used on this site do not attract insects or rodents.

Hazardous Waste: The proposed development will not generate hazardous waste.

Lighting and Glare: ADC 9.480 states that no direct or sky reflecting glare in excess of 0.5-foot candles of light be visible at the lot line shall be permitted. The Lighting Plan (Attachment B.3, Sheet SDR09) shows all lighting will be contained on-site. Condition of Approval 10 which is listed under Site Plan Review Criterion Four, above will ensure that all exterior lighting fixtures will be of a shielded, full cut-off design.

- 5.12 Refuse Containers. ADC 5.370 requires that any refuse container or disposal area that would otherwise be visible from a public street, customer, resident parking area, public facility, or any residential area must be screened from view by placement of a sight-obscuring fence, wall, or hedge at least six feet tall. All refuse materials must be contained within the screened area. As shown on the Preliminary Site Plan (Attachment B.2, Sheet SDR08), the applicant proposes to locate a refuse container area with trash enclosure south of Building Eight. A detail plan of the trash enclosure screening will be required prior to issuance of a building permit.
- 5.13 Fences. ADC 9.370 lists the requirements for fences. No perimeter fences are required or proposed with this application.
- 5.14 The multi-family design standards in Article Eight are addressed later in this report. Those findings and conclusions are included here by reference.

## Conclusions

- 5.1 The site is surrounded primarily by residential zones, with some OS to the west and MUC to the southeast. The site is a mixed-zone property, but the proposed apartment complex will be located entirely within the MUC zone. Multi-family residential development is allowed in MUC zone through site plan review approval.
- 5.2 The characteristic of this neighborhood is primarily residential. The design and operating characteristics of the proposed development is like other residential uses in the area.
- 5.3 The proposal meets the standards for density, building height, lot coverage, setbacks, and environmental standards.
- 5.4 Any adverse impacts associated with the use of the property can be mitigated through such means as shielded lighting and landscaping.
- 5.5 Condition of Approval Ten, which is listed under Site Plan Review Criterion Four, above will ensure that all exterior lighting fixtures, including pole mounted lights, shall be of a shielded, full cut-off design.
- 5.6 The applicant's site plan indicates that landscaping will be provided; however, a detailed landscape and irrigation plan will need to be submitted and approved prior to site improvements.

- 5.7 As shown on the site plan, the applicant proposes to locate a refuse container area within a trash enclosure. A detail of the trash enclosure screening will be required prior to issuance of a building permit.
- 5.8 No perimeter fences are required or proposed with this application.
- 5.9 Based on the observations above, the proposed development will be compatible with existing or anticipated uses in terms of size, intensity, setbacks, lighting, screening and landscaping when the following conditions are met.

## Conditions of Approval

- Condition 11** Prior to issuance of a building permit, a final landscape and irrigation plan shall be submitted for review and approval by the Community Development Department. The plan must be consistent with the landscaping standards of ADC 9.140, landscape parking lot standards of ADC 9.150, and irrigation standards of ADC 9.160. (Note: All required landscaped areas must be provided with an irrigation system unless a licensed landscape architect, landscape construction professional, or certified nurseryman submits written verification that the proposed plants do not require irrigation.)
- Condition 12** Prior to issuance of a building permit, a detail plan of the trash enclosure screening shall be submitted for review and approval by the Community Development Department.
- Condition 13** Prior to installation, all landscape materials shall be inspected and approved by the Community Development Department to ensure consistency with the approved plans.
- Condition 14** Prior to issuance of the final certificate of occupancy, all proposed and required site improvements (e.g. vehicle and bicycle parking, landscaping, tot-lot, refuse enclosure, lighting, etc.), shall be constructed and completed in accordance with approved plans. Landscaping may be financially secured through a completion guarantee, per ADC 9.190.

## Criterion 6

**Activities and developments within special purpose districts must comply with the regulations described in Articles 4 (Airport Approach), 6 (Natural Resources), and 7 (Historic), as applicable.**

## Findings of Fact

- 6.1 Article 4 Airport Approach. Figure 4-1 of ADC Article 4 shows that the subject property is located in the Airport Approach District. This district is comprised of several imaginary surfaces above which aircraft are allowed to operate.

The proposed development will be under the outermost surface called the Conical Surface. The Conical Surface begins at the outer boundary of the Horizontal Surface, at an elevation of 372 feet (NGVD 1929) above the airport elevation. The existing ground elevation is approximately 229 feet (NGVD 1929), and the maximum height limit of the MUC zone is 50 feet above grade for a total elevation of 279 feet which is well below the maximum height established by the Conical Surface.

There are no design features of the proposed development with navigational signals or radio communications, or that would induce confusing light patterns, or create bird-strike hazards that would endanger or interfere with aircraft intending to use the airport. Sound buffering features are not

warranted because the location of the proposed development is located outside the “noise sensitivity property” defined by 55 and 60 ldn noise contours.

6.2 Article 6 Steep Slopes, Comprehensive Plan Plate 7: The site is relatively flat. There are not areas of steep slopes on the subject property.

6.3 Article 6 Floodplains, Comprehensive Plan Plate 5: As shown on Attachment A, the Burkhardt Creek/Truax Creek Diversion Channel follows around the south and east boundary of the site. Flood Insurance Rate Map (FIRM) #41043C0218G shows the Special Flood Hazard Area (SFHA), otherwise known as the 100-year floodplain, follows the Burkhardt Creek/Truax Creek Diversion Channel along the east and south perimeter of the site.

Applicable review criteria for this land use review are ADC 6.110 “Site Improvement, Land Division, and Manufactured Home Park Standards.” Those criteria are addressed later in this report. Those findings and conclusions are included here by reference.

Under the Conditions of Approval Seven and Eight, which are listed under Site Plan Review Criterion Three, above, construction of Timber Ridge Street south through this site, and across Burkhardt Creek will be required. The crossing of Burkhardt Creek will require construction of a bridge, which will require floodplain review prior to initiating construction of this project. This will be included as a condition of approval.

6.4 Article 6 Wetlands, Comprehensive Plan Plate 6: As shown on the Existing Conditions plan sheet (Attachment B.22, Sheet SDR02), wetlands encumber a portion of the site. A wetland delineation (WD2019-0116) was completed, and concurrence was received from the Department of State Lands (DSL). Impacts to these wetlands are regulated by DSL and the U.S. Army Corps of Engineers. The Community Development Department sent a wetland land use notice to DSL regarding the proposed development. DSL responded and stated that the proposal appears to avoid impacts to jurisdictional wetlands or waters mapped in WD2019-0116; this information will be included on the notice of decision as information to the applicant.

6.5 Article 6 Natural Resource Overlays: The location map (Attachment A), shows Significant Wetland (/SW) and Riparian Corridor (/RC) overlays are located around the periphery of the site. The Site Overview Plan (Attachment B.1, Sheet SDR07) shows that these natural resource overlays are not impacted; therefore, a natural resource impact review and mitigation plan are not necessary for the proposed project.

Under the Conditions of Approval Seven and Eight, which are listed under Site Plan Review Criterion Three, above, construction of Timber Ridge Street along the west of the site, and across Burkhardt Creek/Truax Creek Diversion Channel will be required. The crossing of Burkhardt Creek/Truax Creek Diversion Channel will require construction of a bridge, which will impact the natural resource overlays.

ADC 6.290(4) exempts private construction of public infrastructure projects that are included in a master plan from natural resource impact review, as long as the unimproved but disturbed areas are replanted with native vegetation. The extension of Timber Ridge Street through the site is included in the adopted Transportation System Plan; therefore, this infrastructure project is exempt from natural resource impact review.

- 6.6 Article 7 Historic Districts, Comprehensive Plan Plate 9: The subject site is not located in a historic district. There are no known archaeological sites on the property. Under planning file SP-28-19 & FP-09-19, a letter from the Oregon State Historic Preservation Office (SHPO) submitted a letter on January 29, 2020, stating: “*According to the SHPO statewide database archaeological sites are not known to exist within the proposed project location. During project implementation, if an archaeological object or feature is encountered, please stop all ground disturbing activity at that location, and contact our office to report the find. (...)*” This information will be included on the notice of decision as information to the applicant.

## Conclusions

- 6.1 FIRM #41043C0218G shows the SFHA follows the Burkhart Creek/Truax Creek Diversion Channel around the perimeter of the site. Floodplain development review criteria ADC 6.110 are addressed later in this report.
- 6.2 Conditions of approval, below, under the floodplain development analysis ensure the development is located and constructed to minimize flood damage.
- 6.3 The site is located in the airport approach district, but the developable height limit in the underlying zoning district is well below the allowable height limit within the airport approach district.
- 6.4 The site is not located in a historic district and there are no steep slopes on the property.
- 6.5 The site is shown to have wetlands on the property that are under the jurisdiction of DSL and the U.S. Army Corps of Engineers. The proposed development avoids impacting these wetlands.
- 6.6 Significant Wetland Overlay (/SW) and Riparian Corridor Overlay (/RC) are located on portions of the site, but the proposed development will avoid impacting these natural resource overlays.
- 6.7 This criterion can be met without conditions.

## Criterion 7

### **The site is in compliance with prior land use approvals.**

## Findings of Fact and Conclusion

- 7.1 Three prior land use approvals are associated with the property:
- a. SP-04-19 and FP-04-19: Withdrawn - Site Plan Review and Floodplain Development Permit to construct a 264-unit apartment complex (Brandis Meadows Apartments) with associated parking and common open space
  - b. PA-06-18: Partition a 23.84-acre parcel into two parcels. Parcel one is proposed to be 16.52 acres, parcel two is proposed to be 5.54 acres, and a 73-foot wide street right-of-way is proposed to be dedicated to extend Timber Ridge Street through the site.
  - c. SD-08-06: Withdrawn - Brandis Village Subdivision Tentative Plat that will divide a 24.48-acre parcel of land and a 24.11-acre parcel of land into 202 lots. All of the lots, except Lot 202, will be developed with residential uses, including 79 detached single-family homes, 122 carriage-style homes, and 150 condominiums. Lot 202 will be an 8.46-acre lot designated for commercial development at a later time.
- 7.2 Albany Planning File No. PA-06-18 was approved with the following conditions of approval:

- a. Condition 1: Prior to recordation of the partition plat, the applicant shall provide a Petition for Improvement – Waiver of Remonstrance for participation in an assessment district for the following improvements:
    - i. The construction of public street improvements along the site’s frontage on Knox Butte Road.
    - ii. The construction of public street and utility improvements along the site’s frontage on Timber Ridge Street.
    - iii. The construction of a bridge for Timber Ridge Street across Burkhart Creek.
  - b. Condition 2: The applicant shall dedicate public street right of way for Timber Ridge Street as shown on the tentative partition plat.
  - c. Condition 3: Prior to any development in the Special Flood Hazard Area (e.g. a bridge over the Burkhart Creek/Truax Creek Diversion Channel), floodplain development review is required in accordance with the ADC.
  - d. Condition 4: Prior to issuance of a Site Improvement (SI) permit for development of bridge over the Burkhart Creek/Truax Creek Diversion Channel through the Significant Wetland Overlay (/SW) and Riparian Corridor Overlay (/RC), the applicant shall submit a plan to the Community Development Department for replanting unimproved but disturbed areas with native vegetation. Implementation shall be completed in accordance with the approved plan.
- 7.3 A Petition for Improvements and Waiver of Remonstrance Agreement was recorded with Linn County (2019-23054) on December 16, 2019.
- 7.4 An Infrastructure Funding Agreement was entered into on July 24, 2019, that satisfies the agreement to participate in cost to construct a bridge over Burkhart Creek at Timber Ridge Street as called for in the Petitions and Waivers of Remonstrance Agreement, recorded on December 16, 2019.
- 7.5 A Mutual Improvement Agreement Completion Bond to construct a bridge over Burkhart Creek at Timber Ridge Street was entered into on August 5, 2015.
- 7.6 Partition Plat 2020-09 (C.S. 26781) was recorded with Linn County on February 13, 2020. Included on the final plat was the dedicated public street right of way for Timber Ridge Street.
- 7.7 Two Site Improvement permits are currently under review: 1) Site Improvement Permit No. SI-20-14 to construct a bridge across Burkhart Creek at Timber Ridge Street; 2) Site Improvement Permit No. SI-20-17 to construct Timber Ridge Road, water, sewer, storm main extensions, new services, and stormwater quality facilities along the west of the subject property in association with the proposed development.
- 7.8 As of the date of this report, an application for floodplain development review has not been received by the City. The Site Improvement Permit (file SI-20-14) to construct a bridge across Burkhart Creek at Timber Ridge Street may not be issued until floodplain development review has been approved for this project. A condition of approval will ensure that prior to any development in the Special Flood Hazard Area (e.g. File SI-20-14), floodplain development review is conducted in accordance with the ADC and Condition Three of Albany Planning File No. PA-06-18.
- 7.9 This criterion can be met with the following condition.

## Condition of Approval

**Condition 15** Prior to issuance of a Site Improvement (SI) permit for development of a bridge over the Burkhart Creek/Truax Creek Diversion Channel, floodplain development review (including no-rise analysis), is required in accordance with the ADC.

## Criterion 8

**Sites that have lost their nonconforming status must be brought into compliance and may be brought into compliance incrementally in accordance with Section 2.370.**

## Findings of Fact and Conclusion

8.1 The site is not considered nonconforming; therefore, this criterion is not applicable.

## MULTIPLE FAMILY DEVELOPMENT DESIGN STANDARDS (ADC 8.200 to 8.300)

In addition to the review criteria above, the following Design Standards must be met. **Note:** If there is a checked box symbol () preceding a standard, it means staff has compared the applicant's findings and plans to the standard(s) and finds the standard(s) is met without comment. If the box is unchecked () , staff has provided findings and conclusions as to the reason(s) why the standard is not met and has added a condition. "NA" preceding the standard means it is not applicable to this particular development

N/A 8.210 Relationship to Historic Overlay Districts. For residential property inside the Historic Overlay Districts, see Article 7 for additional historic review criteria.

8.220 Recreation and Open Space Areas. In multi-family developments, a portion of the land not covered by buildings and parking shall be of adequate size and shape and in the proper location to be functional for outdoor recreation and relaxation. The standards are also intended to ensure that project open space is an integral part of the overall development design, not merely leftover space. In larger developments, there should be a variety of open space activities.

1) Common Open Space. For projects of 10 or more units, common open space shall be required at a ratio of 0.25 square feet for each 1.0 square feet of living space.

a) Areas designated as common open space shall be at least 500 square feet in size with no horizontal dimension less than 20 feet. The open space shall be functional and shall include one or more of the following types of uses:

- swimming pools, spas, and adjacent patios and decks
- developed and equipped adult recreation areas
- sports courts (tennis, handball, volleyball, etc.)
- community centers
- food and ornamental gardens
- lawn or hard surface areas in which user amenities such as trees, shrubs, pathways, covered picnic tables, benches, and drinking fountains have been placed
- natural areas

b) Developments shall provide a mix of passive and active recreational uses from the above list if the open space can accommodate more than one use.

c) Indoor or covered recreational space may count towards 50 percent of the common open space requirement.

- d) *No more than 20 percent of the common open space requirement shall be on land with slopes greater than 20 percent.*
- e) *Areas Excluded. Streets and parking areas, including areas required to satisfy parking lot landscape standards, shall not be applied toward the minimum useable open space requirement. Required setback areas may be applied toward the minimum useable open space requirement, with the exception of active, noise-generating activities.*
- f) *Designated on Site Plan. Areas provided to satisfy the minimum useable open space requirement shall be so designated on the development site plan and shall be reserved as open space. Adult recreation areas shall not be allowed in any required setback and shall be centrally located.*
- g) *Open Space and Recreation Area Credit. An open space credit, not to exceed 25 percent of the common open space requirements, may be granted if there is direct access by a pedestrian path, not exceeding 1/4 mile, from the proposed multiple family development to an improved public park and recreation area or public school playground.*
- h) *Approved vegetated post-construction stormwater quality facilities are allowed in common open space areas*

### Findings of Fact

Based on the Preliminary Site Plan (Attachment B.2, Sheet SDR08), there is a combined total of 261,924 square feet of living area within the buildings; therefore, at least 65,481 square feet of common open space is required. As shown on the Open Space Plan (Attachment B.24, Sheet SDR03), a combined total of 138,592 square feet of common open space area is proposed to be provided. The common open space area identified on the plan is at least 500 square feet in size with no horizontal dimension less than 20 feet. Consistent with the standards of ADC 8.220(1)(a), a functional feature is proposed that includes a swimming pool.

- 2) *Children's Play Areas. Multiple family developments larger than 10 units (excluding 1-bedroom and studio units) shall designate one or more children's play areas.*
  - a) *Children's play areas shall be placed within 300 feet of the units they are intended to serve. More than one play area may be needed in larger developments.*
  - b) *No horizontal dimension of a children's play area shall be less than 20 feet.*
  - c) *Placement of children's play areas shall not be allowed in any required setback and shall be centrally located.*
  - d) *Children's play areas may be part of the common open space area but do not count toward the use requirement as outlined in Section 8.220(1)(a).*

### Findings of Fact

The Preliminary Site Plan (Attachment B.2, Sheet SDR08), shows a children's play area 600 square feet (30 feet by 25 feet) in size that is located on the northwest end of the site. The children's play area is shown to be fenced and without any play equipment. A fence is not required and without play equipment a fence is not recommended for the final plan. A condition of approval will require the site plan to be revised to incorporate play equipment so it can function as a tot lot and to avoid fencing unless the tot lot is a larger size.

- 8.230 *Private Open Space. In all newly constructed multiple family developments except in the CB, HD and LE zoning districts and assisted-living and nursing home developments, private open space shall be provided as follows:*

- 1) *At-Grade Dwellings.* Dwellings located at finished grade, or within 5 feet of finished grade, shall provide at least 96 square feet of private open space per unit, with no dimension less than 8 feet. Private open space for at-grade dwellings may be provided within interior courtyards created within a single building or cluster of buildings. Private open space for at-grade dwellings shall be screened from view from public streets.
- 2) *Above-Grade Dwellings.* Dwellings located more than 5 feet from finished grade shall provide a minimum of 80 square feet of private open space per dwelling unit (such as a yard, deck or porch), with no dimension less than 6 feet. Private open space for units located more than 5 feet above grade may be provided individually, as with a balcony or collectively by combining into a larger area that serves multiple units.
- 3) *Access to Private Open Space.* All private open space shall be directly accessible from the dwelling unit through a doorway.
- 4) *Privacy Requirements.* Private open space, excluding front porches, shall be physically and visually separated from common open space.

### Findings of Fact

The Elevation Plans (Attachment B.5 – B.16) show that all of the private open space is accessible through the back door of each apartment unit. The lower floor of each building includes private concrete patios at least 96 square feet (10 feet by 9 feet 8 inches) in size, which meets the minimum size standard. The code also requires private open space for at-grade dwellings to be screened from view from public streets. A 5-foot-tall privacy fence is proposed as screening for the at-grade patios for some but not buildings with patios fronting Knox Butte Road and Timber Ridge Street. A condition of approval will require at-grade patios to be at least 96 square feet, with no dimension less than 8 feet and screened from view from public streets.

The private open space areas located above grade, on the second and third floor, indicate balconies that are 60 square feet (11 feet 6 inches by 6 feet) in size, which is less than the minimum size standard. A condition of approval will require above-grade patios to be at least 80 square feet, with no dimension less than 6 feet.

#### 8.240 *Maximum Setbacks for Street Orientation.*

- 1) *On sites with 100 feet or more of frontage on a collector or local public street, at least 50 percent of the site width shall be occupied by a building(s) placed no further than 25 feet from the front lot line.*
- 2) *On sites with less than 100 feet of frontage on a collector or local public street, at least 40 percent of the site width shall be occupied by a building(s) placed no further than 25 feet from the front lot line.*
- 3) *As used in these standards, “site width” does not include significant natural resources as mapped by the City, delineated wetlands, slopes greater than 20%, recorded easements, required fire lanes and other similar non-buildable areas as determined by the City.*

### Findings of Fact

The subject property has frontage on Knox Butte Road that is classified as a minor arterial and Timber Ridge Street that is classified as a minor collector.

Buildings along Timber Ridge Street are setback 7 feet to 20 feet from the front property line. The subject property has 1,175 feet of street frontage along Timber Ridge Street, with 591 feet of street frontage occupied by buildings (Buildings 1 - 2, 14 - 15, and 19 - 21). Fifty-one (51) percent of the site's street frontage will be occupied by buildings placed no further than 25 feet front the front line.

Buildings along Knox Butte Road are not subject to this standard as they only pertain to maximum setbacks from collector or local public street.

8.250 *Functional Design and Building Details. These standards are intended to promote functional design and building details in new construction that contribute to a high-quality living environment for residents and enhance compatibility with the neighborhood.*

- 1) *The design of new buildings shall avoid long, flat, uninterrupted walls or roof planes. Changes in wall plane and height, and inclusion of elements such as balconies, porches, arbors, dormers, gables and other human-scale design elements such as landscaping should be used to achieve building articulation.*
- 2) *Buildings shall be massed so individual units or the common main entrance is clearly identifiable from the private or public street that provides access unless the units are located on upper floors above non-residential uses.*
- 3) *Stairways shall be incorporated into the building design. External stairways, when necessary, should be recessed into the building, sided using the same siding materials as the building, or otherwise incorporated into the building architecture.*
- 4) *Building facades shall be broken up to give the appearance of a collection of smaller buildings.*

## Findings of Fact

The building design does not have long flat walls or roof lines. The buildings have four-foot offsets that break up the front of the buildings and the roof lines. Balconies and dormers are incorporated in the building design to add some visual element to the buildings. All external stairways are recessed into the building, and physically and visually incorporating stairways into the building design. The main entrances of all buildings are clearly identifiable and accessible.

8.260 *Building Orientation and Entries. These standards are intended to promote building and site design that contributes positively to a sense of neighborhood and to the overall streetscape by carefully relating building mass, entries and yards to public streets.*

- 1) *As many of the dwelling unit entries as possible shall face public local residential streets and along the internal street system of larger scale developments. Internal units may face a courtyard or plaza, but not a parking lot. The use of front porches or entry patios and terraces is encouraged.*
- 2) *Building entries and entries to individual units shall be clearly defined, visible for safety purposes, and easily accessible. Arches, gateways, entry courts, and awnings are encouraged to shelter entries.*
- 3) *Individual entries are encouraged; the use of long access balconies and/or corridors that are monotonous and impersonal are discouraged.*
- 4) *The primary entrance(s) of ground floor units of residential building(s) located within 25 feet of a local street may face the street. Primary entrances may provide access to individual units, clusters of units, courtyard*

*dwelling, or common lobbies. No off-street parking or circulation shall be located between the front of the building and the street. The following exceptions to this standard are allowed:*

- *On corner lots, the main building entrance(s) may face either of the streets or be oriented to the corner.*
- *For buildings that have more than one entrance serving multiple units, only one entrance must meet this requirement.*

## Findings of Fact

The site does not have frontage on a local street; the site has frontage on a collector street (Timber Ridge Street) and arterial street (Knox Butte Road). All building entries are clearly defined and easily accessible. There are no long balconies or monotonous corridors. The primary entrance for each individual unit is provided through a covered main entry way.

All of the buildings face the interior of the site with the rear of the buildings facing the right-of-way. The rear of these buildings are designed to be similar in style and materials (Attachment B.5 - B.16). The location of the buildings allows the development to provide efficient circulation with adequate parking within close proximity to the main entrance of each building. None of the on-site parking lot is located between the front of the building and the street.

- 8.270 *Transition to Lower Density Uses. The following design standards shall be incorporated into the design of multiple-family housing to create transitions between multiple-family developments and nearby, lower-density residential development, in order to reduce the impacts of building mass and scale.*

- 1) *When abutting single-family homes, buildings shall be set back at least one foot for each foot in building height from the property line. Building height is measured from the average grade to the top of the wall facing the property line or to the top of the highest window or door, whichever is higher.*
- 2) *Smaller-scale buildings should be sited in the area immediately adjacent to single-family zoning districts, and larger-scale buildings sited at the interior of the development or adjacent to other multiple-family developments.*
- 3) *Parking and maneuvering areas, driveways, active recreation areas, loading areas and dumpsters should not be located between multiple family buildings and abutting single family homes.*

## Findings of Fact

There are existing single-family dwellings located to the west of the site. The proposed apartment buildings are three stories, the wall height is 30 feet and the total building height is 39 feet to 41.5 feet (Apartment Buildings 1-11, 13-24) in height when measured to the peak of the roof. The natural resource overlays along the Burkhart Creek/Truax Creek Diversion Channel provides a large setback of over 75 feet from the existing single-family dwellings east of the site. There are no single-family dwellings on the adjacent parcel south of Burkhart Creek/Truax Creek Diversion Channel nor are there any single-family dwellings on the adjacent parcel to the west of Timber Ridge Street. Parking and maneuvering areas, driveways, active recreation areas, loading areas, and dumpsters are not to be located between the proposed apartment buildings and abutting properties with single family homes.

- 8.280 *Pedestrian Connections. Pedestrian circulation systems shall be designed to provide clear and identifiable connections within the multiple-family development and to adjacent uses and public streets/sidewalks.*

- 1) *Each multiple family development shall contain an internal pedestrian circulation system that makes clear, easily identifiable and safe connections between individual units and parking and shared open space areas. All pedestrian ways shall comply with the requirements of the Americans with Disabilities Act.*
- 2) *The pedestrian circulation system shall be designed to provide safe crossings of streets and driveways. Reflective striping should be used at crossings to emphasize the crossing under low light and inclement weather conditions.*
- 3) *Safe, convenient, and attractive pedestrian connections shall be provided between the multiple family development and adjacent uses such as parks, schools, retail areas, bus stops, and other pedestrian ways. Connections shall be made to all adjacent streets and sidewalks at 200-300 foot intervals.*

### Findings of Fact

The internal pedestrian circulation system consists of seven and one-half-foot (7.5') wide hard surfaced sidewalks that provide easily identifiable and safe connections between the residential units, parking, trash disposal area, and the public sidewalk at the main entrances on Timber Ridge Street. The sidewalks are raised above the surface of the travel lanes. Pedestrian crossings will make use of drop curbs to facilitate handicap access. These features provide a clear separation between vehicles and pedestrians.

The Preliminary Site Plan shows there are three pedestrian connections to the street sidewalks (Attachment B.2, Sheet SDR08); however, these three pedestrian connections are not adequate to meet the 200-300 foot interval standard under ADC 8.280(3) above. Therefore, a condition of approval will require two additional pedestrian connections to be added, one on the north of Building 2 and one between Buildings 15 and 19 to meet this standard.

- 8.290 *Vehicle Circulation System. On-site circulation shall be clearly identifiable, safe, pedestrian friendly and interconnected.*

- 1) *Internal vehicle circulation system of a multiple family development shall be a continuation of the adjacent public street pattern wherever possible and promote street connectivity. Elements of the public street system that shall be emphasized in the internal circulation system include the block pattern, sidewalks, street trees, on-street parking and planter strips.*
- 2) *The vehicle circulation system and building pattern shall mimic a traditional local street network and break the development into numerous smaller blocks with all of the public street system elements highlighted above. Private streets are acceptable, unless a public street is needed to extend the public street grid. The connectivity and block length standards in Articles 11 and 12 apply to all public and private streets.*
- 3) *The streets that form the primary internal circulation system may include parallel parking and accessways to parking bays or courts, but should not be lined with head-in parking spaces.*
- 4) *Interior roadways shall be designed to slow traffic speeds. This can be achieved by meandering the roadway, keeping road widths to a minimum, allowing parallel parking, and planting street trees to visually narrow the road.*

## Findings of Fact

The site is located on a corner lot. No parking is proposed on the street, only on-site within the drive aisles of the development. As proposed, the site plan provides pedestrian-friendly circulation throughout the site.

Criterion ADC 8.290 (above) would require the applicant to spread the development out over the site to accommodate multiple parking pods. This type of design would impact the natural resource overlays and would not meet criterion ADC 8.300 below. Natural Resource Overlays encumber a portion of the site; and the applicant has avoided the Floodplain (/FP), Significant Wetland (/SW), and Riparian Corridor Overlays (/RC) by consolidating the development onto 13.23 acres of the 16.52-acre site. Criterion ADC 8.300 requires parking stalls to be located close to the apartment units. To accomplish this, the site is designed with drive aisles and parking stalls located within 100 feet of the main entrance for each apartment unit. As proposed, the development avoids impacting natural resource overlays, provides efficient circulation and conveniently located parking spaces.

- 8.300 Parking. Multiple-family development shall provide attractive street frontages and visual compatibility with neighborhoods by minimizing the placement of parking lots along public streets. See Article 9 for additional parking lot standards.*

- 1) *Parking lots, carports, and garages shall not be sited between multiple-family buildings and the public local street unless site size and configuration make this impossible. Where available, private access to parking is encouraged.*
- 2) *Parking areas shall be broken into numerous small parking bays and landscaped to minimize their visual impact. Large, uninterrupted rows of parking are prohibited. Required parking must be located within 100 feet of the building entrance for each unit. The integration of garages into residential buildings is encouraged.*

## Findings of Fact

Access to the site and parking lot is provided via two private driveways off Timber Ridge Street. The parking spaces are located behind the apartment buildings and they are not located between the multiple-family buildings and the public street. The parking lot is broken up into smaller bays with landscaped parking islands throughout the development, in accordance with the standards of ADC 9.150. All of the parking spaces are located within 100 feet of the building entrance for each unit.

## Conclusions

- DS.1 The recreation and open space standards are met with adequate common open space area and a swimming pool for a functional feature.
- DS.2 The children's play area/tot lot needs play equipment if it is to function as that use; fencing should be avoided unless the tot lot is designed to be a larger size.
- DS.3 Private open space is provided for each apartment through concrete at-grade patios and balconies on the upper levels of the buildings. To meet the minimum code standards under ADC 8.230, at-grade patios need to be at least 96 square feet, with no dimension less than 8 feet and screened from view from public streets; and above-grade patios need to be at least 80 square feet, with no dimension less than 6 feet.

- DS.4 The buildings are located on the site to effectively meet the maximum setback requirement from public streets, as well as the minimum setback requirement from adjacent single-family residential uses.
- DS.5 The architectural design of the proposed apartment buildings meet the functional design and building detail standards.
- DS.6 The proposed pedestrian connections are not adequate to meet the 200-300 foot interval standard under ADC 8.280(3); two additional pedestrian connections need to be added, one on the north of Building 2 and one between Buildings 15 and 19 to meet this standard.
- DS.7 The design of the overall development meets the standards for Building Orientation and Entries, Vehicle Circulation System, and Parking.
- DS.8 As proposed, Multi-Family Design Standards can be met with the following condition.

### Condition of Approval

**Condition 16** Prior to issuance of a building permit, the applicant shall submit a revised site plan to the Community Development Department for review and approval that includes:

- a. At-grade patios at least 96 square feet, with no dimension less than 8 feet and screened from view from public streets per ADC 8.230(1).
- b. Above-grade patios at least 80 square feet, with no dimension less than 6 feet per ADC 8.230(1).
- c. Two additional pedestrian connections, one on the north of Building 2, and one between Buildings 15 and 19 to meet the standard under ADC 8.280(3).
- d. Children's play area/tot lot to include play equipment to function as a children's play area.

### Supplemental Residential Design Standards in Village Center (ADC 8.480 - 8.485)

**8.485 Purpose.** *These provisions are intended to promote the design of an urban environment that is built to human scale and to foster a mixed-use character for village centers with an emphasis on a high-quality pedestrian environment.*

- 1) *Building exteriors shall be surfaced with wood, brick, stucco, stone, masonry, or lap siding on all sides.*
- 2) *Rooflines should be designed to reduce the exterior mass of multiple attached units and shall incorporate elements such as parapets, gables, dormers, etc.*
- 3) *All exterior HVAC equipment shall be screened from street-level view.*
- 4) *Alleys are encouraged to provide a friendly street frontage and to set driveways and garages in the rear.*

### Findings of Fact and Conclusions

- 1.1 As shown on the building elevations, all building exteriors (front, back, and side) will have a mix of horizontal lap, shingle, and board and batten fiber cement lap siding, fiber cement window and door trim, belly bands, composition roofing, and steel or fiberglass entry doors (see Attachment B.4).
- 1.2 The building design does not have long flat walls or roof lines. The buildings will have four-foot and nine- and one-half foot offsets that break up the front of the buildings and the roof lines. Balconies

(decks) and dormers are incorporated in the building design to add some visual element to the buildings. All external stairways are recessed into the building with covered gable areas, therefore, physically and visually incorporating them into the building's architecture design (see Attachment B.4).

- 1.3 There is no ground level equipment proposed for this development.
- 1.4 There are no alleys adjacent to this site. No alley access is provided. Therefore, this criterion is not applicable.

## Site Improvements, Land Division and Manufactured Home Parks in the Floodplain (ADC 6.110)

### Criterion 1

**All proposed new development and land divisions shall be consistent with the need to minimize flood damage and ensure that building sites will be reasonably safe from flooding.**

### Findings of Fact and Conclusion

- 1.1 Context and Background: The proposal is to develop 16.52 acres of vacant land into a 264-unit apartment complex. The subject property is located at 4350 Knox Butte Road SE and is shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) #41043C0218G. The site is bounded to the north by Knox Butte Road, to the south and west by Burkhart Creek, and to the east by Burkhart-Truax Diversion Channel. Based on the FEMA Flood Insurance Study (FIS) for Linn County, OR (effective 7/31/2019), the portions of Burkhart Creek and Burkhart-Truax Diversion Channel that abut the subject property have only been studied by approximate methods (Zone A). The FIS has not established Base Flood Elevations (BFEs) or a floodway in this area.

Since no FEMA BFEs exist for Burkhart Creek and Burkhart-Truax Diversion Channel in the vicinity of the subject property, Albany Development Code (ADC) requires that BFEs be determined and certified by an engineer. Specifically, ADC 6.110(7) requires the BFE be determined and certified by a registered engineer if elevation data is not provided through the FIS, and the development is four or more acres or results in four or more lots or structures. If, based on the BFE determination, activities are being conducted within the Special Flood Hazard Area (SFHA) (one percent annual chance floodplain; aka 100-year floodplain), the applicant must ensure that the proposed activities also meet the relevant floodplain sections of the ADC.

- 1.2 Flood Study: The applicant's engineer, Multi/Tech Engineering has provided figures with a mapped floodplain boundary and BFEs for the SFHA. The BFEs shown on the Base Flood Map (Attachment B.25, Sheet SD04) are based on a 2004 flood study conducted by WRG Design, for the Brookstone Estates Subdivision located west, across Burkhart Creek from the subject property. The 2004 study developed BFEs based on XPSWMM and HEC-RAS modeling and extended upstream and downstream of the subject site. The City requested a review of the application material by Ken Puhn, PE, CFM, of WEST Consultants, Inc. A memo was provided by Ken Puhn (Attachment B.26), which states that "a review of the WRG results showed consistency with the mapped BFEs on the figures provided by applicant's engineer, Multi/Tech Engineering."

Note: The WRG flood study and the applicant's plan sheets all show elevations based on the National Geodetic Vertical Datum of 1929 (NGVD '29). All elevations referenced in this floodplain review section are referenced from the NGVD of 1929.

The WRG study did not include BFEs for the Burkhart-Truax Diversion Channel, which runs along the eastern perimeter of the site. The mapping and site plans provided by the applicant project the BFE of 226.05 feet at the divergence of Truax Creek Overflow from Burkhart Creek to the downstream terminus of the project along Burkhart-Truax Diversion Channel at the Knox Butte Road crossing (Attachment B.25, Sheet SD04). By applying the same BFE of the upstream point to the downstream point, the applicant conservatively assumes there is no downstream slope to the water surface profile; this is a conservative assumption because the downstream BFE is generally lower than upstream portions of a river.

Ken Puhn notes that "While [the BFE estimate is] conservative, it is noted that this method does not account for the effects of backwater from the private bridge at the Knox Butte Road crossing located a short distance downstream of the project site on the Burkhart-Truax Diversion Channel." Because the estimated BFEs do not replace the need for a detailed flood study, a condition of approval will require a detailed flood study, with updated BFEs and floodplain mapping, be conducted for Burkhart Creek and Burkhart-Truax Diversion Channel, prior to initiating development (per ADC 6.110(7)).

Based on the materials provided by the applicant, no grading is proposed within the mapped SFHA (one percent annual chance floodplain). As shown on Attachments B.27 and B.28 (Grading Plan Sheets SDR10 & 11), the building finished floor elevations are generally three feet or more above the BFE (at 229.50 feet). Since all proposed activities are outside the mapped SFHA, ADC 6.100 *Floodway Restrictions*, ADC 6.101 *Alteration of a Watercourse*, and ADC 6.111 *Grading, Fill, Excavation and Paving* do not apply at this time.

When the results of the detailed flood study are complete, it will need to be reviewed by the Albany Community Development Department. If the detailed flood study shows the proposed development is located within the SFHA, the applicant will need to show all applicable floodplain standards are met through a floodplain review process. In addition, to ensure the new development will be reasonably safe from flooding, the requirements under *Building Standards* of ADC 6.120 will be applied to new construction at the time of building permit. These requirements are included as conditions of approval.

- 1.3 Timber Ridge Street Bridge: Under the Transportation Criterion Three, Conditions of Approval Seven and Eight (above), construction of a bridge crossing Burkhart Creek will be required. Development of a bridge is considered an alteration to a watercourse and a modification within a regulated floodplain and floodway; therefore, the applicant will need to complete a floodplain review process to show the criteria under ADC 6.100 *Floodway Restrictions*, ADC 6.101 *Alteration of a Watercourse*, and ADC 6.111 *Grading, Fill, Excavation and Paving* are met, prior to initiating construction of this bridge crossing over Burkhart Creek. This is included as Condition of Approval 15 under Site Plan Review Criterion Seven (above).
- 1.4 Based on the factors described above, the proposed new development will minimize the risk of flood damage and be reasonably safe from flooding with the following conditions of approval.

## Conditions of Approval

**Condition 17** Prior to issuance of a Site Improvement (SI) permit for the development, a detailed flood study, with updated Base Flood Elevations (BFE) and floodplain mapping is required to be

submitted for review and approval by the Albany Community Development Department. If the detailed flood study shows development impacts within the Special Flood Hazard Area (SFHA), floodplain development review is required in accordance with the ADC.

**Condition 18** Prior to issuance of Building Permits for the development, the building standards under ADC 6.120 and 6.121 shall be met.

## Criterion 2

**All new development and land division proposals shall have utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.**

### Findings of Fact and Conclusions

- 2.1 Provisions for utilities and public water systems are addressed in detail under Site Plan Review Criterion One (above). Those findings are included here by reference.
- 2.2 Since all proposed development activity is located outside the mapped SFHA, the proposed development will have utilities constructed to minimize flood damage.
- 2.3 This criterion is met without conditions.

## Criterion 3

**On-site waste disposal systems shall be located and constructed to avoid functional impairment, or contamination from them, during flooding.**

### Findings of Fact and Conclusions

- 3.1 Provisions for sanitary sewer are addressed in detail under Site Plan Review Criterion One (above). Those findings are included here by reference.
- 3.2 No on-site waste disposal systems are proposed; public sanitary sewer services are proposed through Timber Ridge Street to provide service to the development.
- 3.3 This criterion is not applicable.

## Criterion 4

**All development proposals shall have adequate drainage provided to reduce exposure to flood damage.**

### Findings of Fact and Conclusions

- 4.1 Provisions for stormwater drainage are addressed in detail under Site Plan Review Criterion One (above). Those findings are included here by reference.
- 4.2 The applicant has submitted a preliminary storm drainage report that shows how stormwater runoff will be collected on-site and discharged to the public drainage system (Burkhart Creek). The City's Public Works Department has reviewed the report and has found it to be generally acceptable, but final design details will be reviewed in conjunction with future required design and construction permits.
- 4.3 Adequate drainage is provided to reduce exposure to flood damage.

4.4 This criterion is met without conditions.

### Criterion 5

**Any lot created for development purposes must have adequate area created outside of the floodway to maintain a buildable site area meeting the minimum requirements of this Article.**

#### Findings of Fact and Conclusions

5.1 The proposal does not create any new lots.

5.2 This criterion is not applicable.

### Criterion 6

**Any new public or private street providing access to a residential development shall have a roadway crown elevation not lower than one foot below the 100-year flood elevation.**

#### Findings of Fact and Conclusions

6.1 The proposal will improve Timber Ridge Street, which runs north to south through the site. A Site Improvement (SI) Permit (file SI-20-17) was submitted by the applicant to the Albany Public Works Department. Street Improvement Plan Sheet 401 (Attachment B.29) shows the crown elevation of Timber Ridge Street at its lowest point is 225.11 feet. The Base Flood Map (Attachment B.25, Sheet SD04) shows the BFE at its highest point to be 226.06 feet. Based on this information, the crown elevation of Timber Ridge Street will not be lower than one foot below the BFE.

6.2 Condition of Approval 17 (above), requires completion of a detailed flood study. When the results of the detailed flood study are complete, it will need to be reviewed by the Albany Community Development Department to ensure the roadway crown elevation is still not lower than one foot below BFE. This is included as a condition of approval.

6.3 This criterion is met with the following condition.

#### Condition of Approval

**Condition 19** The roadway crown elevation of Timber Ridge Street shall not be lower than one foot below the Base Flood Elevation (BFE), per ADC 6.110(6).

### Criterion 7

**All development proposals shall show the location of the 100-year flood contour line followed by the date the flood elevation was established. When elevation data is not available, either through the Flood Insurance Study or from another authoritative source, and the development is four or more acres or results in four or more lots or structures, the elevation shall be determined and certified by a registered engineer. In addition, a statement located on or attached to the recorded map or plat shall read as follows: "Development of property within the Special Flood Hazard Area as most currently established by the Federal Emergency Management Agency or City of Albany may be restricted and subject to special regulations by the City."**

## Findings of Fact and Conclusions

- 7.1 This criterion is addressed above, under Criterion One of this Section (ADC 6.110(1)). Those findings are included here by reference.
- 7.2 This criterion is met with the Conditions of Approval 17 and 18 listed under ADC 6.110(1).

## Criterion 8

**In addition to the general review criteria applicable to manufactured home parks in Article 10, applications that propose actual development within a Special Flood Hazard Area shall include an evacuation plan indicating alternate vehicular access and escape routes.**

## Findings of Fact and Conclusions

- 8.1 This is not an application to develop a manufactured home park.
- 8.2 This criterion is not applicable.

## Overall Conclusion

As proposed and conditioned, the applications for Site Plan Review and Floodplain Development to develop a phased, 264-unit apartment complex with associated site improvements satisfies all applicable review criteria as outlined in this report.

## Conditions of Approval

- Condition 1** Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public sanitary sewer main in Knox Butte Road to the east boundary of the property's frontage. Alternatively, the applicant may construct (or provide financial assurances for the construction) a public sewer main internal to the proposed development, which would serve the adjacent parcel to the northeast. Any public sewer constructed across private property shall be located within a permanent public easement a minimum of 20 feet in width. Additionally, said easement shall be located in the parking lot, private drive, or similar open area that permits unobstructed vehicle access for maintenance and inspection purposes. An all-weather access shall be provided to all public utility structures located outside of parking lots or private drives, with a minimum width of 12 feet.
- Condition 2** Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public sanitary sewer main in Timber Ridge Street from Knox Butte Road to the proposed northern access to the apartment complex (approximately 300 feet).
- Condition 3** Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public 24-inch water main in Knox Butte Road to the east boundary of the property's frontage.
- Condition 4** Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) a public 12-inch water main in Timber Ridge Street from Knox Butte Road to approximately the south boundary of the subject property.

- Condition 5** Before the City will issue building permits for this project, the applicant must construct (or provide financial assurances for the construction) public storm drainage improvements in Knox Butte Road in conjunction with any required street improvements in the Knox Butte Road right-of-way.
- Condition 6** Before the City will issue a final occupancy permit for any portion of the proposed project, the applicant must obtain a stormwater quality permit from the City and construct all required stormwater quality facilities according to City codes and standards.
- Condition 7** Before the City will issue a building permit for phase one of this project, the applicant shall construct the following improvements:
- a. Public street improvements that include curb, gutter, and sidewalk improvements along the site's frontage on Knox Butte Road. The curb and gutter shall match existing improvements east of the roundabout and transition to an ultimate curb to curb width of 38 feet at the site's east boundary. Sidewalk width shall be a minimum of 6 feet and be setback from the curb with a landscape stripe having a minimum width of 6 feet.
  - b. Public street improvements along phase one's frontage on Timber Ridge Street that include: curb, gutter, and sidewalk on both sides; a vehicle travel lane in each direction; and on street bike lanes. The curb to curb width shall match existing improvements south of the roundabout and transition to a curb to curb width of 34 feet. Sidewalk width shall be a minimum of 6 feet in width and setback from the curb by a landscape strip having a minimum width of 6 feet. Striping design shall be approved by the City Engineer and include two 11-foot vehicle lanes and 6-foot bike lanes.
- Criterion 8** Before the City will issue a building permit for phase two of this project, the applicant shall construct the following improvements:
- d. Public Street improvements along the development's remaining frontage on Timber Ridge Street and across Burkhart Creek. The curb to curb width shall be 34 feet. Sidewalk width shall be a minimum of 6 feet in width and, with the exception of the bridge across the creek, be setback from the curb by a landscape strip having a minimum width of 6 feet. Striping design shall be approved by the City Engineer and include two 11-foot vehicle lanes and 6-foot bike lanes.
  - e. Construction of a bridge for the Timber Ridge Street crossing of Burkhart Creek. The bridge width shall provide for two 11-foot vehicle lanes, two 6-foot bike lanes, and a sidewalk with a minimum width of 6 feet on each side.
  - f. Construction of a gravel emergency vehicle access road on the south side of Burkhart Creek connecting Timber Ridge Street with Dogwood Avenue. The road shall have a minimum width of 20 feet and be designed to accommodate emergency vehicles.
- Condition 9** Prior to issuance of a building permit, the applicant shall submit a revised site plan to the Community Development Department for review and approval, to meet the five-foot dead-end backup area requirement, consistent with the standards of Table 9-2: Parking Lot Design and Supplemental Drawings.
- Condition 10** All lighting must be directed down, contained on site, and shielded, full cut-off design.

- Condition 11** Prior to issuance of a building permit, a final landscape and irrigation plan shall be submitted for review and approval by the Community Development Department. The plan must be consistent with the landscaping standards of ADC 9.140, landscape parking lot standards of ADC 9.150, and irrigation standards of ADC 9.160. (Note: All required landscaped areas must be provided with an irrigation system unless a licensed landscape architect, landscape construction professional, or certified nurseryman submits written verification that the proposed plants do not require irrigation.)
- Condition 12** Prior to issuance of a building permit, a detail plan of the trash enclosure screening shall be submitted for review and approval by the Community Development Department.
- Condition 13** Prior to installation, all landscape materials shall be inspected and approved by the Community Development Department to ensure consistency with the approved plans.
- Condition 14** Prior to issuance of the final certificate of occupancy, all proposed and required site improvements (e.g. vehicle and bicycle parking, landscaping, tot-lot, refuse enclosure, lighting, etc.), shall be constructed and completed in accordance with approved plans. Landscaping may be financially secured through a completion guarantee, per ADC 9.190.
- Condition 15** Prior to issuance of a Site Improvement (SI) permit for development of a bridge over the Burkhart Creek/Truax Creek Diversion Channel, floodplain development review (including no-rise analysis), is required in accordance with the ADC.
- Condition 16** Prior to issuance of a building permit, the applicant shall submit a revised site plan to the Community Development Department for review and approval that includes:
- e. At-grade patios at least 96 square feet, with no dimension less than 8 feet and screened from view from public streets per ADC 8.230(1).
  - f. Above-grade patios at least 80 square feet, with no dimension less than 6 feet per ADC 8.230(1).
  - g. Two additional pedestrian connections, one on the north of Building 2, and one between Buildings 15 and 19 to meet the standard under ADC 8.280(3).
  - h. Children's play area/tot lot to include play equipment to function as a children's play area.
- Condition 17** Prior to issuance of a Site Improvement (SI) permit for the development, a detailed flood study, with updated Base Flood Elevations (BFE) and floodplain mapping is required to be submitted for review and approval by the Albany Community Development Department. If the detailed flood study shows development impacts within the Special Flood Hazard Area (SFHA), floodplain development review is required in accordance with the ADC.
- Condition 18** Prior to issuance of Building Permits for the development, the building standards under ADC 6.120 and 6.121 shall be met.
- Condition 19** The roadway crown elevation of Timber Ridge Street shall not be lower than one foot below the Base Flood Elevation (BFE), per ADC 6.110(6).

## Attachments

- A. Location Map
- B. Applicant's Plan Set
  1. Site Overview Plan, Sheet SDR07
  2. Preliminary Site Plan, Sheet SDR08
  3. Site Lighting Plan, Sheet SDR09
  4. Building Elevations Plans
    - i. Sheet A1.80
    - ii. Sheet A2.90
    - iii. Sheet A3.90
    - iv. Sheet A4.90
    - v. Sheet A5.90
    - vi. Sheet A6.80
    - vii. Sheet A8.1
    - viii. Sheet A9.1
    - ix. Sheet A10.1
    - x. Sheet A11.1
    - xi. Sheet A12.1
  5. Landscaping Plans
    - i. Schematic Landscape Plan – NE, Sheet L1.1
    - ii. Schematic Landscape Plan – SE, Sheet L1.2
    - iii. Schematic Landscape Plan – SW, Sheet L1.3
    - iv. Schematic Landscape Plan – NW, Sheet L1.4
    - v. Schematic Landscape Notes and Details, Sheet L1.5
  6. Existing Conditions, Sheet SDR02
  7. Riparian Corridor, Sheet SDR05
  8. Open Space Plan, Sheet SDR03
  9. Base Flood Map, SDR04
  10. Ken Puhn Memo (FP-09-19)
    - i. Base Flood Map, Sheet SDR04
    - ii. Grading and Drainage Plan – North, Sheet SDR10
    - iii. Grading and Drainage Plan – South, Sheet SDR11
    - iv. Completeness Response, Dated March 23, 2020
    - v. Brookstone Estates Drainage Report, Dated February 9, 2004
  11. Grading and Drainage Plan – North, Sheet SDR10
  12. Grading and Drainage Plan – South, Sheet SDR11
  13. Street Improvement Plan – Timber Ridge Street, Sheet 401

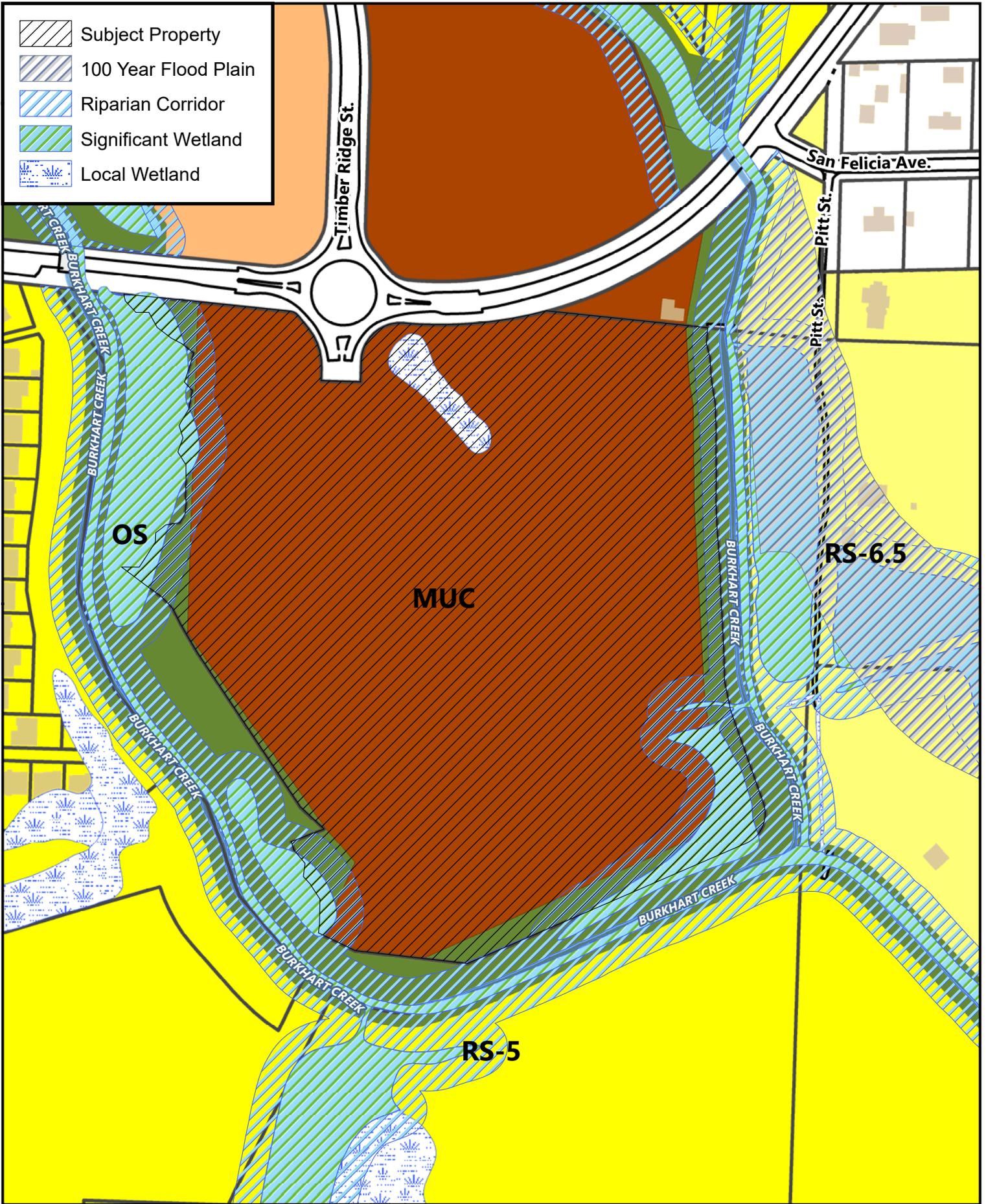
## Acronyms

ADC	Albany Development Code
AMC	Albany Municipal Code
BFE	Base Flood Elevation
CC	Community Commercial Zoning District
DSL	Oregon Department of State Lands
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FP	Floodplain Review File Designation
/FP	Floodplain Overlay District
MUC	Mixed-Use Commercial District

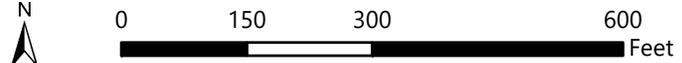
NGVD 1929	National Geodetic Vertical Datum of 1929*
OFC	Oregon Fire Code
OS	Open Space Zone District
PA	Partition File Designation
/RC	Riparian Corridor Overlay District
RM	Residential Medium Density
RMA	Residential Medium Density Attached
RS-6.5	Residential Single Family
SD	Subdivision File Designation
SFHA	Special Flood Hazard Area
SHPO	Oregon State Historic Preservation Office
/SW	Significant Wetland Overlay District
SP	Site Plan Review File Designation
TIA	Traffic Impact Analysis
TSP	Transportation System Plan

\*The conversion factor from NGVD 1929 to NAVD 1988 in Albany is +3.38 feet.

-  Subject Property
-  100 Year Flood Plain
-  Riparian Corridor
-  Significant Wetland
-  Local Wetland



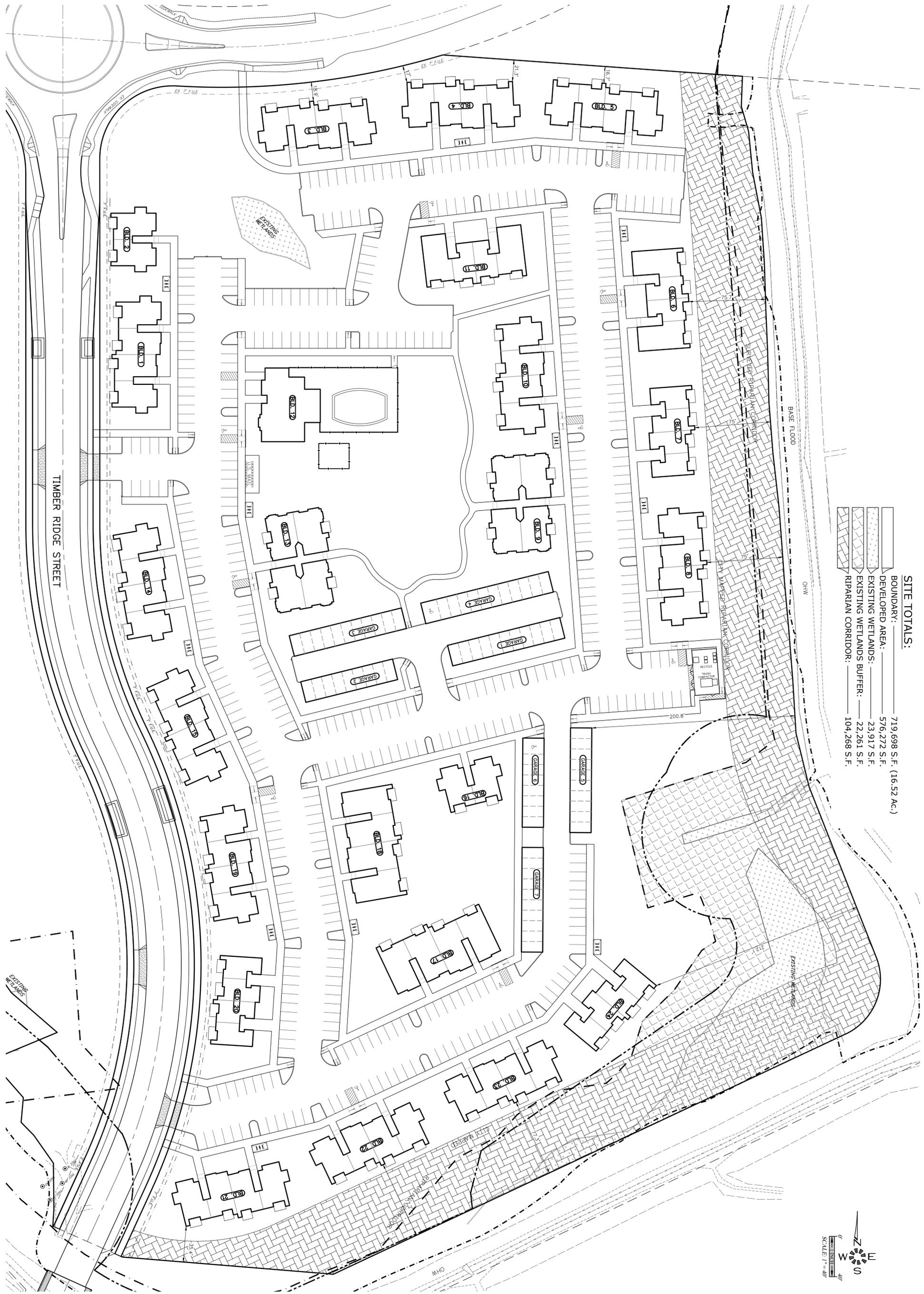
G:\Community Development\Planning\Land Use Cases\2019\05\2019 Site Plan Review (SP)\SP-04-19\4350 Knox Butte\4350 Knox Butte - Location Map.mxd



Date: 3/25/2019 Map Source: City of Albany

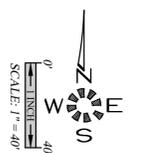
**4350 Knox Butte Rd. E**

Location / Zoning Map



**SITE TOTALS:**

BOUNDARY:	719,698 S.F. (16.52 AC.)
DEVELOPED AREA:	576,272 S.F.
EXISTING WETLANDS BUFFER:	23,917 S.F.
EXISTING WETLANDS:	22,261 S.F.
RIPARIAN CORRIDOR:	104,268 S.F.



**SDR07**

6639b SDR070V

DESIGNED BY: [Signature]

DATE: 08-30-2021

JOB # 6639

Design: M.D.G.  
 Drawn: C.D.S.  
 Checked: B.M.G.  
 Date: MAR 2018  
 Scale: AS SHOWN

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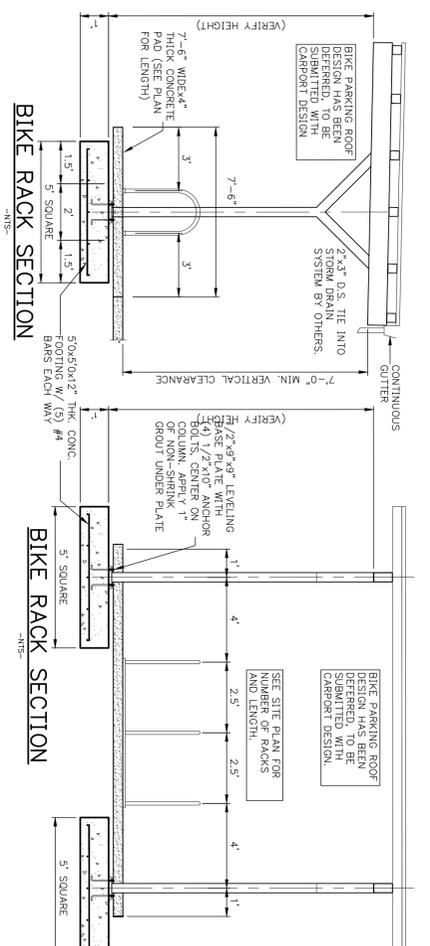
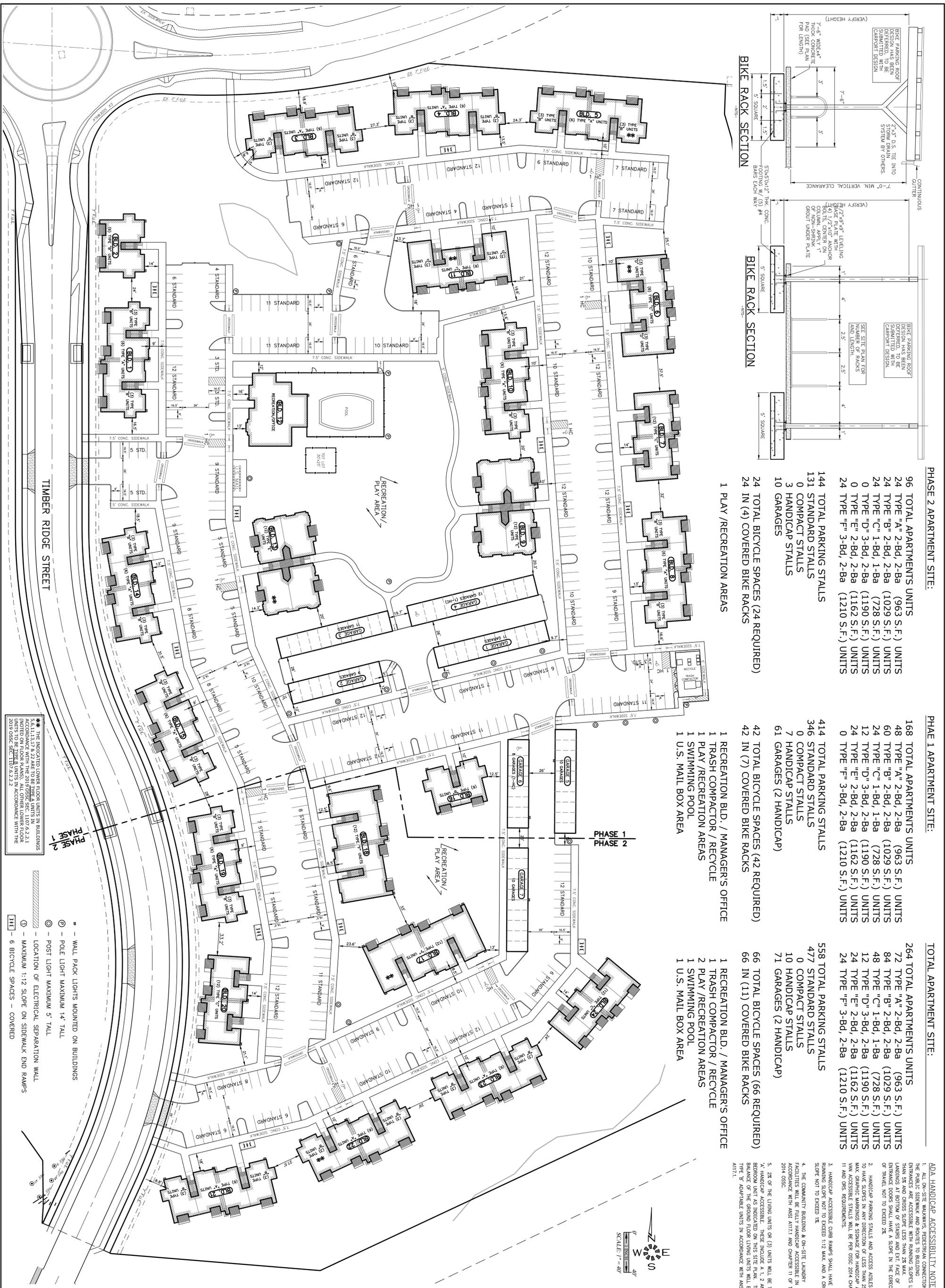
**BRANDIS MEADOWS APARTMENT COMPLEX**

**SITE OVERVIEW PLAN**

**MULTI/TECH**

ENGINEERING SERVICES, INC.

1155 13th ST. S.E. SALEM, OR, 97302  
 PH. (503) 363 - 9227 FAX (503) 364-1260  
 www.mtengineering.net office@mtengineering.net



- PHASE 2 APARTMENT SITE:**
- 96 TOTAL APARTMENTS UNITS
  - 24 TYPE "A" 2-Bd, 2-Ba (963 S.F.) UNITS
  - 24 TYPE "B" 2-Bd, 2-Ba (1029 S.F.) UNITS
  - 24 TYPE "C" 1-Bd, 1-Ba (728 S.F.) UNITS
  - 0 TYPE "D" 3-Bd, 2-Ba (1190 S.F.) UNITS
  - 0 TYPE "E" 2-Bd, 2-Ba (1162 S.F.) UNITS
  - 24 TYPE "F" 3-Bd, 2-Ba (1210 S.F.) UNITS
  - 144 TOTAL PARKING STALLS
  - 131 STANDARD STALLS
  - 0 COMPACT STALLS
  - 3 HANDICAP STALLS
  - 10 GARAGES
  - 24 TOTAL BICYCLE SPACES (24 REQUIRED)
  - 24 IN (4) COVERED BIKE RACKS
  - 1 PLAY / RECREATION AREAS
- PHASE 1 APARTMENT SITE:**
- 168 TOTAL APARTMENTS UNITS
  - 48 TYPE "A" 2-Bd, 2-Ba (963 S.F.) UNITS
  - 60 TYPE "B" 2-Bd, 2-Ba (1029 S.F.) UNITS
  - 24 TYPE "C" 1-Bd, 1-Ba (728 S.F.) UNITS
  - 12 TYPE "D" 3-Bd, 2-Ba (1190 S.F.) UNITS
  - 24 TYPE "E" 2-Bd, 2-Ba (1162 S.F.) UNITS
  - 0 TYPE "F" 3-Bd, 2-Ba (1210 S.F.) UNITS
  - 414 TOTAL PARKING STALLS
  - 346 STANDARD STALLS
  - 0 COMPACT STALLS
  - 7 HANDICAP STALLS
  - 61 GARAGES (2 HANDICAP)
  - 42 TOTAL BICYCLE SPACES (42 REQUIRED)
  - 42 IN (7) COVERED BIKE RACKS
  - 1 RECREATION BLD. / MANAGER'S OFFICE
  - 1 TRASH COMPACTOR / RECYCLE
  - 1 PLAY / RECREATION AREAS
  - 1 SWIMMING POOL
  - 1 U.S. MAIL BOX AREA
- TOTAL APARTMENT SITE:**
- 264 TOTAL APARTMENTS UNITS
  - 72 TYPE "A" 2-Bd, 2-Ba (963 S.F.) UNITS
  - 84 TYPE "B" 2-Bd, 2-Ba (1029 S.F.) UNITS
  - 48 TYPE "C" 1-Bd, 1-Ba (728 S.F.) UNITS
  - 12 TYPE "D" 3-Bd, 2-Ba (1190 S.F.) UNITS
  - 24 TYPE "E" 2-Bd, 2-Ba (1162 S.F.) UNITS
  - 24 TYPE "F" 3-Bd, 2-Ba (1210 S.F.) UNITS
  - 558 TOTAL PARKING STALLS
  - 477 STANDARD STALLS
  - 0 COMPACT STALLS
  - 10 HANDICAP STALLS
  - 71 GARAGES (2 HANDICAP)
  - 66 TOTAL BICYCLE SPACES (66 REQUIRED)
  - 66 IN (11) COVERED BIKE RACKS
  - 1 RECREATION BLD. / MANAGER'S OFFICE
  - 1 TRASH COMPACTOR / RECYCLE
  - 2 PLAY / RECREATION AREAS
  - 1 SWIMMING POOL
  - 1 U.S. MAIL BOX AREA

THE INDICATED LOWER FLOOR UNITS IN BUILDINGS ACCORDANCE WITH THE 2015 O.S.S.C. 1107.6.2.2.2 UNITS TO BE TYPE B UNITS IN ACCORDANCE WITH THE 2019 O.S.S.C. 1107.6.2.2.2

- WALL PACK LIGHTS MOUNTED ON BUILDINGS
- ⊙ — POLE LIGHT MAXIMUM 14' TALL
- ⊙ — POST LIGHT MAXIMUM 5' TALL
- LOCATION OF ELECTRICAL SEPARATION WALL
- ① — MAXIMUM 1:12 SLOPE ON SIDEWALK END RAMPS
- ⊠ — 6 BICYCLE SPACES — COVERED

**ADA HANDICAP ACCESSIBILITY NOTES:**

- ALL ON-SITE WALKWAYS, PATHWAY CONNECTIONS TO ENTRANCES ARE ACCESSIBLE WITH RAMPING SLOPES LESS THAN 5% AND CROSS SLOPE LESS THAN 2% MAX. FACE OF LANDINGS AT BOTTOM OF STAIRS AND EXT. FACE OF ENTRANCE DOORS SHALL HAVE A SLOPE IN THE DIRECTION OF TRAVEL NOT TO EXCEED 2%.
- HANDICAP PARKING STALLS AND ACCESS AISLES ARE TO HAVE SLOPES IN ANY DIRECTION OF TRAVEL LESS THAN 2% AND VAN ACCESSIBLE STALLS WILL BE PER O.S.S.C. 2014 CHAPTER 11 AND O.S.S.C. REVISIONS.
- HANDICAP ACCESSIBLE CURB RAMPS SHALL HAVE A SLOPE NOT TO EXCEED 1:12 MAX. AND A CROSS SLOPE NOT TO EXCEED 1%.
- THE COMMUNITY BUILDING & ON-SITE LAUNDRY FACILITY SHALL BE VAN ACCESSIBLE IN ACCORDANCE WITH ANSI A117.1 AND CHAPTER 11 OF THE 2014 O.S.S.C.
- 2% OF THE LIVING UNITS OR (3) UNITS WILL BE TYPE "A" HANDICAP ACCESSIBLE. THESE INCLUDE A 1, 2 AND 3 BEDROOM UNIT AS INDICATED ON THIS SITE PLAN. THE BALANCE OF THE GROUND FLOOR LIVING UNITS WILL BE TYPE "B" ADAPTABLE UNITS IN ACCORDANCE WITH ANSI A117.1.

6639B SDR85P

Design: M.D.G.  
 Drawn: C.D.S.  
 Checked: B.M.G.  
 Date: MAR 2018  
 Scale: AS SHOWN

**BRANDIS MEADOWS  
 APARTMENT COMPLEX**

**PRELIMINARY SITE PLAN**

**MULTI/TECH**  
 ENGINEERING SERVICES, INC.  
 1155 13th St. S.E. Salem, OR, 97302  
 PH. (503) 363-9227 FAX (503) 364-1260  
 www.mtengineering.net office@mtengineering.net

SDR08

EXPIRES: DEC-30-2021

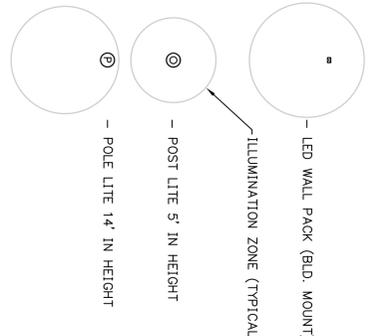
JOB #: 6639

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REGISTERED PROFESSIONAL ENGINEER

BRANDIS MEADOWS APARTMENT COMPLEX



**SDR09**

DATE: 06-30-2021  
JOB #: 6639

6639b SDR9LP

Design: M.D.G.  
Drawn: C.D.S.  
Checked: B.M.G.  
Date: MAR 2018  
Scale: AS SHOWN

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**BRANDIS MEADOWS APARTMENT COMPLEX**

**SITE LIGHTING PLAN**

**MULTI/TECH**

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1155 13th ST. S.E. SALEM, OR. 97302  
PH. (503) 363 - 9227 FAX (503) 364-1260  
www.mtengineering.net office@mtengineering.net



REAR ELEVATION (BLD. 1.3-5.8.10.18-20+22-24)  
SCALE: 1/8" = 1'-0"



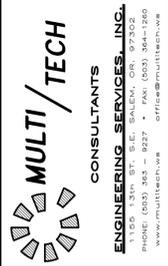
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SCALE: 1/8" = 1'-0"



FRONT ELEVATION (BLD. 1.3-5.8.10.18-20+22-24)  
SCALE: 1/8" = 1'-0"



END ELEVATION (BLD. 1.3-5.8.10.18-20+22-24)  
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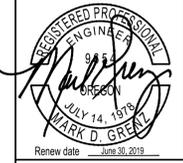


**BUILDING  
ELEVATIONS**

**BRANDIS MEADOWS  
APARTMENT COMPLEX**

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Design: P.L.M.  
Drawn: G.L.D.  
Checked: M.D.G.  
Date: May-18  
Scale: AS SHOWN  
JOB # 6639



**A1.80**

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**REAR ELEVATION (TYPE B UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 2+14**



**END ELEVATION (TYPE B UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 2+14**



**FRONT ELEVATION (TYPE B UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 2+14**

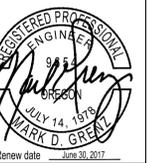


**END ELEVATION (TYPE B UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 2+14**

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 DRAWN: G.L.D.  
 CHECKED: M.D.G.  
 DATE: May-18  
 SCALE: AS SHOWN

JOB # 6639



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**BUILDING  
 ELEVATIONS**

**BRANDIS MEADOWS  
 APARTMENT COMPLEX**

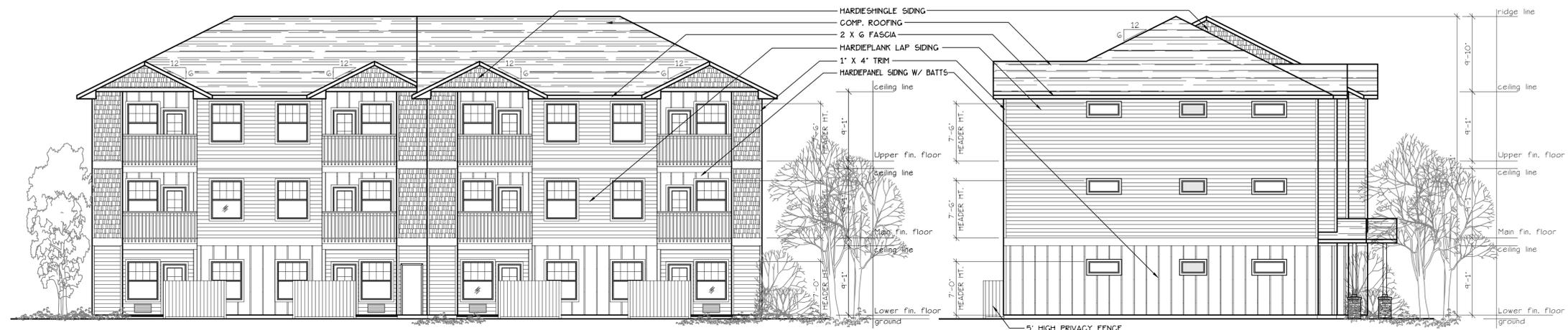
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 THESE DRAWINGS WITHOUT THE  
 AUTHORIZATION FROM THE DESIGN  
 ENGINEER.  
 DIMENSIONS & NOTES TAKE  
 PRECEDENCE OVER GRAPHICAL  
 REPRESENTATION.

DESIGN: P.L.M.  
 DRAWN: G.L.D.  
 CHECKED: M.D.G.  
 DATE: May-18  
 SCALE: AS SHOWN

JOB # 6639

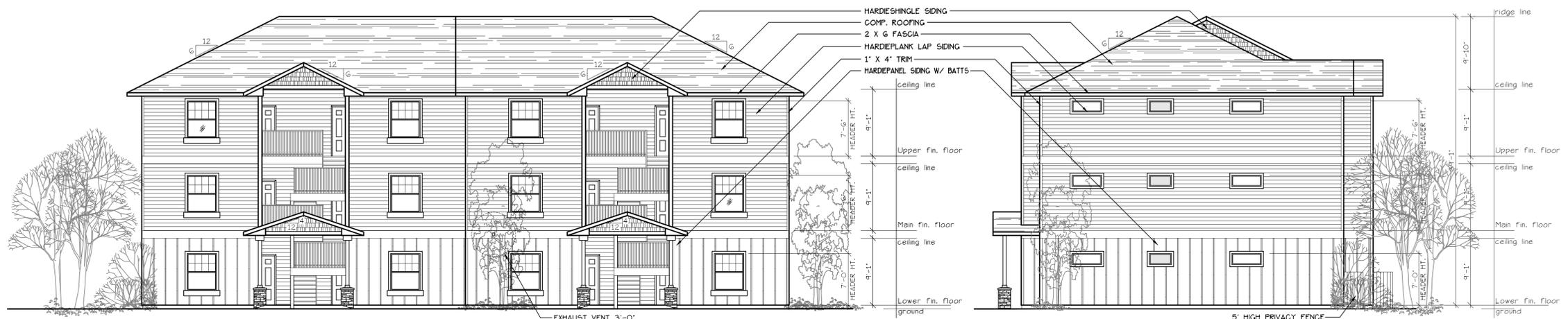
REGISTERED PROFESSIONAL  
 ENGINEER  
  
 MARK D. GREIG  
 Renew date: June 30, 2017

**A3.90**



**EAST ELEVATION** (TYPE C UNITS)  
 SCALE: 1/8" = 1'-0"  
 (BLD. 7.17+21)

**NORTH ELEVATION** (TYPE C UNITS)  
 SCALE: 1/8" = 1'-0"  
 (BLD. 7.17+21)



**WEST ELEVATION** (TYPE C UNITS)  
 SCALE: 1/8" = 1'-0"  
 (BLD. 7.17+21)

**SOUTH ELEVATION** (TYPE C UNITS)  
 SCALE: 1/8" = 1'-0"  
 (BLD. 7.17+21)

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TYPE D UNIT | TYPE C UNITS | TYPE D UNIT  
**EAST ELEVATION (BLD. 6+11)**  
 SCALE: 1/8" = 1'-0"

TYPE D UNITS  
**NORTH ELEVATION (BLD. 6+11)**  
 SCALE: 1/8" = 1'-0"



TYPE D UNIT | TYPE C UNITS | TYPE D UNIT  
**WEST ELEVATION (BLD. 6+11)**  
 SCALE: 1/8" = 1'-0"

TYPE D UNITS  
**SOUTH ELEVATION (BLD. 6+11)**  
 SCALE: 1/8" = 1'-0"

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 DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.  
 Drawn: G.L.D.  
 Checked: M.D.G.  
 Date: May-18  
 Scale: AS SHOWN  
 JOB # 6639



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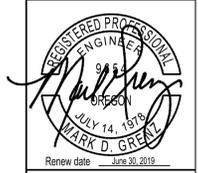
**BUILDING ELEVATIONS**

**BRANDIS MEADOWS APARTMENT COMPLEX**

NO CHANGES, MODIFICATIONS OR REVISIONS WILL BE MADE TO THESE ELEVATIONS WITHOUT THE WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.  
 DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

BLP-2018-011 AS/9/15  
 Design: P.L.M.  
 Drawn: G.L.D.  
 Checked: M.D.G.  
 Date: May-18  
 Scale: AS SHOWN

JOB # 6639



**A5.90**



**REAR ELEVATION (TYPE F UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 15+1G**



**END ELEVATION (TYPE F UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 15+1G**



**FRONT ELEVATION (TYPE F UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 15+1G**



**END ELEVATION (TYPE F UNITS)**  
 SCALE: 1/8" = 1'-0"  
**BLD. 15+1G**



**REAR ELEVATION** (TYPE E UNITS)  
SCALE: 1/8" = 1'-0"  
BLD. 9+13



**END ELEVATION** (TYPE E UNITS)  
SCALE: 1/8" = 1'-0"  
BLD. 9+13



**FRONT ELEVATION** (TYPE E UNITS)  
SCALE: 1/8" = 1'-0"  
BLD. 9+13

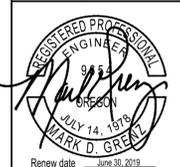


**END ELEVATION** (TYPE E UNITS)  
SCALE: 1/8" = 1'-0"  
BLD. 9+13

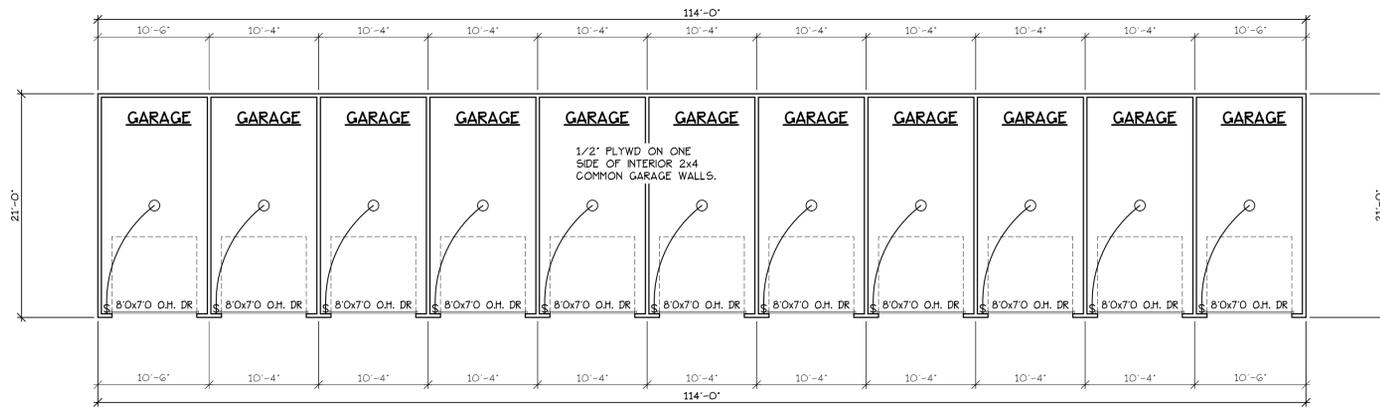
NO CHANGES, MODIFICATIONS OR REVISIONS TO BE MADE TO THIS DRAWING WITHOUT THE AUTHORIZATION FROM THE DESIGN ENGINEER.  
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

BLD. 9+13 PR. 011  
A6.80LEV  
Design: P.L.M.  
Drawn: G.L.D.  
Checked: M.D.G.  
Date: May-18  
Scale: AS SHOWN

JOB # 6639

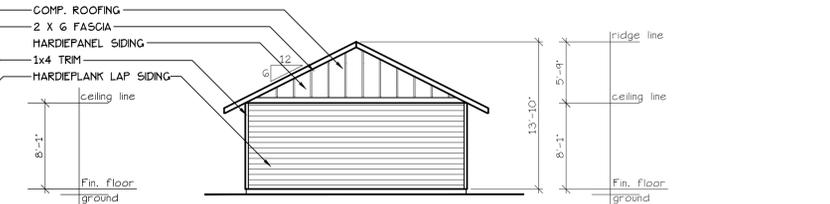


Renew date: June 30, 2019



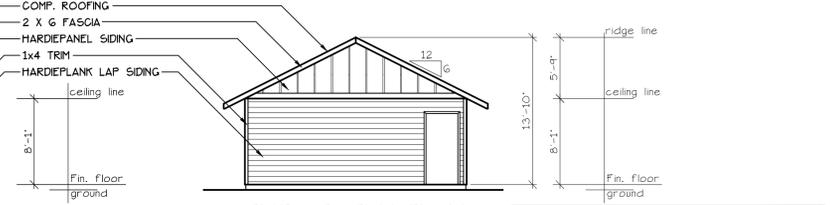
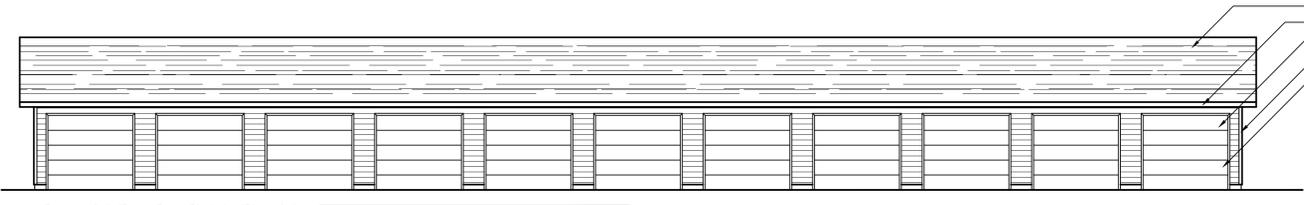
**FLOOR PLAN**  
SCALE: 1/8" = 1'-0"  
**GARAGES 1 + 3 (11 GARAGES)**

NOTE: ALL WALLS TO BE FRAMED WITH 2x4 STUDS, UNLESS NOTED OTHERWISE.



**REAR ELEVATION** (GARAGES 1 + 3 (11 GARAGES))  
SCALE: 1/8" = 1'-0"

**END ELEVATION** (GARAGES 1 + 3 (11 GARAGES))  
SCALE: 1/8" = 1'-0"



**FRONT ELEVATION** (GARAGES 1 + 3 (11 GARAGES))  
SCALE: 1/8" = 1'-0"

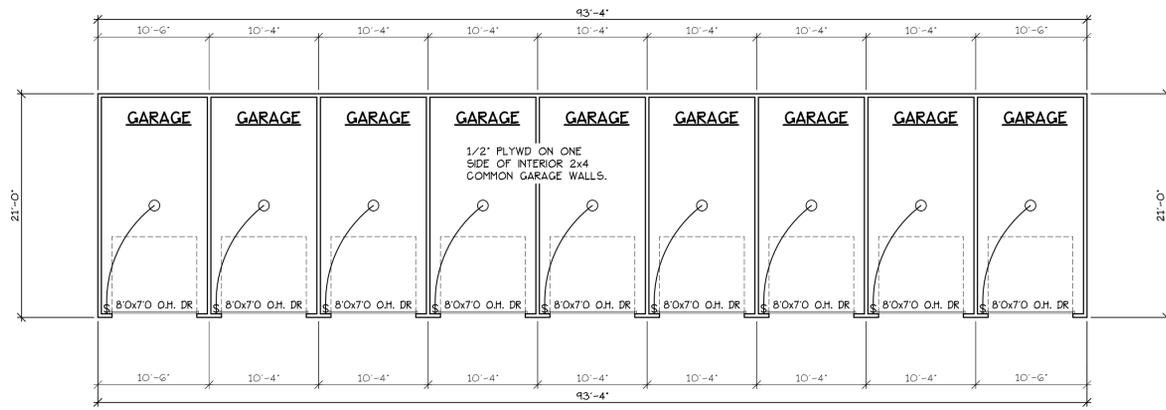
**END ELEVATION** (GARAGES 1 + 3 (11 GARAGES))  
SCALE: 1/8" = 1'-0"

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.  
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.  
Drawn: G.L.D.  
Checked: M.D.G.  
Date: MAY 2018  
Scale: AS SHOWN  
JOB # 6639



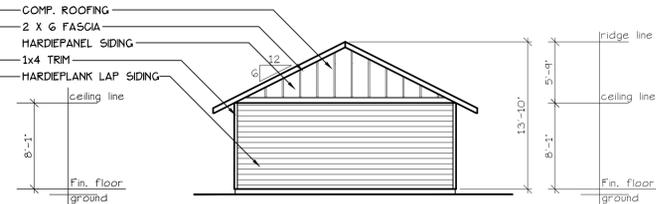
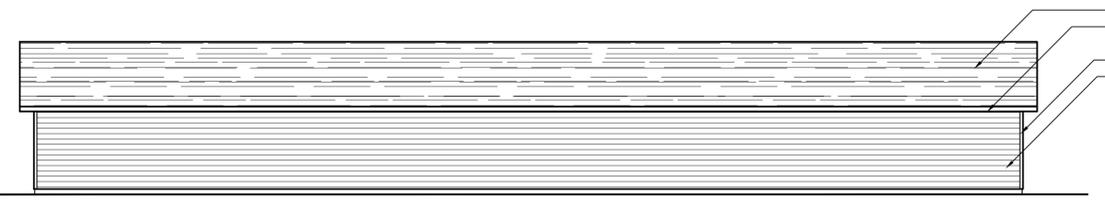
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**FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

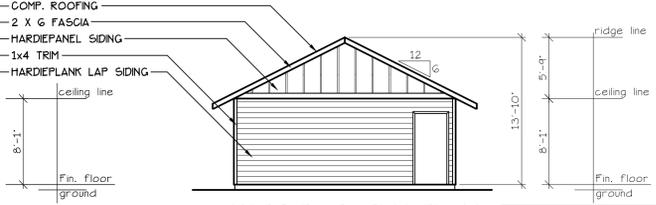
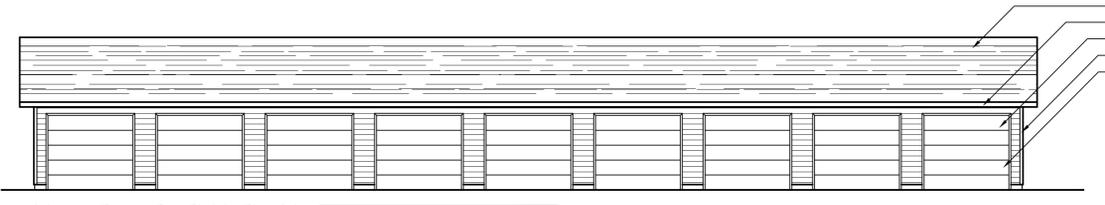
**GARAGE 2 (9 GARAGES)**

NOTE: ALL WALLS TO BE FRAMED WITH 2x4 STUDS, UNLESS NOTED OTHERWISE.



**SOUTH ELEVATION (GARAGE 2 (9 GARAGES))**  
SCALE: 1/8" = 1'-0"

**EAST ELEVATION (GARAGE 2 (9 GARAGES))**  
SCALE: 1/8" = 1'-0"



**NORTH ELEVATION (GARAGE 2 (9 GARAGES))**  
SCALE: 1/8" = 1'-0"

**WEST ELEVATION (GARAGE 2 (9 GARAGES))**  
SCALE: 1/8" = 1'-0"

**GARAGE #2 - FLOOR PLANS & ELEVATIONS**

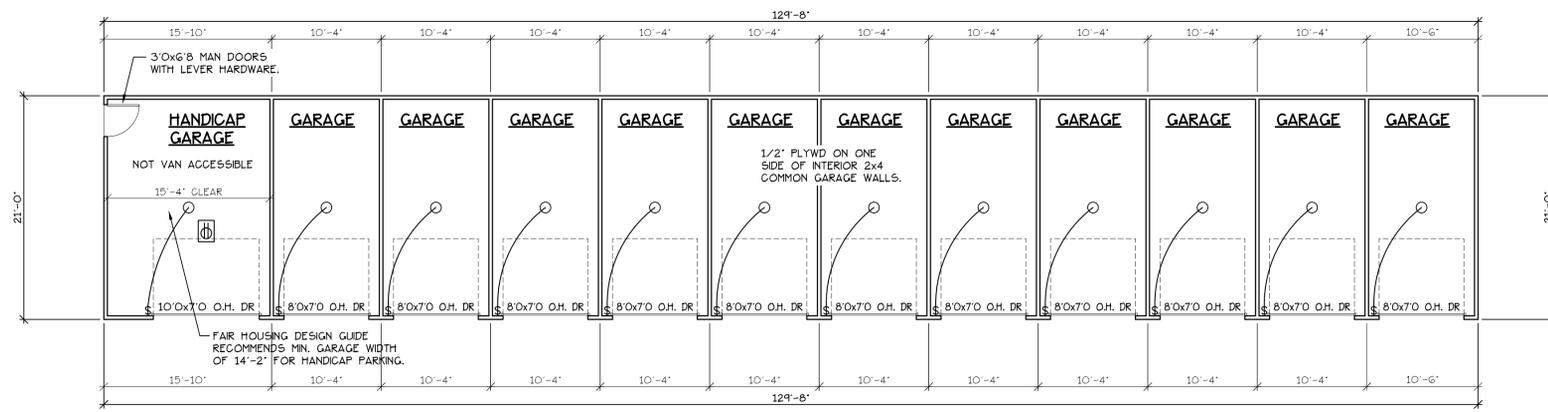
**BRANDIS MEADOWS APARTMENT COMPLEX**

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.  
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.  
Drawn: G.L.D.  
Checked: M.D.G.  
Date: MAY 2018  
Scale: AS SHOWN  
JOB # 6639



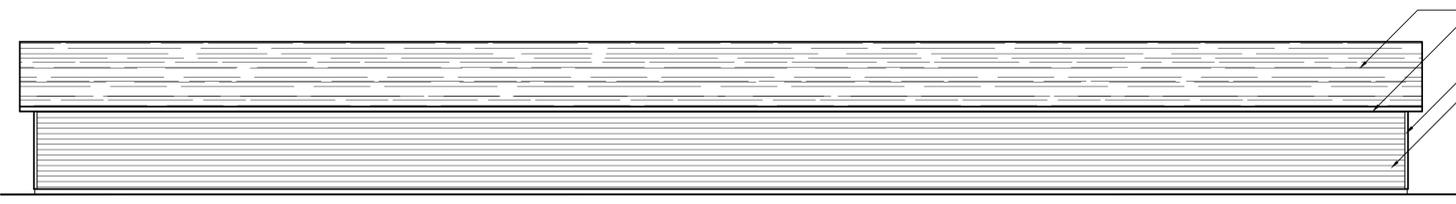
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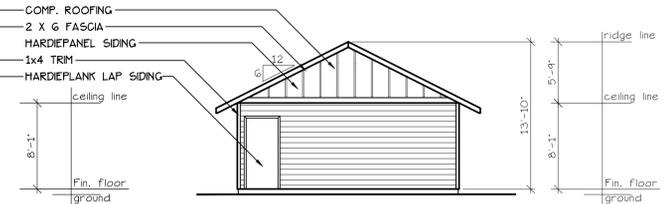
**FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

**GARAGE 4 (12 GARAGES)**

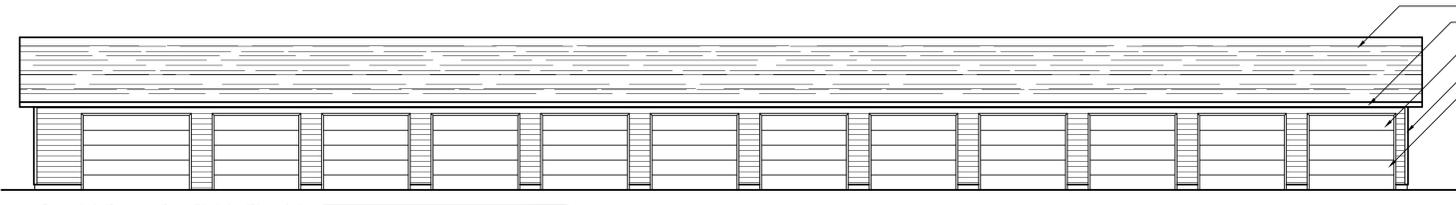
NOTE: ALL WALLS TO BE FRAMED WITH 2x4 STUDS, UNLESS NOTED OTHERWISE.



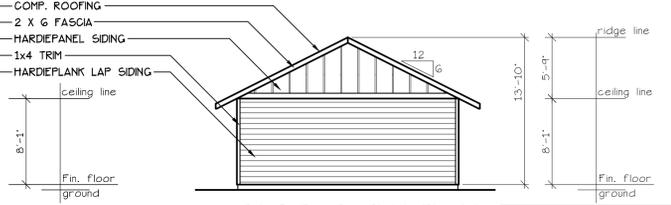
**NORTH ELEVATION (GARAGE 4 (12 GARAGES))**  
SCALE: 1/8" = 1'-0"



**WEST ELEVATION (GARAGE 4 (12 GARAGES))**  
SCALE: 1/8" = 1'-0"



**SOUTH ELEVATION (GARAGE 4 (12 GARAGES))**  
SCALE: 1/8" = 1'-0"



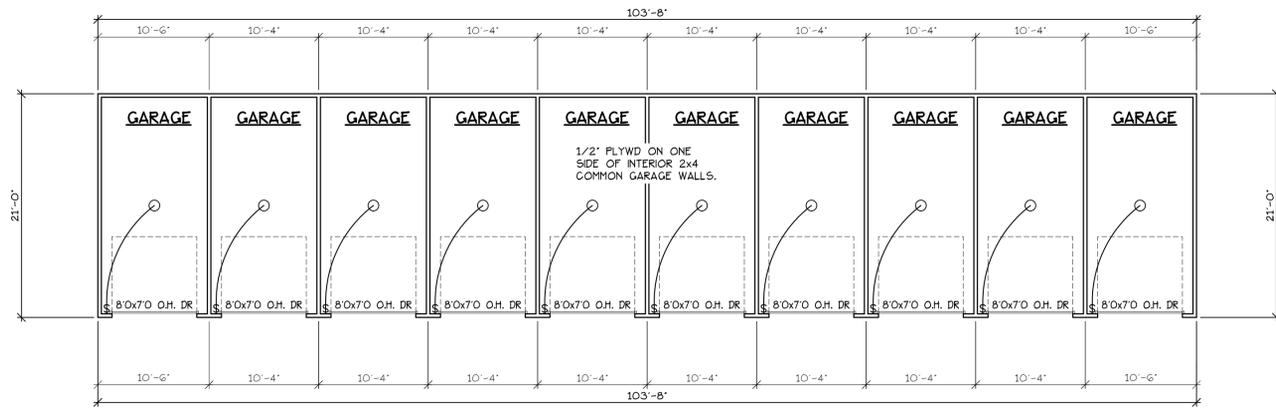
**EAST ELEVATION (GARAGE 4 (12 GARAGES))**  
SCALE: 1/8" = 1'-0"

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.  
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.  
Drawn: G.L.D.  
Checked: M.D.G.  
Date: MAY 2018  
Scale: AS SHOWN  
JOB # 6639



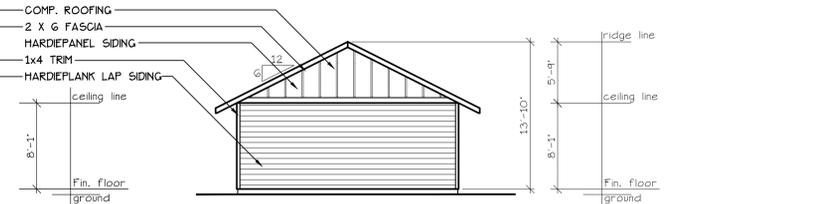
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**FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

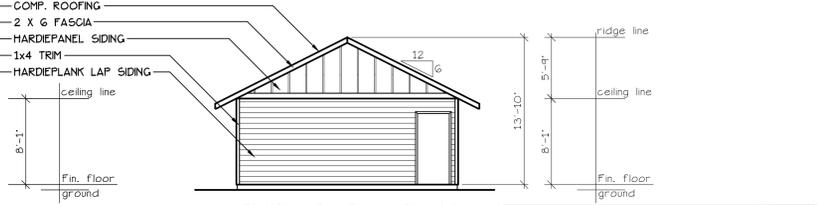
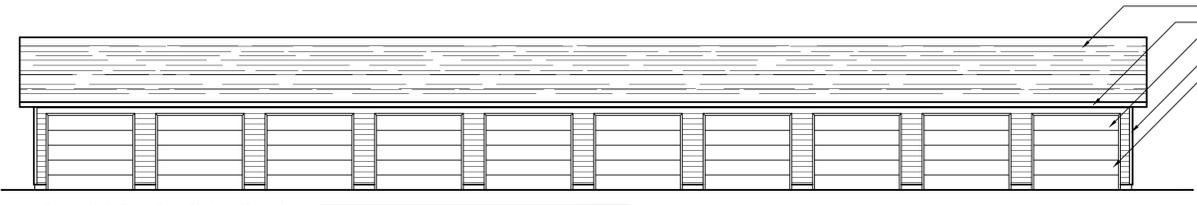
**GARAGES 5 + 7 (10 GARAGES)**

NOTE: ALL WALLS TO BE FRAMED WITH 2x4 STUDS, UNLESS NOTED OTHERWISE.



**REAR ELEVATION** (GARAGES 5 + 7 (10 GARAGES))  
SCALE: 1/8" = 1'-0"

**END ELEVATION** (GARAGES 5 + 7 (10 GARAGES))  
SCALE: 1/8" = 1'-0"



**FRONT ELEVATION** (GARAGES 5 + 7 (10 GARAGES))  
SCALE: 1/8" = 1'-0"

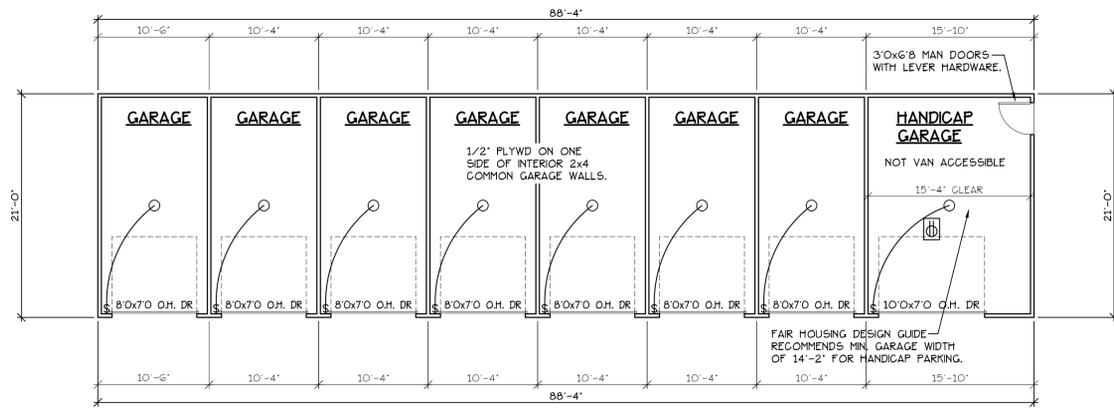
**END ELEVATION** (GARAGES 5 + 7 (10 GARAGES))  
SCALE: 1/8" = 1'-0"

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.  
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

DESIGN: P.L.M.  
DRAWN: G.L.D.  
CHECKED: M.D.G.  
DATE: MAY 2018  
SCALE: AS SHOWN

JOB # 6639  
**REGISTERED PROFESSIONAL ENGINEER**  
*Mark D. Grant*  
JULY 14, 1997  
MARK D. GRANT  
RENEW DATE: June 30, 2019

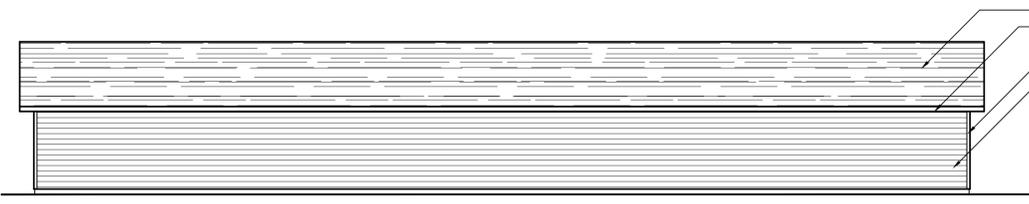
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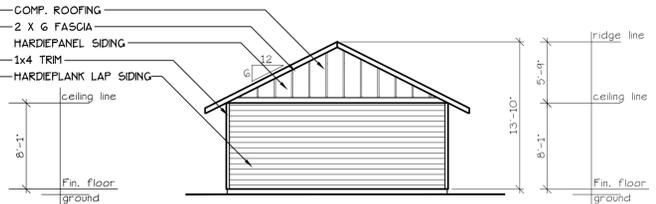
**FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

**GARAGE 6 (8 GARAGES)**

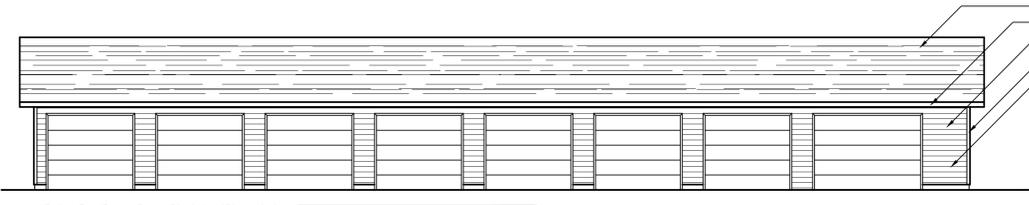
NOTE: ALL WALLS TO BE FRAMED WITH 2x4 STUDS, UNLESS NOTED OTHERWISE.



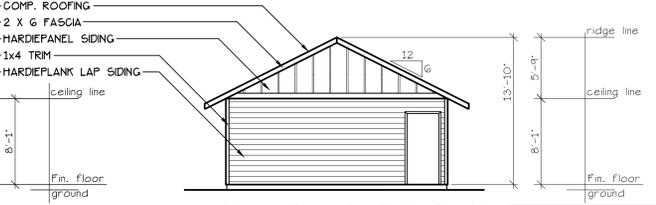
**WEST ELEVATION** (GARAGE 6 (8 GARAGES))  
SCALE: 1/8" = 1'-0"



**SOUTH ELEVATION** (GARAGE 6 (8 GARAGES))  
SCALE: 1/8" = 1'-0"



**EAST ELEVATION** (GARAGE 6 (8 GARAGES))  
SCALE: 1/8" = 1'-0"



**NORTH ELEVATION** (GARAGE 6 (8 GARAGES))  
SCALE: 1/8" = 1'-0"

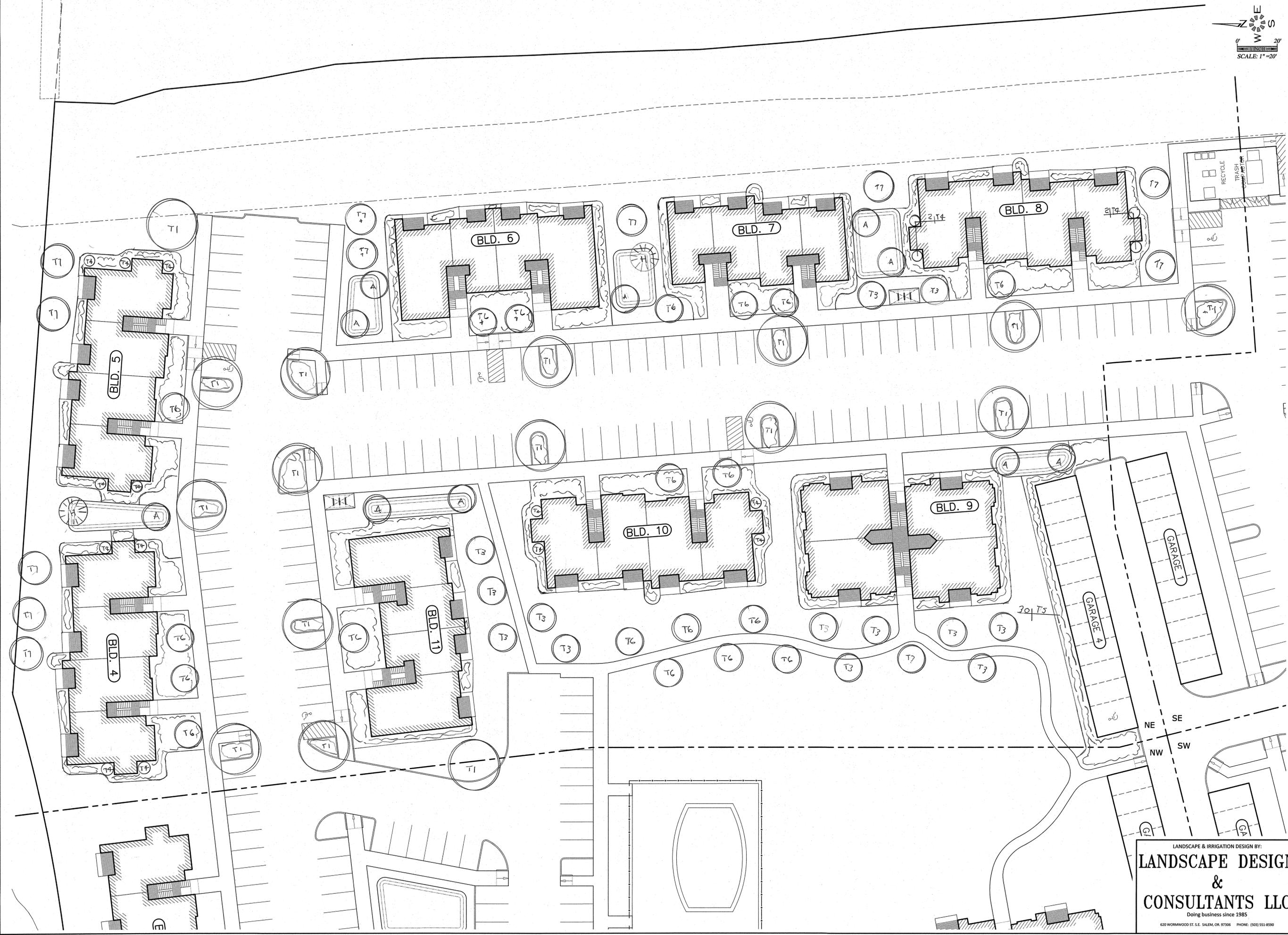
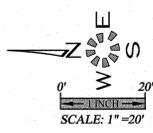
NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.  
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

DESIGN: P.L.M.  
DRAWN: G.L.D.  
CHECKED: M.D.G.  
DATE: MAY 2018  
SCALE: AS SHOWN

JOB # 6639



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**SCHEMATIC LANDSCAPE  
 PLAN - NE**

**BRANDIS MEADOWS  
 APARTMENT COMPLEX**

NO CHANGES, MODIFICATIONS  
 OR REPRODUCTIONS TO BE  
 MADE TO THESE DRAWINGS  
 WITHOUT THE WRITTEN  
 AUTHORIZATION FROM THE  
 DESIGN ENGINEER.  
 DIMENSIONS & NOTES TAKE  
 PRECEDENCE OVER  
 GRAPHICAL REPRESENTATION.

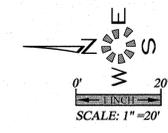
Design: M.D.G.  
 Drawn: GJD/PHS  
 Checked: B.M.G.  
 Date: MAR 2018  
 Scale: AS SHOWN

LANDSCAPE & IRRIGATION DESIGN BY:  
**LANDSCAPE DESIGN  
 &  
 CONSULTANTS LLC**  
 Doing business since 1985  
 620 WORMWOOD ST. S.E. SALEM, OR 97305 PHONE: (503) 551-6590

JOB # 6639

**L1.1**

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**SCHEMATIC LANDSCAPE  
 PLAN - SE**

**BRANDIS MEADOWS  
 APARTMENT COMPLEX**

NO CHANGES, MODIFICATIONS  
 OR REPRODUCTIONS TO BE  
 MADE WITHOUT WRITTEN  
 AUTHORIZATION FROM THE  
 DESIGN ENGINEER.  
 DIMENSIONS & NOTES TAKE  
 PRECEDENCE OVER  
 GRAPHICAL REPRESENTATION.

Design: M.D.G.  
 Drawn: GID/PHS  
 Checked: B.M.G.  
 Date: MAR 2018  
 Scale: AS SHOWN

JOB # 6639

**L1.2**



LANDSCAPE & IRRIGATION DESIGN BY:  
**LANDSCAPE DESIGN  
 &  
 CONSULTANTS LLC**  
 Doing business since 1985  
 620 WORMWOOD ST. S.E. SALEM, OR 97306 PHONE: (503) 551-8990

A:\6600-6639\6639-BrandisMeadows\Map\1818\6639-Map\_SDR-L1.2\_5/7/2018 2:40:19 PM\_Plan.dwg

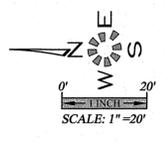


**SCHEMATIC LANDSCAPE  
 PLAN - SW**

**BRANDIS MEADOWS  
 APARTMENT COMPLEX**

NO CHANGES, MODIFICATIONS  
 OR REPRODUCTIONS TO BE  
 MADE TO THESE DRAWINGS  
 WITHOUT WRITTEN  
 AUTHORIZATION FROM THE  
 DESIGN ENGINEER.  
 DIMENSIONS & NOTES TAKE  
 PRECEDENCE OVER  
 GRAPHICAL REPRESENTATION.

66399 - SDR113  
 Design: M.D.G.  
 Drawn: GID/P.H.S.  
 Checked: B.H.G.  
 Date: MAR 2018  
 Scale: AS SHOWN



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**LANDSCAPE DESIGN  
 &  
 CONSULTANTS LLC**  
 Doing business since 1985  
 620 WORMWOOD ST. S.E. SALEM, OR. 97306 PHONE: (503) 551-8590

JOB # 6639

**L1.3**

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**SCHEMATIC LANDSCAPE PLAN - NW**

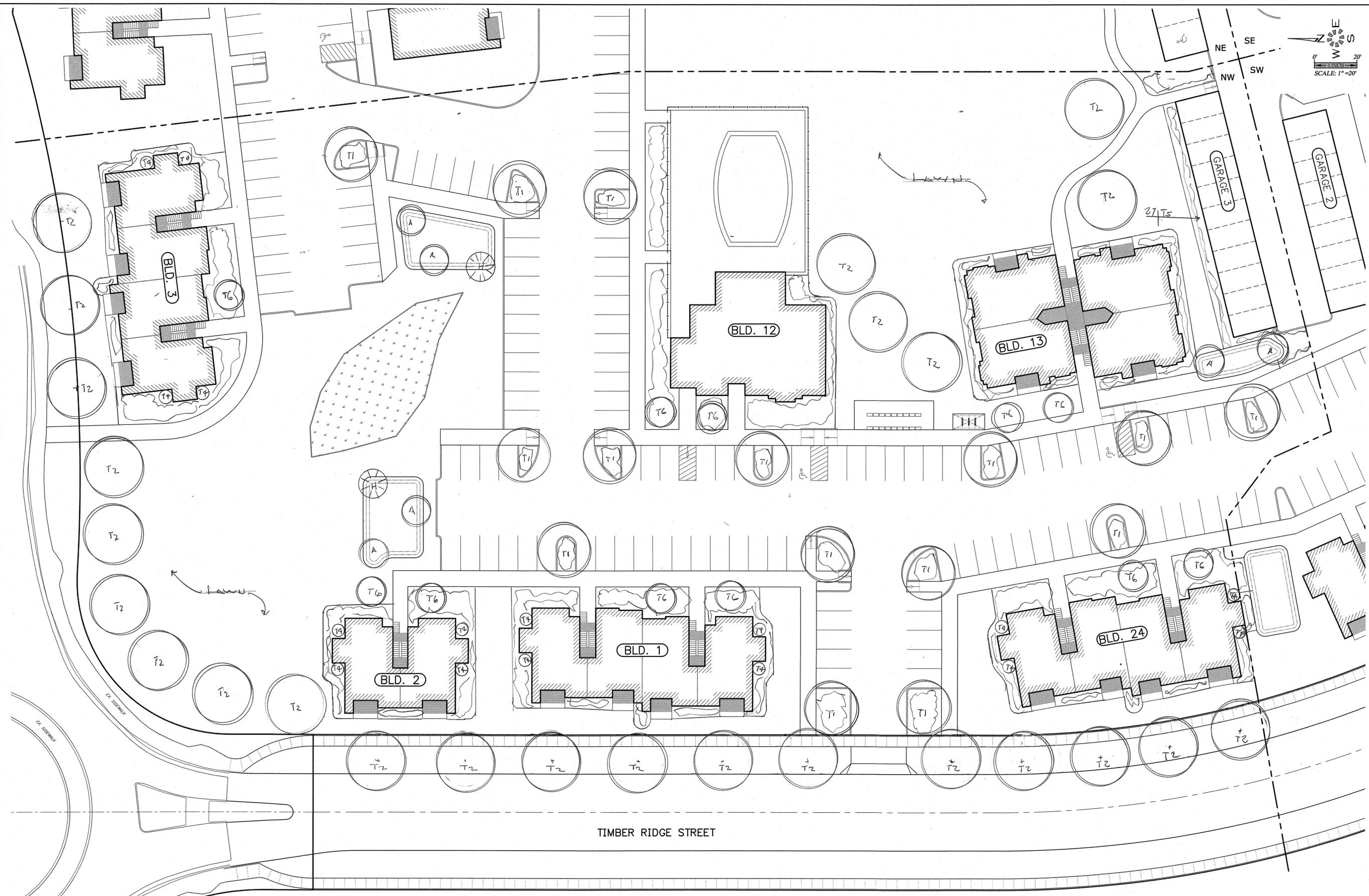
**BRANDIS MEADOWS APARTMENT COMPLEX**

NO CHANGES, MODIFICATIONS OR REVISIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.  
 DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.  
 Drawn: GID/PHS  
 Checked: B.M.G.  
 Date: MAR 2018  
 Scale: AS SHOWN

LANDSCAPE & IRRIGATION DESIGN BY:  
**LANDSCAPE DESIGN & CONSULTANTS LLC**  
 Doing business since 1985  
 620 WORMWOOD ST. S.E. SALEM, OR. 97306 PHONE: (503) 551-8590

JOB # 6639  
**L1.4**



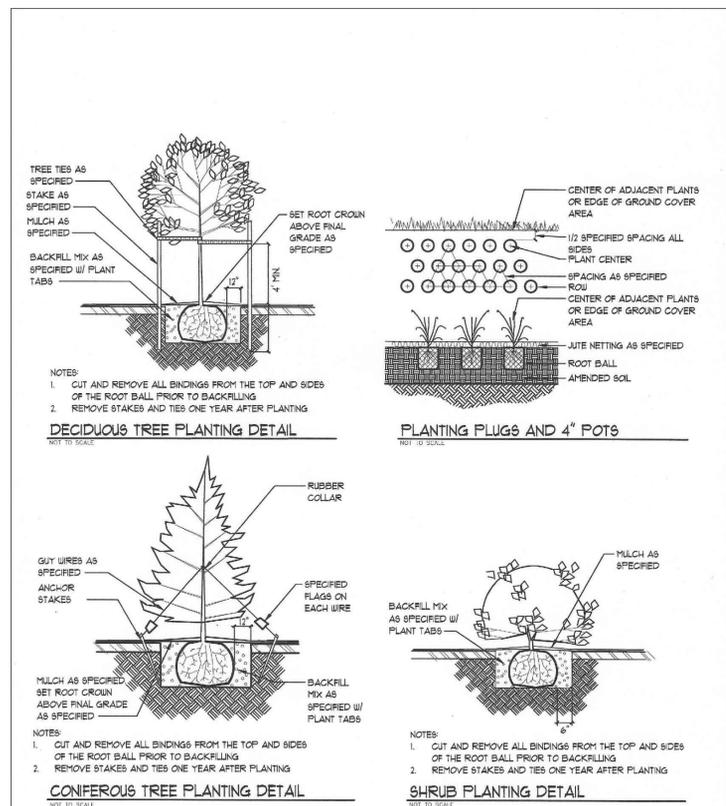
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# PLANT PALETTE

## APARTMENTS

QTY.	SYM	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	REMARKS
<b>TREES</b>						
59	T-1	Acer rubrum 'Armstrong'	Armstrong Red Maple	1 1/2" - 2" cal.	B & B	6' Standard
47	T-2	Acer rubrum 'Autumn Blaze'	Autumn Blaze Maple	1 1/2" - 2" cal.	B & B	6' Standard
18	T-3	Fagus sylvatica 'Dawyck Purple' Columnar	Columnar Dawyck Purple Leaf Birch	1 1/2" - 2" cal.	B & B	3' Standard
64	T-4	Juniperus Virginiana 'Skyrocket'	Skyrocket Juniper	4'-5' Tall	B & B	Full/Natural
106	T-5	Thuja occidentalis 'Emerald Green'	Emerald Green Arborvitae	4'-5' Tall	B & B	Full/Natural
42	T-6	Pyrus calleryana 'Capital'	Capital Flowering Pear	1 1/2" - 2" cal.	B & B	6' Standard
21	T-7	Cercis occidentalis	Western Redbud	1 1/2" - 2" cal.	B & B	6' Standard
<b>SHRUBS</b>						
S-1		Abelia grandiflora 'Ed Goucher'	Edward Goucher Abelia	1 gal.	cont.	Full
S-2		Carex comans Phoenix Green	Phoenix Green Leatherleaf Sedge	1 gal.	cont.	Full
S-3		Calamagrostis x acutiflora 'Avalanche'	Avalanche Feather Reed Grass	1 gal.	cont.	Full
S-4		Calamagrostis x acutiflora 'Karl Foerster'	Karl Foerster Reed Grass	1 gal.	cont.	Full
S-5		Cornus stolonifera 'Kelsey'	Kelsey Dwarf Redwig Dogwood	1 gal.	cont.	Full
S-6		Daphne odora	Winter Daphne	1 gal.	cont.	Full
S-7		Euonymus alatus 'Compacta'	Burning Bush Winged Euonymus	1 gal.	cont.	Full
S-8		Euonymus fortunei Moonshadow	Moonshadow Euonymus	1 gal.	cont.	Full
S-9		Festuca glauca Elijah Blue	Elijah Blue Festuca Grass	1 gal.	cont.	Full
S-10		Fragaria chiloensis	Costal Strawberry	1 gal.	cont.	Full
S-11		Koeleria glauca	Blue Hair Grass	1 gal.	cont.	Full
S-12		Ligustrum japonicum Texanum	Texas Wax-Leaf Privet	1 gal.	cont.	Full
S-13		Mahonia aquifolium	Oregon Grape	1 gal.	cont.	Full
S-14		Mahonia repens	Creeping Mahonia	1 gal.	cont.	Full
S-15		Nandina domestica 'Moon Bay'	Moon Bay Dwarf Nandina	1 gal.	cont.	Full
S-16		Pennisetum alopecuroides Hameln	Dwarf Fountain Grass	1 gal.	cont.	Full
S-17		Pinus mugo mugo 'dwarf'	Dwarf Mugho Pine	1 gal.	cont.	Full
S-18		Pieris japonica 'Astrid' Compacta	Astrid Japanese Andromeda Compacta	3 gal.	cont.	Full
S-19		Prunus laurocerasus 'Otto Lukens'	Otto Lukens Laurel	1 gal.	cont.	Full
S-20		Rhododendron 'Unique'	Unique Rhododendron	18"-24"	w/buds	Full
S-21		Rhododendron 'PJM'	PJM Rhododendron	18"-24"	w/buds	Full
S-22		Rosa 'Radtko' 'Double Knockout Rose'	Double Knockout Rose	1 gal.	cont.	Full
S-23		Rubus calycinoides	Creeping Raspberry	1 gal.	cont.	Full
S-24		Spiraea japonica 'Double Pink'	Double Pink Spirea	1 gal.	cont.	Full
S-25		Viburnum tinus 'Spring Bouquet'	Laurustinus 'Spring Bouquet'	3 gal.	cont.	Full

CONTRACTOR TO VERIFY ALL QUANTITIES OF PLANT MATERIALS WITH LANDSCAPE DESIGN & CONSULTANTS PRIOR TO INSTALLATION. PLANT MATERIAL SUBSTITUTIONS MAY BE MADE BY THE OWNER FOR PLANT MATERIALS OF SIMILAR HABIT, FLOWERING CHARACTERISTIC AND/OR STRUCTURE OF GROWTH DUE TO AVAILABILITY, WATER, SOIL, AND SUN REQUIREMENTS.



RAIN GARDEN PLANT PALETTE						
Symbol	Botanical Name COMMON NAME	E/D	O.C.	QTY.	HT.	CONT.
<b>ZONE 1</b>						
	Bottom 0,000 sq. ft.					
	Carex obovata SLOUGH SEDGE (Herbaceous Plants)	E	12"		24"	Plugs Tri-Space
	Juncus patens 'Elk Blue' ELK BLUE GRAY RUSH (Herbaceous Plants)	E	12"		18"	Plugs Tri-Space
	Carex testacea NEW ZEALAND ORANGE SEDGE (Herbaceous Plants)	E	12"		24"	Plugs Tri-Space
	Elymus glaucus BLUE WILD RYE (Herbaceous Plants)	E	12"		24"	Plugs Tri-Space
	Carex morrowii 'Variegata' VARIEGATED JAPANESE SEDGE (Herbaceous Plants)	E	12"		18"	Plugs Tri-Space
	Sides 0,000 sq. ft.					
(A)	Acer circinatum VINE MAPLE Tree (3 stem clump) (3 trunks per tree)	D		22	15'	5 to 6 ft. B & B
	Cornus stolonifera 'Kelsey' DWARF KELSEY DOGWOOD (Small Shrub)	D	24"		24"	4" Pot Tri-Space
	Spiraea japonica 'Goldmound' GOLDMOUND SPIRAEA (Small Shrub)	D	24"		24"	4" Pot Tri-Space
	Spiraea betulifolia BIRCHLEAF SPIRAEA (Small Shrub)	D	24"		24"	4" Pot Tri-Space
	Symphoricarpos alba SNOWBERRY (Small Shrub)	D	24"		24"	4" Pot Tri-Space
	Spiraea japonica 'Magic Carpet' MAGIC CARPET SPIRAEA (Small Shrub)	D	24"		18"	4" Pot Tri-Space
<b>ZONE 3</b>						
	Top 0,000 sq. ft.					
	Cornus sericea RED TWIG DOGWOOD (Large Shrub)	D	4'		6'	1 Gal. Tri-Space
	Physocarpus opulifolius PACIFIC NINEBARK (Large Shrub)	D	4'		6'	1 Gal. Tri-Space
	Holodiscus discolor WESTERN SERVICEBERRY (Large Shrub)	D	4'		6'	1 Gal. Tri-Space
	Ribes sanguineum RED FLOWERING CURRANT (Large Shrub)	D	4'		8'	1 Gal. Tri-Space
	Spiraea douglasii DOUGLAS SPIRAEA (Large Shrub)	D	4'		7'	1 Gal. Tri-Space
	Thuja plicata Hogan HOGAN CEDAR Tree	E	20"	8	40"	4 to 5 ft. B & B

**NOTE:**  
 SEE LANDSCAPE NOTES BEFORE PLANTING THE RAIN GARDEN  
 For installing of plant materials for Zone 1, group 40 to 50 plants of each species and plant together and very the planting species until the area is filled. For Zone 2, group 8 to 11 plants of each species and plant together and very the planting species until the area is filled. For Zone 3, group 5 to 9 plants of each species and plant together and very the planting species until the area is filled. Installing plants materials shall be on a triangular grid. Tight Poly Jute Netting shall be installed on the slopes and bottom of the Rain Garden as a soil stabilizer and erosion control agent. Use ground covering anchoring pins for installation as per manufactures directions. Do not install plant material until the Poly Jute Netting is installed. Holes are to be cut within the Poly Jute Netting for plant material installation.

### GENERAL LANDSCAPE NOTES:

- General:**
- All local, municipal, state, and federal laws regarding uses, regulations, governing or relating to any portion of the work depicted on these plans are hereby incorporated into and made part of these specifications and their provision shall be carried out by the Contractor. The Contractor shall at all times protect the public throughout the construction process.
  - The Contractor shall carefully correlate construction activities with earthwork contractor and other site development.
  - The Contractor shall verify drawing dimensions with actual field conditions and inspect related work and adjacent surfaces. Contractor shall verify the accuracy of all finish grades within the work area. The Contractor shall report to the Landscape Design & Consultants LLC (LDC) or Owner all conditions which prevent proper execution of this work.
  - The exact location of all existing utilities structures and underground utilities, which may not be indicated on the drawings, shall be determined by the Contractor. The Contractor shall protect existing structures and utility services and is responsible for their replacement if damaged.
  - Disturbance and impacts to existing native trees/shrubs shall be minimized to the greatest extent practicable.
  - The Contractor shall keep the premises free from rubbish and debris at all times and shall arrange material storage to not to interfere with the operation of the project. All unused material, rubbish, and debris shall be removed from the site.
  - All plant material and planting supplies shall be warranted for a period of not less than one year from the completion date of installation. All replacement stock shall be subjected to the same warranty requirement as the original stock. Any damage due to replacement operations shall be repaired by the Contractor. At the end of the warranty period, inspections shall be made by LDC, Owner/General Contractor. All plant and lawn areas not in a healthy growing condition shall be removed and replaced with plants and turf cover of a like kind and size before the close of the next planting season.

### Grading / Erosion Control:

- The design and placement of the building on the site lends itself to minimal slope conditions with positive drainage being maintained around the entire building. In this case standard landscaping procedures of topsoil, lawn, and a two inch layer of bark mulch on all planting beds will be sufficient to control erosion. In the event site conditions change or there are Slopes / Bio Swale / Detention Ponds on the project with slopes greater than 30% Poly tight Jute Netting shall be installed with anchoring pins per manufacturers recommendations prior to planting. Recommend DeWitt FJN4216 Erosion Control Poly Jute Netting and DeWitt anchor pins or approved equal.
- Seed recommendation is Pro Time 700 Low Profile or approved equal over the jute netting at a rate of 2 lbs. per 1000 sq. feet. The address of Pro Time is 1712 SE Ankeny, Portland OR 97214. Phone 503-239-7518. Their email is info@protimeawnseed.com
- The work limits shown on this plan shall clearly be marked in the field prior to construction. No disturbance beyond the work limits shall be permitted.
- Grading shall be performed during optimal weather conditions.
- Erosion control measures shall be constructed in conjunction with all clearing and grading activities, and in such a manner as to ensure that sediment and sediment-laden water does not enter the drainage system or violate applicable water standards.
- Prior to the commencement of construction activities, Contractor shall place orange construction fencing around perimeters of construction impact areas, and sediment fencing at downhill portions of the site. Contractor is responsible for proper installation, maintenance, replacement, and upgrading of all erosion and sediment control measures, in accordance with local, state, and federal regulations.

### Plant Material:

- Contractor shall verify all plant & tree quantities with LDC or Owner prior to construction.
- In the event of a discrepancy between plant materials listed on the drawings, the drawings shall govern the plant species and quantities required.
- Plant material shall be first quality stock and shall conform to the code of standards set forth in the current edition of the American Standards for Nursery Stock sponsored by the American Association of Nurserymen, Inc. (AAN)
- Species and variety as specified on the drawings and delivered to the site shall be certified true to their genus, species and variety and as defined within the current edition International Code of Nomenclature for Cultivated Plants.
- Obtain freshly dug, healthy, vigorous plants nursery-grown under climatic conditions similar to those in the locality for the project for a minimum of two years. Plants shall have been lined out in rows, annually cultivated, sprayed, pruned, and fertilized in accordance with good horticultural practice. All container plants shall have been transplanted or root pruned at least once in the past three years. Balled-and-burlapped (B&B) plants must come from soil which will hold a firm root ball. Heeled in plants and plants from cold storage are not acceptable.
- Planting stock shall be well-branched and well-formed, sound, vigorous, healthy, free from disease, sun-scaled, windburn, abrasion, and harmful insects or insect eggs; and shall have healthy, normal, unbroken root systems. Deciduous trees and shrubs shall be symmetrically developed, uniform habit of growth, with straight trunks or stems, and free from objectionable disfigurements. Evergreen trees and shrubs shall have well-developed symmetrical tops with typical spread of branches for each particular species or variety. Only vines and ground cover plants well-established shall be used. Plants budding into leaf or having soft growth shall be sprayed with an anti-desiccant at the nursery before digging.
- Contractor shall not make substitutions of plant materials. If required landscape material is not obtainable, submit proof of non-availability and proposal for use of equivalent material. When authorized, adjustments of contract amount (if any) will be made by change order.
- Plant sizes and grading shall conform to the latest edition of American Standard for Nursery Stock as sponsored by the American Association of Nurserymen Inc. (AAN)
- All vegetation shown on this plan shall be maintained in a healthy and vigorous growing condition throughout the duration of the proposed use. All vegetation not so maintained shall be replaced with new vegetation at the beginning of the next growing season.

### Planting:

- Planting shall be installed between March 1<sup>st</sup> to April 30<sup>th</sup> or between October 1<sup>st</sup> to November 30<sup>th</sup>. If planting is installed outside these time frames, additional measures may be needed to ensure survival and shall be pre-approved by the owner.
- Plant material shall be transported to the site in a timely manner to minimize on-site storage. Where storage is required, all plants shall be kept moist and shaded.
- Plant stock shall be handled in a manner that will not break, scrape, or twist any portion of the plant. Protect plants at all times from conditions that can damage the plant (e.g., sun, wind, freezing conditions).
- Provide the following clearance for planting of trees where applicable:  
 Maintain 30 feet vision triangles at all intersections and corners  
 5 feet from all street/parking lot light standards  
 10 feet from fire hydrants  
 5 feet from all utility vaults, meter boxes, etc.
- No trees or shrubs shall be planted on existing or proposed utility lines.
- All shrub beds shall receive a minimum 2" layer of bark mulch evenly applied immediately after planting is completed. All plant beds shall drain away from buildings.
- Excavate plant pits for shrubs and trees as follows:  
 Container stock: width = 2 times the container diameter, depth = container depth.  
 Bare root stock: width = 2 times the widest diameter of the root, depth = of root system.  
 B & B: width = 2 times ball diameter, depth = ball depth.  
 Scarify sides and bottom of plant pits to roughen surfaces.
- Place plants plumb in the pit, Backfill with native soil or top soil mixture to the original plant soil line, and tap solidly around the ball and roots. Water plants immediately after planting if soil is not saturated to the surface.

### Lawn Areas / Hydro-Seeding/Sod:

- All lawn areas shall be seeded unless otherwise directed by Owner to install Sod. Seed or Sod shall be procured through Kuenzi Turf Nursery. Seed or Sod shall be Rhizomatous Tall Fescue (RTF). Seed mix shall be applied at a rate of 10 lbs. per 1000 sq. feet. Contact Kuenzi Turf Nursery at (503)585-8337 or approved equal.
- All areas shown on the plan shall be seeded between March 1<sup>st</sup>, and May 1<sup>st</sup>, or between September 1<sup>st</sup> and October 15<sup>th</sup>.
- Scarify soil surface to a depth of 3 inches, to ensure adequate seed contact with soil.
- Prior to seeding, clearly delineate seeding limits using flags or non-toxic paint.
- Hydro-seed application rate shall be 60 lbs. per 100 gallons of hose work or 75 lbs. per 100 gallons of tower work.
- At the end of one complete growing season, the planted and seeded area fail to exhibit well-established plant communities, or exhibit patchiness in the patterns of vegetative cover, supplemental seeding and planting shall occur.
- Seeding of slopes greater than 30% shall be done by Hydro Seeding using a seed mix of Pro Time 700 Low Profile or approved equal at a rate of 2 lbs. per 1000 sq. feet.

### Top Soil Mixture:

- A 2" to 4" layer of garden care compost, mushroom compost or similar material sterilized at 105 degrees Fahrenheit shall be incorporated into the existing soil prior to planting and seeding/sod lawns.  
 Incorporate into existing soil prior to planting the following fertilizers at a rate specified per 1000 sq. ft. of planting area.  
 20 lbs. 10-6-4 50% Slow Release  
 30 lbs. 38-0-0 Nitroform  
 10 lbs. Iron Sulfate 21%  
 20 lbs. 0-18-0 Super Phosphate  
 25 lbs. Dolomite Lime  
 10 lbs. 13-0-11 Potassium Nitrate

### Bark Mulch:

- All shrub beds shall receive a minimum 2" layer of fine hemlock or fir bark mulch evenly applied immediately after planting is completed. All plant beds shall drain away from buildings.

### Poly Jute Netting:

- Tight net Poly Jute Netting shall be installed on Bio Swales/Detention Ponds/Vegetated Swale and Rain Gardens as a soil stabilizer and erosion control agent. Jute Netting shall be installed with anchoring pins per manufacturers recommendations prior to planting. Recommend DeWitt FJN4216 Erosion Control Poly Jute Netting and DeWitt anchor pins or approved equal.

### Bio Swales/Detention Ponds/Common Swales/Vegetated Swales/Stormwater Swales/Planter Boxes:

- Bark Mulch shall not be applied to Bio Swales/Detention Ponds/Common Swales/Vegetated Swales/Stormwater Swales/Planter Boxes.

### Weed Control Agent:

- Apply casoron as a weed control agent after planting per manufactures specified recommendations around building or approved equal.

### Non-Native Plant Species:

- All non-native, invasive plant species shall be removed from the site.

NOTE:  
 Growing Medium for the Rain Garden shall comply with the City of Albany Standard Construction Specifications, Division 6, Post Construction Stormwater Quality Facilities, 301 Growing Medium.

LANDSCAPE & IRRIGATION DESIGN BY:  
**LANDSCAPE DESIGN & CONSULTANTS LLC**  
 Doing Business Since 1985  
 620 WORMWOOD ST. S.E. SALEM, OR 97306 PHONE: (503) 551-8590



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EX. TYPE 4 C.B.  
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INV. 225.32 10" PVC (N)

EX. TYPE 3 C.B.  
RIM 227.87  
INV. 224.43 10" PVC (N)

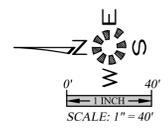
EX. TYPE 3 C.B.  
RIM 227.81  
INV. 224.02 10" PVC (N)

EX. S.S. C.O.  
RIM 228.09

EX. 12" PVC (N)

EX. 8" PVC (N)

NOTE:  
THERE ARE NO EXISTING  
TREES ON PROJECT SITE



**EXISTING CONDITIONS PLAN**

**BRANDIS MEADOWS  
APARTMENT COMPLEX**

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DIMENSIONS & NOTES TAKE  
PRECEDENCE OVER  
GRAPHICAL REPRESENTATION.

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Drawn: C.D.S.  
Checked: B.M.G.  
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Scale: AS SHOWN



JOB # 6639

**SDR02**



**RIPARIAN CORRIDOR MAP**

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JOB # 6639

**SDR05**

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**RIPARIAN CORRIDOR MAP**

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EXPRES: 06-30-2021  
 JOB # 6639

**SDR05**

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**OVERALL SITE TOTALS:**  
 BOUNDARY: 719,698 S.F. (16.52 Ac.)  
 DEVELOPED AREA: 576,272 S.F.  
 EXISTING WETLANDS: 23,917 S.F.  
 EXISTING WETLANDS BUFFER: 31,809 S.F.  
 RIPARIAN CORRIDOR: 104,268 S.F.

**BUILDING FRONTAGE**  
 NORTH PROPERTY LINE 324 L.F.  
 NORTH BUILDINGS 141 L.F. (43.4%)

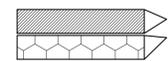
WEST PROPERTY LINE 1,175 L.F.  
 WEST BUILDINGS 591 L.F. (50.3%)

TOTAL PROPERTY LINE 1,499 L.F.  
 TOTAL BUILDINGS 731 L.F. (48.8%)

**PERVIOUS AREA**  
 LANDSCAPE AREA 377,272 S.F. (52.4%)

**IMPERVIOUS AREA**  
 TOTAL PAVED AREA 166,128 S.F. (23.1%)  
 SIDEWALKS & PATIOS 74,310 S.F. (10.3%)  
 BUILDINGS 86,308 S.F. (14.2%)

**SITE TOTALS:**  
 TOTAL AREA 719,698 S.F. (100.0%)  
 DEVELOPED AREA 576,272 S.F. (80.1%)  
 COMMON OPEN SPACE (20') 138,592 S.F. (19.3%)  
 COMMON OPEN SPACE (ALL) 440,983 S.F. (61.3%)



**OPEN SPACE PLAN**

**BRANDIS MEADOWS APARTMENT COMPLEX**

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 JOB # 6639

**SDR03**

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 Date: MAR 2018  
 Scale: AS SHOWN



# Technical Memo

WEST Consultants, Inc.

2601 25<sup>th</sup> St. SE

Suite 450

Salem, OR 97302-1286

(503) 485 5490

(503) 485-5491 Fax

[www.westconsultants.com](http://www.westconsultants.com)



**To:** Melissa Anderson, AICP, PMP, CFM  
Community Development Department, City of Albany, Oregon

**Date:** April 7, 2020

**From:** Ken Puhn, P.E., CFM

**Subject:** Review of Floodplain Development Permit Application FP-09-19; Brandis Meadows Apartments

---

## Background

WEST Consultants has completed a review of the Floodplain Development Permit Application No. FP-09-19. The subject of this application is the development of 16.52 acres of currently undeveloped land into a 264-unit apartment complex. This work is part of the ongoing Brandis Meadows Development. The subject property is bounded to the north by Knox Butte Road, to the south and west by Burkhart Creek, and to the east by Burkhart-Truax Diversion Channel. Based on the effective FEMA Flood Insurance Study (FIS) for Linn County, OR (effective 7/31/2019), the portions of Burkhart Creek and Burkhart-Truax Diversion Channel that abut the subject property have only been studied by approximate methods (Zone A). No BFEs, or floodways have been determined.

Since no FEMA base flood elevations (BFEs) exist for Burkhart Creek and Burkhart-Truax Diversion Channel in the vicinity of the subject property, the City requires that BFEs be determined and certified by an engineer, prior to issuance of a floodplain development permit. If, based on the BFE determination, activities are being conducted within the 1% annual chance floodplain, the applicant must ensure that the proposed activities also meet the relevant portions of 6.100, 6.101, and 6.111 of the City of Albany Development Code (CADC).

## Findings

The applicant's engineer, Multi/Tech Engineering (MT), has provided figures with a mapped floodplain boundary and BFEs for the 1% annual chance flood. The BFEs are based on a 2004 flood study conducted by WRG Design, for the Brookstone Estates Subdivision located west, across Burkhart Creek from Brandis Meadows. The 2004 study developed BFEs based on XPSWMM and HEC-RAS modeling and extended upstream and downstream of the Brandis Meadows project site. A review of the WRG results showed consistency with the mapped BFEs on the figures provided by MT.

The WRG study did not include Burkhart-Truax Diversion Channel. The mapping and site plans provided by MT assumed the elevation of the BFE at the divergence of Truax Creek Overflow from Burkhart Creek was projected at the same elevation, to the downstream terminus of the project along Burkhart-Truax Diversion Channel (i.e. it was conservatively assumed there was no downstream slope to the water surface profile). While conservative, it is noted that this method does not take into account the effects of backwater from the private bridge and the Knox Butte Road crossing located a short distance downstream of the project site on Burkhart-Truax Diversion Channel. At this time, the City has indicated it is willing to provide approval on the condition that development of a detailed flood study (updated BFEs and floodplain mapping) be conducted for Burkhart Creek and Burkhart-Truax Diversion Channel, prior to initiating development.

According to materials provided by the applicant, no grading is proposed within the mapped 1% annual change floodplain based on the BFE determination described above, and the building finished floor elevations are generally 3 to 5 feet above the BFEs. Since all proposed activities are outside the mapped 1% annual chance floodplain, sections 6.000, 6.101, and 6.111 do not apply at this time. When complete, the results of the detailed flood study will be reviewed by the City and sections 6.000, 6.101, and 6.111 of the CADC will need to be met, if applicable.

Supporting documentation from the applicant is included in Appendix A.

## APPENDIX A – Supporting Documentation



**BASE FLOOD MAP**

**BRANDIS MEADOWS  
 APARTMENT COMPLEX**

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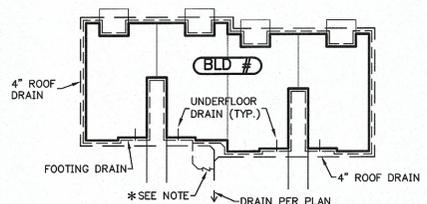
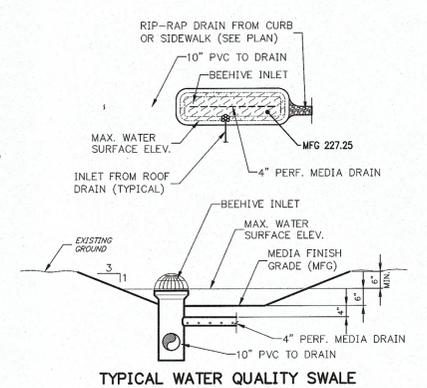
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\*NOTE: ALL BUILDINGS TO CONNECT TO ROOF DRAIN WITH BACKFLOW PREVENTION DEVICE EXCEPT BUILDING 10 FOOTING / UNDERFLOOR DRAIN TO BE CONNECTED TO 10" PVC PER PLAN

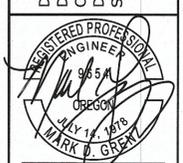
- SW 227.00 SIDEWALK FINISH GRADE
- FG 227.00 PAVEMENT FINISH GRADE
- MFG 226.75 MEDIA FINISH GRADE

**WATER QUALITY BASIN CHART**

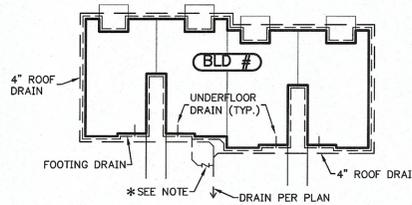
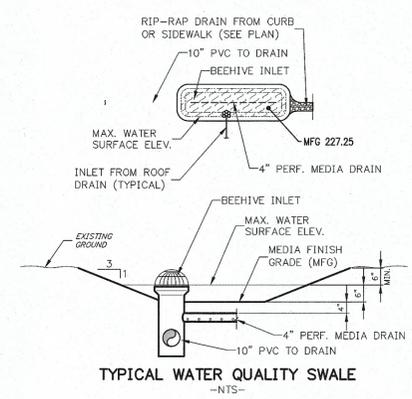
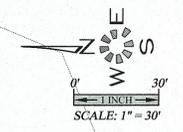
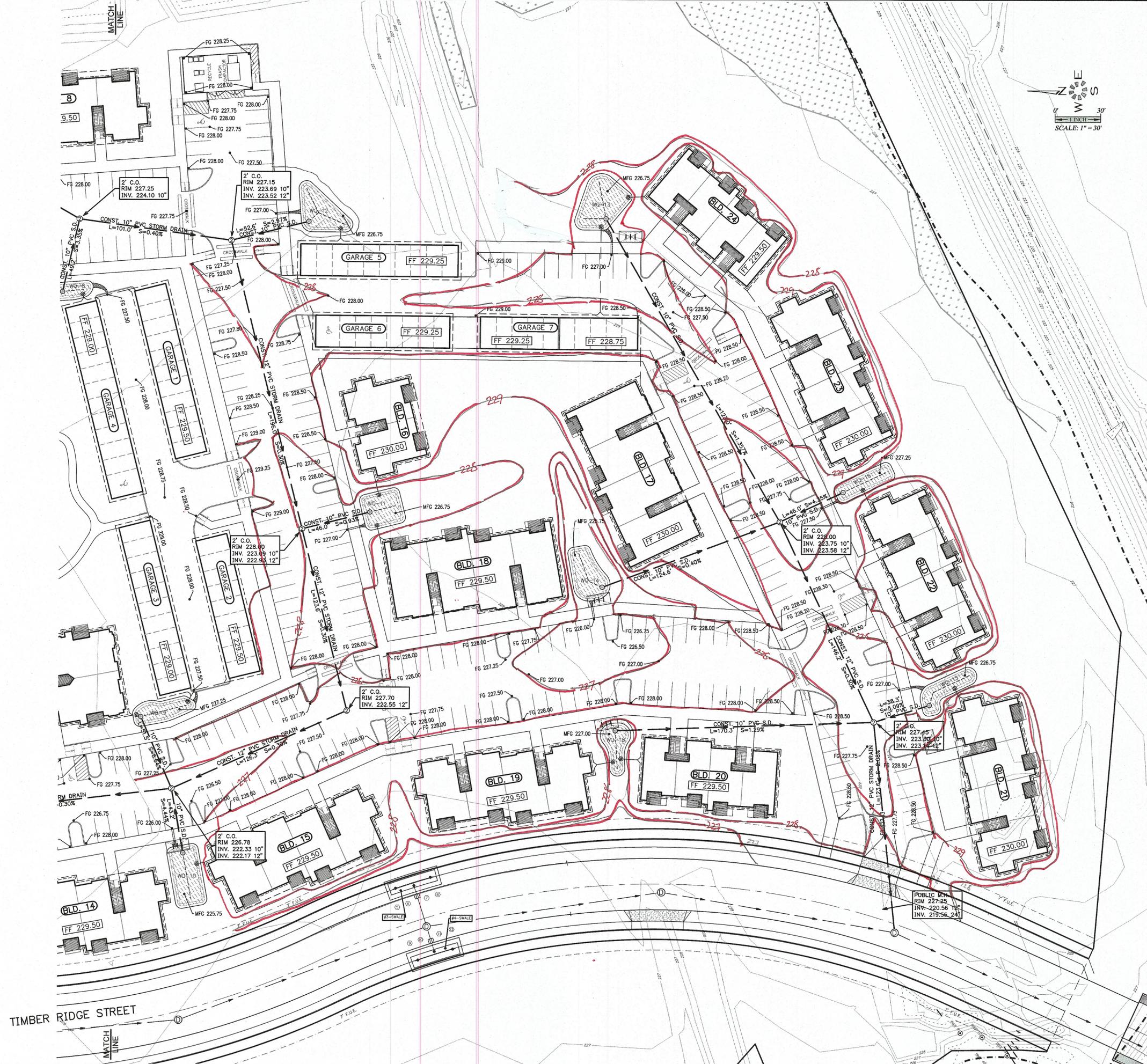
BASIN No.	INLET RIM	MEDIA F.G.	4" DRAIN INVERT	10" DRAIN INVERT
WQ-1	227.00	226.50	226.16	225.00
WQ-2	225.50	225.00	224.66	223.50
WQ-3	226.00	225.50	225.16	224.00
WQ-4	227.25	226.75	226.41	225.25
WQ-5	226.75	226.25	225.91	224.75
WQ-6	227.25	226.75	226.41	225.25
WQ-7	226.50	226.00	225.66	224.50
WQ-8	227.75	227.25	226.91	225.75
WQ-9	227.75	227.25	226.91	225.75
WQ-10	226.25	225.75	225.41	224.25
WQ-11	227.25	226.75	226.41	225.25
WQ-12	227.25	226.75	226.41	225.25
WQ-13	227.25	226.75	226.41	225.25
WQ-14	226.25	225.75	225.41	224.25
WQ-15	227.25	226.75	226.41	225.25
WQ-16	227.25	227.25	226.91	225.75
WQ-17	226.25	225.75	225.41	224.25
WQ-18	227.50	227.00	226.66	225.50

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Drawn: C.D.S.  
Checked: B.M.G.  
Date: MAR 2018  
Scale: AS SHOWN



EXPIRES: 06-30-2021  
JOB # 6639



**TYPICAL FOOTING / UNDERFLOOR / ROOF DRAIN CONFIGURATION**  
-NTS-

\* NOTE: ALL BUILDINGS TO CONNECT TO ROOF DRAIN WITH BACKFLOW PREVENTION DEVICE EXCEPT BUILDING TO FOOTING / UNDERFLOOR DRAIN TO BE CONNECTED TO 10" PVC PER PLAN

- SW 227.00 SIDEWALK FINISH GRADE
- FG 227.00 PAVEMENT FINISH GRADE
- MFG 226.75 MEDIA FINISH GRADE

**WATER QUALITY BASIN CHART**

BASIN No.	INLET RIM	MEDIA F.G.	4" DRAIN INVERT	10" DRAIN INVERT
WQ-1	227.00	226.50	226.16	225.00
WQ-2	225.50	225.00	224.66	223.50
WQ-3	226.00	225.50	225.16	224.00
WQ-4	227.25	226.75	226.41	225.25
WQ-5	226.75	226.25	225.91	224.75
WQ-6	227.25	226.75	226.41	225.25
WQ-7	226.50	226.00	225.66	224.50
WQ-8	227.75	227.25	226.91	225.75
WQ-9	227.75	227.25	226.91	225.75
WQ-10	226.25	225.75	225.41	224.25
WQ-11	227.25	226.75	226.41	225.25
WQ-12	227.25	226.75	226.41	225.25
WQ-13	227.25	226.75	226.41	225.25
WQ-14	226.25	225.75	225.41	224.25
WQ-15	227.25	226.75	226.41	225.25
WQ-16	227.25	227.25	226.91	225.75
WQ-17	226.25	225.75	225.41	224.25
WQ-18	227.50	227.00	226.66	225.50

**GRADING & DRAINAGE PLAN - SOUTH**

**BRANDIS MEADOWS APARTMENT COMPLEX**

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT THE AUTHORIZATION FROM THE DESIGN ENGINEER. DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.  
Drawn: C.D.S.  
Checked: B.M.G.  
Date: MAR 2018  
Scale: AS SHOWN



EXPIRES: 06-30-2021  
JOB # 6639

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## **Brandis Meadows Apartments**

### *Planning Files SP-28-19 and FP-09-19*

March 23<sup>th</sup>, 2020 - Completeness Items

Response:

- 1) The Base Flood Map, sheet SDR04 has been prepared utilizing the information included in the Brookstone Estates Flood Study prepared by WRG Engineers for the residential subdivision located on the west side of Burkart Creek.

We submitted the full Drainage Report through eplans on February 26, 2020. The Drainage Report includes the required studies and information. Within our submitted Drainage Report, is attached page 47 of 62 from the Drainage Report put together by WRG Design in 2004 for the Brookstone Estates Subdivision located just on the west side of Burkhart Creek from the Brandis Meadows Apartment property. Sheet 47 shows the proposed water surface elevation of Burkhart Creek after the development of the Brookstone Estates Subdivision. We have used their study and have added these station numbers and elevations to our sheet SDR04 Base Flood Map. Based on these elevations, we have added a base flood line around the west, south and east portion of our property. You will see that our base flood line is in similarity with the Proposed Floodplain Delineation shown on sheet 24 of 62 of the same Drainage study.

We reviewed this study and it's included assumptions. The assumptions were reasonable and in keeping with the channel and known flow information for the area. This study was used to establish the Base Flood Elevations for the subdivision that was developed along the west and south sides of this water way. We did a comparison of the widths of the flood hazard areas in the report at specific stations to what we found on the site with the topographic data that we have. We found them to be reasonable.

- 2/3) The base flood elevations were extrapolated from this report and shown on SDR04. To the greatest extent possible, the stations were set out and the BFE's for those stations were added to the drawing. We provided you added copies of specific pages from the report that show the BFE's that are related to this project area. As is noted on SDR04, the base flood elevations are 3 to 5 feet below the proposed finish floor elevations for the project.

During the development of the Timber Ridge Apartment project, a "Pedestrian" bridge was to be constructed. A condition tied to that improvement was to complete a "no-rise" analysis relative to the new bridge structure. This study was much more detailed than the WRG study, for the limited study area of the MULTI/TECH (MTE) "no-rise" analysis.

We noted that the MTE study was based on topographic elevations based on a City Bench located on the north side of Knox Butte Road. That bench elevation should be slightly different than the one used by WRG for this analysis.

In comparison of the two studies, we noted that the MTE analysis generated a BFE on the south side of Knox Butte Road that was 0.24 feet higher. For purposes of the Site Design Review and Flood Plain Development applications, we elected to stay with the WRG information. We again note that the proposed finish floor elevations for the Brandis Meadows Apartments is 3 to 5 feet above the BFE's noted. The elevation difference of 0.24 feet is within an acceptable range of errors and would not negate the value of the WRG report information.

It is correct that the WRG report did not include a BFE analysis of the Truax Creek overflow channel. We have established (for land use purposes) the limits of the Base Flood along the Truax Creek overflow by using the information in the WRG report set out at Station 80+00 at the point that the Overflow splits away from the main water way. The WRG BFE for this station was 226.05. We know that the water flows to the north and would for sure have a lower BFE at Knox Butte Road than at Station 80+00.

Using that assessment, we have shown a Flood Plain limit (BFE) along the east project limits of 226.05, expected to be higher than the true elevation at the north end of the project along the overflow.

We considered this Flood Plain boundary to be the most conservative at this time.

We understand and agree to a condition of approval that would require the preparation of a "Detailed" Flood Study for Burkart Creek along the project and the Truax Overflow Channel.



## Ken Puhn

---

**From:** Mark Grenz, P.E. <MGrenz@mtengineering.net>  
**Sent:** Friday, April 3, 2020 8:12 AM  
**To:** Ken Puhn  
**Cc:** Anderson, Melissa; Brian Grenz; Natalie G. Janney, P.E.  
**Subject:** RE: Brandis Meadows FP-09-19  
**Attachments:** 8697.pdf; 8698.pdf; 8699.pdf

I have attached the project grading and drainage plan sheets with proposed contours (in red) for the site, as can be seen, we are not grading within any of the identified flood plain areas and all of the project areas are well above those base flood elevation shown on SDR4.

Please let us know if you have any other questions.

Thanks

---

**From:** Ken Puhn <kpuhn@westconsultants.com>  
**Sent:** Thursday, April 2, 2020 4:13 PM  
**To:** Mark Grenz, P.E. <MGrenz@mtengineering.net>  
**Cc:** Anderson, Melissa <Melissa.Anderson@cityofalbany.net>  
**Subject:** Brandis Meadows FP-09-19

Mark,

I'm reviewing materials associated with the floodplain permitting for the Brandis Meadows Apartments application. In the submitted materials I see some figures that show the mapped preliminary floodplain along with building footprints and finish elevations for parking lots. What I'm looking for is a figure that shows the proposed grading plan (contours) along with the floodplain boundary. Although the finish elevations for things like parking lots and so forth are helpful, I need something that allows me to verify all of the proposed grading for the entire development is outside of the mapped floodplain. I recognize that the mapped floodplain may change to some extent once you conduct additional modeling work, but I'd like to verify based on what you've submitted to date. Is that something you have and could email over to me? And sorry in advance if you already included this in the materials and I somehow missed it.

I hope all is well over there and you are making due with all of the stuff going on these days.

Regards,



Ken Puhn, P.E., CFM | Project Manager/Senior Hydraulic Engineer  
2601 25<sup>th</sup> Street SE, Suite 450, Salem, OR 97302  
P: 503-485-5490 | F: 503-485-5491  
[www.WESTconsultants.com](http://www.WESTconsultants.com)

WORK COPY

DRAINAGE REPORT

February 9, 2004  
Updated From: November 20, 2003

**BROOKSTONE ESTATES**  
**ALBANY, OREGON**

Prepared For:

D.R. Horton, Inc.  
c/o JT Smith Companies  
4386 SW Macadam, Suite 102  
Portland, OR 97201

02/10/04



EXPIRATION DATE: 6/30/05

Prepared By:

WRG Design, Inc.  
5415 SW Westgate Dr.  
Portland, Oregon 97221  
WRG PROJECT NO. DRH3274, 2033274

G

R

W



## TABLE OF CONTENTS

VICINITY MAP .....	1
PROJECT DESCRIPTION .....	2
EXISTING CONDITIONS.....	2
Topography .....	2
Climate.....	2
Site Geology .....	2
Existing Hydrology .....	3
Curve Number (CN).....	3
Time of Concentration .....	4
Basin Areas .....	6
HYDROLOGIC ANALYSIS .....	6
Design Guidelines.....	6
Hydrograph Method .....	6
XP-SWMM Runoff.....	7
Design Storm .....	7
Basin Runoff.....	8
HYDRAULIC ANALYSIS AND DESIGN CHARACTERISTICS .....	9
Manning's 'n' Values .....	9
Proposed Downstream Drainage .....	9
System Capacities .....	9
Culvert Performance.....	10
XP-SWMM Hydraulics.....	10
HEC-RAS Hydraulics .....	10
SUMMARY.....	11
TECHNICAL APPENDIX.....	A
REFERENCES.....	A

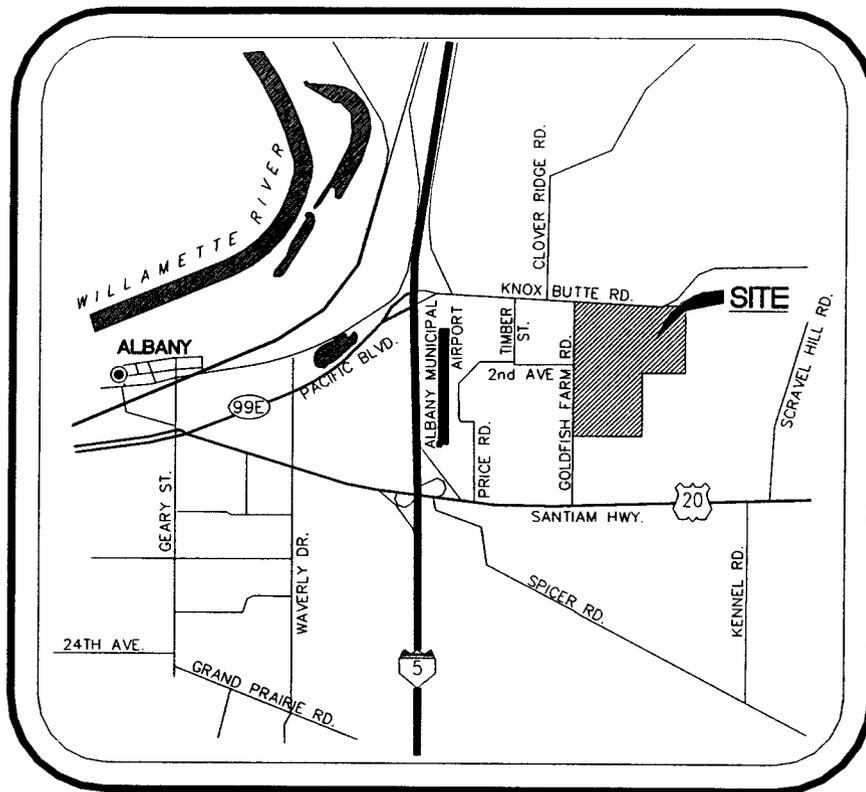
## LIST OF FIGURES

Figure 1 - Vicinity Map.....	1
Figure 2 - 100 Year NRCS Type 1A Rainfall Distribution.....	8

## LIST OF TABLES

Table 1 - Soil Characteristics (Onsite) .....	2
Table 2 - Onsite Curve Numbers.....	3
Table 3 - Offsite Curve Numbers .....	4
Table 4 - Time of Concentration Values.....	5
Table 5 - Basin Areas (Onsite).....	6
Table 6 - Basin Areas (Offsite).....	6
Table 7 - Design Storm .....	7
Table 8 - Existing Runoff Rates (Onsite) .....	8
Table 9 - Existing Runoff Rates (Offsite) .....	9

**VICINITY MAP**



**Figure 1 - Vicinity Map**

## PROJECT DESCRIPTION

The proposed Brookstone Estates property will be a 41.37-acre residential community of 211 single-family units and 93.47 acres will be undeveloped. This community will be located along the intersection of Knox Butte Road and Goldfish Farm Road (See Figure 1 - Vicinity Map). (The purpose of this Brookstone Estates drainage report is to analyze the sites storm conveyance characteristics during the 100-year storm event for pre- and post-development condition.)

## EXISTING CONDITIONS

### Topography

#### Proposed Brookstone Estates Property

The existing property consists of several basin areas (See Technical Appendix – Burkhart Drainage – Onsite Basins). The northeast corner of the property drains directly into Burkhart Creek. The remainder of the site drains to the west and the south. This area is fairly flat with maximum slopes of 3%. Elevations range from a maximum of 232 feet to a minimum of 218 feet. These minimum and maximum elevations are found in and along Burkhart Creek. The elevations for the other areas range from 224 feet to 228 feet.

### Climate

The site is located approximately 70 miles inland from the Pacific Ocean. There is a gradual change in seasons with defined seasonal characteristics. Average daily temperatures range from 40°F to 67°F. Record temperatures recorded for this region of the state are -7°F and 108°F. Average annual rainfall recorded in this area is 44 inches.

### Site Geology

#### Proposed Brookstone Estates Property

There are several different underlying soil types on the Brookstone Estates property. As classified by the United States Department of Agriculture Soil Survey of Linn County, Oregon, the soil types are identified below in Table 1 (See Technical Appendix - Soil Map).

Soil Type	Hydrologic Group
Awbrig Silty Clay Loam	D
Bashaw Silty Clay	D
Clackamas Gravelly Silty Loam	D
Coburg Silty Clay Loam	C
Conser Silty Clay Loam	D
Courtney Gravelly Silty Clay Loam	D
Malabon Silty Clay Loam	C
Riverwash	D

Table 1 - Soil Characteristics (Onsite)

The majority of the site is classified as either Clackamas Gravelly Silty Loam or Malabon Silty Clay Loam. While the Clackamas Gravelly Silty Loam is classified as hydrologic group D and the Malabon Silty Clay Loam is classified as hydrologic group C, a majority of the site, roughly 66%, is classified as hydrologic group D. Therefore, the proposed Brookstone Estates Property will be conservatively analyzed as hydrologic group D (See Technical Appendix – Soil Map).

### Offsite Basins

The offsite basins contain similar soil types as found onsite. The offsite basins will be analyzed as hydrologic group D since a majority of the area consists of silty soils.

### Existing Hydrology

#### Proposed Brookstone Estates Property

Burkhart Creek flows from the east portion of the Brookstone Estates property near the confluence of Truax Creek to the north end of the property where it crosses Knox Butte Road. A number of small tributaries converge with Burkhart Creek on the property site. (See Technical Appendix – Sheet C2.1, Existing Conditions – North)

#### Offsite Basins

Burkhart Creek runs from south of Lebanon and flows northwest to the Willamette River a half-mile north of Knox Butte Road, adjacent to I-5. According to the Drainage Master Plan of the City of Albany, the Burkhart Creek basin is approximately 13 miles long and 1 mile wide at its widest location. The basin drains an area of approximately 7,750 acres (See Technical Appendix – Burkhart Drainage: Offsite Basin). A study by the Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service (SCS)) that the City of Albany's Drainage Master Plan was based upon shows the Burkhart Creek basin to have adequate capacity to convey 100-year storm event flows with only minor flooding.

  
NATURAL  
CREEK?

Burkhart Creek is conveyed by a system of open channels and culverts. A concrete box culvert with a 100-year storm capacity (based on NRCS calculations) of 490 ft<sup>3</sup>/second (cfs) conveys the flow from Burkhart Creek under I-5 to the Willamette River as indicated in City of Albany's Drainage Master Plan.

One-half mile east of Goldfish Farm Road, a diversion structure diverts one-third of the flow from Burkhart Creek to Truax Creek. The NRCS study estimated this flow to Truax Creek to be approximately 260 cfs of the total 710 cfs generated during a 100-year storm event as indicated in City of Albany's Drainage Master Plan.

#### Curve Number (CN)

The major factors for determining the CN values are hydrologic soil group, cover type, treatment, hydrologic condition, and runoff condition. The curve number represents runoff potential from the soil.

The Brookstone Estates basins are relatively flat, undeveloped pastureland. Since the majority of the site is covered with grass, the pre-developed areas will be analyzed as "Open Space in Good Condition (grass cover >75%)", and the post-developed condition will be analyzed as "Residential District, 1/8 acre or less" (See Technical Appendix – Technical Release 55, Table 2-2a: Runoff curve numbers for urban areas). The associated runoff curve numbers are as shown in Table 2 below:

Pre-Developed	
Pervious (CN)	80
Impervious (CN)	98
Post-Developed	
Pervious (CN)	92
Impervious (CN)	98

Table 2 – Onsite Curve Numbers

The associated runoff curve number for 7300 Acre basin outside of the Urban Growth Boundary are shown in Table 3 below.

<b>OFFSITE BASIN CURVE NUMBER CALCULATIONS</b>	
<b>URBAN AREA</b>	
Total Area:	996 Acres
Curve Number:	
Residential	85
(Residential District by Average Lot Size of 1/2 Acre)	
<b>FARM AREA</b>	
Total Area:	6305 Acres
Curve Number:	
Pasture Land 35%	80
Hay 35%	78
Close Seed Grains 30%	83
<b>COMPOSITE CURVE NUMBER</b>	<b>84.4</b>

**Table 3 - Offsite Curve Numbers**

**Time of Concentration**

The time of concentration ( $T_c$ ) as described in the National Engineering Handbook - Section 4 (NEH-4) Chapter 15, is defined in two ways: the time for runoff to travel from the furthest point of the watershed to the point in question, and the time from the end of excess rainfall to the point of inflection on the trailing limb of the unit hydrograph.

Three components are considered for determining the  $T_c$ : sheet flow, shallow concentrated flow, and channel/pipe flow. The  $T_c$  values for the Brookstone Estates property were determined based on the following equations per The City of Albany Department of Public Works (Division E) Stormwater Management Design Standards.

Sheet Flow

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

- $T_t$  = Travel Time (hours)
- $n$  = Manning's "n" of slope
- $L$  = Length of flow (ft)
- $P_2$  = 2-Year, 24-hour rainfall (in)
- $s$  = Slope (ft/ft)

Shallow Concentrated Flow

$$T_t = \frac{L}{3600V}$$

T<sub>t</sub> = Travel Time (hours)  
 L = Flow Length (ft)  
 V = Average Velocity (ft/s)  
 3600 = seconds/hour

Channel / Pipe Flow

Using Manning's Equation, the velocities were calculated in the channels and/or pipes, and then the flow length was divided by this velocity.

$$V = \frac{1.49r^{2/3}s^{1/2}}{n} \quad T_t = \frac{L}{3600V}$$

V = Average Velocity (ft/s)  
 r = Hydraulic Radius = a / P<sub>w</sub>  
 a = Cross-sectional Area (ft<sup>2</sup>)  
 P<sub>w</sub> = Wetted Perimeter (ft)  
 s = Channel Slope (ft/ft)  
 n = Manning's "n" of channel

The time of concentration values used for the Brookstone Estates stormwater analysis are shown in Table 3 below. These values were computed according to The City of Albany Department of Public Works (Division E) Stormwater Management Design Standards (See Technical Appendix – Time of Concentration Calculation).

Onsite Basins	Developed (min.)
350	72
430	100
Offsite Basins	
311	18
325	52
327	34
340	20
399	72
405	45
420	46
450	85
465	1175

**Table 4 - Time of Concentration Values**

**Basin Areas**

**Proposed Brookstone Estates Property**

Impervious and pervious surface areas for pre-developed and post-developed conditions for the Brookstone Estates property are shown in Table 4 below. The existing basin is approximately 0% impervious, while the proposed development will be approximately 53% impervious.

Pre-Developed	sq. ft.	acres	%
Impervious Area	0	0.00	0.0
Pervious Area	1,802,141	41.37	100.0
Total Pre-Developed Basin Area	1,751,611	41.37	100.0
Post-Developed			
Impervious Area	928,354	21.31	51.51
Pervious Area	873,787	20.06	48.49
Total Post-Developed Basin Area	1,751,611	41.37	100.00

**Table 5 - Basin Areas (Onsite)**

**Offsite Basin**

The pervious and impervious areas for offsite basins are shown in Table 5. These values are based on the conservative assumption that a majority of the offsite basins are developed.

Pre-Developed	sq. ft.	acres	%
Impervious Area	6,683,237	153.43	2.00
Pervious Area	327,478,591	7517.87	98.00
Total Offsite Basin Areas	334,161,828	7671.30	100.00

**Table 6 - Basin Areas (Offsite)**

**HYDROLOGIC ANALYSIS**

**Design Guidelines**

The site is located within the jurisdiction of the City of Albany. The analysis and design criteria used for stormwater management described in this section will follow The City of Albany Department of Public Works (Division E) Stormwater Management Design Standards.

The runoff values used in this report were established using XP SWMM SCS runoff module, which is based on the TR-55 method.

**Hydrograph Method**

Naturally occurring rainstorms dissipate over long periods of time. The most effective way of estimating storm rainfall is by using the hydrograph method. The NRCS Curve Number method is described in the NRCS National Engineering Handbook - Section 4 (NEH-4). The NRCS runoff method equation is:

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S}$$

Q = direct runoff (in.)  
 P = rainfall (in.)

S = potential maximum retention after runoff begins (in.)  
 $I_a$  = initial abstraction (in.)

The above equation is used to compute the incremental runoff depth to produce the design storm hydrograph.

XP-SWMM2000 Version 8.5 and HEC-RAS were used for the hydrology and hydraulics analysis. XP-SWMM2000 is based on the public domain SWMM program. SWMM and HEC-RAS are both approved methods of analysis by the City of Albany

#### **XP-SWMM Runoff**

The runoff function of XP-SWMM generates surface and subsurface runoff based on design or measured rainfall conditions, land use and topography. XP-SWMM has preset design rainfall patterns. The NRCS Type IA rainfall distribution with total precipitation depth multiplier was used in the model for the Brookstone Estates property.

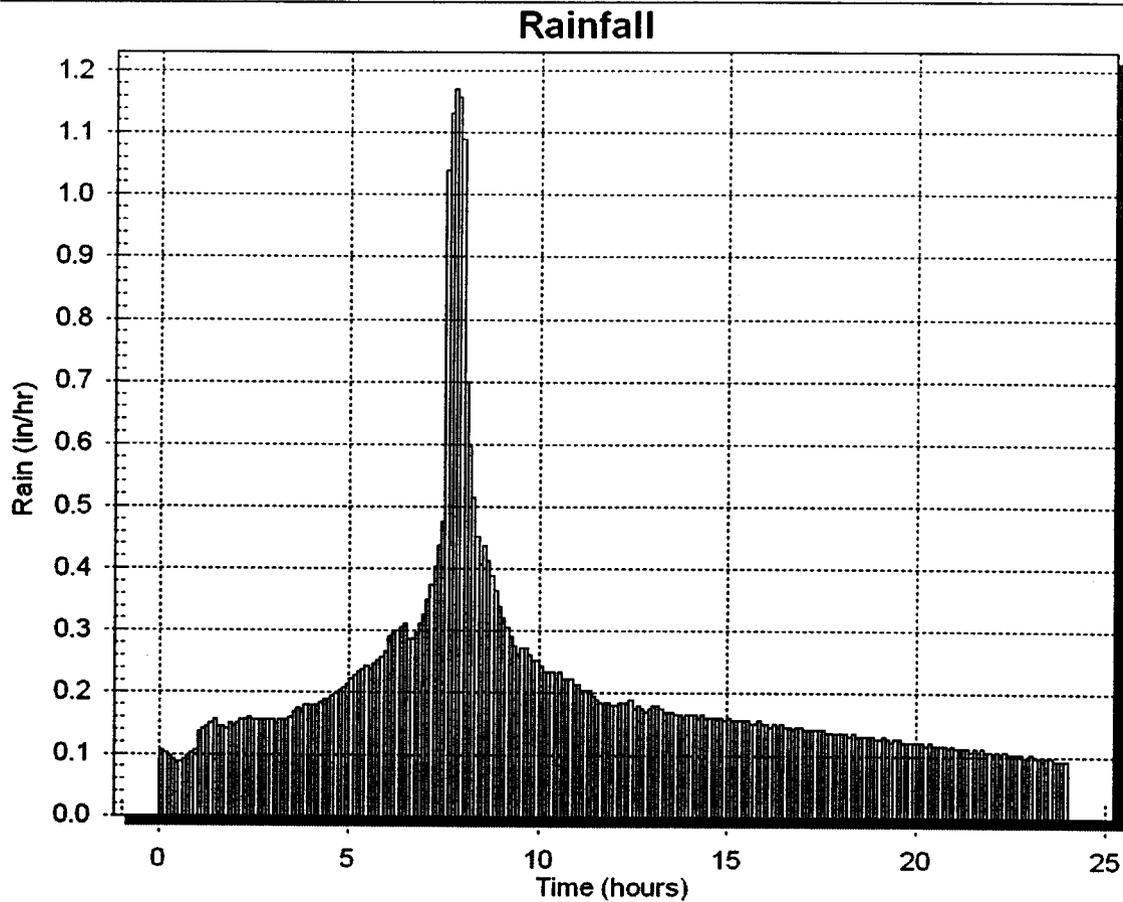
#### **Design Storm**

The rainfall distribution to be used within the City of Albany jurisdiction is the design storm of 24-hour duration based on the standard NRCS Type 1A rainfall distribution. A typical NRCS Type 1A 24-hour rainfall distribution for a 100-year storm event is shown in Figure 2.

Recurrence Interval (years)	Total Precipitation Depth (in.)
100	4.86

**Table 7 - Design Storm**

Table 6 shows the total precipitation depth for the 24-hour storm event as stated in City of Albany Drainage ordinances. This value of 4.86 inches was used as a multiplier for the NRCS Type 1A 24-hour rainfall distribution in XP-SWMM.



**Figure 2 - 100 Year NRCS Type 1A Rainfall Distribution**

**Basin Runoff**

The peak runoff values for the onsite basins during the 100-year storm event are shown in Table 7 below (See Technical Appendix - Existing Runoff Hydrographs) and in Table 8 for offsite basins.

Onsite Basins	Peak Runoff Rate (cfs)
350	49.94
430	

**Table 8 - Existing Runoff Rates (Onsite)**

Offsite Basins	Peak Runoff Rate (cfs)
311	135.39
325	
327	
340	
405	40.32
420	36.43
450	1003.58
465	

**Table 9 - Existing Runoff Rates (Offsite)**

The existing on and offsite runoff values were used for the downstream conveyance design. The values used for the onsite basins assumed that the basins were fully developed. The peak runoff from basin 465 will arrive to the proposed site after all other basins flows have crested.

## HYDRAULIC ANALYSIS AND DESIGN CHARACTERISTICS

### **Manning's 'n' Values**

A Manning's 'n' value of 0.024 was selected for all of the corrugated metal storm culverts along Burkhart Creek. The Manning's values assumed for the creek were 0.035 for the main channel and 0.05 for the over banks. Manning's 'n' used for the Knox Butte Apartment complex was assumed to be 0.03 for the channel and 0.03 for overbank areas (See HEC-RAS Hydraulics).

### **Downstream Drainage Conveyance**

In the event of a 100-year storm, the post-development flows generated from the on-site basin will peak within two hours. The majority of the Burkhart Creek basin is undeveloped and stretches 13 miles to the City of Lebanon. The peak flow generated from the larger portion of this basin will not reach the site for 19 hours. Due to this lapse in peak flow time and volume (roughly 77.4 cfs compared to 500 cfs passing through the site), the peak flow generated off-site will be considered the governing flow for downstream conveyance, including a portion of Burkhart Creek running through the proposed development.

### **System Capacities**

The existing storm conveyance channel system was reviewed by the Soil Conservation Service (NRCS) in the 1960's and was shown to have sufficient capacity to handle all storm events up to and including the 100-year storm event.

Based on current HEC-RAS model portions of Burkhart Creek between Knox Butte Road Bridge and Clover Ridge Road will experience significant flooding during 100-year storm event.

The previous studies that have been performed were all done under the assumption that full development has occurred within the Urban Growth Boundary, which has not yet been reached. We believe that at the current build out conditions, Burkhart Creek has sufficient capacity to convey the existing flows, and after the full buildout, the water surface will match the water surfaces that are shown in the report.

### **Culvert Performance**

Maximum flow in a storm drainage pipe occurs when the water surface in the pipe is at approximately 94% of the full depth of the pipe (hereafter called 0.94do where do = depth of culvert normal to the direction of flow). At 0.94do, the section factor of uniform flow has a maximum value, which results in optimum flow for a section without surcharge conditions. The existing private culvert north of the Knox Butte Road Bridge has flow overtopping the roadway during a 100-year storm event, so it does not operate at maximum flow.

### **XP-SWMM Hydraulics**

The hydraulic mode of XP-SWMM solves equations throughout the drainage network and includes modeling of backwater effects, flow reversal, surcharging, looped connections, pressure flow and interconnected ponds. XP-SWMM was used to model the diversion structure and flows to be used for downstream conveyance analysis.

### **HEC-RAS Hydraulics**

Burkhart Creek was also modeled in HEC-RAS (River Analysis System) to confirm the results obtained from the XP-SWMM model. The HEC-RAS model was created using data from GIS, recent surveys, and a report with data regarding Burkhart Creek from the construction of the Knox Butte Apartments. This model begins where Burkhart Creek crosses Scrael Hill Road and ends at I-5. This 2-mile section of the creek has a watershed area of 446 acres.

The flow runoff used in the HEC-RAS model was obtained from the XP-SWMM SCS runoff module. The results from the HEC-RAS model were compared with the hydraulics from XP-SWMM and are within a reasonable tolerance.

The total Burkhart Creek watershed is 7,746 acres, with 7,300 acres of that area located to the east of Scrael Hill Road outside the Urban Growth Boundary (UGB). The watershed area outside of the UGB generates 1003 cfs at Scrael Hill Road during the design storm, but roughly 496 cfs of this flow is diverted to Truax Creek, which connects to Burkhart Creek along the eastern property line of Tax Lot 100. Thus, the flow through the site to I-5 is 507 cfs. (See Technical Appendix – Burkhart Drainage)

The results from HEC-RAS were obtained by performing a steady flow analysis of the creek with a flow of 1003 cfs from Scrael Hill Road to Truax Creek, and 506 cfs from Truax Creek to I-5. One method used to determine the water surface elevations is by entering in the known downstream elevation. HEC-RAS will then calculate the water surface elevations upstream from the known elevation.

The existing water surface elevation chosen for this model was 207 at I-5. In order to verify the accuracy of this assumption, a significantly greater elevation of 212 was also chosen and evaluated. The effect of this change only propagated upstream for 1,700 feet. **The water surface profile** (See Technical Appendix – HEC-RAS Data: Water Surface along Burkhart) shows the water surface elevations if the downstream elevation were assumed to be 207 and 212. The XP-SWMM model yielded a downstream water surface elevation of 207, confirming the previous assumption.

WHERE DID 207 COME FROM?

The water surface on the project site varies from 224.38 to 226.16 (See Technical Appendix – HEC-RAS Data: Existing Water Surface Table). The 100-year floodplain was determined using the various water surface elevations along the creek and a topographical map of the site (See Technical Appendix – HEC-RAS Data: 100-Year Floodplain).

The culverts in the Knox Butte Apartment complex, under Clover Ridge Road, and in the private property north of the project site have been modeled in HEC-RAS, as well as the bridge at Knox Butte Road. The first two culverts were modeled from information obtained from their plan specifications. The water surface elevations for these culverts were close to the values that were determined in the Burkhart Creek analysis for Knox Butte Apartments.

The culvert in the private property was modeled using information obtained from a recent survey and is not adequate for the 100-year flood flow. During such a flood event, the culvert will be overtopped and the deck above the culvert will act as a weir. This effect results in a significantly higher water surface elevation upstream, especially through the project site. Cross sections of the culverts in the creek are shown in Technical Appendix – HEC-RAS Data: Channel/Culvert Cross Sections.

## SUMMARY

The purpose of this drainage report was to determine the floodplain elevation for a 100-year design storm event for the pre- and post-developed conditions on the proposed Brookstone Estates property. Upon analysis of the existing site, the proposed Brookstone Estates property, and all related drainage basins using the XP-SWMM and HEC-RAS modeling software, an elevation line showing the limits of the floodplain that would occur with the occurrence of the design storm event was created (See Technical Appendix – Floodplain Delineation).

Both software models produced similar onsite floodplain elevations, and as shown on the Floodplain Delineation plans, the flood zone encroaches onto the proposed property in several different areas.

According to the SWMM analysis, the peak flows from the lower portions of the basin will peak and recede prior to the peak flow generated outside of the Urban Growth Boundary. This flow has been deemed the governing flow through the site for establishing the 100-year floodplain elevation.

The existing drainage report was modified per City of Albany comments dated January 9, 2004. As requested, a 4.86" storm event was used to model the 100-year storm event, instead of the 4.2" storm event that occurred on November 19, 1996. The increase in rainfall resulted in an increased amount of runoff from the Burkhart Basin. In addition to the rainfall, the current model was updated to reflect the current weir condition that diverts flow from Burkhart to the Truax Creek. According to the SWMM model that was used, the weir diverted an equal amount of flow between Burkhart and Truax, in contrast to the previous assumption that only one-third of the flow would be diverted. During the 100-year event, of the 1003 cfs, 497 cfs were diverted through Truax, while the remaining 506 cfs continues through the site. See Brookstone Estates (STA 74+31.61): Diversion Structure in the Technical Appendix.

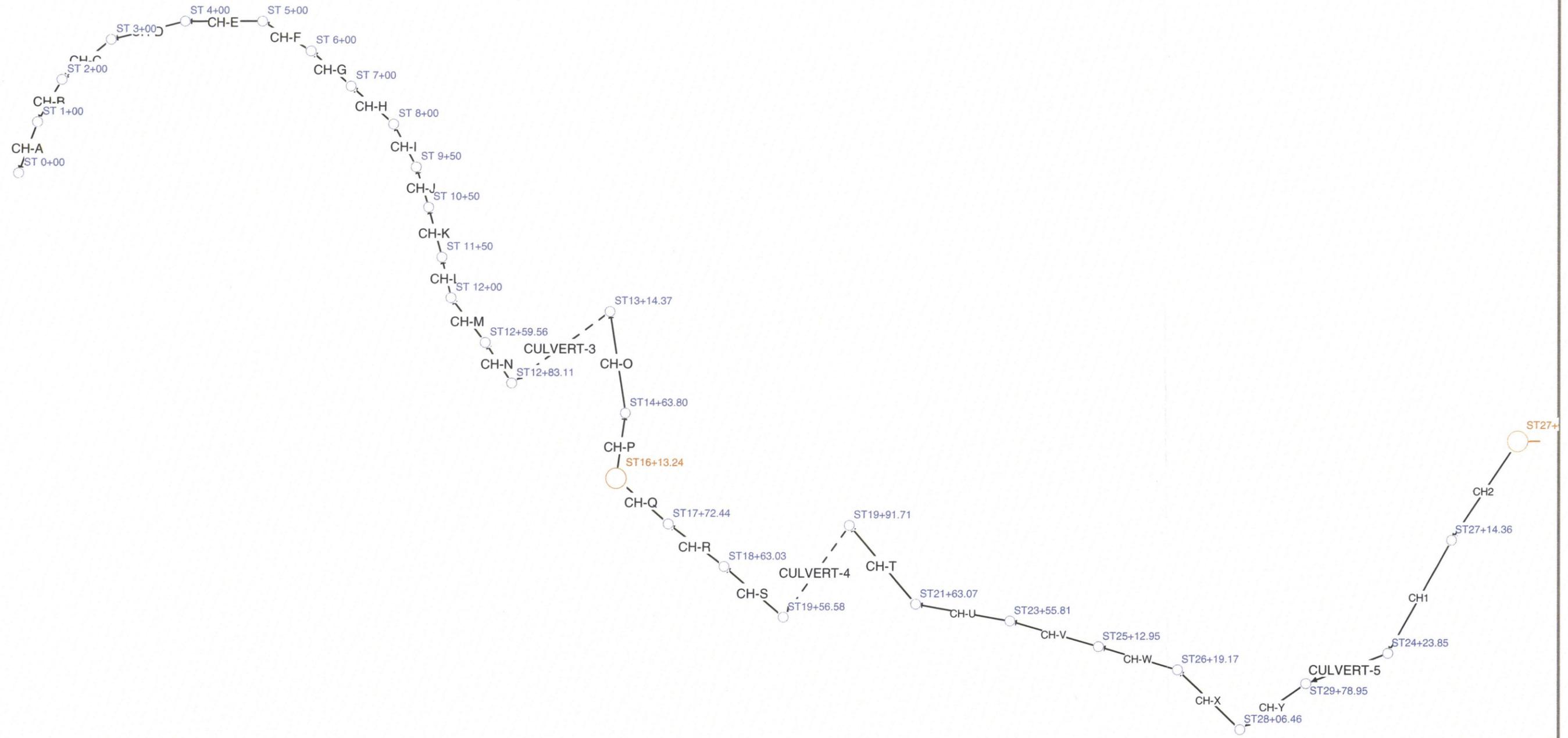
In this updated report, areas previously marked as part of the floodplain on the western side of the site are now considered depressions that will pond water because of the soil conditions, not because of overflow from Burkhart. This change was a result of further investigation of the existing grades within the site. The largest depression area near the southwest corner of the site will most likely drain due to the fact that a culvert at the low point of the depression will release the flow into pipe system that will remove the excess water.

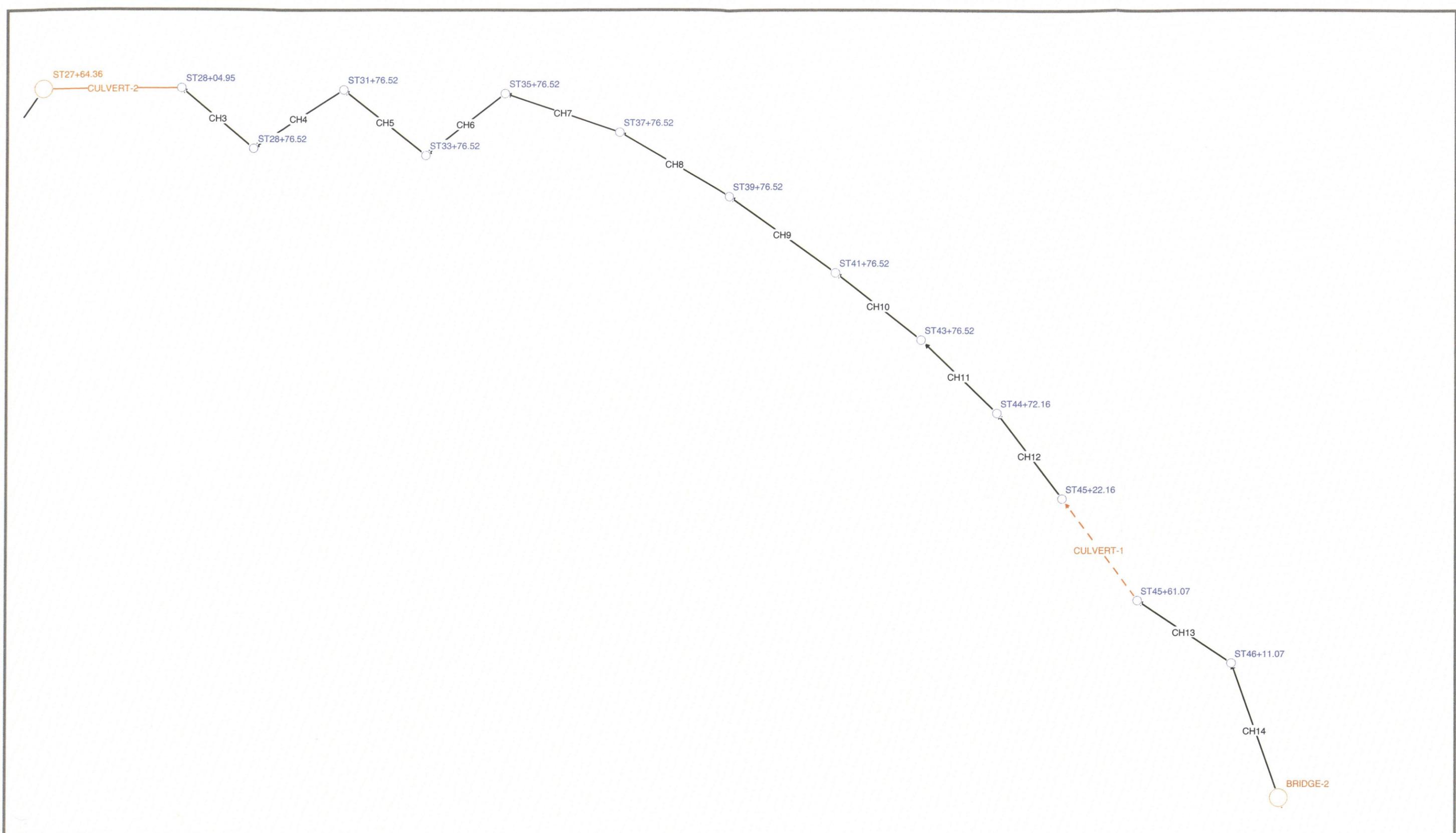
## TECHNICAL APPENDIX

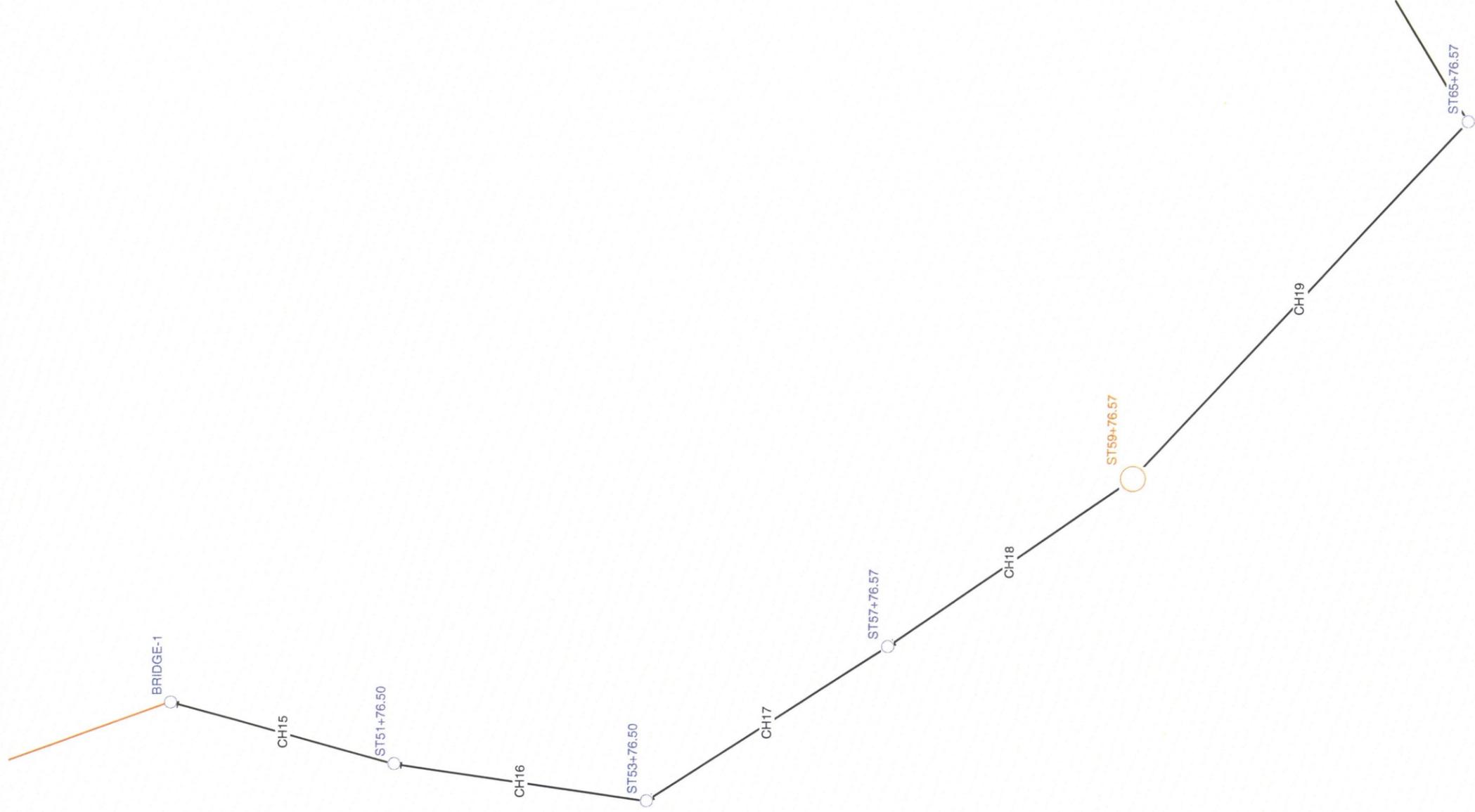
- Exhibit 1      Hydraulic Analysis - Schematic Layout
  - Offsite A, Offsite B, Onsite, Offsite C
- Exhibit 2      Existing Floodplain Delineation
  - Offsite A, Offsite B, Onsite, Offsite C
- Exhibit 3      Proposed Floodplain Delineation
  - Onsite
- Exhibit 4      Burkhart Drainage
  - Onsite Basins
  - Offsite Basin
- Exhibit 5      Channel Profiles (Burkhart Creek – Design Storm Event)
- Exhibit 6      Brookstone Estates - Burkhart Creek Sections
- Exhibit 7      Time of Concentration Calculation
  - Onsite Basins
  - Offsite Basin 465
- Exhibit 8      Soil Map
- Sheet C2.0    Existing Conditions
- XP\_SWMM Storm Runoff Data
  - Design Storm
  - Existing Runoff Hydrographs
- HEC-RAS Data
  - Existing Water Surface Elevation Table
  - Existing Water Surface along Burkhart Creek
  - Proposed Water Surface Elevation Table
  - Water Surface Elevation for 100-year Flood
  - Drop in Water Surface Elevation during 100-year Flood
  - Schematic Plan view with Stationing
  - Existing Channel/Culvert Cross Sections
  - Proposed Channel/Culvert Cross Sections
- Brookstone Estates Vicinity Soil Maps
- Technical Release 55 – Table 2-2a: Runoff curve numbers for urban areas

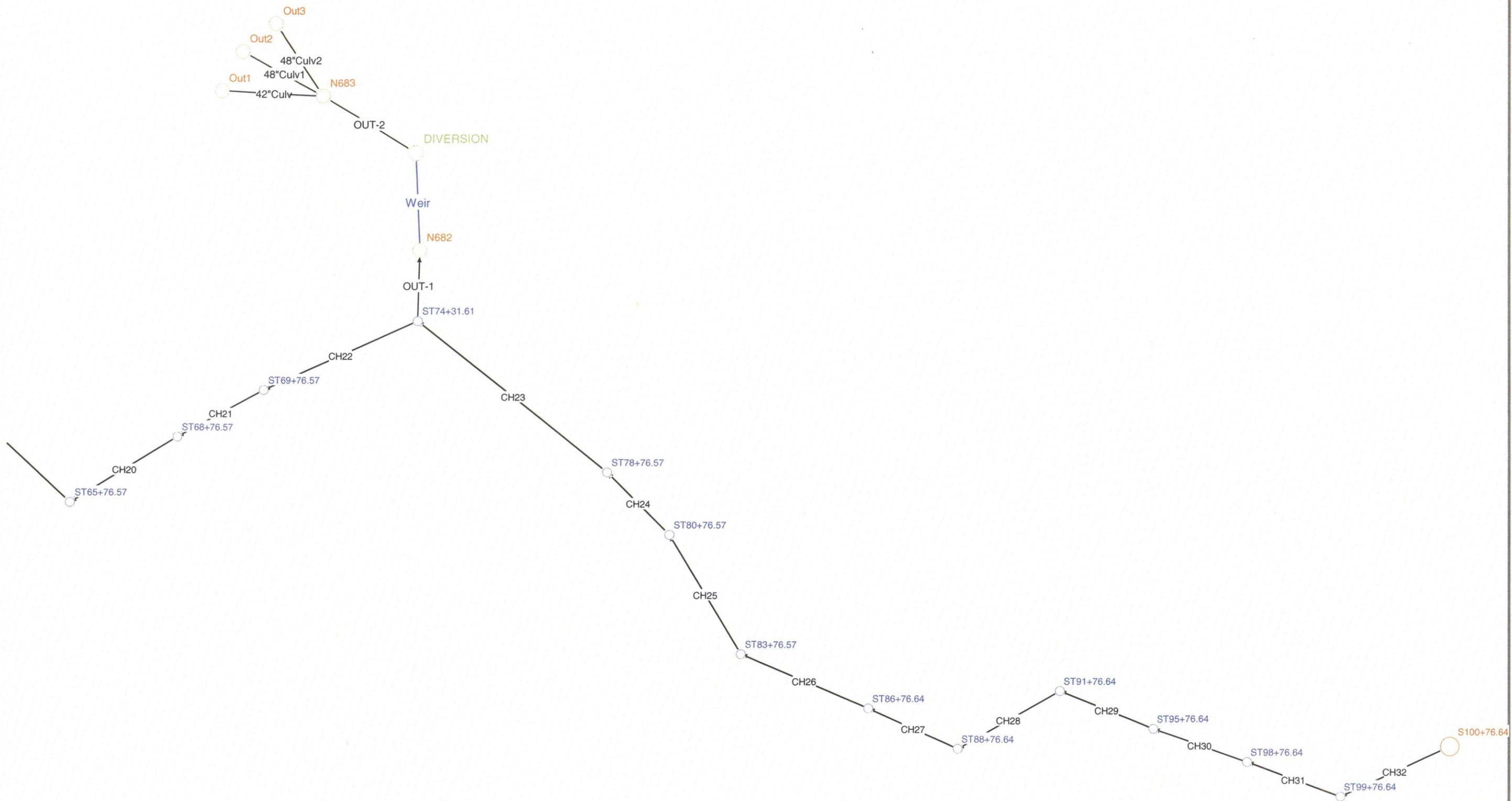
## REFERENCES

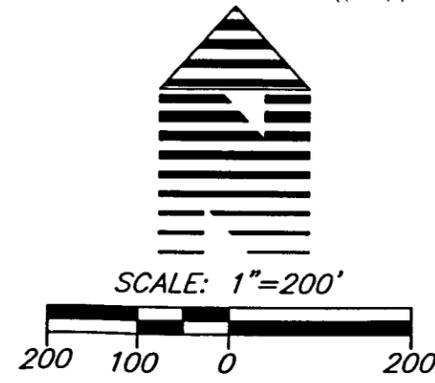
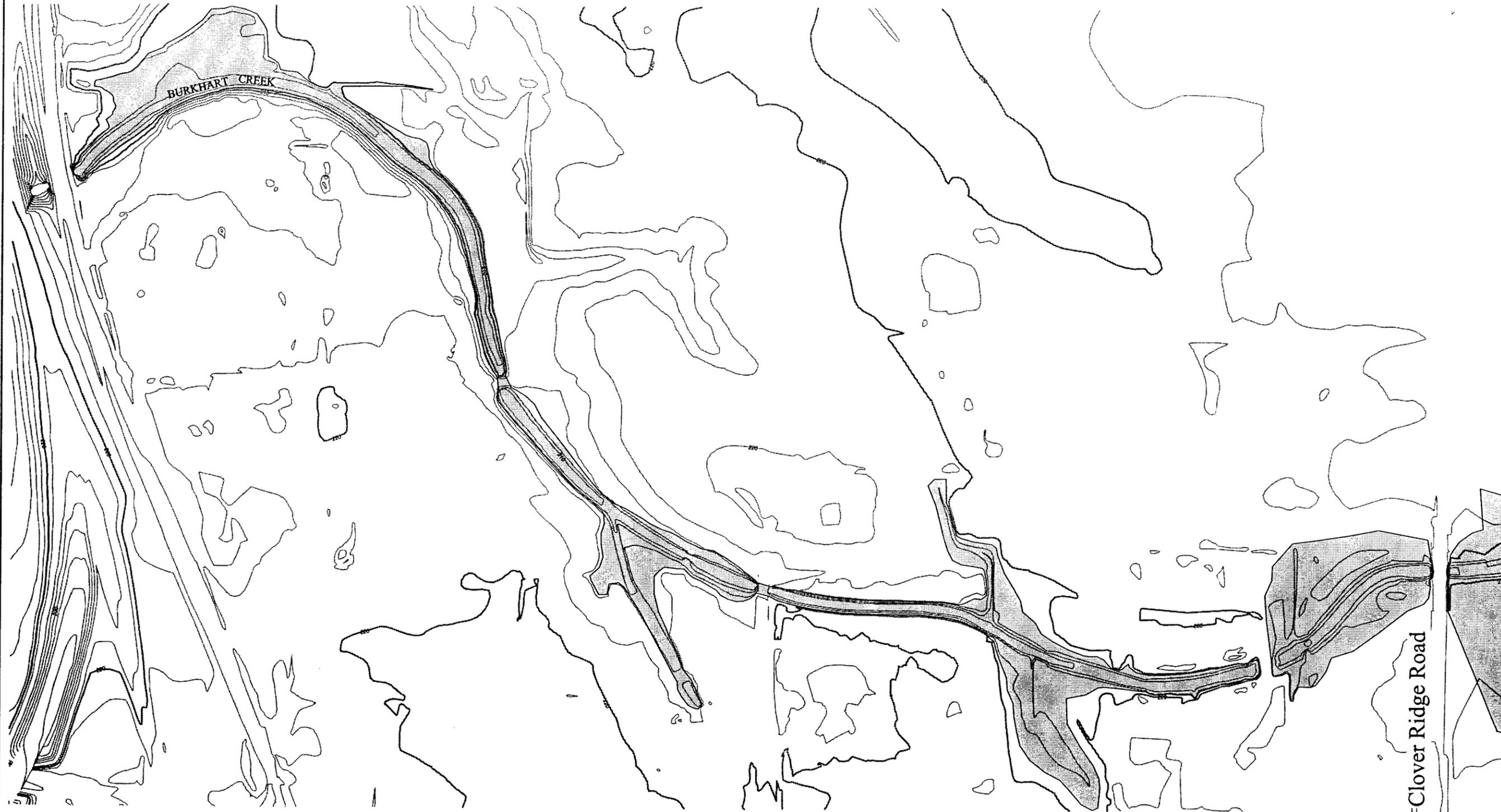
1. Soil Survey of Linn County Area, Oregon  
Russell W. Landridge, Soil Conservation Service
2. 1988 Drainage Master Plan – City of Albany, Oregon
3. Division E Stormwater Management Design Standards  
City of Albany, Oregon Public Works Department









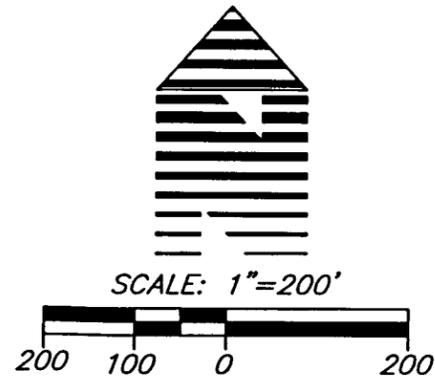
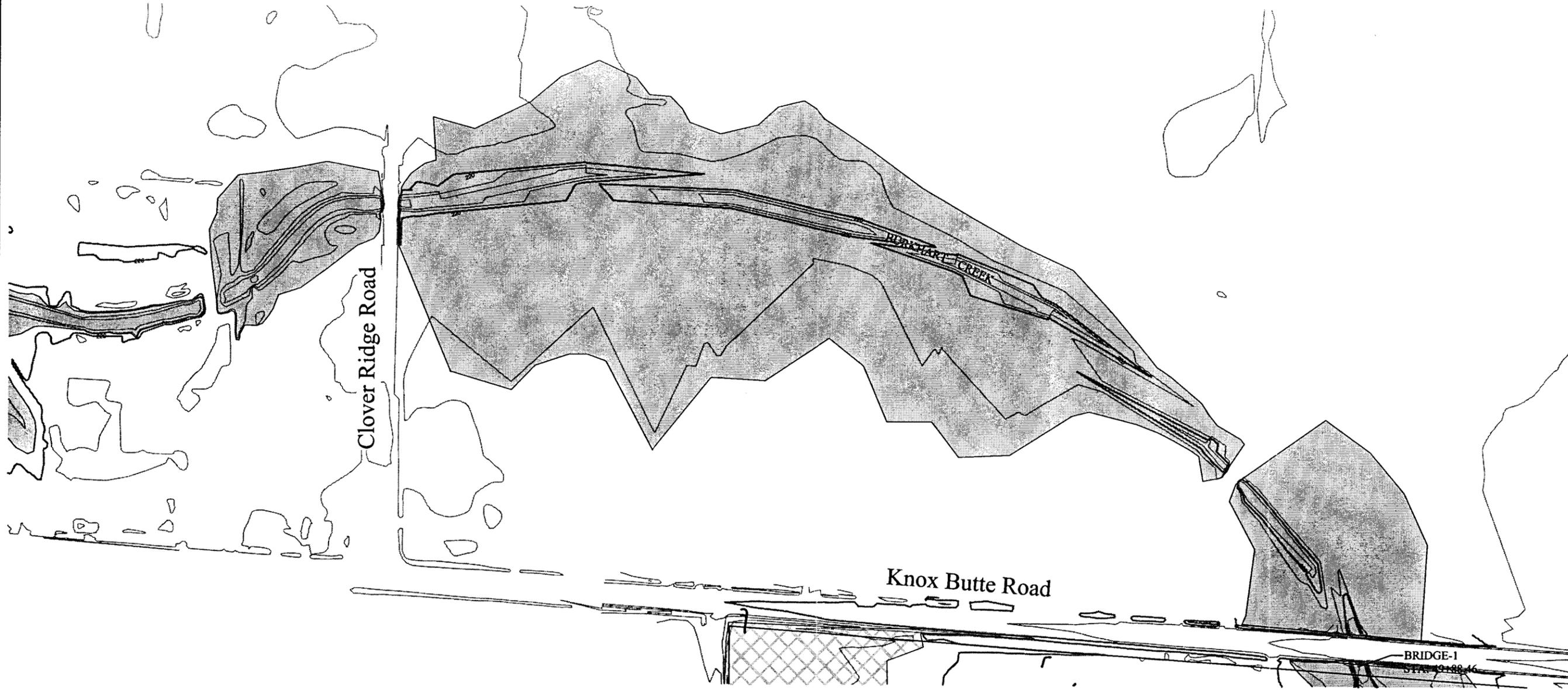


PROJECT NO. DRH3274  
 DATE: 11/18/03  
 BY: RCB  
 SHEET NO. 1/4

Existing Floodplain Delineation (Offsite A)  
**BROOKSTONE ESTATES**

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 Albany, Oregon

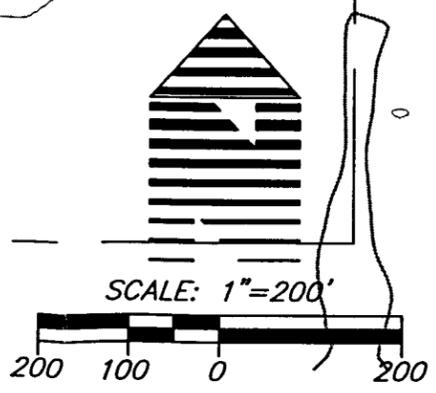
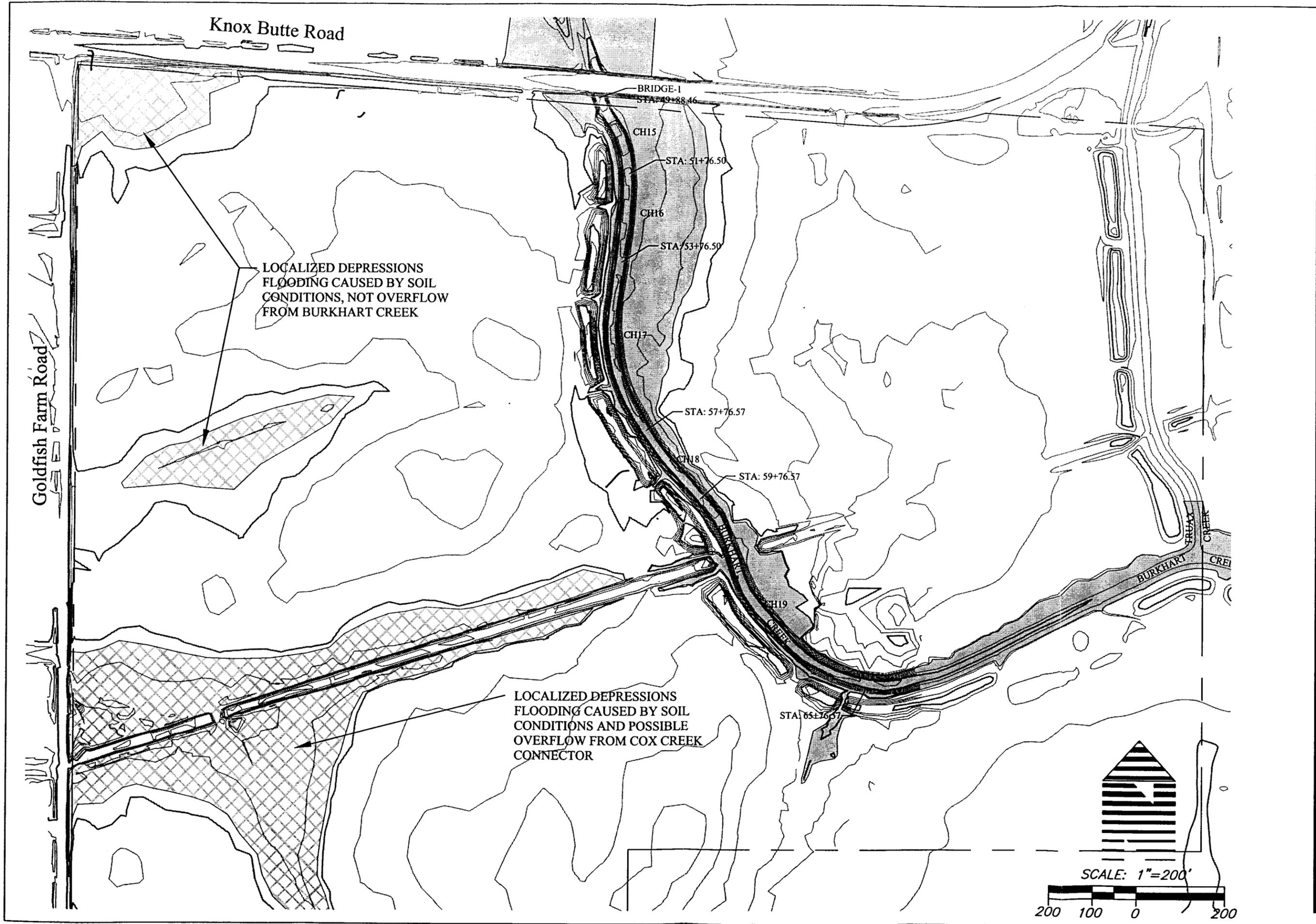
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 DATE: 11/18/03  
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 SHEET NO. 2/4

Existing Floodplain Delineation (Offsite B)  
**BROOKSTONE ESTATES**

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 Albany, Oregon

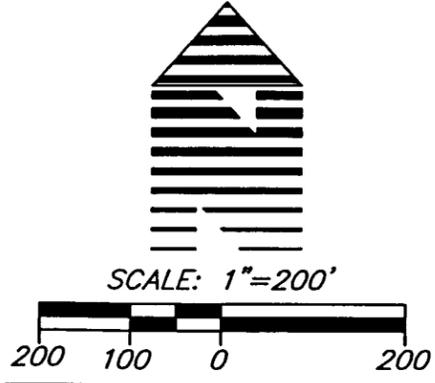


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 DATE: 11/18/03  
 BY: RCB  
 SHEET NO. 3/4

**Existing Floodplain Delineation (Onsite)**  
**BROOKSTONE ESTATES**

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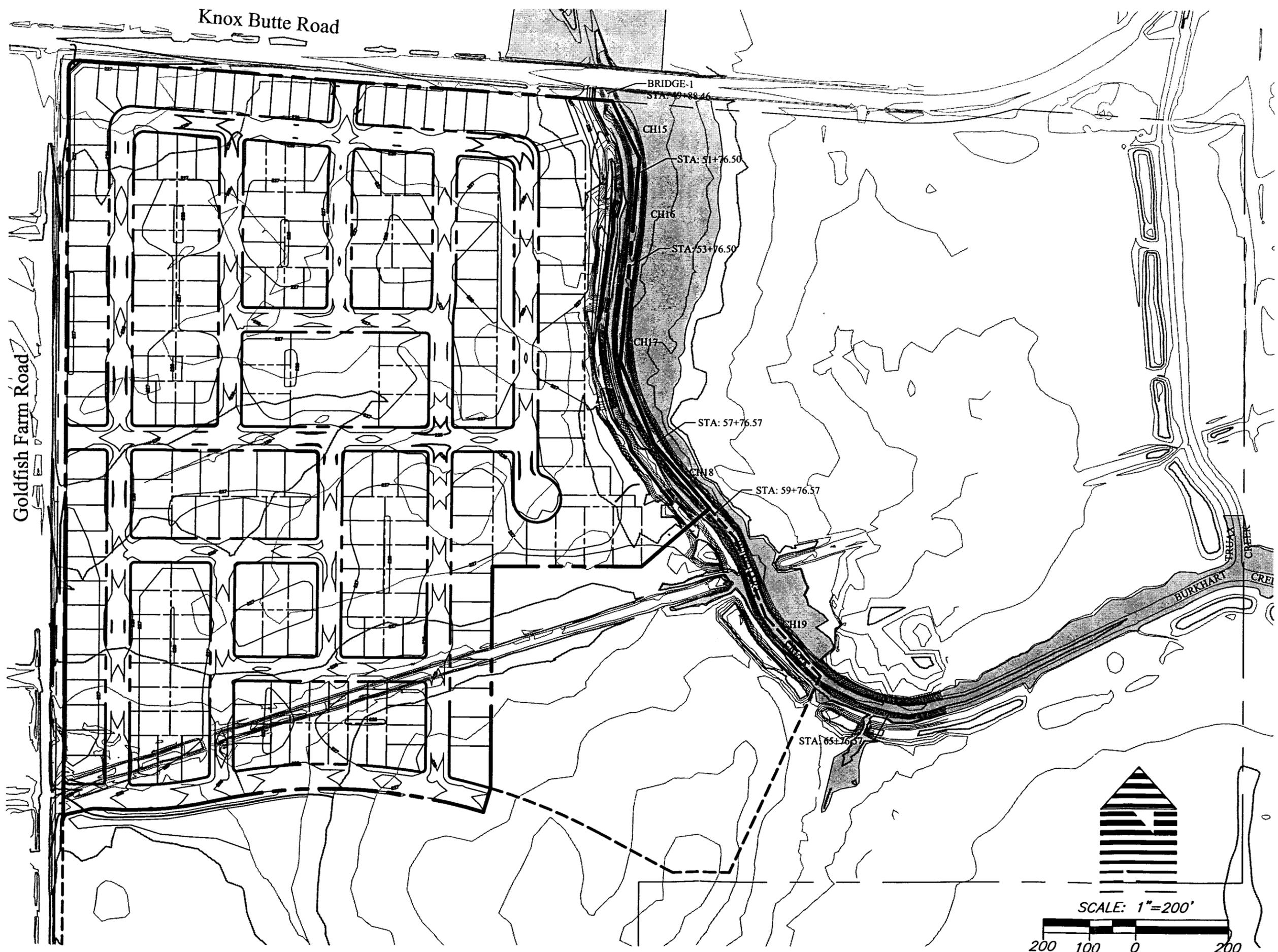


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 DATE: 11/18/03  
 BY: RCB  
 SHEET NO. 4/4

**Existing Floodplain Delineation (Offsite C)**  
**BROOKSTONE ESTATES**

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DATE: 11/18/03

BY: RCB

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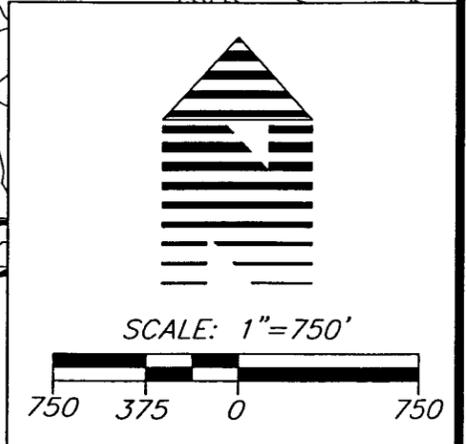
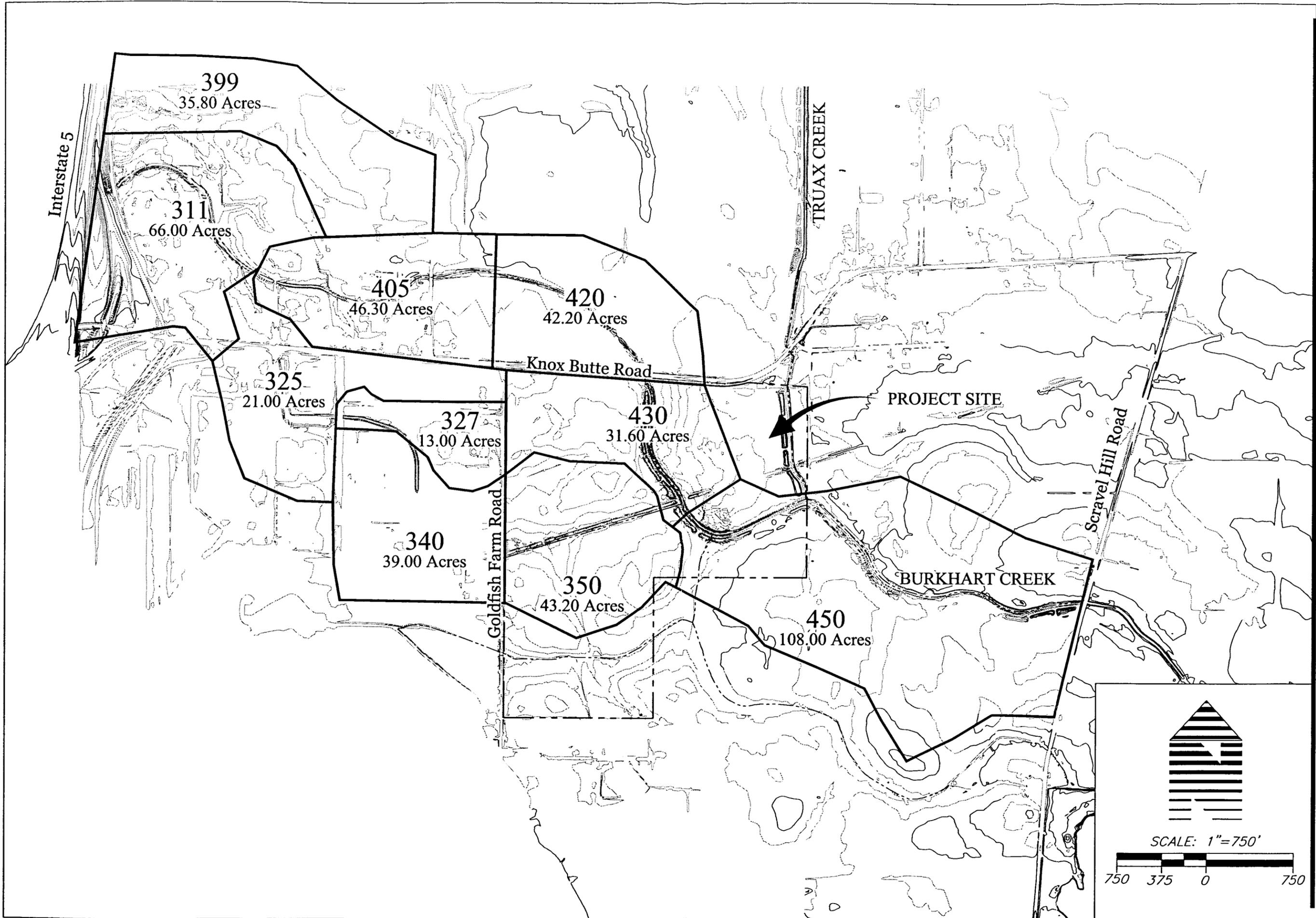
Proposed Floodplain Delineation (Onsite)  
**BROOKSTONE ESTATES**

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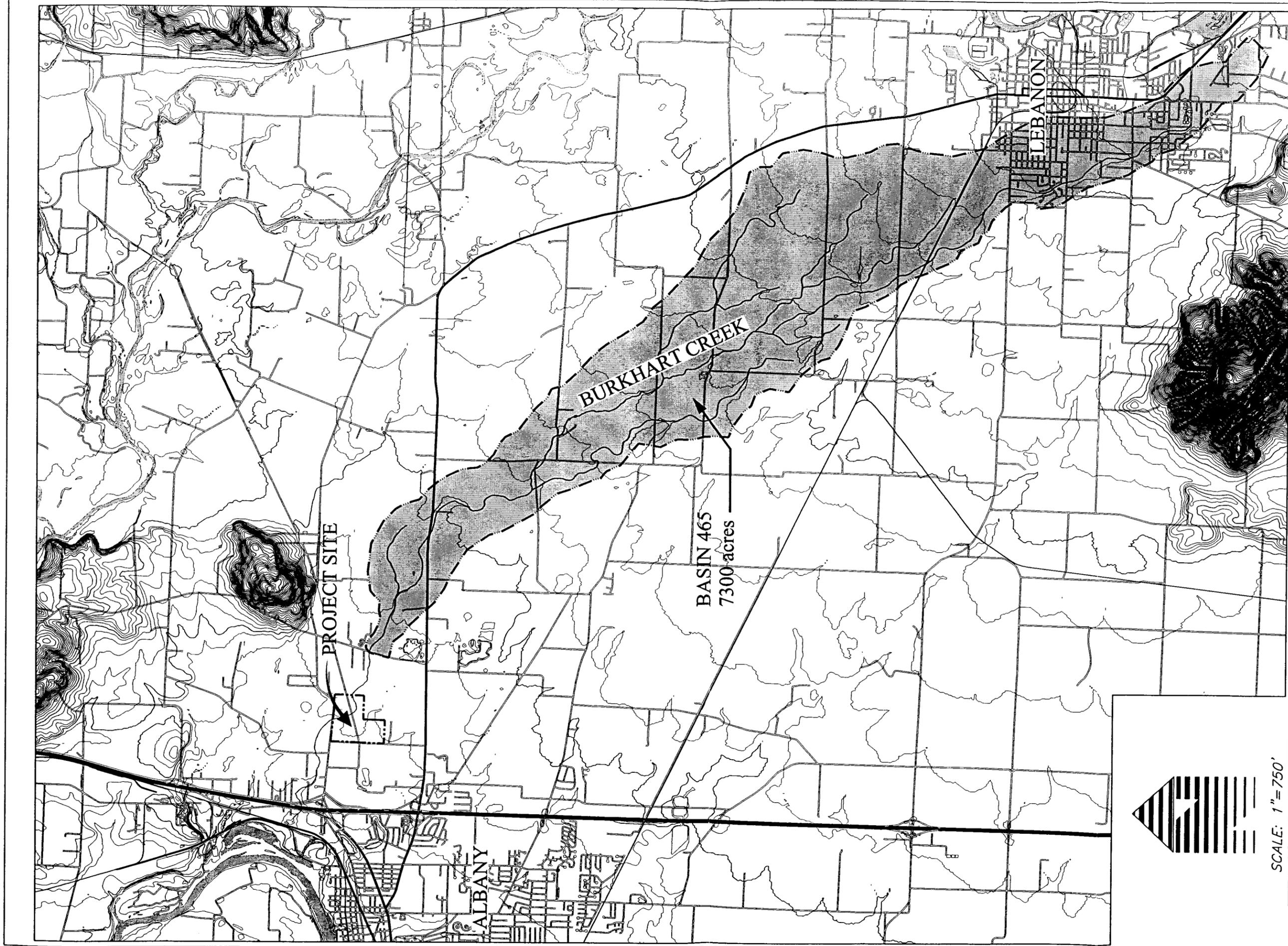


PROJECT NO. DRH3274  
 DATE: 11/20/03  
 BY: RCB  
 SHEET NO. 1/2

Burkhart Drainage (Onsite Basins)  
 BROOKSTONE ESTATES

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PROJECT NO. DRH3274

DATE: 11/20/03

BY: RCB

SHEET NO. 2/2

**Burkhart Drainage (Offsite Basin)  
BROOKSTONE ESTATES**

**D.R. HORTON HOMES  
ALBANY, OREGON**

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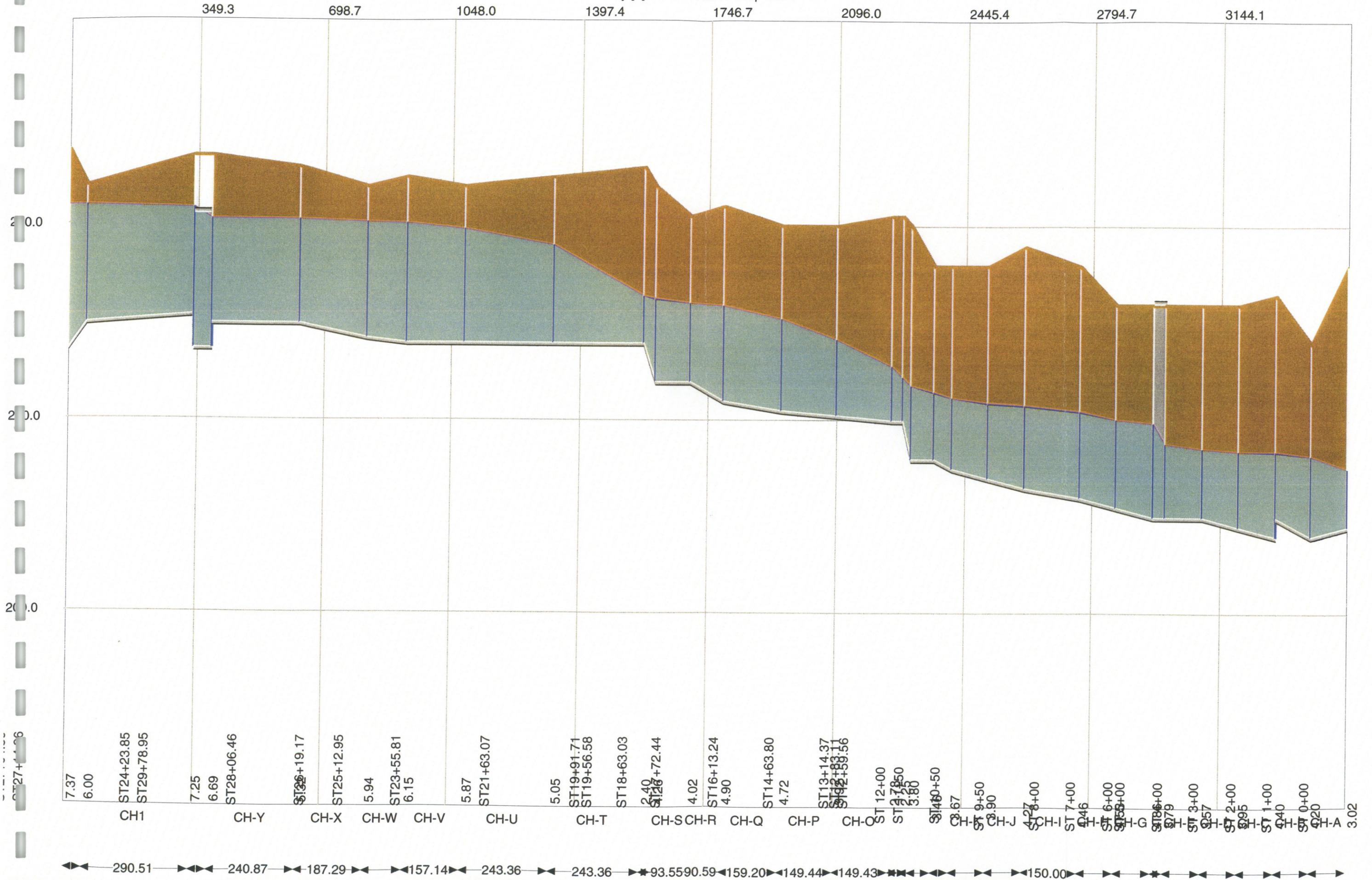
**D E S I G N I N G**

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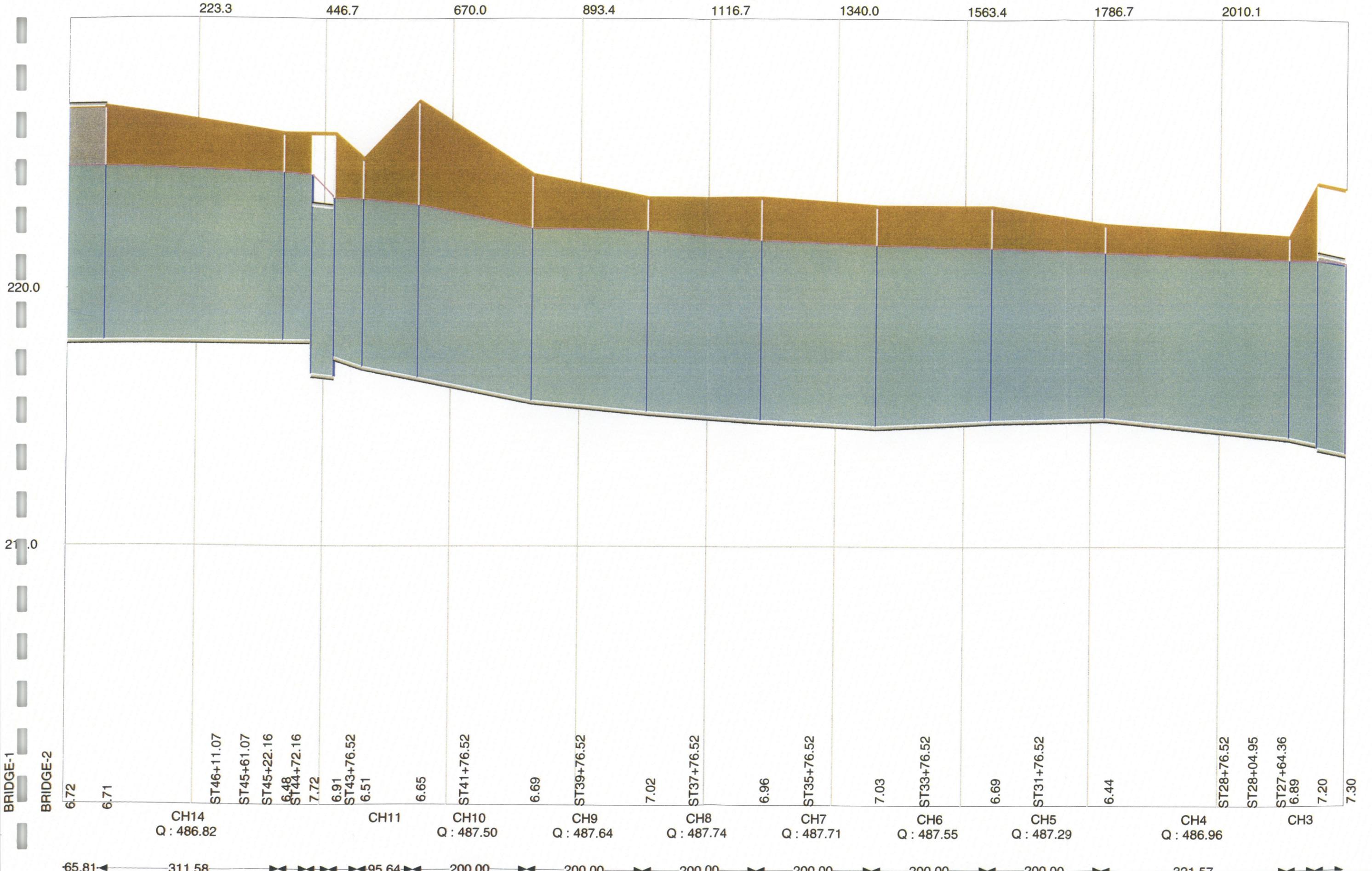
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BURKHART CREEK - 100-YR STORM EVENT

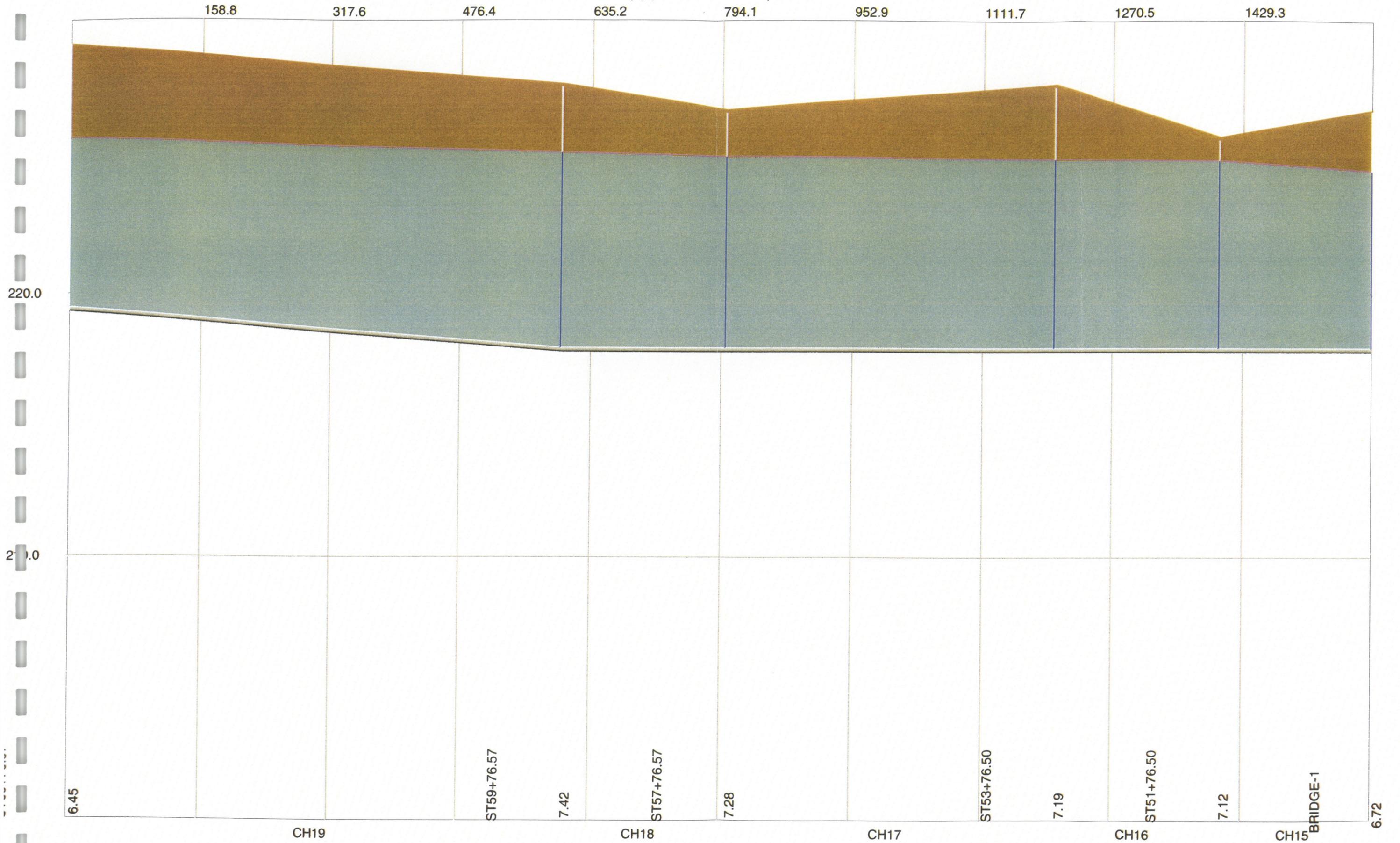
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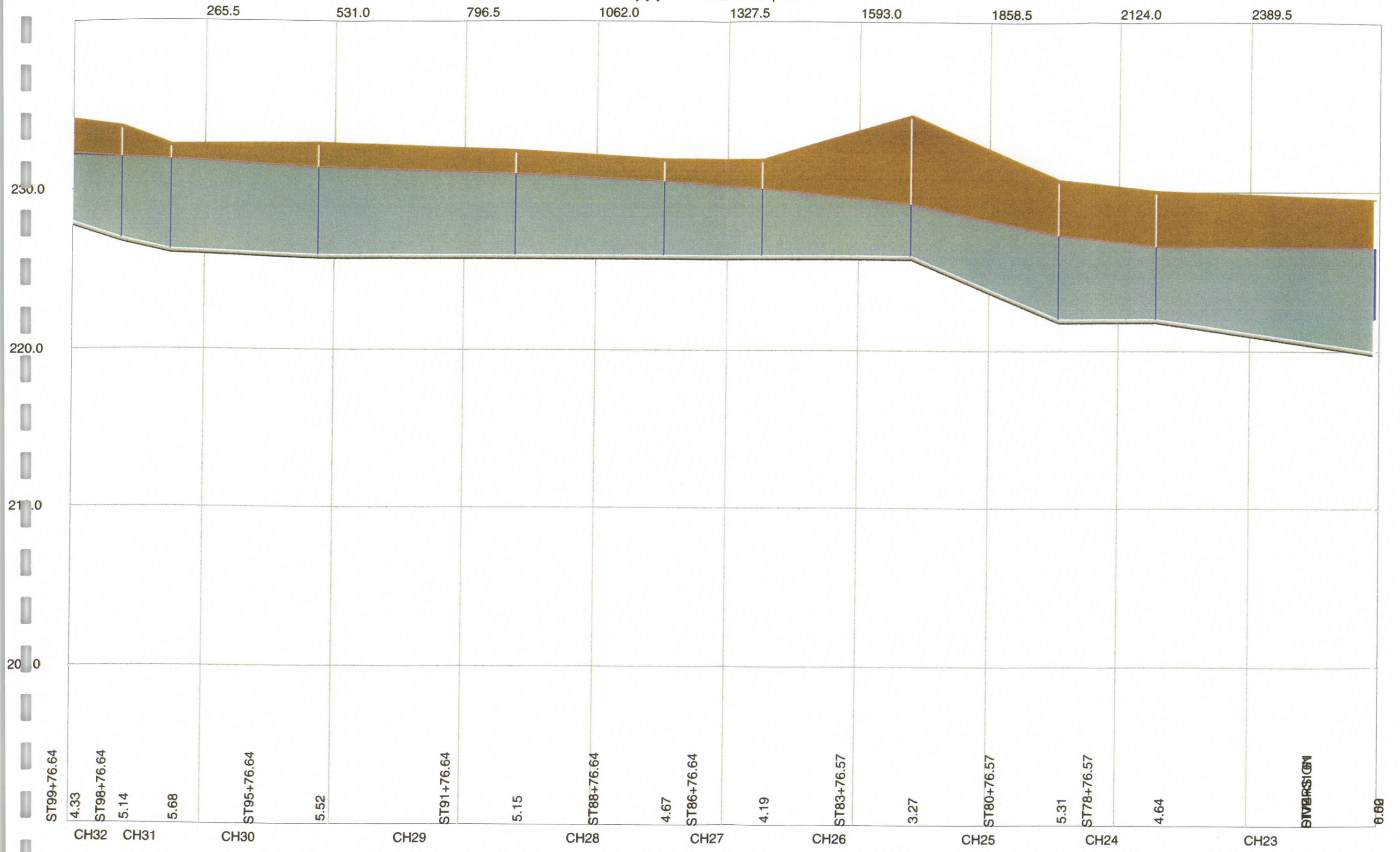
BURKHART CREEK - 100-YR STORM EVENT  
 Day [1] Time 06:44:00 Step 3688



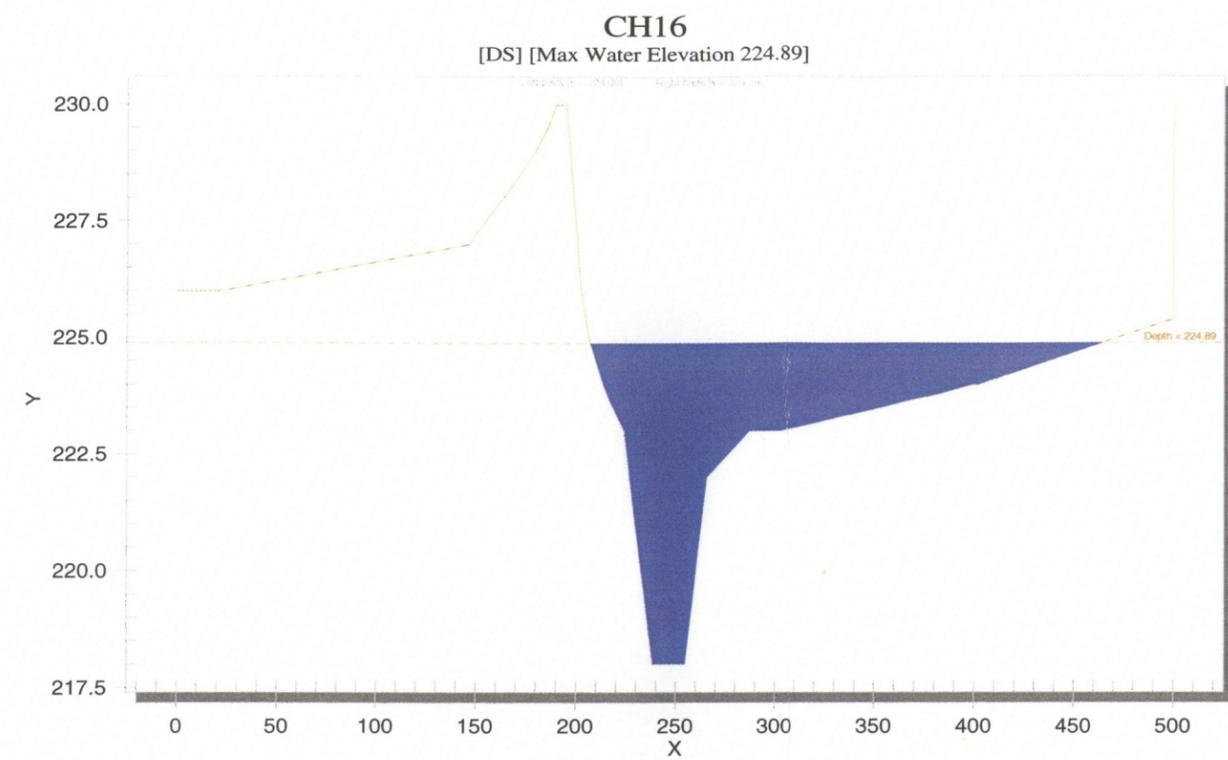
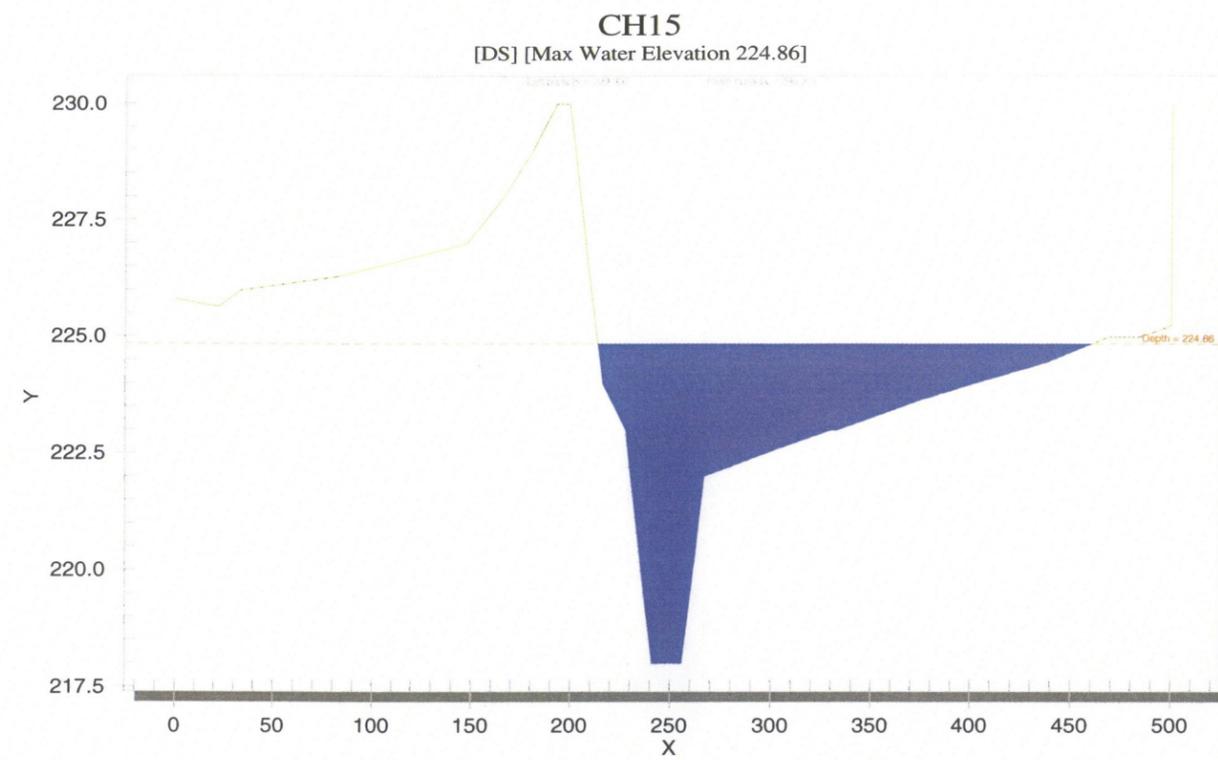
BURKHART CREEK - 100-YR STORM EVENT  
Day [1] Time 05:47:00 Step 3574

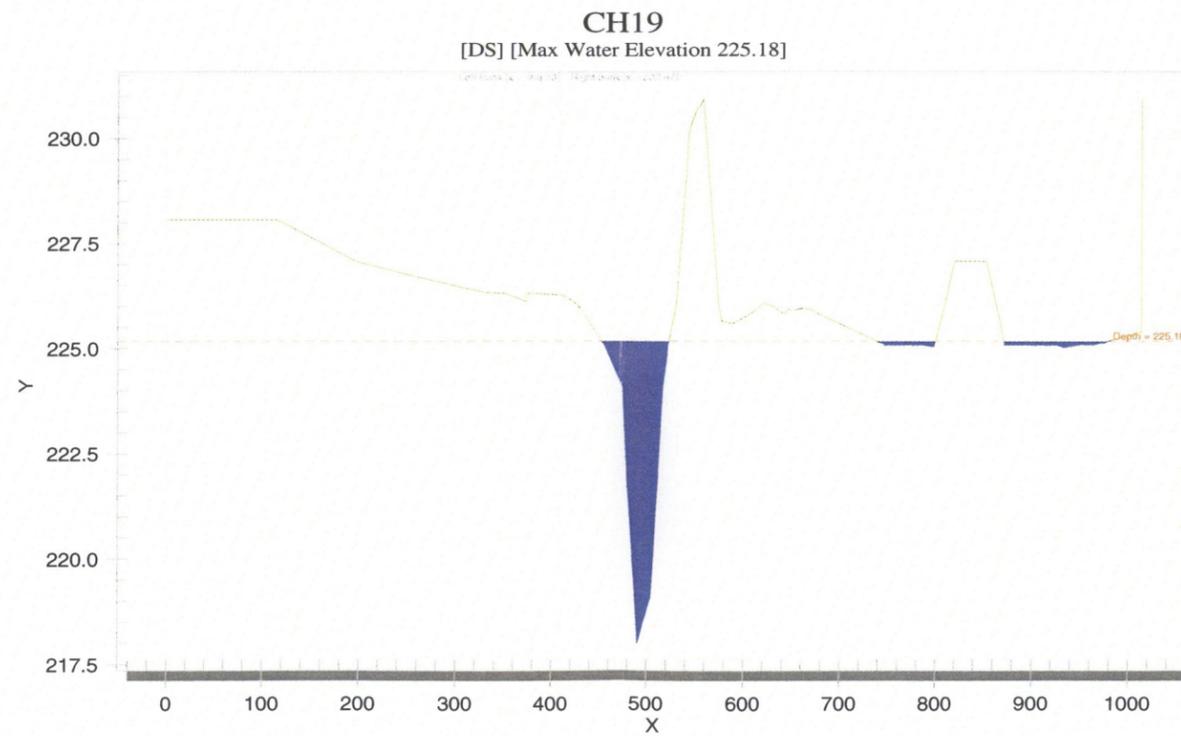
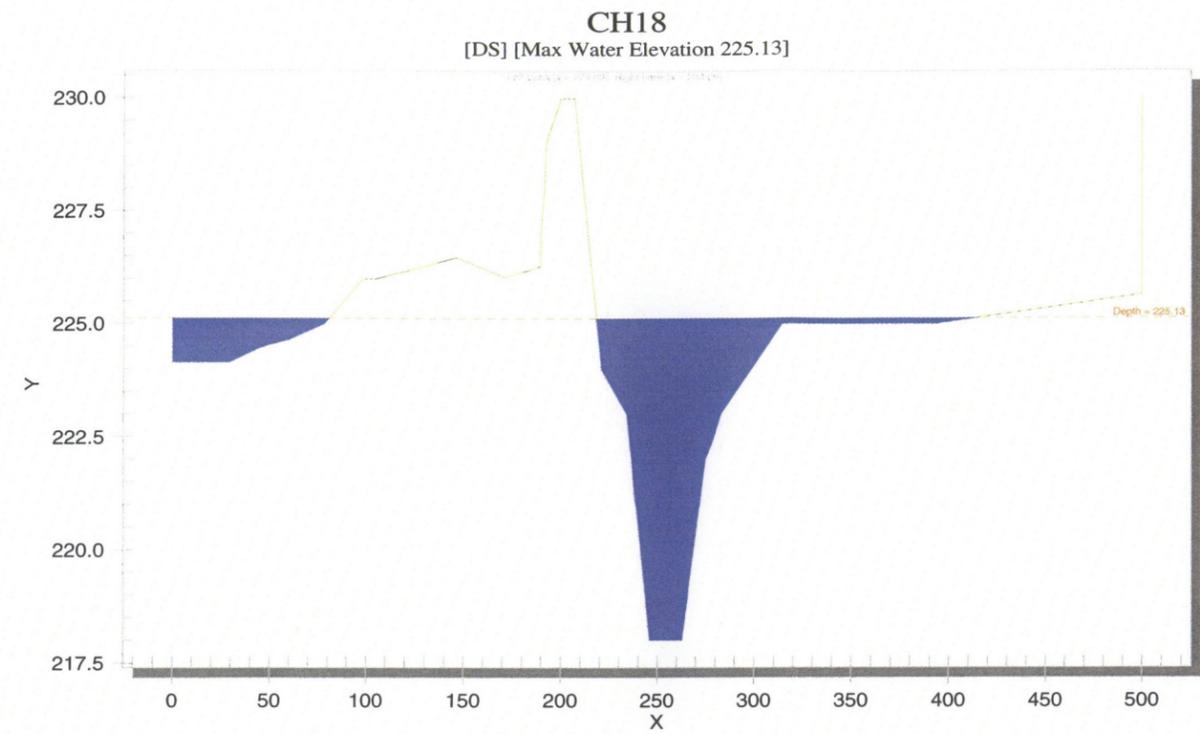
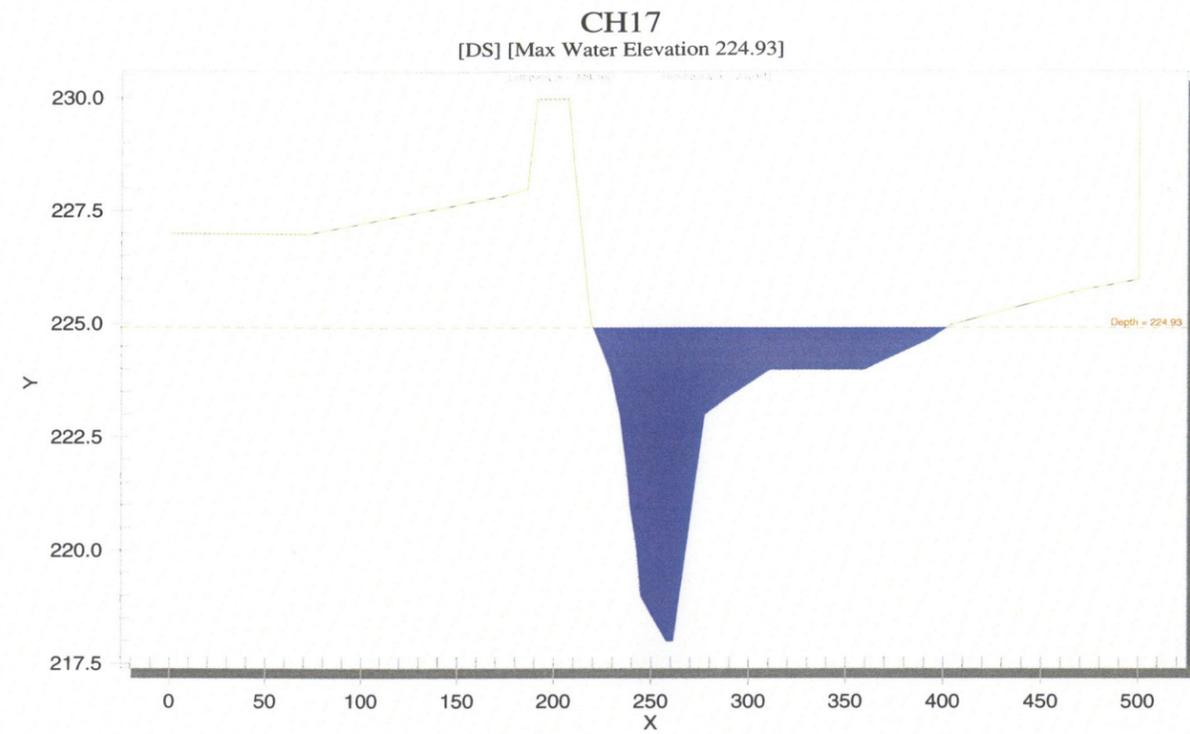


BURKHART CREEK - 100-YR STORM EVENT  
 Day [1] Time 05:47:00 Step 3574



←100.00 →100.00 ←300.00 →400.00 ←300.00 →200.00 ←300.00 →100.00 ←300.00 →100.00 ←300.00 →100.00





**Time of Concentration Calculation**  
**Brookstone Estates - Albany, Oregon**  
**DRH3274**

**Offsite Basin 465**

Segment ID	1		2-AB		2-BC		3		4		5		6	
	Surface Description	Cultivated Soil												
1	Surface Description	0.011	0.011	0.011	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
2	Manning's "n"	300	300	300	300	300	300	300	300	300	300	300	300	300
3	Flow Length, L (<300 ft)	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
4	2-Yr 24 Hour Rainfall, P <sub>2</sub>	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
5	Land Slope, s	0.34	0.34	0.34	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6	Travel Time, T <sub>t</sub> = $\frac{0.007(L)^{0.8}}{(P_2)^{0.5} s^{0.4}}$ .....hr													

Surface Description	Unpaved		Paved		Unpaved		Unpaved		Unpaved		Unpaved		Unpaved	
	Manning's "n"	Flow Length, L	Watercourse Slope, s	Average Velocity, V	Manning's "n"	Flow Length, L	Watercourse Slope, s	Average Velocity, V	Manning's "n"	Flow Length, L	Watercourse Slope, s	Average Velocity, V	Manning's "n"	Flow Length, L
7	0.011	5340	0.00025	0.26	0.011	2750	0.00025	0.32	0.17	3425	0.00025	0.26	0.17	14691
8	0.011	105	0.00025	0.26	0.011	105	0.00025	0.26	0.17	105	0.00025	0.26	0.17	105
9	0.011	43.68	0.00025	0.26	0.011	43.68	0.00025	0.26	0.17	43.68	0.00025	0.26	0.17	43.68
10	0.011	2.40	0.00025	0.26	0.011	2.40	0.00025	0.26	0.17	2.40	0.00025	0.26	0.17	2.40
11	Travel Time, T <sub>t</sub> = $\frac{L}{3600V}$ .....hr	5.81	2.38	3.73	4.34	3.75	16.00	10.95	10.95	10.95	10.95	10.95	10.95	10.95

Surface Description	Unpaved		Paved		Unpaved		Unpaved		Unpaved		Unpaved		Unpaved	
	Manning's "n"	Flow Length, L	Watercourse Slope, s	Average Velocity, V	Manning's "n"	Flow Length, L	Watercourse Slope, s	Average Velocity, V	Manning's "n"	Flow Length, L	Watercourse Slope, s	Average Velocity, V	Manning's "n"	Flow Length, L
12	0.011	105	0.00025	0.26	0.011	105	0.00025	0.26	0.17	105	0.00025	0.26	0.17	105
13	0.011	43.68	0.00025	0.26	0.011	43.68	0.00025	0.26	0.17	43.68	0.00025	0.26	0.17	43.68
14	0.011	2.40	0.00025	0.26	0.011	2.40	0.00025	0.26	0.17	2.40	0.00025	0.26	0.17	2.40
15	0.011	0.04	0.00025	0.26	0.011	0.04	0.00025	0.26	0.17	0.04	0.00025	0.26	0.17	0.04
16	0.011	3.34	0.00025	0.26	0.011	3.34	0.00025	0.26	0.17	3.34	0.00025	0.26	0.17	3.34
17	0.011	61289	0.00025	0.26	0.011	61289	0.00025	0.26	0.17	61289	0.00025	0.26	0.17	61289
18	0.011	5.09	0.00025	0.26	0.011	5.09	0.00025	0.26	0.17	5.09	0.00025	0.26	0.17	5.09
19	Travel Time, T <sub>t</sub> = $\frac{L}{3600V}$ .....hr	5.09	5.09	3.16	3.16	3.06	0.75	1.58	1.58	1.58	1.58	1.58	1.58	1.58

Watershed or Subarea	T <sub>c</sub> (hrs)		(minutes)	
	Value	Value	Value	Value
20	11.24	675	9.82	589
			19.75	1185
			15.54	932

**Time of Concentration Calculation**  
**Brookstone Estates - Albany, Oregon**  
**DRH3274**

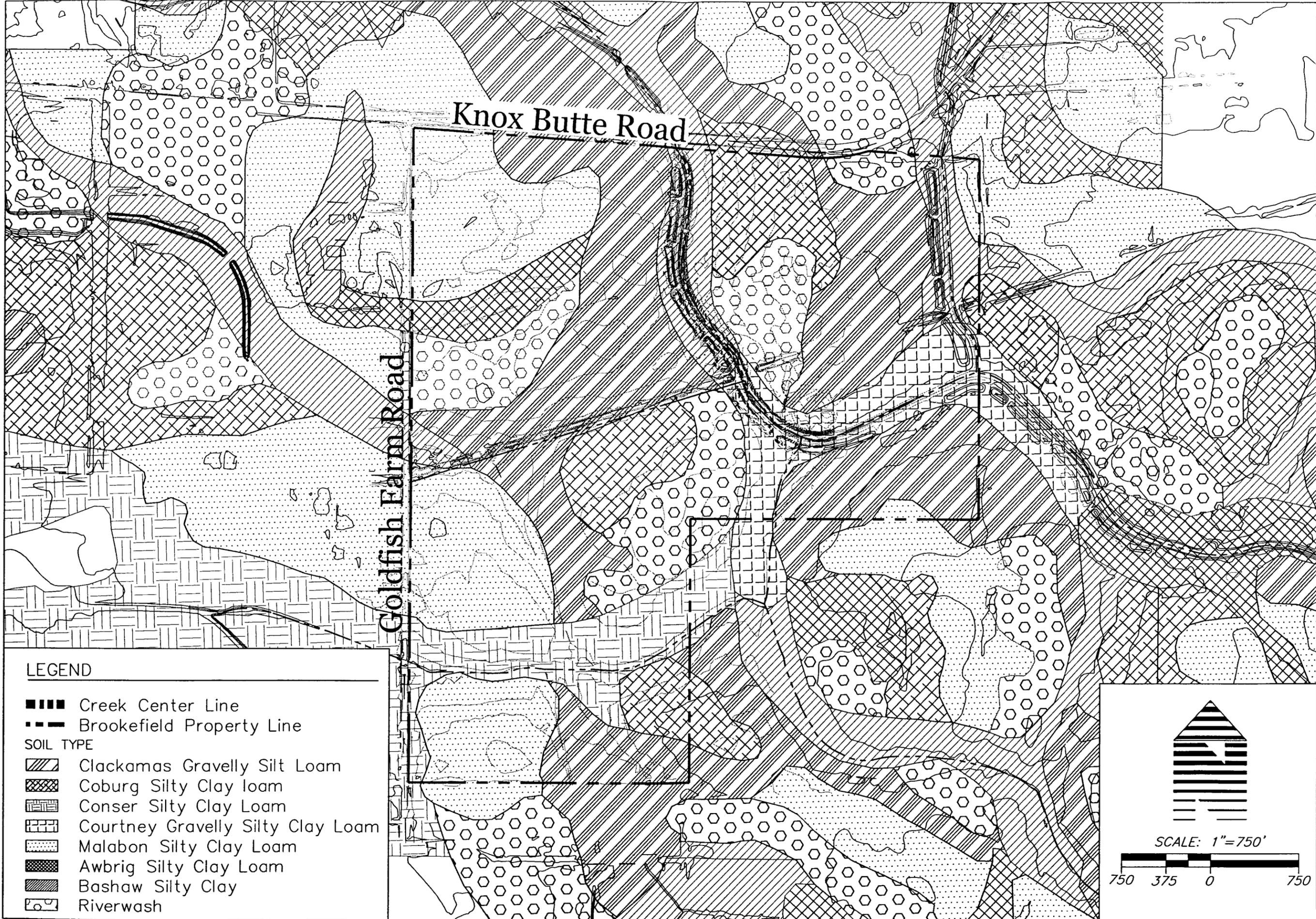
**Onsite Basins**

SHEET FLOW										
Segment/Basin ID	450	430	420	405	350	340	327	325	311	
1	Surface Description	Cultivated Soil	Cultivated Soil	Cultivated Soil	Partially Developed	Cultivated Soil	Cultivated Soil	Cultivated Soil	Partially Developed	Developed
2	Manning's "n"	0.17	0.17	0.1	0.08	0.17	0.02	0.011	0.02	0.011
3	Flow Length, L (<300 ft).....ft	300	300	300	300	300	300	300	300	300
4	2-Yr 24 Hour Rainfall, P <sub>2</sub> .....in	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
5	Land Slope, s.....ft/ft	0.0047	0.002	0.0074	0.0059	0.0047	0.008	0.0025	0.0025	0.012
6	Travel Time, $T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$ .....hr	0.88	1.24	0.48	0.44	0.88	0.13	0.13	0.20	0.07

SHALLOW CONCENTRATED FLOW										
Surface Description (paved or unpaved)	Unpaved	Unpaved	Unpaved	Partially Developed	Unpaved	Unpaved	Unpaved	Unpaved	Partially Developed	Developed
7	Manning's "n"	0.17	0.17	0.1	0.08	0.17	0.02	0.011	0.02	0.011
8	Flow Length, L.....ft	550	850	350	475	1275	500	1600	1500	1100
9	Watercourse Slope*, s.....ft/ft	0.0047	0.002	0.0074	0.0059	0.0047	0.008	0.0025	0.0025	0.012
10	Average Velocity, V .....ft/s	1.11	0.72	1.60	1.60	1.11	1.75	1.02	0.81	2.23
	Figure 3-1	1.18	1.18	1.6	1.6	1.18	1.75	1.18	1.18	1.18
	Unpaved	1.11	0.72	1.39	1.24	1.11	1.44	0.81	0.81	1.77
	Paved	1.39	0.91	1.75	1.56	1.39	1.82	1.02	1.02	2.23
11	Travel Time, $T_t = \frac{L}{3600V}$ .....hr	0.14	0.33	0.06	0.08	0.32	0.08	0.44	0.52	0.14

CHANNEL FLOW										
12	Cross Sectional Flow Area, a.....ft <sup>2</sup>	190	332	382	280	105	50	105	110	104
13	Wetted Perimeter, P <sub>w</sub> .....ft	90	173	272	180	43.68	22.5	43.68	50	51
14	Hydraulic Radius, r = a / P <sub>w</sub> .....ft	2.11	1.92	1.40	1.56	2.40	2.22	2.40	2.20	2.04
15	Channel Slope, s.....ft/ft	0.0021	0.001	0.0015	0.0021	0.0025	0.0025	0.0025	0.0025	0.0046
16	Manning's "n"	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04
17	Average Velocity, $v = \frac{1.49r^{\frac{2}{3}}s^{\frac{1}{2}}}{n}$ ft/s	2.81	1.82	1.81	2.29	3.34	4.23	3.34	3.15	4.06
18	Flow Length, L.....ft	4067	645	1480	1885	0	1800	0	1600	1400
19	Travel Time, $T_t = \frac{L}{3600V}$ .....hr	0.40	0.10	0.23	0.23	0.00	0.12	0.00	0.14	0.10

20	Watershed or Subarea T <sub>c</sub> (hrs) =	1.42	1.66	0.77	0.75	1.20	0.33	0.56	0.86	0.30
	(minutes) =	85	100	46	45	72	20	34	52	18

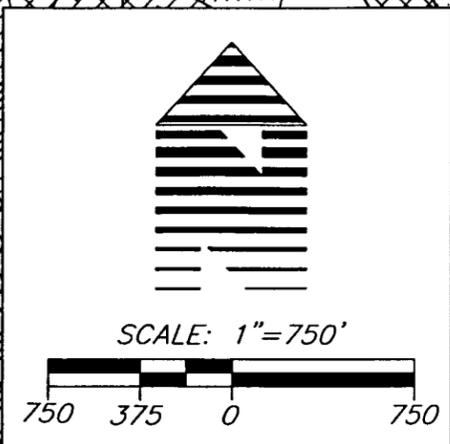


**LEGEND**

- ▣▣▣▣ Creek Center Line
- ▣-▣-▣-▣ Brookefield Property Line

**SOIL TYPE**

- ▨▨▨▨ Clackamas Gravelly Silt Loam
- ▩▩▩▩ Coburg Silty Clay loam
- ▧▧▧▧ Conser Silty Clay Loam
- ▦▦▦▦ Courtney Gravelly Silty Clay Loam
- ▥▥▥▥ Malabon Silty Clay Loam
- ▤▤▤▤ Awbrig Silty Clay Loam
- ▣▣▣▣ Bashaw Silty Clay
- ▢▢▢▢ Riverwash



PROJECT NO. DRH3274

DATE: 10/29/03

BY:

SHEET NO.

**SOIL MAP**  
**BROOKSTONE ESTATES**

D.R. HORTON HOMES  
ALBANY, OREGON

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CUSTOM HOMES

EXISTING CONDITIONS  
**BROOKSTONE ESTATES**  
 DR HORTON, INC.  
 ALBANY, OREGON



PROJECT NO: DR-8274  
 DATE: JAN 28, 2004  
 DESIGNED BY: RDB  
 DRAWN BY: RDB/KAN  
 CHECKED BY: RBD

**EXISTING CONDITIONS**  
 C20

**LEGEND**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>INDICATES DATA FROM AS-BUILT INFORMATION</li> <li>100-YEAR FLOOD BOUNDARY</li> <li>UNDERGROUND GAS LINE</li> <li>UNDERGROUND WATER LINE</li> <li>SANITARY SEWER LINE</li> <li>OVERHEAD WIRE</li> <li>UNDERGROUND TELEPHONE LINE</li> <li>STORM DRAINAGE LINE</li> <li>FENCE LINE, TYPE AS NOTED</li> <li>BUILDING OVERHANG LINE</li> <li>BUILDING FACE</li> <li>WETLAND LIMITS</li> <li>STREAM FLOWLINE</li> <li>PROJECT BOUNDARY</li> <li>RIGHT OF WAY</li> <li>LOT LINE</li> <li>1' CONTOUR LINE</li> <li>5' CONTOUR LINE</li> <li>GRAVEL SURFACE</li> <li>CONCRETE SURFACE</li> <li>WETLANDS</li> <li>100-YEAR FLOOD BOUNDARY</li> <li>AC PAVEMENT</li> <li>LOCALIZED DEPRESSION</li> </ul> | <ul style="list-style-type: none"> <li>SEE STORM DRAINAGE TABLE</li> <li>STORM MANHOLE</li> <li>CATCH BASIN</li> <li>CURB INLET</li> <li>DITCH INLET</li> <li>AREA DRAIN</li> <li>CATCH BASIN TRAPPED TYPE</li> <li>SANITARY MANHOLE</li> <li>SEE SANITARY SEWER TABLE</li> <li>WATER VALVE</li> <li>WATER METER</li> <li>SPRINKLER VALVE</li> <li>FIRE HYDRANT</li> <li>ELECTRICAL RISER</li> <li>TRANSFORMER</li> <li>SIGNAL LIGHT JUNCTION BOX</li> <li>ELECTRICAL JUNCTION BOX</li> <li>UTILITY POLE</li> <li>GUY WIRE ANCHOR</li> <li>TELEPHONE RISER</li> <li>DECIDUOUS TREE</li> <li>CONIFEROUS TREE</li> <li>SIGN</li> <li>GATE POST</li> <li>BOLLARD</li> <li>MAIL BOX</li> <li>STAND PIPE</li> <li>CLEANOUT</li> <li>GAS VALVE</li> <li>GAS METER</li> <li>GAS WARNING SIGN</li> <li>CABLE TELEVISION RISER</li> </ul> |
|---|--|

**SANITARY SEWER NOTES:**

- |  |   |  |  |
|--|---|--|--|
| <p>① SANITARY SEWER MANHOLE<br/>RM=225.81' (1' O/S EAST)<br/>6" PVC IN(S)<br/>6" PVC IN(E)<br/>6" PVC OUT(W)<br/>E C/L STRUCTURE=216.94'</p> | <p>② SANITARY SEWER MANHOLE<br/>RM=224.38' (NO O/S)<br/>6" PVC IN(W)<br/>6" PVC IN(S)<br/>6" PVC OUT(W)<br/>E C/L STRUCTURE=216.79'</p> | <p>③ SANITARY SEWER MANHOLE<br/>RM=224.85'<br/>12" PVC IN(SE)<br/>12" OUT(W)<br/>E C/L STRUCTURE=214.11'</p> | <p>④ SANITARY SEWER MANHOLE<br/>RM=225.85'<br/>12" PVC IN(SE)<br/>12" OUT(W)<br/>E C/L STRUCTURE=216.90'</p> |
| <p>⑤ SANITARY SEWER MANHOLE<br/>RM=224.17'<br/>12" PVC IN(SE)<br/>12" OUT(W)<br/>E C/L STRUCTURE=213.22'</p>                                 | <p>⑥ SANITARY SEWER MANHOLE<br/>RM=225.37'<br/>12" PVC IN(SE)<br/>12" OUT(W)<br/>E C/L STRUCTURE=214.84'</p>                            |  |  |

**STORM SEWER NOTES:**

- |  |  |  |
|--|--|--|
| <p>① STORM SEWER CURB INLET<br/>RM=223.23'<br/>7" ALUMINUM CAP STAMPED<br/>10" PVC IN(W)<br/>10" PVC OUT(W)=218.05'<br/>E SLMP=218.38'</p>             | <p>② STORM SEWER MANHOLE<br/>RM=224.13'<br/>10" PVC IN(W)<br/>10" PVC OUT(W)<br/>E C/L STRUCTURE=216.09'</p>                         | <p>③ STORM SEWER CATCH BASIN<br/>TO=225.98'<br/>(NO INVERT DATA)</p>         |
| <p>④ STORM SEWER CURB INLET<br/>RM=223.14' (1' O/S SE)<br/>7" ALUMINUM CAP STAMPED<br/>10" PVC IN(S)<br/>10" PVC OUT(S)=218.07'<br/>E SLMP=218.21'</p> | <p>⑤ STORM SEWER CATCH BASIN<br/>TO=222.63'<br/>15" PVC IN(S)<br/>72" CONC IN(S)<br/>72" CONC OUT(W)<br/>E C/L STRUCTURE=216.33'</p> | <p>⑥ STORM SEWER DITCH INLET<br/>TO=225.09'<br/>E 10" PVC OUT(W)=216.90'</p> |

**BENCHMARK / BASIS OF BEARING**

BASIS OF BEARING IS PER FOUND AND HELD MONUMENTS MARKING THE CENTERLINE OF GOLDFISH FARM ROAD BETWEEN DOGWOOD AVENUE AND KNOX BUTTE ROAD PER COUNTY SURVEY NO. 23291, BEING NORTH 00°09'32" EAST.

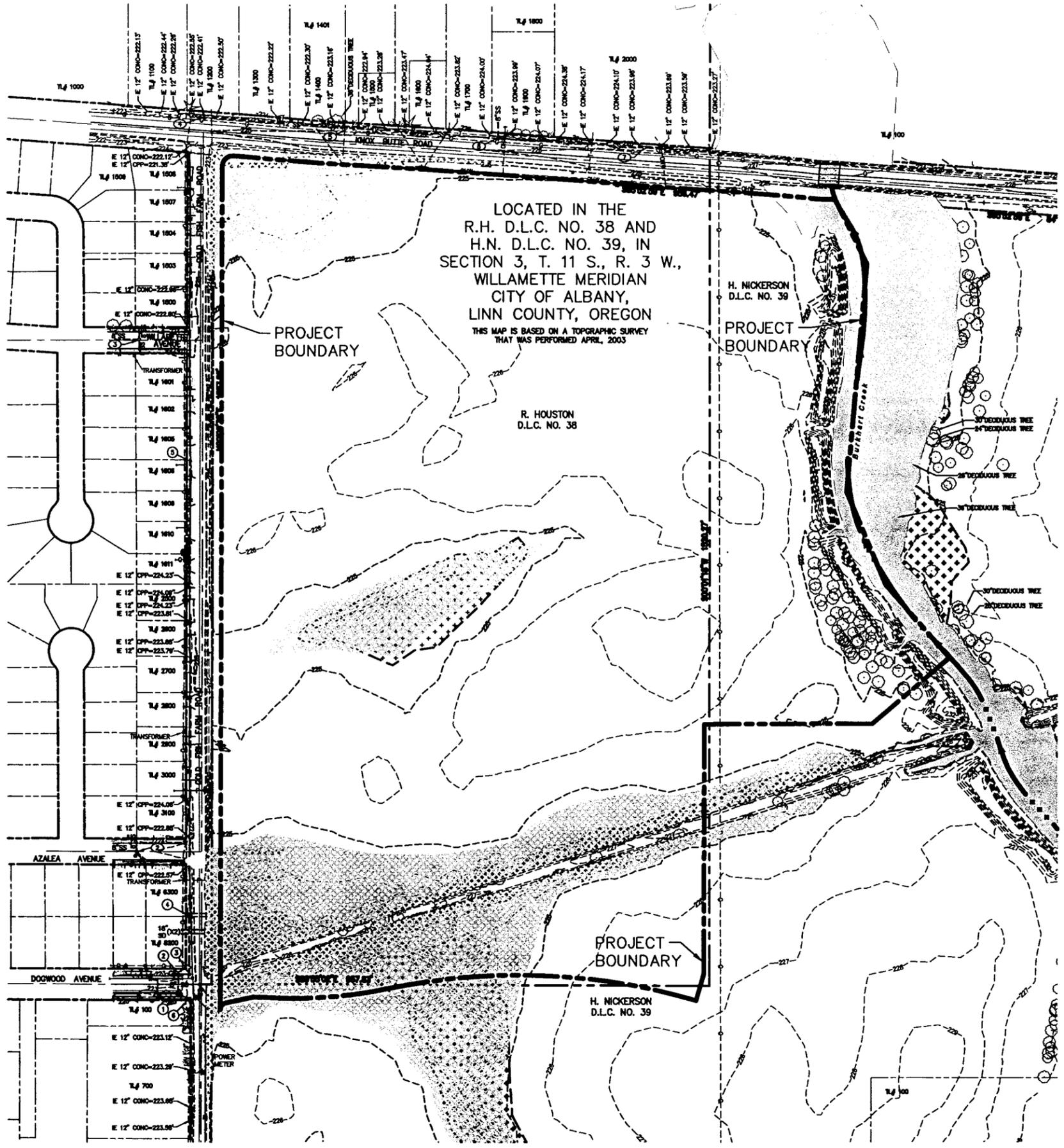
ELEVATION DATUM: NGVD 1929 (47)  
 BENCHMARK: FOUND 3 1/4" ALUMINUM CAP STAMPED  
 "T115 R3W S3 D1C38/D1C 38 RESET 2002" AT THE  
 INTERSECTION OF GOLDFISH FARM ROAD AND DOGWOOD  
 AVENUE.  
 BENCHMARK NO: GPS MONUMENT 93021  
 BENCHMARK ELEVATION: 225.399 (NGVD 1929 (47))

**UTILITY STATEMENT:**

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM READILY IDENTIFIABLE FIELD INDICATORS AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES AND NO UTILITY LOCATES WERE PERFORMED.

**NOTES:**

- ALL TREES IDENTIFIED ON THIS SURVEY ARE LESS THAN 24-INCHES IN DIAMETER UNLESS OTHERWISE NOTED.



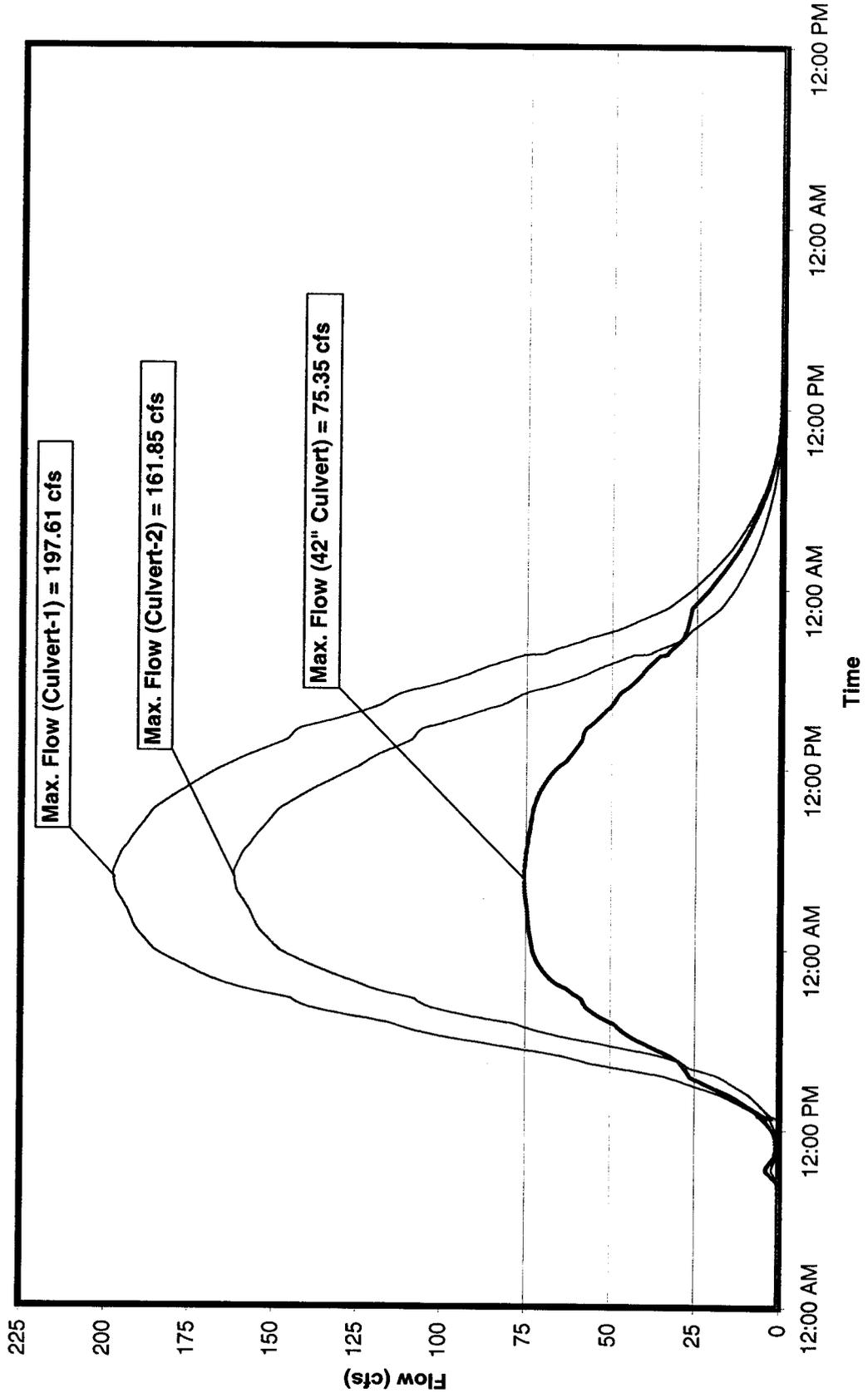
LOCATED IN THE  
 R.H. D.L.C. NO. 38 AND  
 H.N. D.L.C. NO. 39, IN  
 SECTION 3, T. 11 S., R. 3 W.,  
 WILLAMETTE MERIDIAN  
 CITY OF ALBANY,  
 LINN COUNTY, OREGON  
 THIS MAP IS BASED ON A TOPOGRAPHIC SURVEY  
 THAT WAS PERFORMED APRIL, 2003

PROJECT BOUNDARY  
 H. NICKERSON  
 D.L.C. NO. 39

**XP-SWMM RUNOFF DATA - BROOKSTONE ESTATES  
STORM RUNOFF DATA DESIGN STORM EVENT (SCS METHOD)**

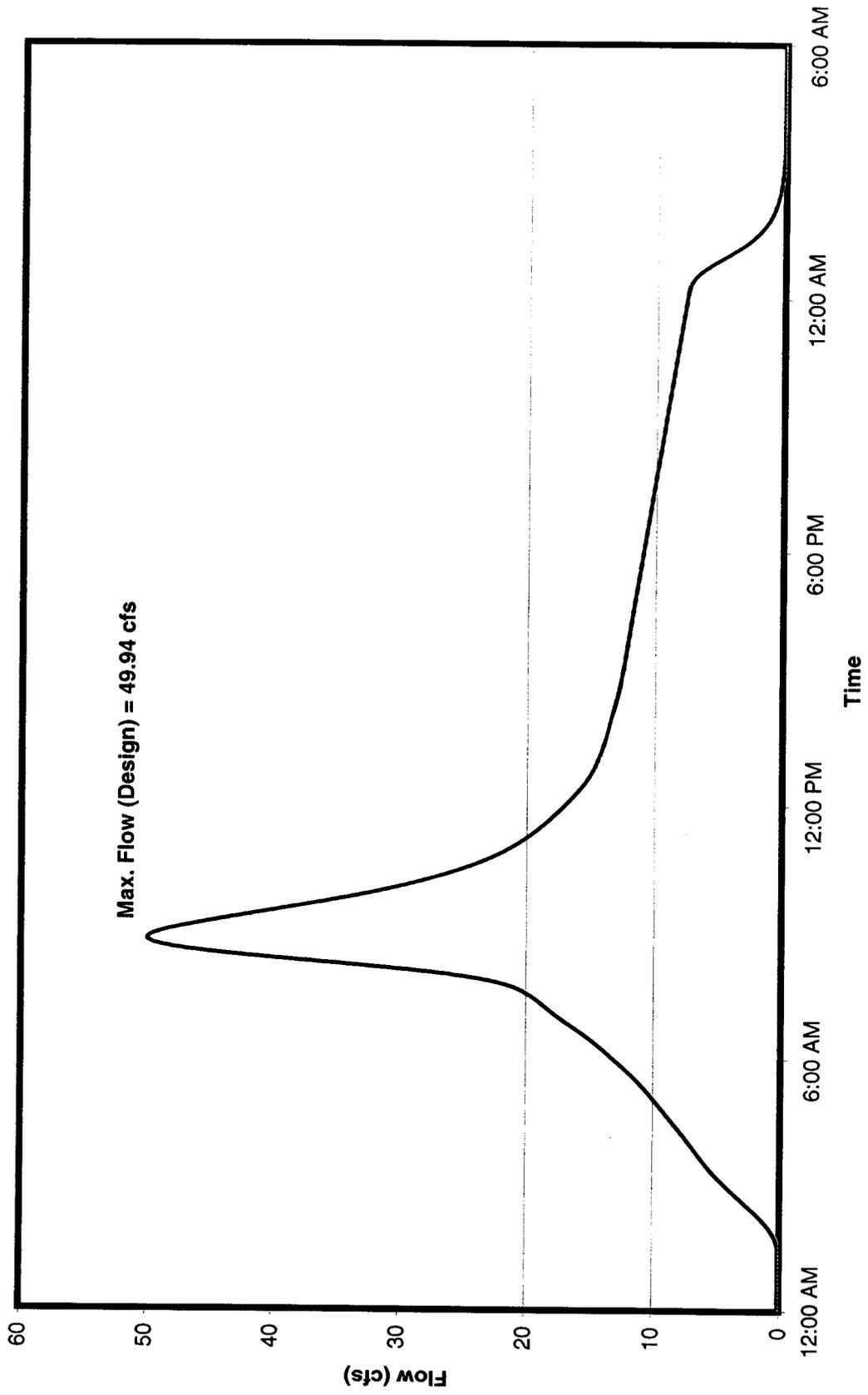
Node Name	Node Information						Runoff Information			
	Area acre	Impervious %	Slope ft/ft	Width ft	SCS Curve	Tc min.	Rainfall in	Infiltration in	Surface in	Runoff cfs
S100+76.64	7300	3.4	0	200000	84	1185	4.86	0.531	4.329	1003.583
ST59+76.57	31.6	65	0.002	1000	92	100	4.86	0.45	4.41	49.9
BRIDGE-2	42.2	65	0.007	3200	92	46	4.86	0.46	4.40	36.4
ST17+13.24	66	65	0.006	1000	92	45	4.86	0.45	4.41	40.3
ST16+13.24	21	65	0.001	1500	92	18	4.86	0.46	4.40	135.4
-	39	65	0.003	1000	92	52	-	-	-	-
-	75	65	0.008	500	92	20	-	-	-	-
-	75	65	0.003	500	92	64	-	-	-	-

**Brookstone Estates (Offsite)  
Knox Butte Road Culverts  
100-Year Flow Hydrograph**

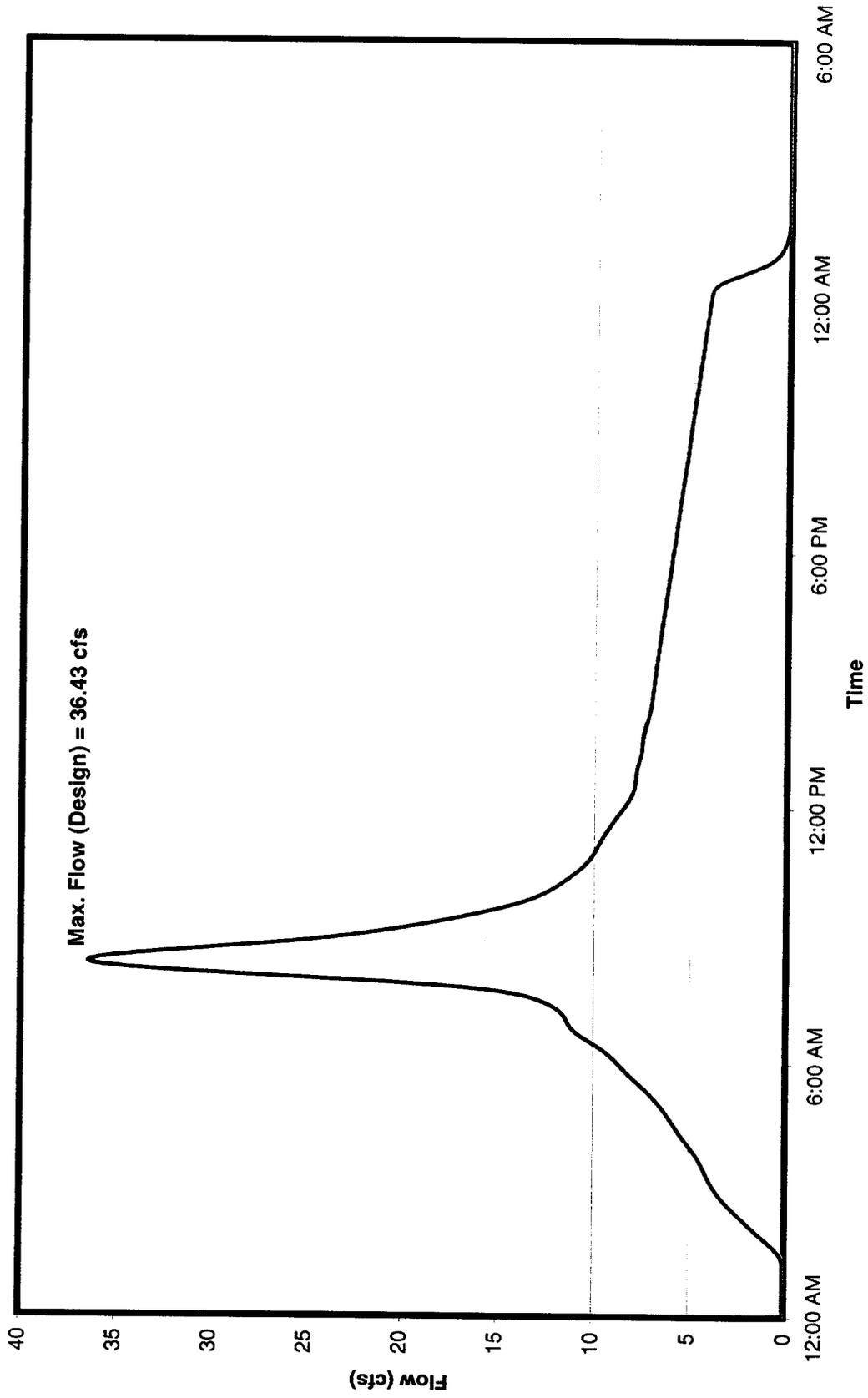




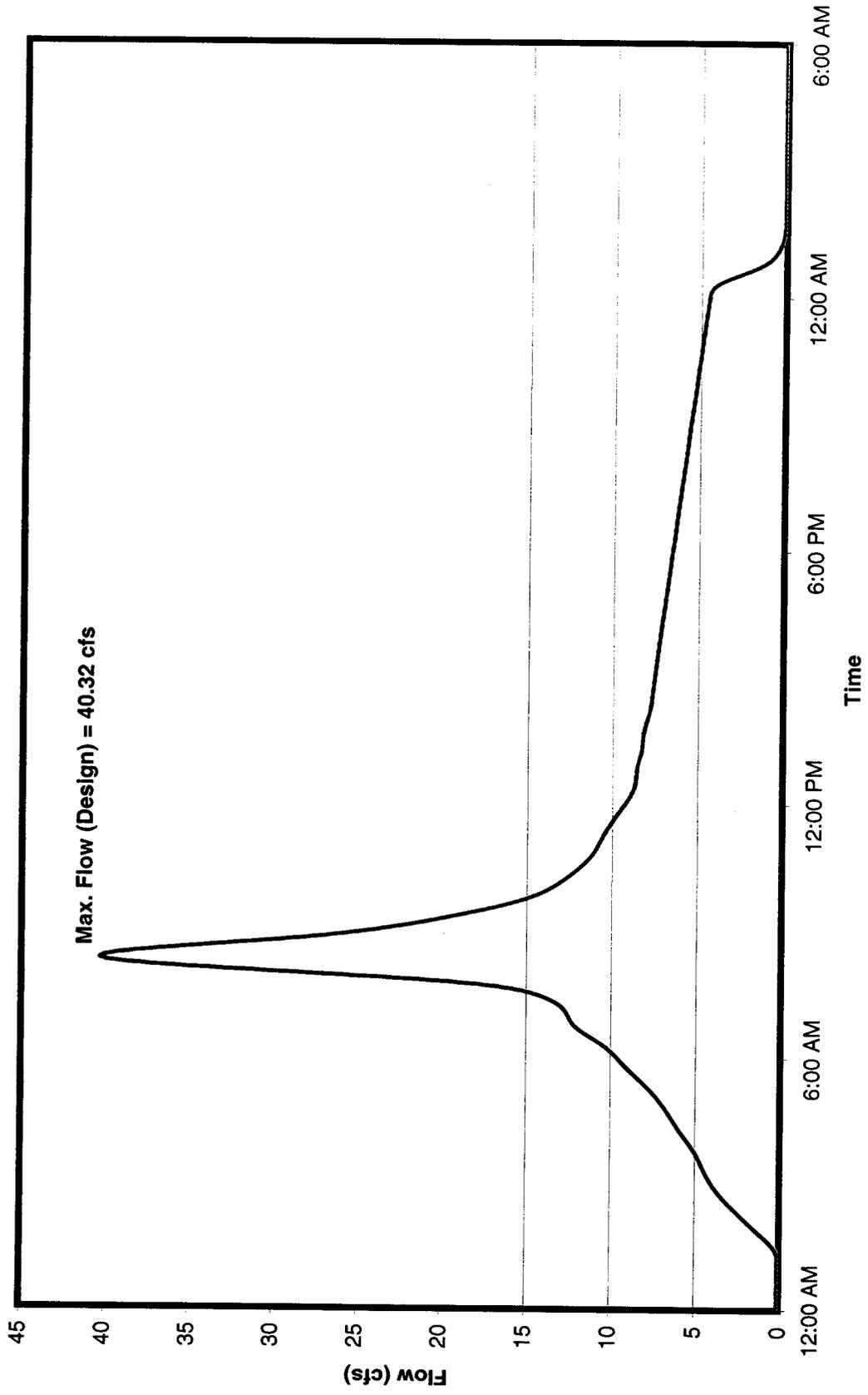
**Brookstone Estates (STA 59+76.57)  
Basins 350, 430  
Flow Hydrograph**



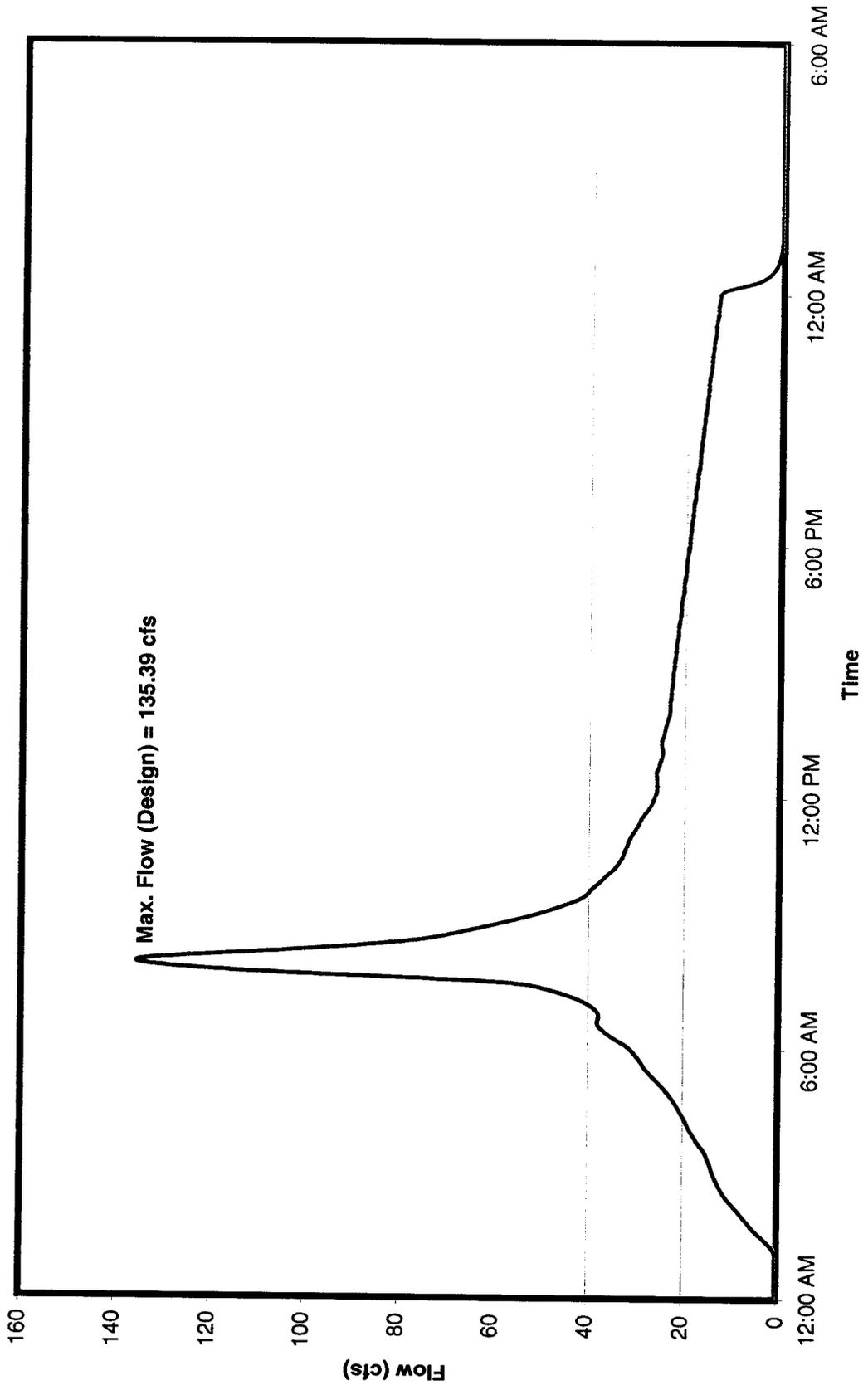
**Brookstone Estates (BRIDGE-2)  
Basin 420  
100-Year Flow Hydrograph**



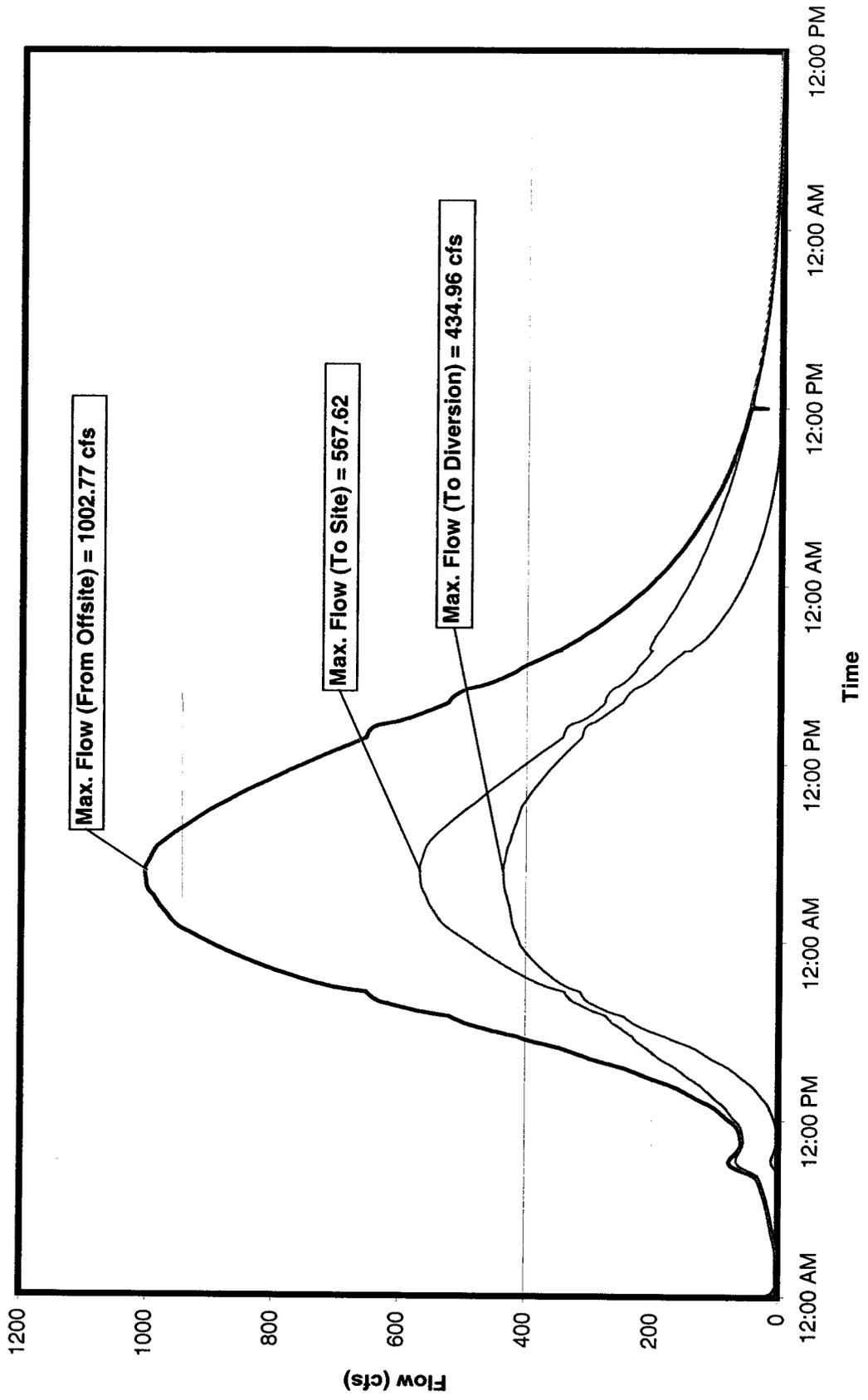
**Brookstone Estates (STA 27+64.36)**  
**Basin 405**  
**100-Year Flow Hydrograph**



**Brookstone Estates (STA 16+13.24)  
Basins 311, 325, 327, 340  
100-Year Flow Hydrograph**



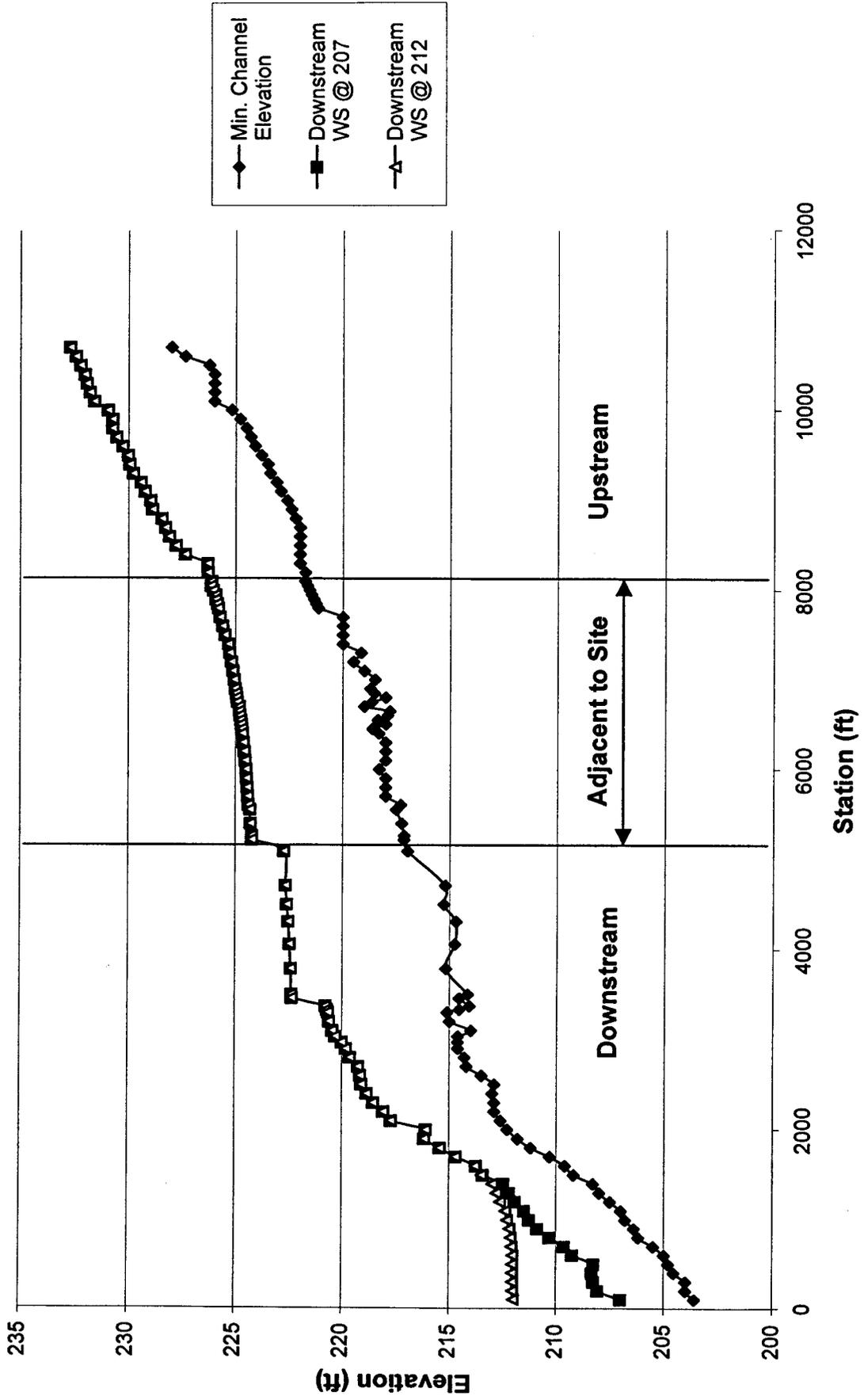
**Brookstone Estates (STA 74+31.61)  
Diversion Structure  
100-Year Flow Hydrograph**



**Existing Water Surface Elevation Table**

Station	Existing WS		Station	Existing WS		Station	Existing WS
10700	232.71		6900	225.02		2600	219.15
10600	232.45		6850	224.97		2500	219.10
10500	232.24		6800	224.94		2400	218.85
10400	232.03		6750	224.91		2300	218.55
10300	231.94		6700	224.82		2200	218.07
10200	231.79		6650	224.82		2100	217.72
10100	231.59		6600	224.79		2000	216.09
10000	230.96		6550	224.76		1900	216.17
9900	230.75		6500	224.73		1800	215.44
9800	230.75		6450	224.70		1700	214.70
9700	230.56		6400	224.67		1600	213.74
9600	230.27		6300	224.63		1500	213.41
9500	230.02		6200	224.59		1400	212.46
9400	229.95		6100	224.54		1300	212.20
9300	229.78		6000	224.50		1200	211.92
9200	229.43		5900	224.48		1100	211.48
9100	229.24		5800	224.44		1000	211.26
9000	228.97		5700	224.42		900	210.87
8900	228.89		5606.28	224.38	Bridge	800	210.30
8800	228.45		5551.73	224.32		700	209.62
8700	228.28		5396.79	224.29		600	209.24
8600	228.10		5262.73	224.23		500	208.26
8500	227.79		5218.47	224.23		400	208.33
8400	227.36		5090.58	222.73		300	208.25
8300	226.32		4711.15	222.65		200	208.06
8200	226.30		4500.85	222.59		100	207.00
8100	226.13		4307.57	222.52			
8050	226.16	Enters Site	4058.21	222.46			
8000	226.05		3786.31	222.40			
7950	225.94		3499.26	222.36			
7900	225.93		3458.31	222.35			
7850	225.86		3371.42	220.78			
7800	225.82		3332.37	220.71			
7750	225.73		3300	220.66			
7700	225.61		3200	220.61			
7650	225.51		3100	220.45			
7600	225.34		3033.39	220.31			
7550	225.28		2970	220.01			
7500	225.19		2900	219.82			
7450	225.13		2800	219.63			
7400	225.06		2700	219.25			

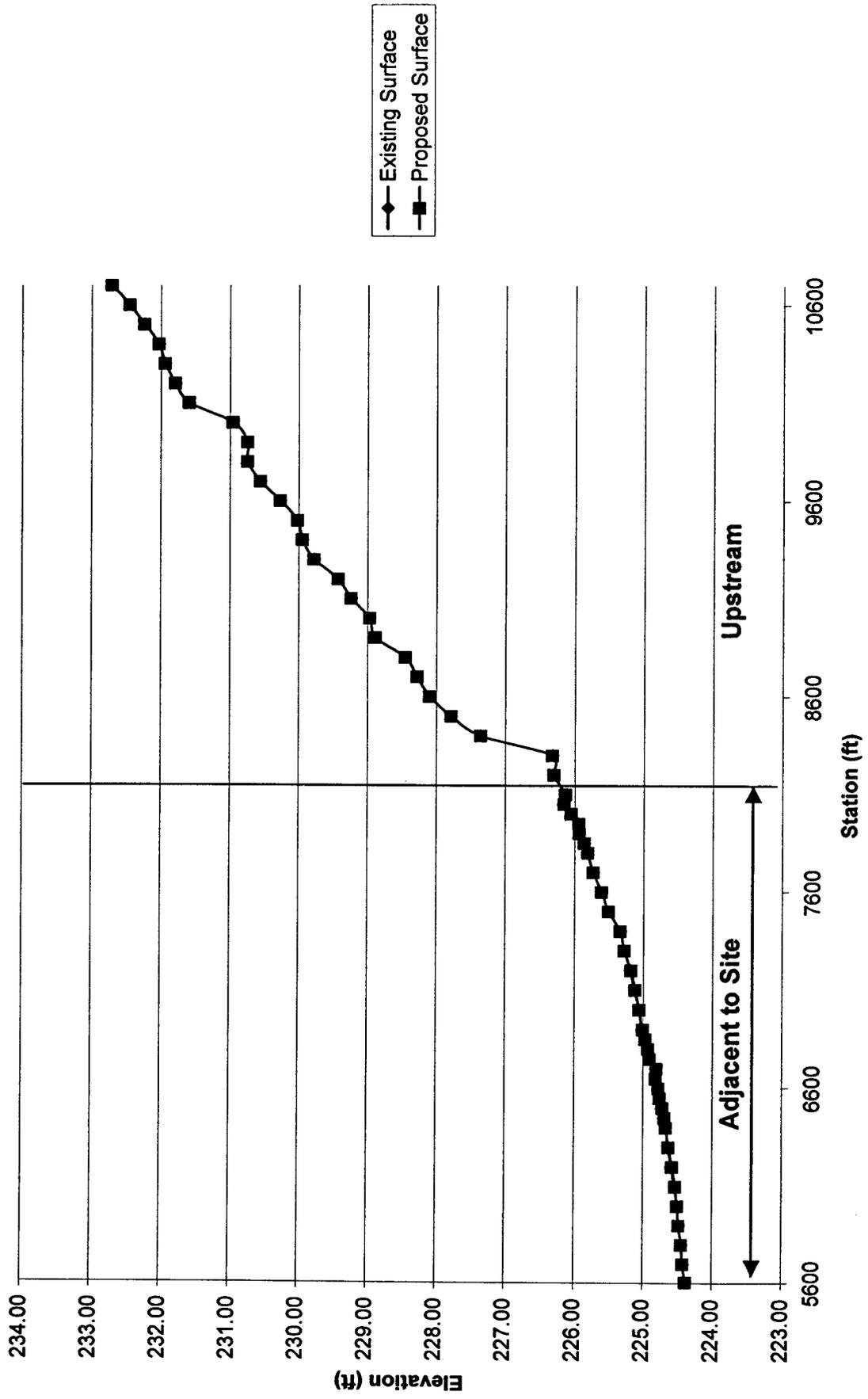
# Existing Water Surface along Burkhardt Creek (100-year flood)



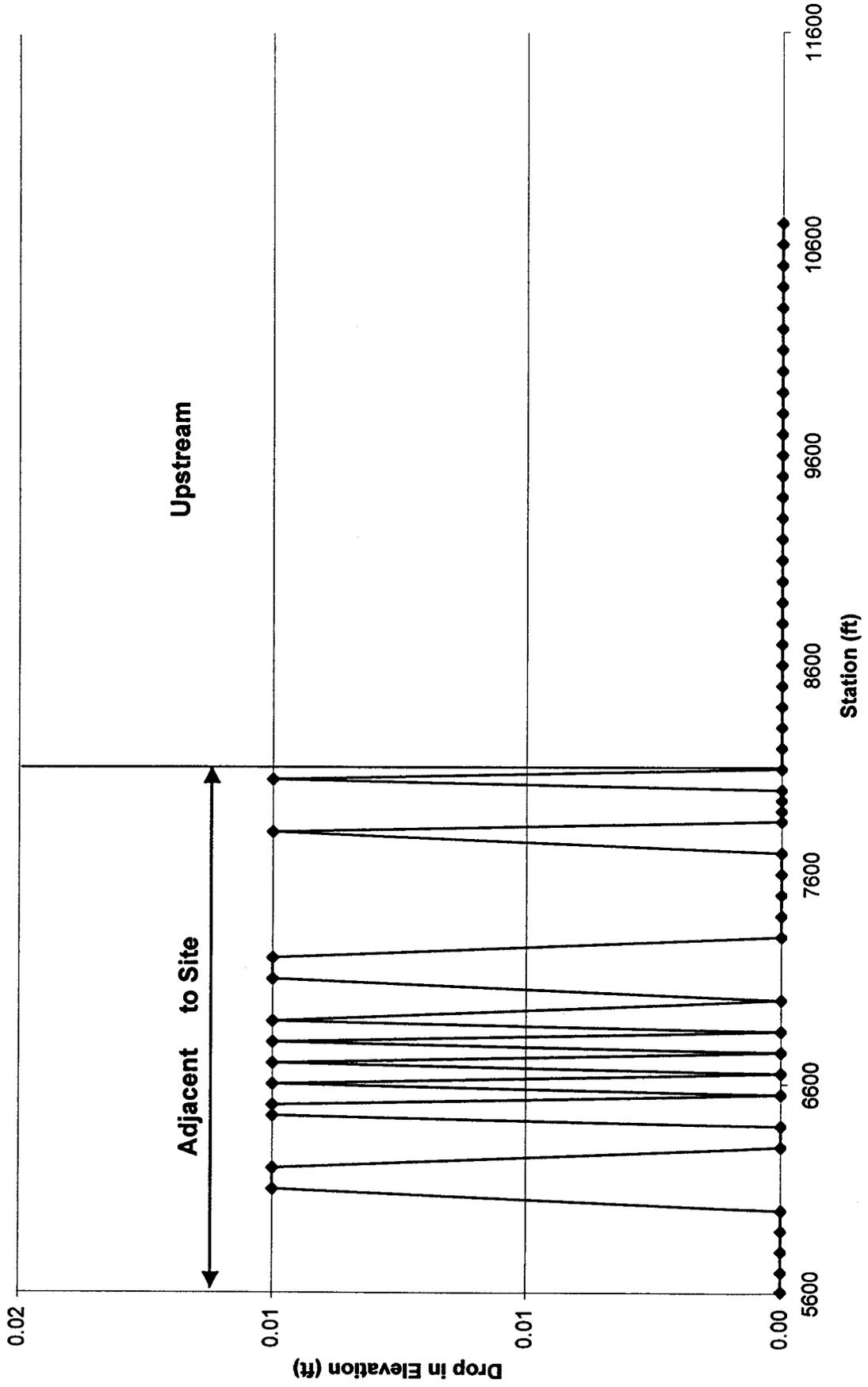
**Proposed Water Surface Elevation Table**

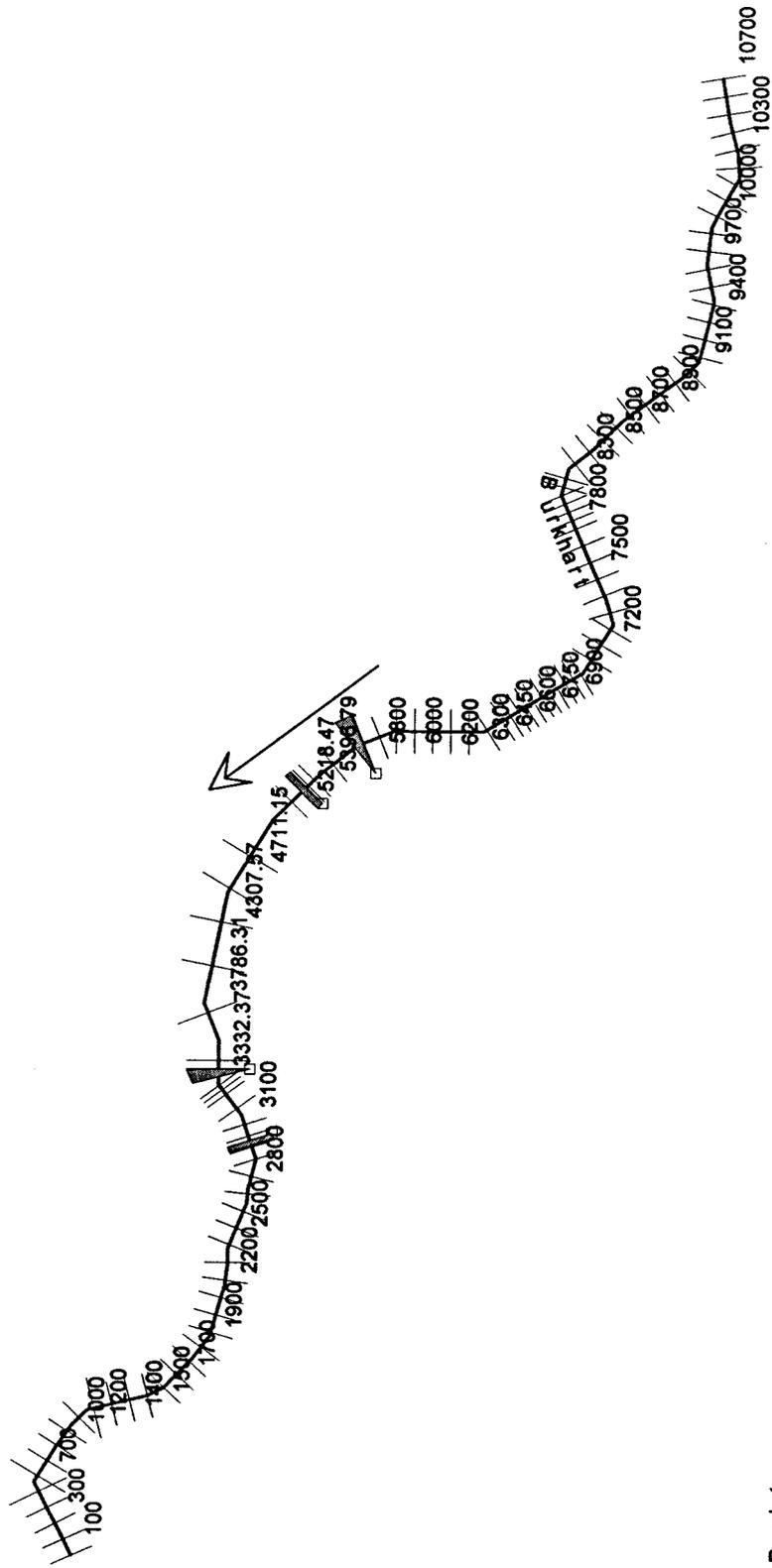
Station	Proposed WS		Station	Proposed WS		Station	Proposed WS
10700	232.71		6900	225.01		2600	219.15
10600	232.45		6850	224.97		2500	219.10
10500	232.24		6800	224.93		2400	218.85
10400	232.03		6750	224.91		2300	218.55
10300	231.94		6700	224.81		2200	218.07
10200	231.79		6650	224.82		2100	217.72
10100	231.59		6600	224.78		2000	216.09
10000	230.96		6550	224.76		1900	216.17
9900	230.75		6500	224.72		1800	215.44
9800	230.75		6450	224.69		1700	214.70
9700	230.56		6400	224.67		1600	213.74
9600	230.27		6300	224.63		1500	213.41
9500	230.02		6200	224.58		1400	212.46
9400	229.95		6100	224.53		1300	212.20
9300	229.78		6000	224.50		1200	211.92
9200	229.43		5900	224.48		1100	211.48
9100	229.24		5800	224.44		1000	211.26
9000	228.97		5700	224.42		900	210.87
8900	228.89		5600	224.38	Bridge	800	210.30
8800	228.45		5552	224.32		700	209.62
8700	228.28		5397	224.29		600	209.24
8600	228.10		5263	224.23		500	208.26
8500	227.79		5218	224.23		400	208.33
8400	227.36		5091	222.73		300	208.25
8300	226.82		4711	222.65		200	208.06
8200	226.30		4501	222.59		100	207.00
8100	226.13		4308	222.52			
8050	226.15	Enters Site	4058	222.46			
8000	226.05		3786	222.40			
7950	225.94		3499	222.36			
7900	225.93		3458	222.35			
7850	225.86		3371	220.78			
7800	225.81		3332	220.71			
7750	225.73		3300	220.66			
7700	225.61		3200	220.61			
7600	225.51		3100	220.45			
7500	225.34		3033	220.31			
7400	225.28		2970	220.01			
7300	225.18		2900	219.82			
7200	225.12		2800	219.63			
7100	225.06		2700	219.25			

# Water Surface Elevation for 100-yr Flood

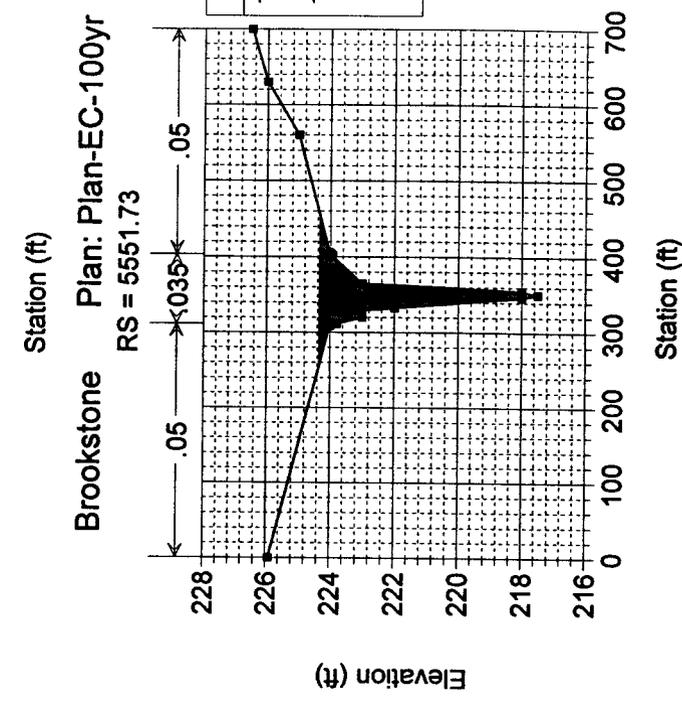
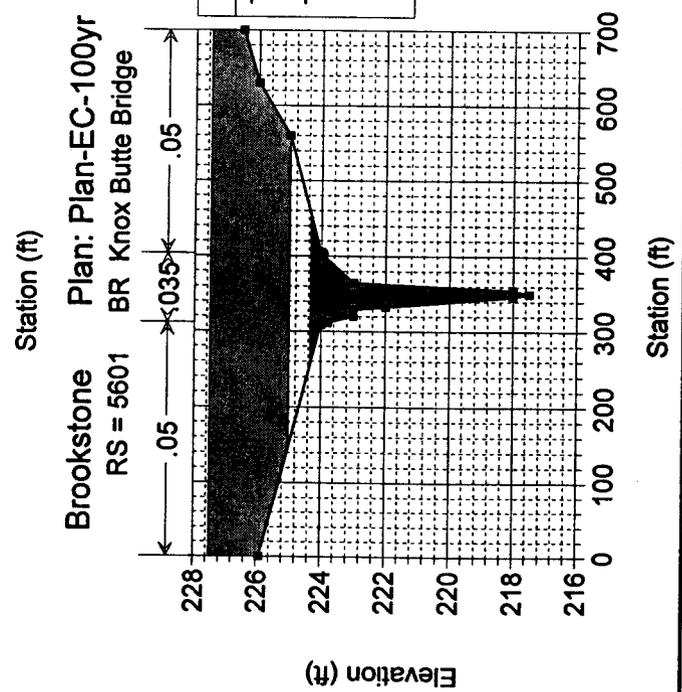
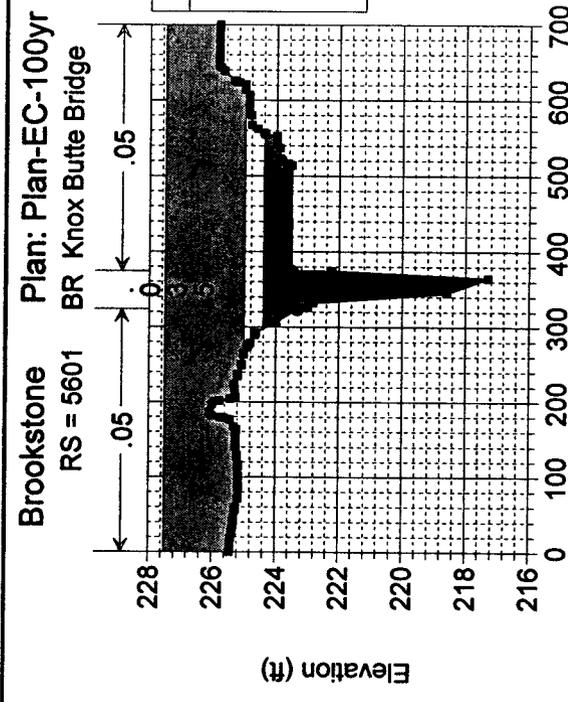
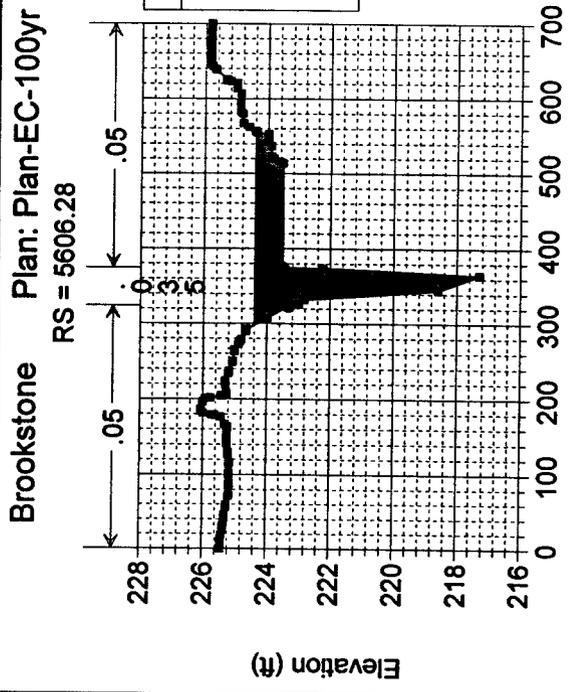


# Drop in Water Surface Elevation



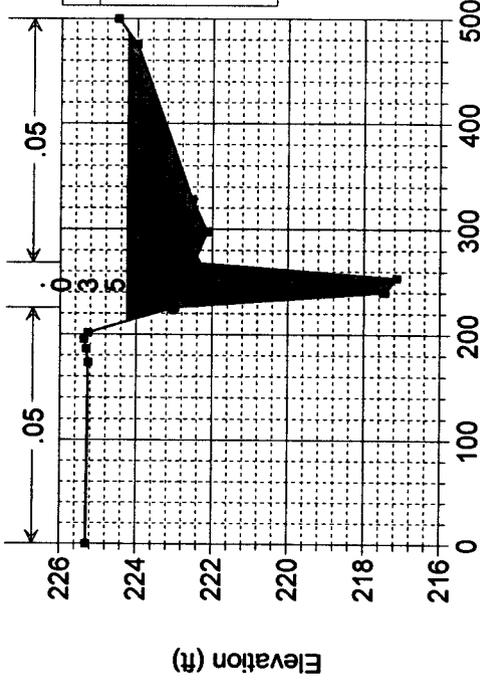


Reach-1



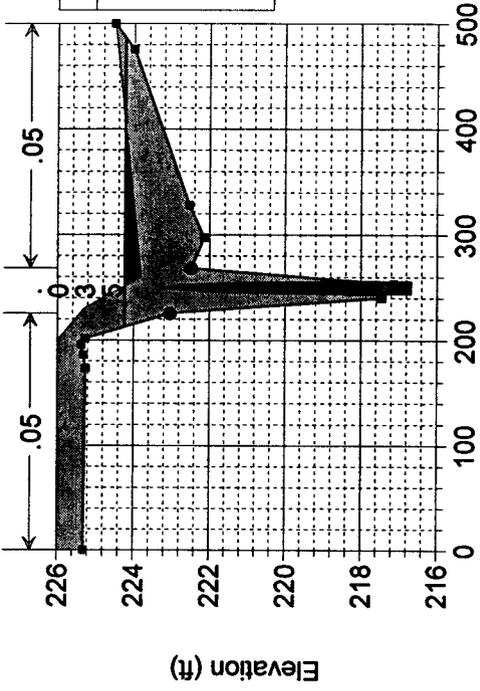
Brookstone Plan: Plan-EC-100yr

RS = 5218.47



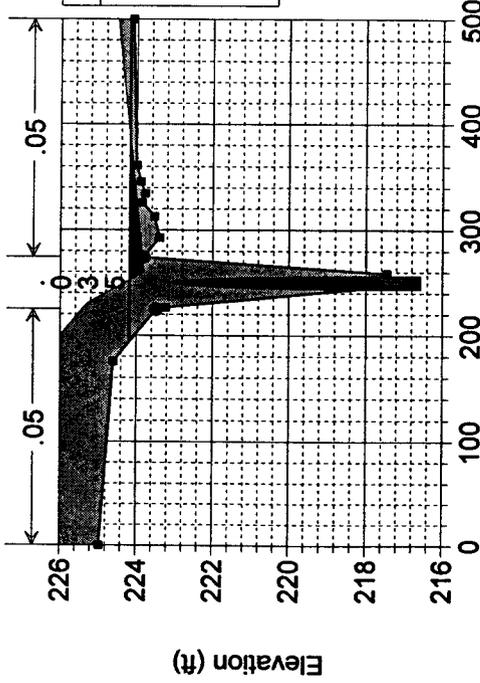
Brookstone Plan: Plan-EC-100yr

RS = 5165 Culv 78" CMP Arch Culvert



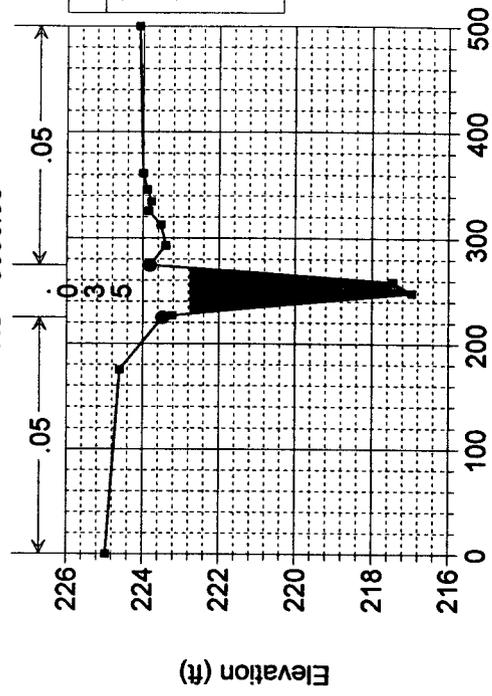
Brookstone Plan: Plan-EC-100yr

RS = 5165 Culv 78" CMP Arch Culvert



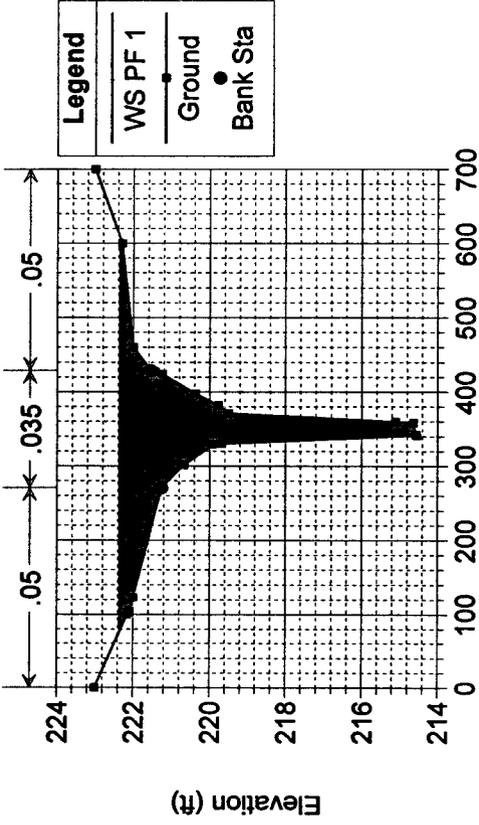
Brookstone Plan: Plan-EC-100yr

RS = 5090.58



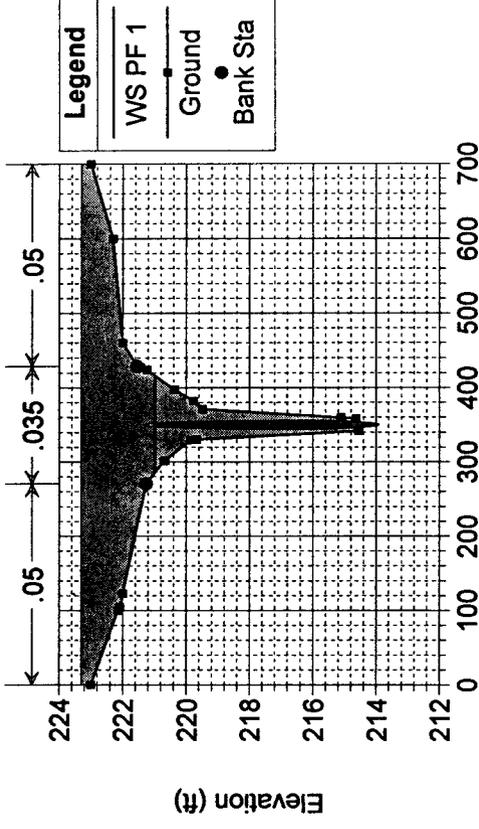
Brookstone Plan: Plan-EC-100yr

RS = 3458.31



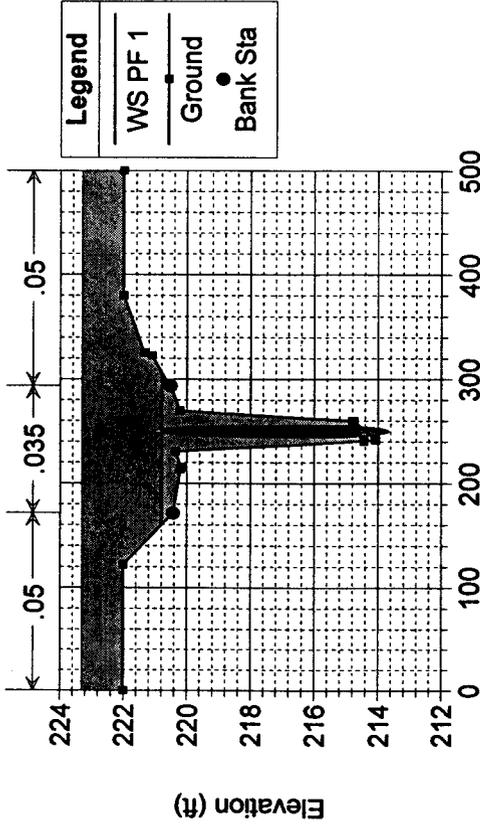
Brookstone Plan: Plan-EC-100yr

RS = 3407.50 Culv New arched Culvert



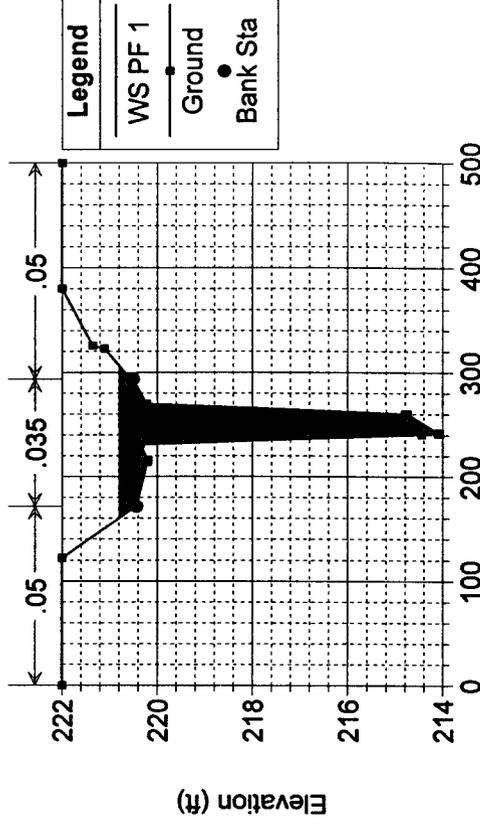
Brookstone Plan: Plan-EC-100yr

RS = 3407.50 Culv New arched Culvert

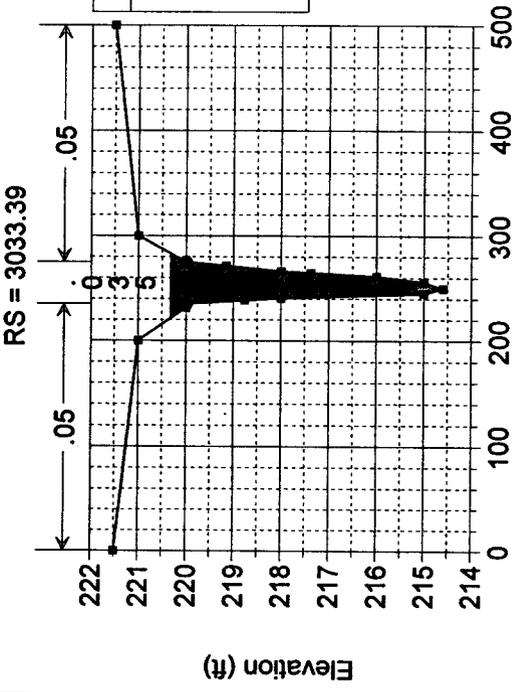


Brookstone Plan: Plan-EC-100yr

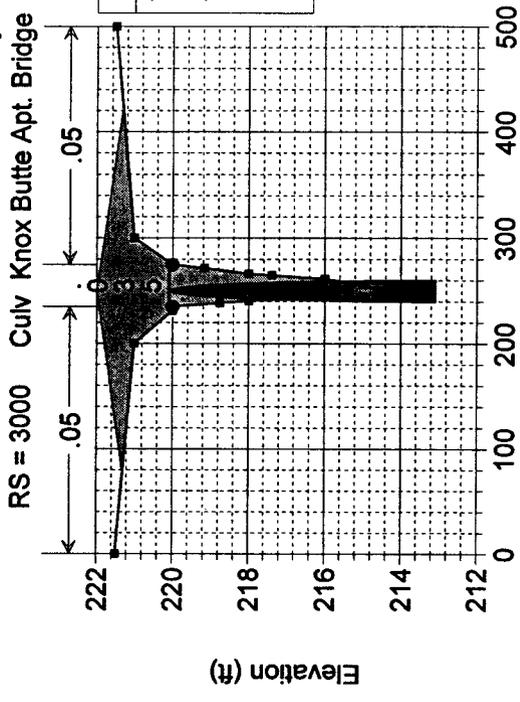
RS = 3371.42



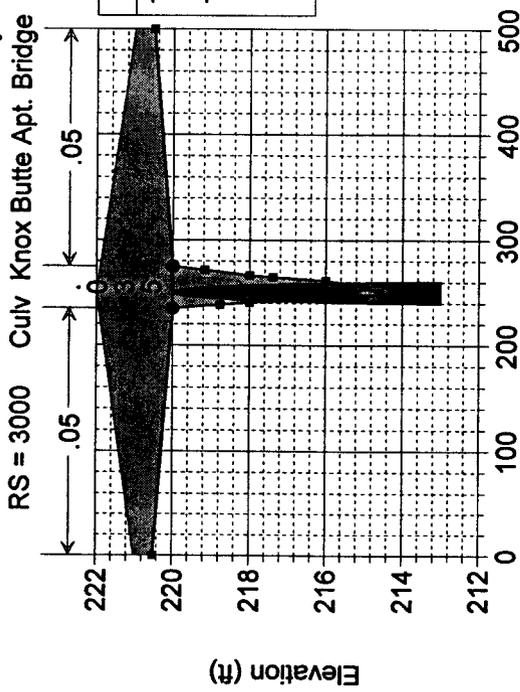
Brookstone Plan: Plan-EC-100yr  
RS = 3033.39



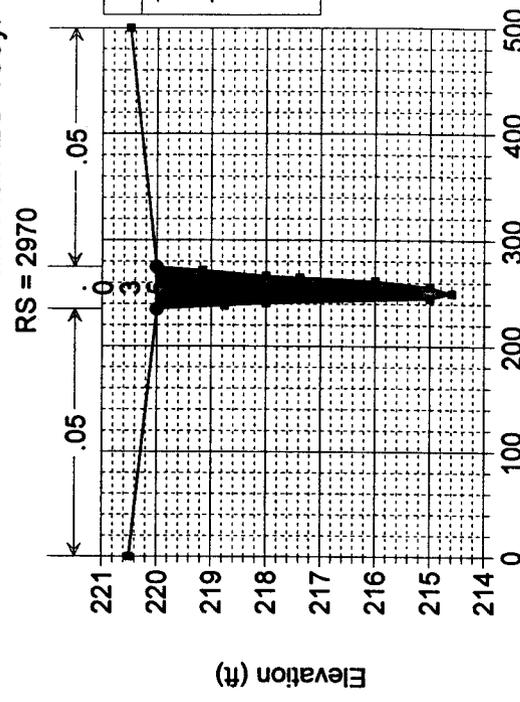
Brookstone Plan: Plan-EC-100yr  
RS = 3000 Culv Knox Butte Apt. Bridge

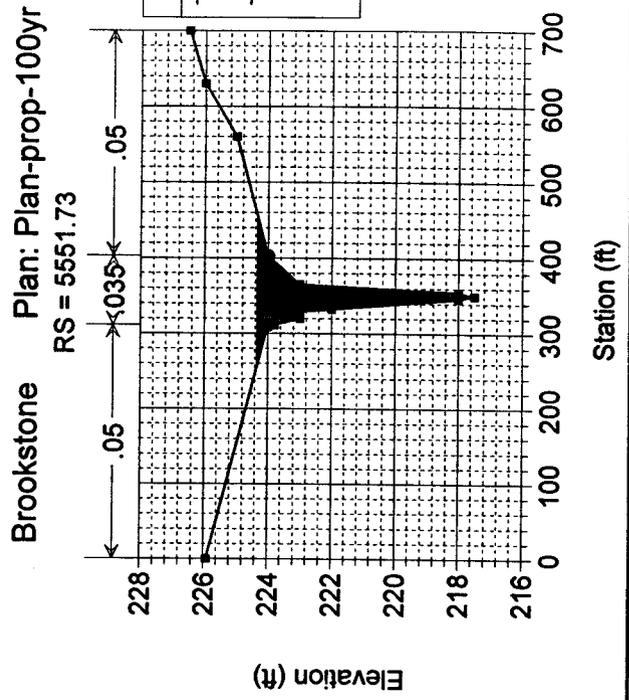
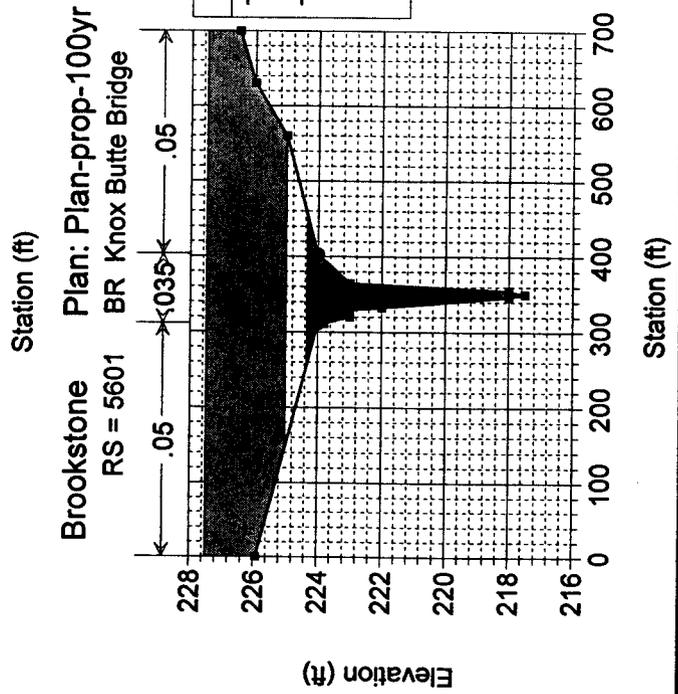
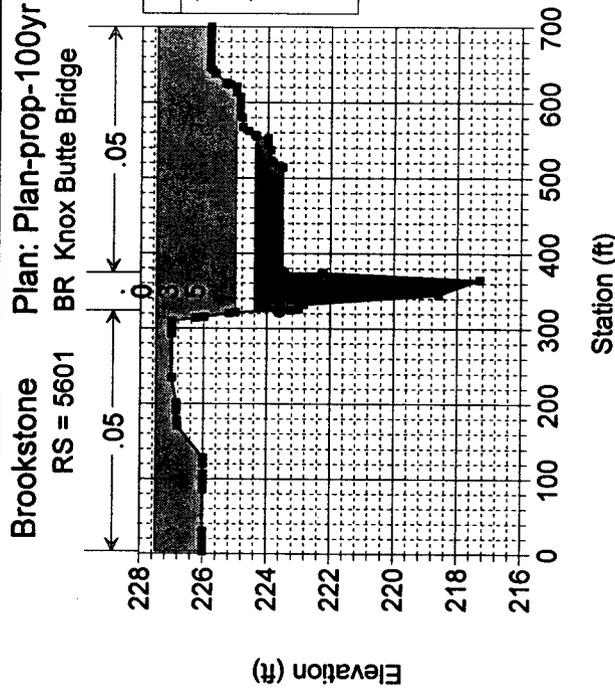
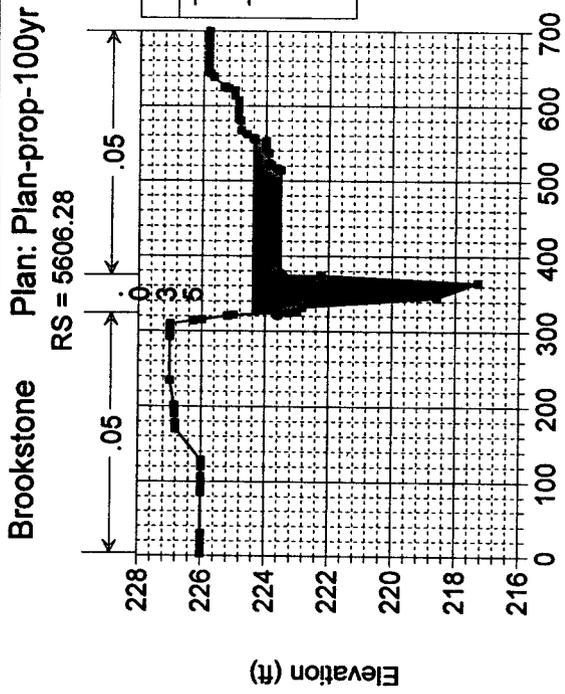


Brookstone Plan: Plan-EC-100yr  
RS = 3000 Culv Knox Butte Apt. Bridge



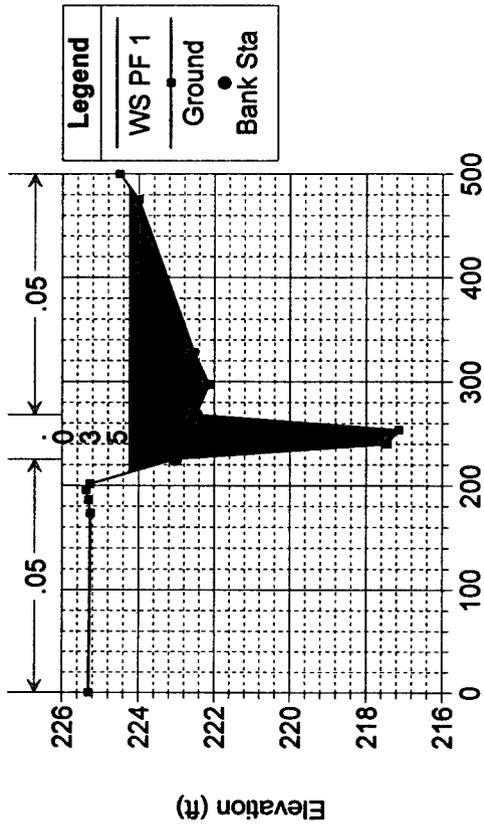
Brookstone Plan: Plan-EC-100yr  
RS = 2970





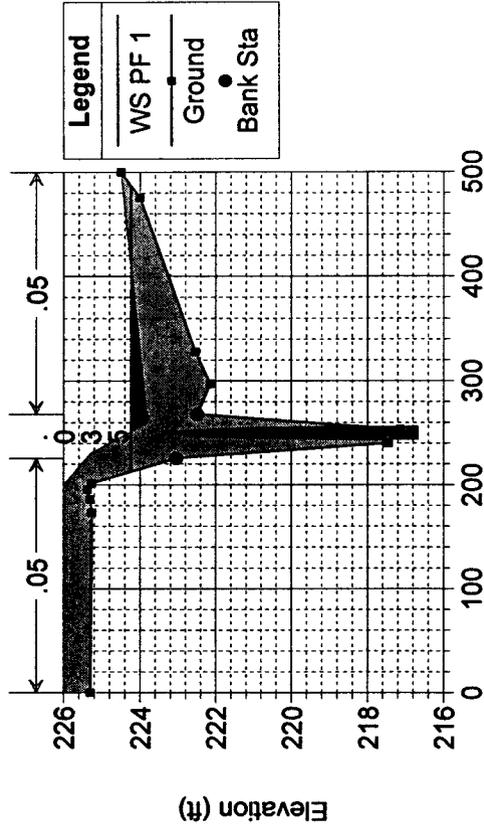
Brookstone Plan: Plan-prop-100yr

RS = 5218.47



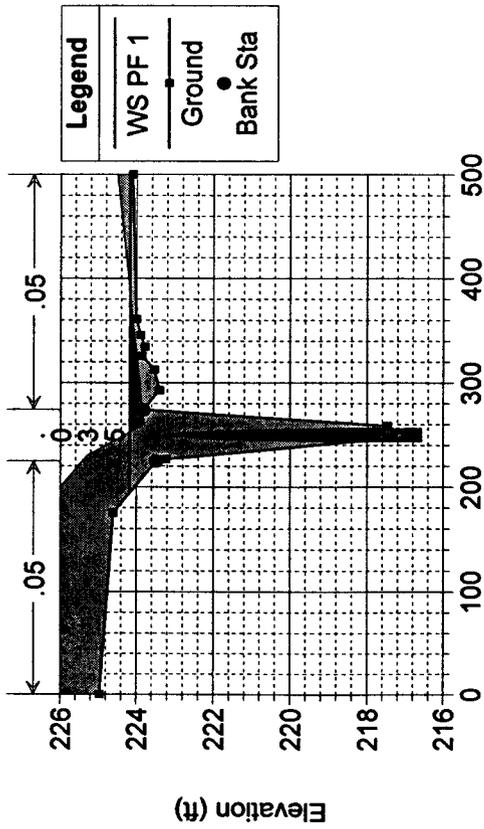
Brookstone Plan: Plan-prop-100yr

RS = 5165 Culv 78" CMP Arch Culvert



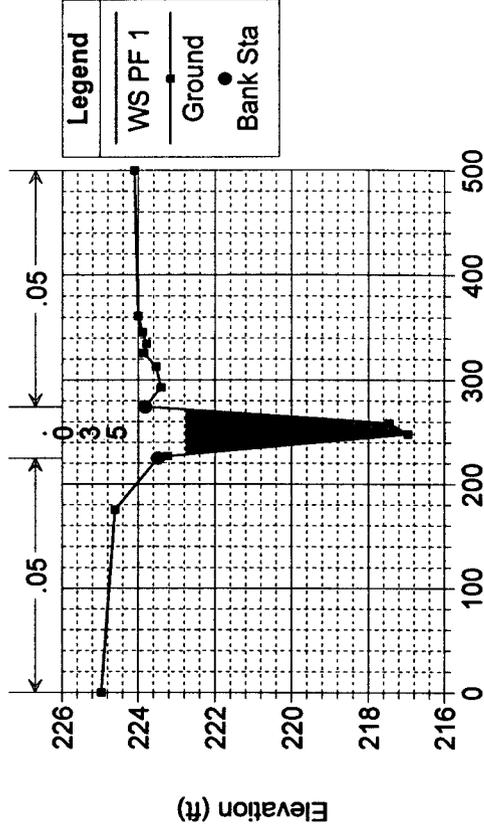
Brookstone Plan: Plan-prop-100yr

RS = 5165 Culv 78" CMP Arch Culvert

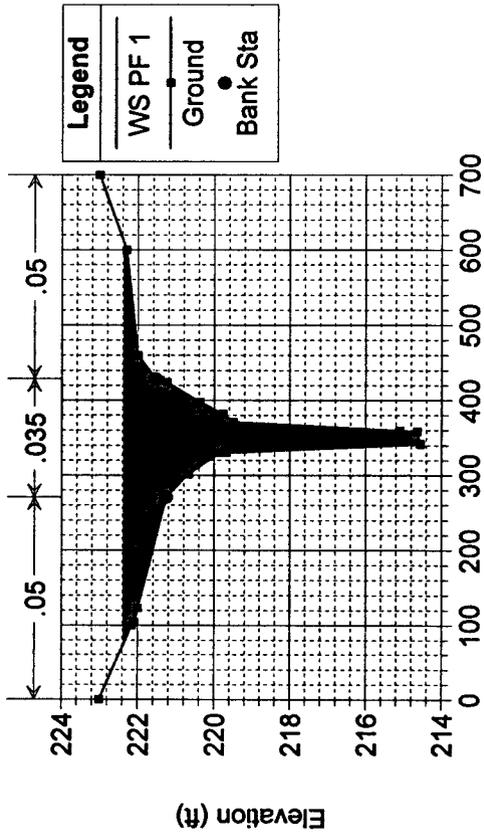


Brookstone Plan: Plan-prop-100yr

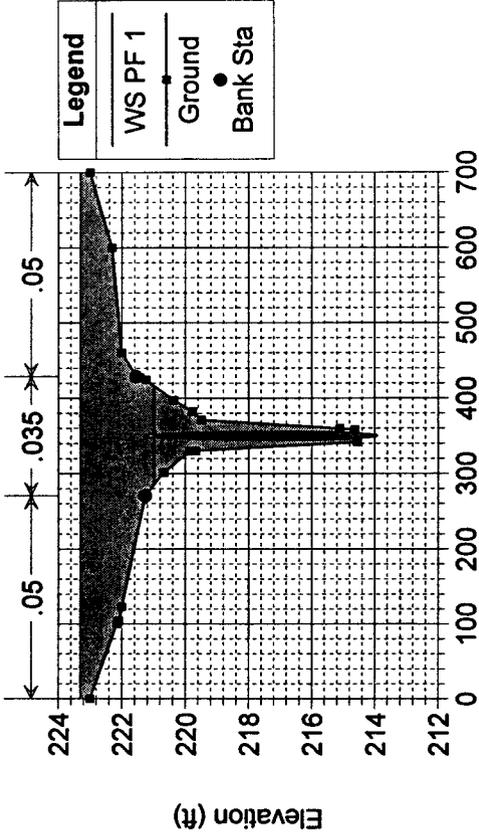
RS = 5090.58



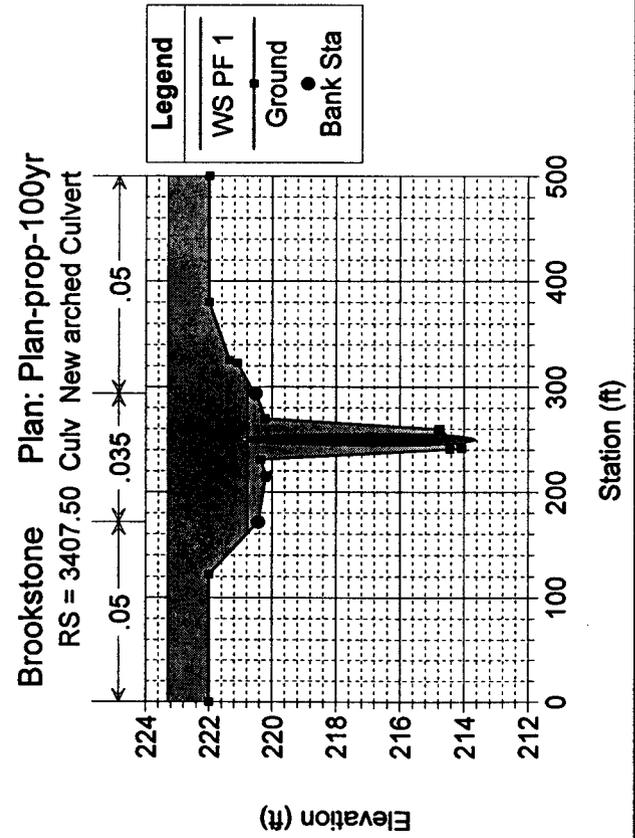
Brookstone Plan: Plan-prop-100yr  
RS = 3458.31



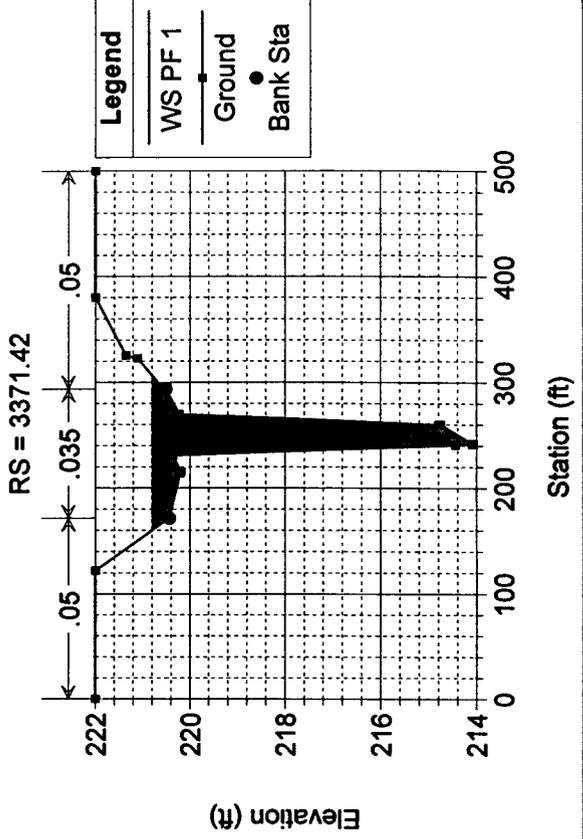
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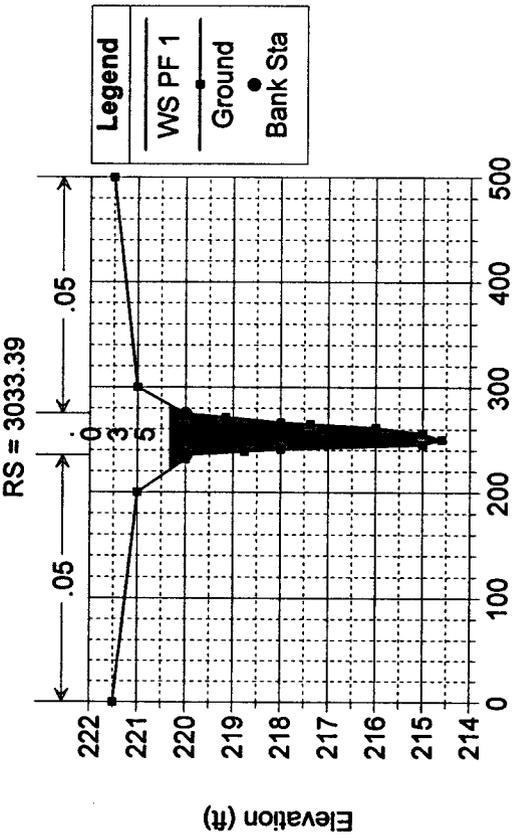
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RS = 3407.50 Culv New arched Culvert



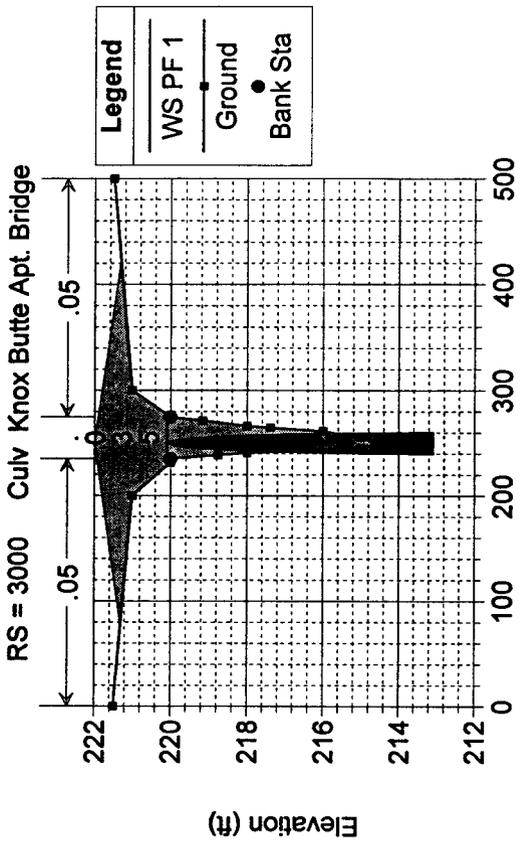
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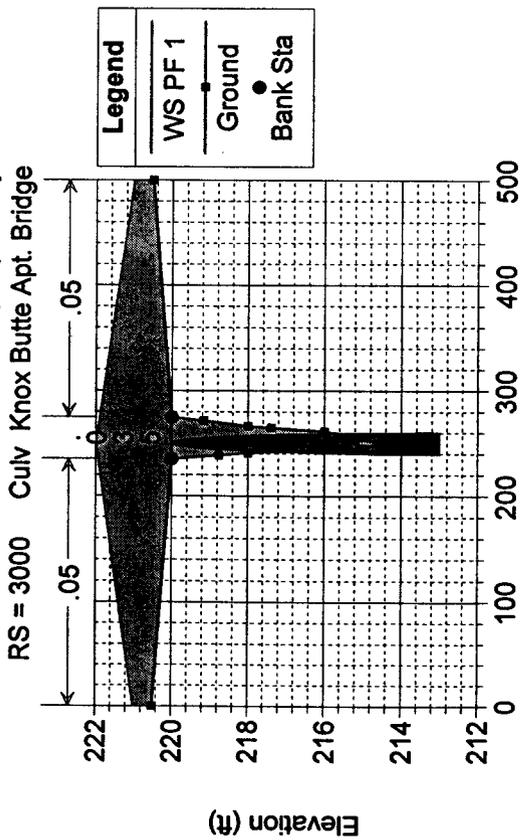
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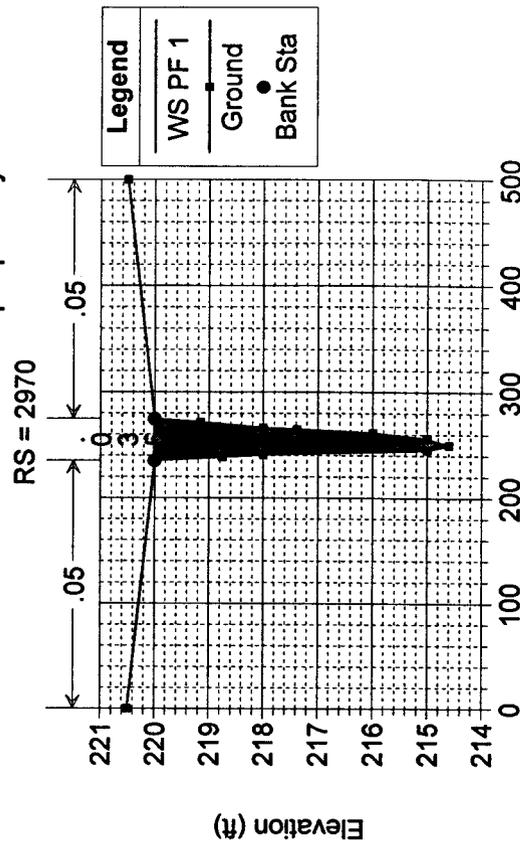
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RS = 3000 Culv Knox Butte Apt. Bridge



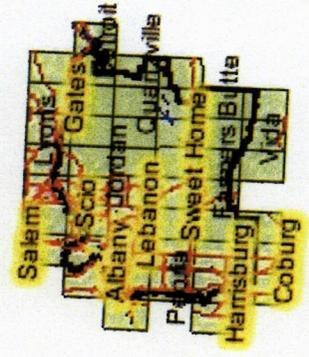
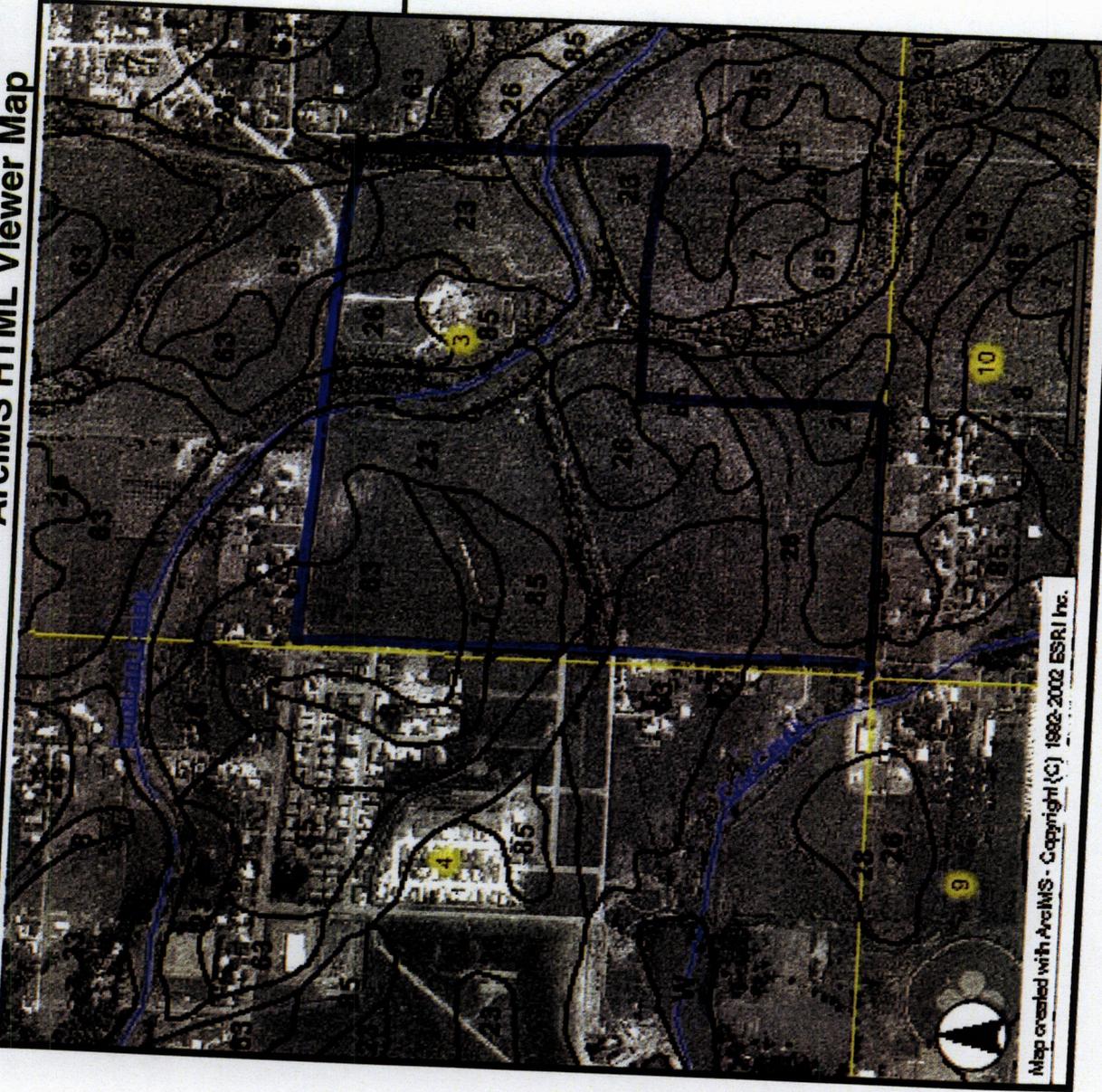
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RS = 3000 Culv Knox Butte Apt. Bridge



Brookstone Plan: Plan-prop-100yr  
RS = 2970



# ArcIMS HTML Viewer Map



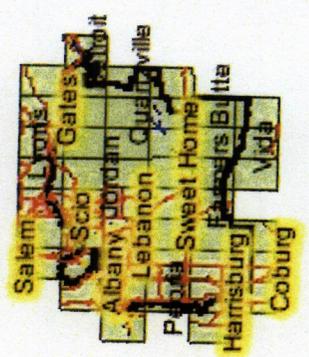
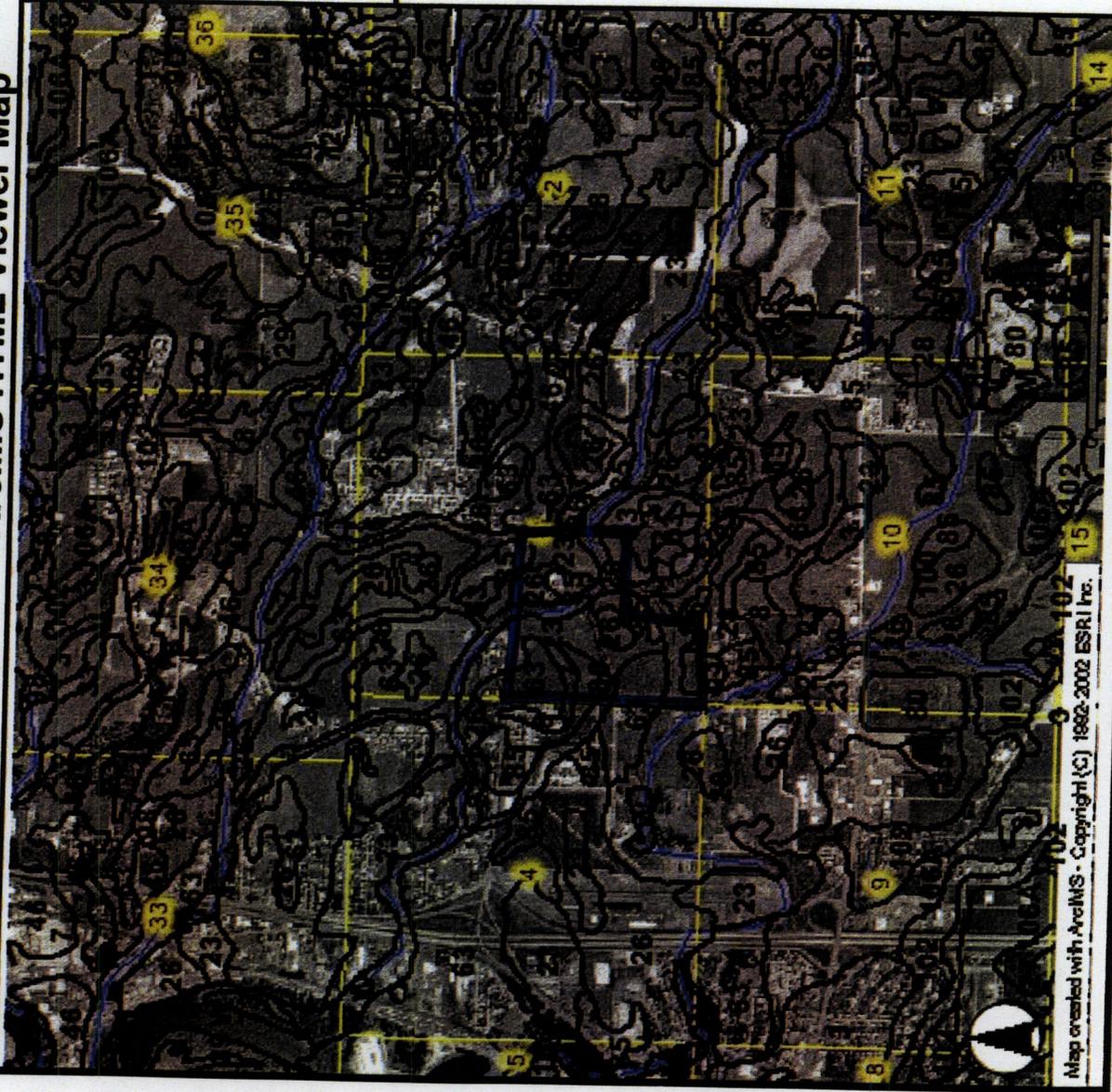
## Legend

- soils
- plss
- streams
- airphoto.sid

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# ArcIMS HTML Viewer Map



## Legend

- soils
- plss
- streams
- airphoto.sid

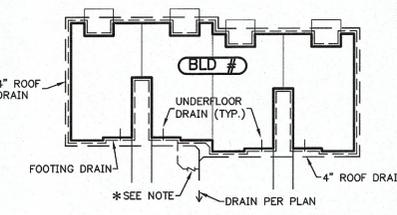
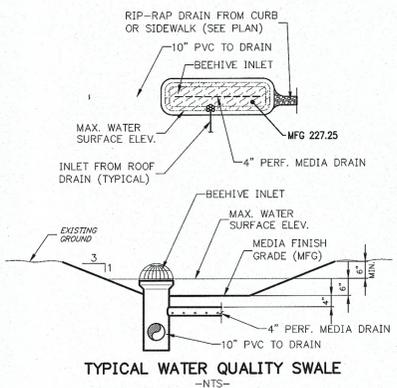
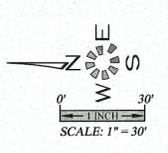
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**Table 2-2a** Runoff curve numbers for urban areas <sup>1/</sup>

Cover description	Average percent impervious area <sup>2/</sup>	Curve numbers for hydrologic soil group			
		A	B	C	D
<b>Fully developed urban areas (vegetation established)</b>					
Open space (lawns, parks, golf courses, cemeteries, etc.) <sup>3/</sup> :					
Poor condition (grass cover < 50%) .....		68	79	86	89
Fair condition (grass cover 50% to 75%) .....		49	69	79	84
Good condition (grass cover > 75%) .....		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way) .....		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way) .....		98	98	98	98
Paved; open ditches (including right-of-way) .....		83	89	92	93
Gravel (including right-of-way) .....		76	85	89	91
Dirt (including right-of-way) .....		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) <sup>4/</sup> .....		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders) .....		96	96	96	96
Urban districts:					
Commercial and business .....	85	89	92	94	95
Industrial .....	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses) .....	65	77	85	90	92
1/4 acre .....	38	61	75	83	87
1/3 acre .....	30	57	72	81	86
1/2 acre .....	25	54	70	80	85
1 acre .....	20	51	68	79	84
2 acres .....	12	46	65	77	82
<b>Developing urban areas</b>					
Newly graded areas (pervious areas only, no vegetation) <sup>5/</sup> .....		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

<sup>1</sup> Average runoff condition, and  $I_p = 0.2S$ .<sup>2</sup> The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.<sup>3</sup> CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.<sup>4</sup> Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.<sup>5</sup> Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

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\* NOTE: ALL BUILDINGS TO CONNECT TO ROOF DRAIN WITH BACKFLOW PREVENTION DEVICE EXCEPT BUILDING 10 FOOTING / UNDERFLOOR DRAIN TO BE CONNECTED TO 10" PVC PER PLAN

- SW 227.00 SIDEWALK FINISH GRADE
- FG 227.00 PAVEMENT FINISH GRADE
- MFG 226.75 MEDIA FINISH GRADE

WATER QUALITY BASIN CHART

BASIN No.	INLET RIM	MEDIA F.G.	4" DRAIN INVERT	10" DRAIN INVERT
WQ-1	227.00	226.50	226.16	225.00
WQ-2	225.50	225.00	224.66	223.50
WQ-3	226.00	225.50	225.16	224.00
WQ-4	227.25	226.75	226.41	225.25
WQ-5	226.75	226.25	225.91	224.75
WQ-6	227.25	226.75	226.41	225.25
WQ-7	226.50	226.00	225.66	224.50
WQ-8	227.75	227.25	226.91	225.75
WQ-9	227.75	227.25	226.91	225.75
WQ-10	226.25	225.75	225.41	224.25
WQ-11	227.25	226.75	226.41	225.25
WQ-12	227.25	226.75	226.41	225.25
WQ-13	227.25	226.75	226.41	225.25
WQ-14	226.25	225.75	225.41	224.25
WQ-15	227.25	226.75	226.41	225.25
WQ-16	227.25	226.75	226.41	225.25
WQ-17	226.25	225.75	225.41	224.25
WQ-18	227.50	227.00	226.66	225.50

**GRADING & DRAINAGE PLAN - NORTH**

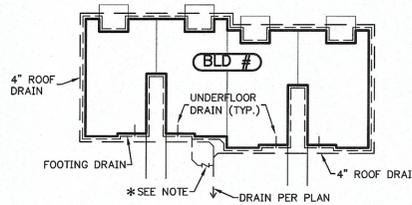
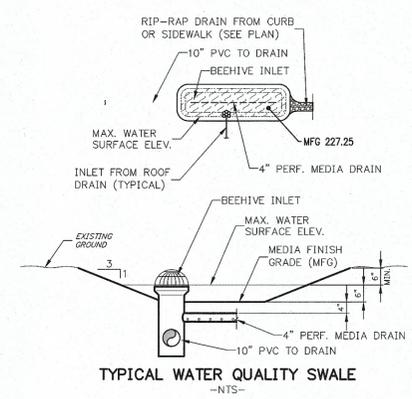
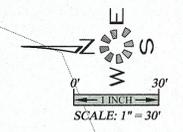
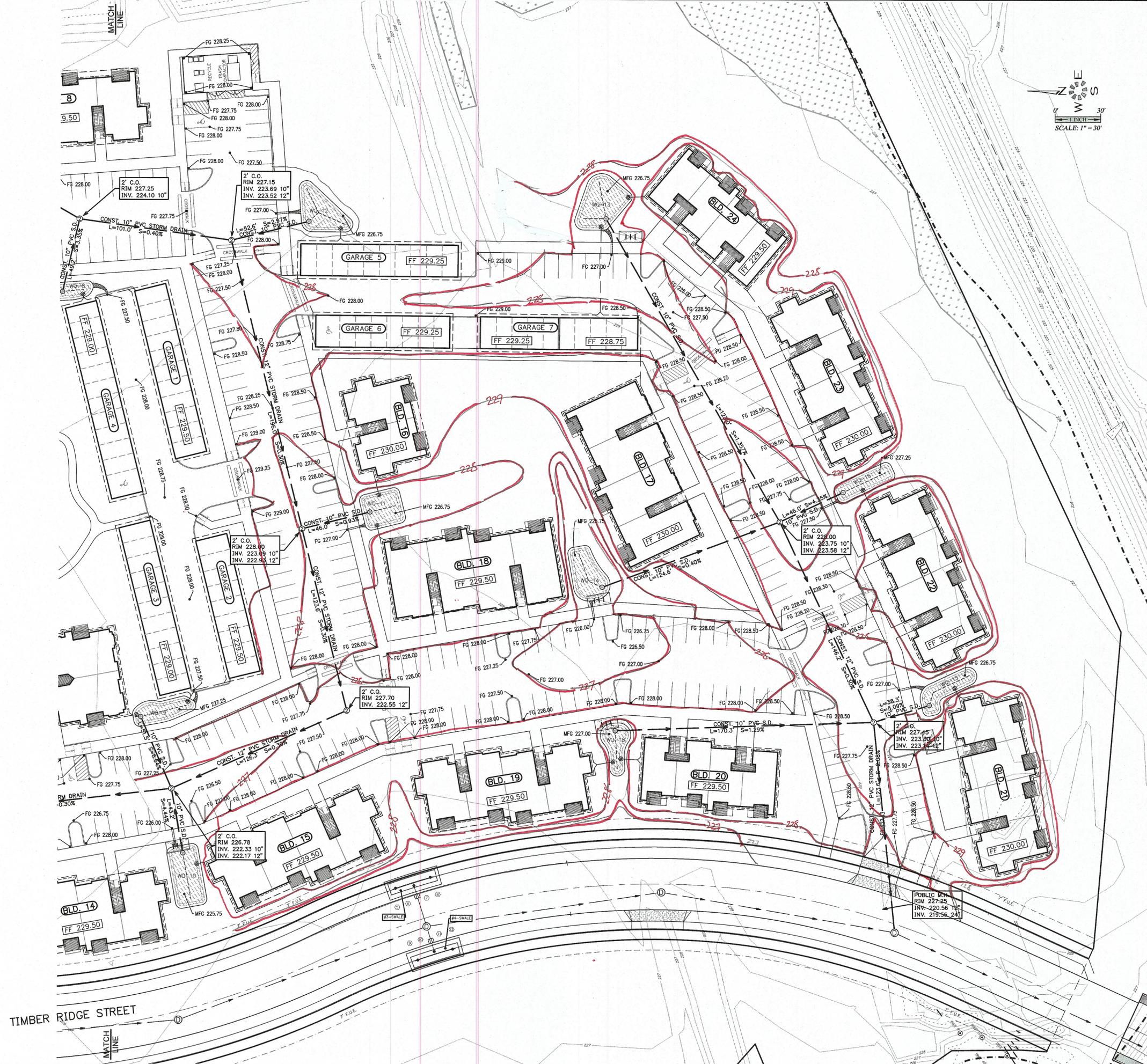
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Drawn: C.D.S.  
Checked: B.M.G.  
Date: MAR 2018  
Scale: AS SHOWN



EXPIRES: 06-30-2021  
JOB # 6639



**TYPICAL FOOTING / UNDERFLOOR / ROOF DRAIN CONFIGURATION**  
-NTS-

\* NOTE: ALL BUILDINGS TO CONNECT TO ROOF DRAIN WITH BACKFLOW PREVENTION DEVICE EXCEPT BUILDING TO FOOTING / UNDERFLOOR DRAIN TO BE CONNECTED TO 10" PVC PER PLAN

- SW 227.00 SIDEWALK FINISH GRADE
- FG 227.00 PAVEMENT FINISH GRADE
- MFG 226.75 MEDIA FINISH GRADE

**WATER QUALITY BASIN CHART**

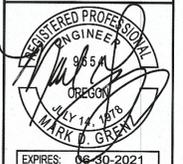
BASIN No.	INLET RIM	MEDIA F.G.	4" DRAIN INVERT	10" DRAIN INVERT
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WQ-3	226.00	225.50	225.16	224.00
WQ-4	227.25	226.75	226.41	225.25
WQ-5	226.75	226.25	225.91	224.75
WQ-6	227.25	226.75	226.41	225.25
WQ-7	226.50	226.00	225.66	224.50
WQ-8	227.75	227.25	226.91	225.75
WQ-9	227.75	227.25	226.91	225.75
WQ-10	226.25	225.75	225.41	224.25
WQ-11	227.25	226.75	226.41	225.25
WQ-12	227.25	226.75	226.41	225.25
WQ-13	227.25	226.75	226.41	225.25
WQ-14	226.25	225.75	225.41	224.25
WQ-15	227.25	226.75	226.41	225.25
WQ-16	227.25	227.25	226.91	225.75
WQ-17	226.25	225.75	225.41	224.25
WQ-18	227.50	227.00	226.66	225.50

**GRADING & DRAINAGE PLAN - SOUTH**

**BRANDIS MEADOWS APARTMENT COMPLEX**

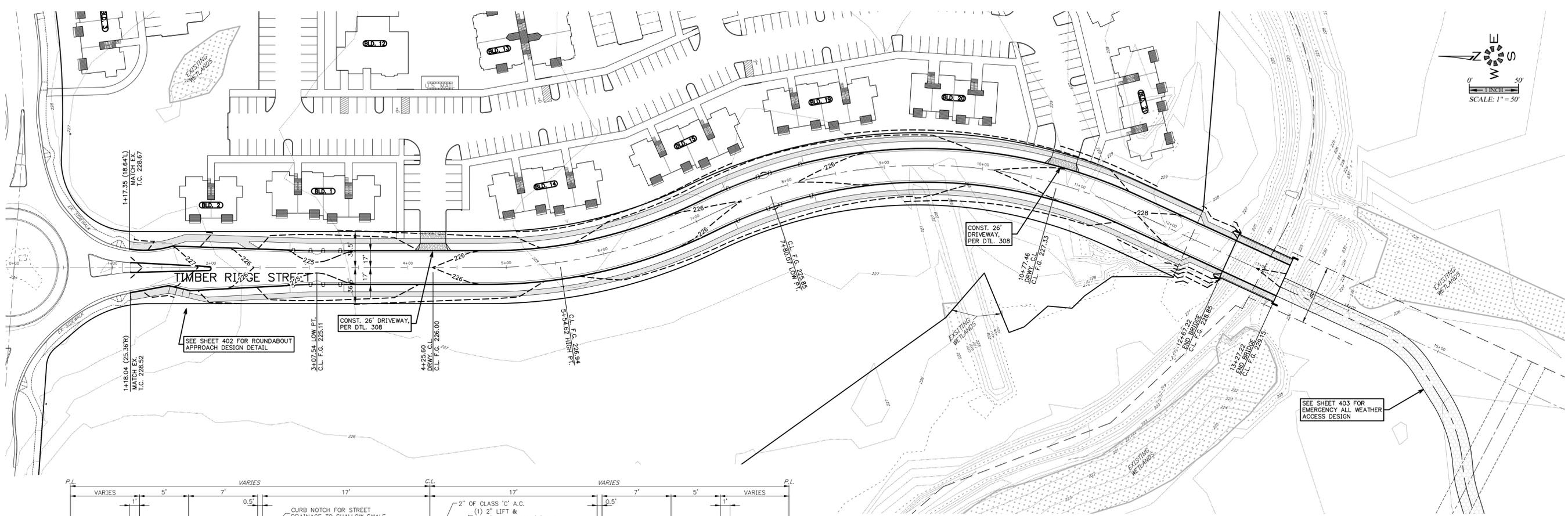
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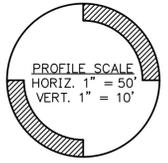
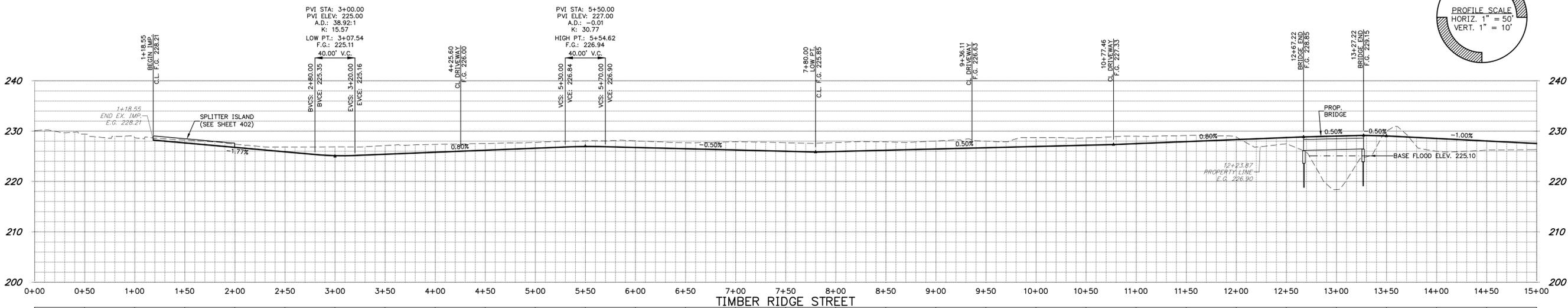
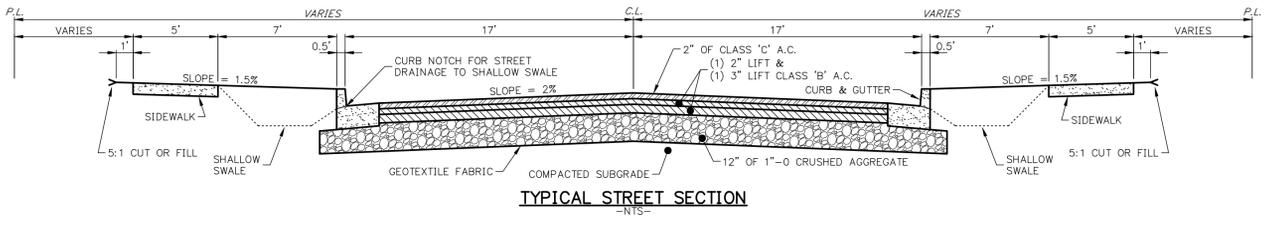
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JOB # 6639

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**STREET IMPROVEMENT  
 PLAN - TIMBER RIDGE  
 STREET**

**BRANDIS MEADOWS  
 APARTMENT COMPLEX**



TIMBER RIDGE STREET	
E.G. 230.1 C.L.	F.G. 227.54 C.L.
E.G. 229.4 C.L.	F.G. 226.89 C.L.
F.G. 228.7 C.L.	F.G. 226.24 C.L.
E.G. 228.0 C.L.	F.G. 225.59 C.L.
F.G. 227.65 C.L.	F.G. 224.94 C.L.
E.G. 227.4 C.L.	F.G. 224.29 C.L.
F.G. 226.77 C.L.	F.G. 223.64 C.L.
E.G. 226.8 C.L.	F.G. 222.99 C.L.
F.G. 225.88 C.L.	F.G. 222.34 C.L.
E.G. 226.9 C.L.	F.G. 221.69 C.L.
F.G. 225.13 C.L.	F.G. 221.04 C.L.
E.G. 227.1 C.L.	F.G. 220.39 C.L.
F.G. 225.40 C.L.	F.G. 219.74 C.L.
E.G. 227.4 C.L.	F.G. 219.09 C.L.
F.G. 225.80 C.L.	F.G. 218.44 C.L.
E.G. 227.5 C.L.	F.G. 217.79 C.L.
F.G. 226.20 C.L.	F.G. 217.14 C.L.
E.G. 227.8 C.L.	F.G. 216.49 C.L.
F.G. 226.60 C.L.	F.G. 215.84 C.L.
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F.G. 226.94 C.L.	F.G. 214.54 C.L.
E.G. 228.1 C.L.	F.G. 213.89 C.L.
F.G. 226.75 C.L.	F.G. 213.24 C.L.
E.G. 227.7 C.L.	F.G. 212.59 C.L.
F.G. 225.95 C.L.	F.G. 211.94 C.L.
E.G. 227.8 C.L.	F.G. 211.29 C.L.
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E.G. 228.3 C.L.	F.G. 227.54 C.L.

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 Drawn: D.G.G.  
 ProjMgr: B.M.G.  
 Date: MAR 2018  
 Scale: AS SHOWN  
 As-Built: ----



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