

Site Plan Review, Driveway Approach Permit, and Adjustments

Application Submittal
Date:

September 2024

Submitted To:

City of Salem Planning

Project Location:

Marion Co. Tax Lot 072W32D002400

Applicant(s):

Studio 3 Architecture

Applicant's Land Use
Representative:

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Aerial View of Subject Property and Existing Development



Section 1: Property Background and Request

The applicant, 7 Star Salem, LLC, is presenting a consolidated class 3 site plan review, class 2 adjustment, and class 2 driveway approach application for the development of a six-pump fueling station, convenience store, parking, and associated site improvements.

Section 2: Existing Conditions

The development site is approximately 1.54 acres in size and is described as Marion County Assessor Map and Tax Lot 072W32D002400, a Marion County Tax Map is included within the exhibits list identifying the subject properties.

The site is located within corporate City limits of the City of Salem. The Salem Area Comprehensive Plan (SACP) map has a designation for the property of "Industrial Commercial". The subject property is located outside of the City's Urban Service Area (USA).

The Comprehensive Plan designations of surrounding properties include:

North: Across Macleay Road SE, MF "Multi-Family Residential" and IND "Industrial"

South: Marion County – Outside Corporate City Limits

East: Marion County – Outside Corporate City Limits

West: IC "Industrial Commercial"

The subject property is zoned IC (Industrial Commercial) and the surrounding properties are zoned as follows:

North: Across Macleay Road SE, RM2 (Multiple Family Residential 2) and IBC (Industrial Business Campus)

South: Marion County – Outside Corporate City Limits

East: Marion County – Outside Corporate City Limits

West: IC (Industrial Commercial)

Section 3: Findings Applicable to Administrative Procedures

[Chapter 300 – Procedures for Land Use Applications and Legislative Land Use Proposals](#)
[Section 300.001 – Purpose](#)

The purpose of this chapter is to establish uniform procedures for the review and processing of land use applications, and to establish procedures for legislative land use proposals. This chapter is intended to make the land use application review process clear and understandable

for applicants; to facilitate timely review of land use applications by the City; and to enable the public to effectively participate in the local land use decision making process.

Section 300.300 – Pre-Application Conference

- (a) *Purpose.* Pre-application conferences are intended to familiarize applicants with the requirements of the UDC; to provide applicants with an opportunity to meet with city staff to discuss proposed projects in detail; and to identify approval criteria, standards, and procedures prior to filing a land use application. The pre-application conference is intended to be a tool to orient applicants and assist them in navigating the land use process, but is not intended to be an exhaustive review that identifies or resolves all potential issues, and does not bind or preclude the City from enforcing all applicable regulations or from applying regulations in a manner differently than may have been indicated at the time of the pre-application conference.
- (b) *Applicability and waiver of pre-application requirement.*
 - (1) Pre-application conferences are mandatory for those land use actions identified under Table 300-2 as requiring a pre-application conference.
 - (2) Nothing in this section shall preclude an applicant from voluntarily requesting a pre-application conference for any other land use action.
 - (3) Notwithstanding the provisions of this section, a mandatory pre-application conference may be waived by the Planning Administrator if the application is relatively simple, and good cause is shown by the applicant. An application for a waiver shall be made on forms provided by the Planning Administrator. The applicant for a waiver shall acknowledge that waiving the pre-application conference increases the risk of an application being rejected or processing delayed due to insufficient, incomplete, or incorrect information being provided. The decision of the Planning Administrator on an application to waive a pre-application conference is not appealable.
- (c) *Pre-application conference procedures.*
 - (1) *Application requirements.*
 - (A) *Application form.* Pre-application conference requests shall be made on forms provided by the Planning Administrator.
 - (B) *Submittal requirements.* Pre-application conference requests shall:
 - (i) Include a completed application form;
 - (ii) Include payment of the application fee;
 - (iii) Be accompanied by the information required, if any, for the specific pre-application conference sought; and

- (iv) Be accompanied by any additional information the applicant deems necessary to demonstrate the nature and scope of the proposal in sufficient detail to allow city staff to review and comment.
- (2) *Scheduling of pre-application conference.* Upon receipt of a complete application, the Planning Administrator shall schedule the pre-application conference. The Planning Administrator shall coordinate the involvement of other city departments, as appropriate, in the pre-application conference. Pre-application conferences are not open to the general public.
- (3) *Pre-application conference summary.* Subsequent to the pre-application conference, the Planning Administrator will provide the applicant with a written summary of the conference. The purpose of the written summary is to provide a preliminary assessment of the proposal, but shall not be deemed to be a recommendation by the City or any other outside agency or service provider on the merits of the proposal.
- (4) *Validity period for mandatory pre-application conferences; follow-up conferences.* A follow-up conference is required for those mandatory pre-application conferences that have already been held when:
 - (A) A complete application relating to the proposed development that was the subject of the pre-application conference has not been submitted within 18 months of the pre-application conference;
 - (B) The proposed use, layout, and/or design of the proposal have significantly changed; or
 - (C) The owner and/or developer of a project changes after the pre-application conference and prior to application submittal.

Applicant's Findings: Pursuant to table 300-2, the requested applications do not require a pre-application conference; however, the applicant requested and attended a pre-application conference on February 26, 2024 for the proposal.

Section 300.310 – Neighborhood Association Contact

- (a) *Purpose.* The purpose of neighborhood association contact is to provide an opportunity for neighborhood associations to learn of upcoming land use applications involving land within or adjacent to their boundaries in advance of applications being submitted. This encourages dialogue and provides opportunities for feedback and resolution of potential issues prior to filing.

Applicant's Findings: The applicant understands the purpose of requiring neighborhood association contact.

(b) *Applicability.*

- (1) Neighborhood association contact, as provided in this section, is required for those land use applications identified under Table 300-2 as requiring neighborhood association contact.

Applicant's Findings: *Table 300-2 requires neighborhood association contact for the applications. The applicant's representative prepared a letter and sent it to the chair and land use chair of the neighborhood association. The letter was sent via email. The email and the letter are included with this submittal.*

- (2) When multiple land use applications are consolidated into a single application and one or more of the applications involved include a requirement for neighborhood association contact and the other applications do not require neighborhood association contact, the entire consolidated application shall require neighborhood association contact.

Applicant's Findings: *The applicant understands because the application is consolidated, neighborhood association contact is required for all applications included. As demonstrated by the contact materials provided, the applicant notified the chair and land use chair of all applications being requested. This criterion is met.*

- (3) Nothing in this section shall be construed to preclude additional contact between an applicant and neighborhood association beyond the requirements of this section, or an applicant from contacting a neighborhood association where no neighborhood association contact is required.

Applicant's Findings: *The applicant understands nothing in this section shall preclude additional contact between the applicant and neighborhood association.*

- (c) *Process.* Prior to submitting a land use application requiring neighborhood association contact, the applicant shall contact the City-recognized neighborhood association(s) whose boundaries include, or are adjacent to, the subject property via e-mail or mailed letter. The e-mail or mailed letter shall:

- (1) Be sent to the chair(s) and land use chair(s) of the applicable neighborhood association(s) prior to submitting the land use application; and
- (2) Contain the following information:
 - (A) The name, telephone number, and e-mail address of the applicant;
 - (B) The address of the subject property;
 - (C) A summary of the proposal;
 - (D) A conceptual site plan, if applicable, that includes the proposed development; and

(E) The date on which the e-mail or letter is being sent;

Applicant's Findings: *The applicant emailed a letter with information relating to the proposal to both the chair and land use chair of the neighborhood association. The letter included all the required information listed above. This criterion is met.*

(d) *Effect on subsequent land use application submittal.* A land use application requiring neighborhood association contact shall not be accepted, as provided under SRC 300.210, unless it is accompanied by a copy of the e-mail or letter that was sent to the neighborhood association, and a list of the e-mail or postal addresses to which the e-mail or letter was sent.

Applicant's Findings: *The applicant understands the city is unable to accept applications requiring neighborhood association contact prior to contact being made. However, the applicant has demonstrated satisfying this criterion prior to submittal.*

Section 4: Findings Applicable to Class 3 Site Plan Review

Chapter 220 – Site Plan Review

Section 220.001 – Purpose

The purpose of this chapter is to provide a unified, consistent and efficient means to conduct site plan review for development activity that requires a building permit, to ensure that such development meets all applicable standards of the UDC, including, but not limited to, standards related to access, pedestrian connectivity, setbacks, parking areas, external refuse storage areas, open areas, landscaping, and transportation and utility infrastructure.

Section 220.005 – Site Plan Review

(a) *Applicability.*

(1) Except as provided in subsection (a)(2) of this section, site plan review approval is required:

(A) Prior to issuance of a building permit, for any development that requires a building permit;

(B) Prior to a change of use, when a building permit is not otherwise required; and

(C) Prior to commencement of work, for any of the following when a building permit is not otherwise required:

(i) Development of a new off-street parking or vehicle use areas;

(ii) Expansion of an existing off-street parking or vehicle use areas, when additional paved surface is added;

- (iii) Alteration of an existing off-street parking or vehicle use areas, when the existing paved surface is replaced with a new paved surface;
- (iv) Paving of an unpaved area; and
- (v) Restriping of an off-street parking or vehicular use areas, when the layout will be reconfigured.

Applicant's Findings: *The proposal includes a new development that requires a building permit; therefore, triggering the applicability of the Site Plan Review section. Findings addressing the approval criteria for Site Plan Review have been provided within this narrative.*

(2) Exemptions.

(A) The following development that requires a building permit is exempt from site plan review:

- (i) Development of a single family use, two family use, three family use, four family use, or cottage cluster on an individual lot, including the construction of accessory structures and paving associated with such uses.
- (ii) Sign installation.
- (iii) Ordinary maintenance or repair of existing buildings, structures, utilities, landscaping, and impervious surfaces, and the installation or replacement of operational equipment or fixtures.
- (iv) The alteration to the facade of a building, except in the Mixed Use-I (MU-I), Mixed Use- II (MU-II), Mixed Use-III (MU-III), or Mixed Use-Riverfront (MU-R) zones unless there are no standards in the zone that are applicable to the proposed façade alteration.
- (v) Interior construction or tenant improvements that involve no change of use or occupancy.
- (vi) Demolition permit.
- (vii) Construction of a fence.

(B) Any of the activities identified under subsection (a)(1)(C) of this section are exempt from site plan review if they are for a single family use, two family use, three family use, four family use, or cottage cluster on an individual lot.

Applicant's Findings: *The proposal does not meet any of the exemptions listed above, therefore the applicant is applying for a Site Plan Review as part of this application submittal.*

(b) *Classes*. The three classes of site plan review are:

(1) *Class 1 site plan review*. Class 1 site plan review is site plan review for any development under subsection (a)(1) of this section that does not involve a land use decision or limited land use decision, as those terms are defined in ORS 197.015, and that involves either:

(A) A change of use or change of occupancy where only construction or improvements to the interior of the building or structure are required; or

(B) A change of use when a building permit is not otherwise required.

(2) *Class 2 site plan review*. Class 2 site plan review is site plan review for any development under subsection (a)(1) of this section, other than development subject to Class 1 site plan review, that does not involve a land use decision or limited land use decision, as those terms are defined in ORS 197.015.

(3) *Class 3 site plan review*. Class 3 site plan review is site plan review for any development under subsection (a)(1) of this section that involves a land use decision or limited land use decision, as those terms are defined in ORS 197.015. As used in this subsection, land use decisions and limited land use decisions include, but are not limited to, any development application that:

(A) Requires a Transportation Impact Analysis pursuant to SRC chapter 803;

(B) Requires a geotechnical report or geologic assessment under SRC chapter 810, except where a geotechnical report or geologic assessment has already been approved for the property subject to the development application;

(C) Requires deviation from clear and objective development standards of the UDC relating to streets, driveways or vision clearance areas;

(D) Proposes dedication of right-of-way which is less than the requirements of the Salem Transportation System Plan;

(E) Requires deviation from the clear and objective standards of the UDC and where the Review Authority is granted the authority to use limited discretion in deviating from the standard; or

(F) Involves the imposition of conditions of approval; or

(G) Requires a variance, adjustment, or conditional use permit.

Applicant's Findings: *The application includes consolidated applications including class 2 adjustments and a class 2 driveway approach permit; therefore, the applicant is applying for a class 3 site plan review permit.*

(c) *Procedure type*.

- (1) Class 1 site plan review is processed as a Type I procedure under SRC chapter 300.
- (2) Class 2 site plan review is processed as a Type I procedure under SRC chapter 300.
- (3) Class 3 site plan review is processed as a Type II procedure under SRC chapter 300.
- (4) An application for site plan review may be processed concurrently with an application for a building permit; provided, however, the building permit shall not be issued until site plan review approval has been granted.

Applicant's Findings: *The applicant understands the procedure type that will be used to process the requested applications.*

- (d) *Submittal requirements for Class 1 site plan review.* In lieu of the application submittal requirements under SRC chapter 300, an application for a Class 1 site plan review shall include a completed application form that shall contain the following information:
 - (1) The names and addresses of the applicant(s), the owner(s) of the subject property, and any authorized representative(s) thereof;
 - (2) The address or location of the subject property and its assessor's map and tax lot number;
 - (3) The size of the subject property;
 - (4) The comprehensive plan designation and zoning of the subject property;
 - (5) The type of application(s);
 - (6) A brief description of the proposal; and
 - (7) Signatures of the applicant(s), owner(s) of the subject property, and/or the duly authorized representative(s) thereof authorizing the filing of the application(s).
- (e) *Submittal requirements for Class 2 and Class 3 site plan review.*
 - (1) *Class 2 site plan review.* In addition to the submittal requirements for a Type I application under SRC chapter 300, an application for Class 2 site plan review shall include the following:
 - (A) A site plan, of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing the following information:
 - (i) The total site area, dimensions, and orientation relative to north;
 - (ii) The location of all proposed primary and accessory structures and other improvements, including fences, walls, and driveways, indicating distance from the structures and improvements to all property lines and adjacent on-site structures;

- (iii) Loading areas, if included in the proposed development;
 - (iv) The size and location of solid waste and recyclables storage and collection areas, and amount of overhead clearance above such enclosures, if included in the proposed development;
 - (v) An indication of future phases of development on the site, if applicable;
 - (vi) All proposed landscape areas on the site, with an indication of square footage and their percentage of the total site area;
 - (vii) The location, height, and material of fences, berms, walls, and other proposed screening as they relate to landscaping and screening required by SRC chapter 807;
 - (viii) The location of all trees and vegetation required to be protected pursuant to SRC chapter 808;
 - (ix) The location of all street trees, if applicable, or proposed location of street trees required to be planted at time of development pursuant to SRC chapter 86; and
 - (x) Identification of vehicle, pedestrian, and bicycle parking and circulation areas, including handicapped parking stalls, disembarking areas, accessible routes of travel, and proposed ramps.
- (B) An existing conditions plan, of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing the following information:
- (i) The total site area, dimensions, and orientation relative to north;
 - (ii) The location of existing structures and other improvements on the site, including accessory structures, fences, walls, and driveways, noting their distance from property lines; and
 - (iii) The type, size, and location of all existing trees on the property, with an identification of those trees that will be preserved and those trees that will be removed; and

- (iv) The location of the 100-year floodplain, if applicable.
- (C) A tree plan, of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing the following information:
 - (i) The total site area, dimensions, and orientation relative to north;
 - (ii) The location of all existing trees, indicating their species, DBH, critical root zone, and whether they will be preserved or removed;
 - (iii) The location of all new trees proposed to be planted on the development site, indicating their species and caliper at the time of planting;
 - (iv) The perimeter and soil depth of all proposed tree planting areas;
 - (v) The location of all existing and proposed primary and accessory structures;
 - (vi) The location of all existing and proposed parking and vehicle use areas; and
 - (vii) For developments that include more than one-half acre of new off-street surface parking, the tree plan shall include the expected tree canopy area after 15 years for all trees not removed by the proposed development, and the caliper of all proposed new trees at the time of planting in addition to the other requirements of the tree planting plan.
- (D) A grading plan depicting proposed site conditions following completion of the proposed development, when grading of the subject property will be necessary to accommodate the proposed development.
- (E) A completed trip generation estimate for the proposed development, on forms provided by the City.
- (F) Building elevation drawings for any proposed new buildings and any exterior additions or alterations to existing buildings when the height of the building, or a portion of the building is changed.
- (G) For development in the Mixed Use-I (MU-I) and Mixed Use-II (MU-II) Mixed Use-III (MU-III), and Mixed Use-Riverfront (MU-R) zones, architectural drawings, renderings, or sketches showing all

elevations of the existing buildings and the proposed buildings as they will appear on completion.

- (H) For developments that include more than one-half acre of new off-street surface parking, proof of coordination with the local electric utility to ensure the compatibility of tree canopy and root systems with planned and existing utility infrastructure.

(2) *Class 3 site plan review.* In addition to the submittal requirements for a Type II application under SRC chapter 300, an application for Class 3 site plan review shall include the following:

- (A) All submittal requirements for a Class 2 site plan review under subsection (e)(1) of this section;
- (B) The zoning district, comprehensive plan designation, and land uses for all properties abutting the site;
- (C) Driveway locations, public and private streets, bike paths, transit stops, sidewalks, and other bike and pedestrian pathways, curbs, and easements;
- (D) The elevation of the site at two-foot contour intervals, with specific identification of slopes in excess of 15 percent;
- (E) The location of drainage patterns and drainage courses, if applicable;
- (F) A preliminary utility plan showing capacity needs for municipal water, stormwater facilities, and sewer service, and schematic location of connection points to existing municipal water and sewer services;
- (G) Summary table which includes site zoning designation; total site area; gross floor area by use (e.g., manufacturing, office, retail, storage); building height; itemized number of full size compact and handicapped parking stalls, and the collective total number; total lot coverage proposed, including areas to be paved for parking and sidewalks;
- (H) A geological assessment or geotechnical report, if required by SRC chapter 810, or a certification from an engineering geologist or a geotechnical engineer that landslide risk on the site is low, and that there is no need for further landslide risk assessment; and
- (I) A Transportation Impact Analysis, if required by SRC chapter 803.

Applicant's Findings: *The applicant has submitted the applicable items for the proposal within their application submittal.*

(f) *Criteria.*

(1) *Class 1 site plan review.* An application for a Class 1 site plan review shall be granted if:

- (A) The application involves only a change of use or a change of occupancy, and there is no pending application for an associated land use decision or limited land use decision;
- (B) Only construction or improvements to the interior of the building or structure will be made;
- (C) The new use or occupancy will not require exterior improvements to the building or structure or alteration to existing parking, landscaping, or bufferyards;
- (D) Only clear and objective standards which do not require the exercise of discretion or legal judgment are applicable to the site plan review application; and
- (E) The application meets all applicable standards of the UDC.

Applicant's Findings: *The applicant is requesting a class 3 site plan review; therefore, the class 1 site plan review approval criteria are not applicable.*

(2) *Class 2 site plan review.* An application for a Class 2 site plan review shall be granted if:

- (A) Only clear and objective standards which do not require the exercise of discretion or legal judgment are applicable to the application.
- (B) The application meets all the applicable standards of the UDC.

Applicant's Findings: *The applicant is requesting a class 3 site plan review; therefore, the class 2 site plan review approval criteria are not applicable.*

(3) *Class 3 site plan review.* An application for Class 3 site plan review shall be granted if:

- (A) The application meets all applicable standards of the UDC;

Applicant's Findings: *The applicant has compiled a complete list of applicable standards and criteria and has provided a response to each within this narrative. This criterion is met.*

- (B) The transportation system provides for the safe, orderly, and efficient circulation of traffic into and out of the proposed development, and negative impacts to the transportation system are mitigated adequately;

Applicant's Findings: *The development site abuts Cordon Road to the east, Macleay Road SE to the north, and Gaffin Road to the west. The proposal includes a street improvement at the corner of Cordon Road and Macleay Road SE and has been worked out with the civil engineer*

and the City Traffic Engineer. The proposed traffic circulation pattern into, out of, and through the development site is cohesive with the street system already in place abutting the site and within the surrounding area. The proposed driveway triggers a class 2 driveway approach permit. Within this narrative, the applicant has addressed all of the applicable criteria within SRC Chapters 804 and 805 demonstrating compliance with the approval criteria. Because the proposed circulation plan and improvement accommodates all modes of transportation and meets safety standards for vision clearance areas, this criterion is met by the proposal.

- (C) Parking areas and driveways are designed to facilitate safe and efficient movement of vehicles, bicycles, and pedestrians; and

Applicant's Findings: *The parking area and driveways have been designed to ensure safe and efficient movements by vehicles, bicycles, and pedestrians. The driveways have been thoroughly planned for this development and assessed within the traffic impact analysis and have been reviewed by the City Traffic Engineer. The pedestrian connections keep pedestrians from having to cross the fueling stations or walk behind the vehicular parking.*

- (D) The proposed development will be adequately served with City water, sewer, stormwater facilities, and other utilities appropriate to the nature of the development.

Applicant's Findings: *Surrounding the development site are public water, sewer, and storm infrastructure that is adequate to serve the proposed development. This criterion is met.*

Chapter 230 – Historic Preservation

Section 230.105 – Preservation of Archeological Resources

- (a) Archeological resources shall be protected and preserved in place subject to the requirements of federal, state, and local regulations, including the guidelines administered by the Oregon State Historic Preservation Office and ORS 358.905—358.961.
- (b) A person may not excavate, injure, destroy or alter an archaeological site or object or remove an archaeological object located on public or private lands unless that activity is authorized by a permit issued under ORS 390.235. A violation of this subsection is a misdemeanor.

Applicant's Findings: *The applicant understands the protections around archeological resources. At the time of development, the applicant's contractors will have an inadvertent discovery plan on file with the City.*

Chapter 551 – IC – Industrial Commercial

Section 551.001 – Purpose

The purpose of the Industrial Commercial (IC) Zone is to implement the industrial commercial designation of the Salem Area Comprehensive Plan through the identification of allowed uses and the establishment of development standards. The IC zone generally allows a wide variety of retail, office, heavy commercial, light manufacturing, and warehousing activities.

Section 551.005 – Uses

- (a) Except as otherwise provided in this section, the permitted (P), special (S), conditional (C), and prohibited (N) uses in the IC zone are set forth in Table 551-1.

Applicant's Findings: *The applicant is proposing a new gas station, which is classified as motor vehicle services use and is an outright permitted use within the IC zone. The proposal also includes a convenience store which is classified as a retail sales use and is also an outright permitted use within the IC zone.*

- (b) Continued uses. Existing, legally-established uses established prior to August 24, 2022, but which would otherwise be made nonconforming by this chapter, are hereby deemed continued uses.
 - (1) Building or structures housing a continued use may be structurally altered or enlarged, or rebuilt following damage or destruction, provided such alteration, enlargement, or rebuilding complies with the standards set forth in SRC 551.010(f).
 - (2) Cease of occupancy of a building or structure for a continued use shall not preclude future use of the building or structure for that use; provided, however, conversion of the building or structure to another use shall thereafter prevent conversion back to that use.

Applicant's Findings: *The subject development site is vacant; therefore, no continued uses are present. These criteria are not applicable.*

Section 551.010 – Development Standards

Development within the IC zone must comply with the development standards set forth in this section.

- (a) *Lot standards.* Lots within the IC zone shall conform to the standards set forth in Table 551-2.

Applicant's Findings: *Pursuant to table 551-2, there are no established standards for lot area, lot width, or lot depth. There is a minimum of 16-feet of street frontage for non-single-family uses. The subject property is a corner lot with frontage on Macleay Road SE and Cordon Road SE, both street frontages exceed the minimum 16-feet standard. This standard is met.*

- (b) *Setbacks.* Setbacks within the IC zone shall be provided as set forth in Tables 551-3 and 551-4.

Applicant's Findings:

Setbacks for the proposed vehicle use area are discussed later in this section under findings for chapter 806.

Abutting Street: *The proposed convenience store abuts Cordon Road SE and Macleay Road SE. The building is approximately 20-foot setback from Cordon Road SE and approximately 140-foot setback from Macleay Road SE, exceeding the minimum 5-foot setback established in table 551-3. The proposed accessory structure, the canopy over the fuel pumps, is approximately 28-foot setback from Macleay Road SE and approximately 15-foot setback from Gaffin Road, exceeding the minimum 5-foot setback established in table 551-3.*

Zone-to-zone: *The subject property abuts IC zoning to the southwest, for buildings and accessory structures, there is no setback established pursuant to table 551-4.*

- (c) *Lot coverage; height.* Buildings and accessory structures within the IC zone shall conform to the lot coverage and height standards set forth in Table 551-5.

Applicant's Findings: *Pursuant to table 551-5, there is no maximum lot coverage standard. The maximum building height and accessory structure height is 70 feet, the proposed convenience store is approximately 24 feet in height and the proposed fuel pump canopy is approximately 18 feet in height, both are less than the maximum height allowed within the zone. This standard is met.*

- (d) *Landscaping.*

- (1) *Setbacks.* Required setbacks shall be landscaped. Landscaping shall conform to the standards set forth in SRC chapter 807.
- (2) *Vehicle use areas.* Vehicle use areas shall be landscaped as provided under SRC chapters 806 and 807.
- (3) *Development site.* A minimum of 15 percent of the development site shall be landscaped. Landscaping shall meet the Type A standard set forth in SRC chapter 807. Other required landscaping under the UDC, such as landscaping required for setbacks or vehicular use areas, may count towards meeting this requirement.

Applicant's Findings: *Landscaped areas are shown on the site plan included with this application submittal. Additionally, approximately half of the site is to remain undeveloped as the subject property includes a wetland area and a drainage ditch. Findings addressing specific landscaping requirements are provided later in this section under chapters 806 and 807. Additionally, the applicant will provide a complete landscape plan set, including how the 15 percent minimum total site landscaping has been exceeded, at the time of building permit. This criterion will be met.*

- (e) *Industrial performance standards.* Within the IC zone, no land or structure shall be used or occupied unless maintained and operated in continuing compliance with all applicable standards adopted by the Oregon Department of Environmental Quality (DEQ), including the holding of all licenses and permits required by DEQ regulations, local ordinance, and state and federal law.

Applicant's Findings: *This application is for the development of a new convenience store and fueling station within the IC zone. The applicant understands that they must maintain and operate the land and structure in continuing compliance with all applicable standards adopted by the Oregon Department of Environmental Quality (DEQ), including the holding of all licenses and permits required by DEQ regulation, local ordinance, and state and federal law. As applicable, this criterion will be met.*

- (f) *Development standards for continued uses.*

- (1) *Buildings.* Buildings housing a continued use may be structurally altered or enlarged, or rebuilt following damage or destruction, provided such alteration, enlargement, or rebuilding conforms to development standards set forth in this chapter and to all other applicable provisions of the UDC.
- (2) *Accessory structures.* Existing accessory structures to a continued use may be structurally altered or enlarged, or rebuilt following damage or destruction, and new accessory structures to a continued use may be constructed, provided such alteration, enlargement, rebuilding, or new accessory structure construction conforms to development standards set forth in this chapter and to all other applicable provisions of the UDC.
- (3) *Option to rebuild in same location.* Notwithstanding SRC 551.010(g)(1) and (2), any building or accessory structure rebuilt following damage or destruction may either be located on the same location on the lot as the original building or structure, or may be enlarged, provided the enlargement does not increase the building or structure's nonconformity to development standards set forth in this chapter and all other applicable provisions of the UDC.

Applicant's Findings: *The subject development site is vacant; therefore, no continued uses are present. These criteria are not applicable.*

Section 551.015 – Design Review

Design review under SRC chapter 225 is required for development within the IC as follows:

- (a) Residential care with five or more self-contained dwelling units shall be subject to design review according to the multiple family design review standards set forth in SRC chapter 702.

Applicant's Findings: *The proposal is not for a residential care facility; therefore, a design review under SRC chapter 225 is not required for this application. This is not applicable.*

Chapter 800 – General Development Standards

Section 800.001 – Purpose

The purpose of this chapter is to establish certain standards that apply generally to development throughout the City, regardless of zone.

Section 800.005 – Applicability

The standards set forth in this chapter apply to all development in every zone unless otherwise exempted by the UDC. In the event of a conflict between the standards set forth in this chapter and any other provision of the UDC, the more restrictive provision shall apply.

Section 800.055 – Solid waste service areas

Solid waste service areas shall provide for the safe and convenient collection of solid waste and recyclable and compostable materials by the local solid waste collection franchisee.

(a) ***Applicability.*** Solid waste service area design standards shall apply to:

- (1) All new solid waste, recycling, and compostable service areas, where use of a solid waste, recycling, and compostable receptacle of one cubic yard or larger is proposed; and
- (2) Any change to an existing solid waste service area for receptacles of one cubic yard or larger that requires a building permit.

Applicant's Findings: *The applicant is proposing a new solid waste service area with a receptacle that is larger than one cubic yard, triggering the applicability of this section.*

(b) ***Solid waste receptacle placement standards.*** All solid waste receptacles shall be placed at grade on a concrete pad that is a minimum of four inches thick, or on an asphalt pad that is a minimum of six inches thick. The pad shall have a slope of no more than a three percent and shall be designed to discharge stormwater runoff consistent with the overall stormwater management plan for the site approved by the Director.

(1) ***Pad area.*** In determining the total concrete pad area for any solid waste service area:

- (A) The pad area shall extend a minimum of one foot beyond the sides and rear of the receptacle; and
- (B) The pad area shall extend a minimum three feet beyond the front of the receptacle.
- (C) In situations where receptacles face each other, a minimum four feet of pad area shall be required between the fronts of the facing receptacles.

(2) *Minimum separation.*

- (A) A minimum separation of 1.5 feet shall be provided between the receptacle and the side wall of the enclosure.
- (B) A minimum separation of five feet shall be provided between the receptacle and any combustible walls, combustible roof eave lines, or building or structure openings.

(3) *Vertical clearance.*

- (A) *Receptacles two cubic yards or less.* Receptacles two cubic yards or less in size shall be provided with a minimum of eight feet of unobstructed overhead or vertical clearance for servicing.
- (B) *Receptacles greater than two cubic yards.* Receptacles greater than two cubic yards in size shall be provided with a minimum of 14 feet of unobstructed overhead or vertical clearance for servicing; provided, however, overhead or vertical clearance may be reduced to eight feet:
 - (i) For enclosures covered by partial roofs, where the partial roof over the enclosure does not cover more than the rear eight feet of the enclosure, as measured from the inside of the rear wall of the enclosure (see Figure 800-6); or
 - (ii) Where a physical barrier is installed within, and a maximum of eight feet from the front opening of, the enclosure preventing the backward movement of the receptacle (see Figure 800-7).

Applicant's Findings: *The proposed solid waste receptacle placement standards as outlined above are intended to be met. While detailed solid waste plans have not been included for land use submittal, the applicant intends on meeting these standards.*

(c) *Permanent drop box and compactor placement standards.*

- (1) All permanent drop boxes shall be placed on a concrete pad that is a minimum of six inches thick. The pad shall have a slope of no more than one percent and shall be designed to discharge stormwater runoff consistent with the overall stormwater management plan for the site approved by the Director.
- (2) All permanent compactors shall be placed on a concrete pad that is structurally engineered or in compliance with the manufacturer specifications. The pad shall have a slope of no more than three percent and shall be designed to discharge stormwater runoff consistent with the overall stormwater management plan for the site approved by the Director.

- (3) Pad area. The pad area shall be a minimum of 12 feet in width. The pad area shall extend a minimum of five feet beyond the rear of the permanent drop box or compactor.
- (4) Minimum separation. A minimum separation of five feet shall be provided between the permanent drop box or compactor and any combustible walls, combustible roof eave lines, or building or structure openings.

Applicant's Findings: *The proposal does not include a permanent drop box or a compactor; therefore, these standards are not applicable.*

(d) *Solid waste service area screening standards.*

- (1) Solid waste, recycling, and compostable service areas shall be screened from all streets abutting the property and from all abutting residentially zoned property by a minimum six-foot-tall sight-obscuring fence or wall; provided, however, where receptacles, drop boxes, and compactors are located within an enclosure, screening is not required. For the purpose of this standard, abutting property shall also include any residentially zoned property located across an alley from the property.
- (2) Existing screening at the property line shall satisfy screening requirements if it includes a six-foot-tall sight-obscuring fence or wall.

Applicant's Findings: *As demonstrated on the provided plans, the solid waste service area will be within an enclosure; therefore, additional screening is not required.*

(e) *Solid waste service area enclosure standards.* When enclosures are used for required screening or aesthetics, such enclosures shall conform to the standards set forth in this subsection. The overall dimensions of an enclosure are dependent upon the number and size of receptacles the enclosure is designed to accommodate.

- (1) *Front opening of enclosure.* The front opening of the enclosure shall be unobstructed and shall be a minimum of 12 feet in width.
- (2) *Measures to prevent damage to enclosure.*
 - (A) Enclosures constructed of wood or chainlink fencing material shall contain a minimum four-inch nominal high bumper curb at ground level located 12 inches inside the perimeter of the outside walls of the enclosure to prevent damage from receptacle impacts.
 - (B) Enclosures constructed of concrete, brick, masonry block, or similar types of material shall contain a minimum four-inch nominal high bumper curb at ground level located 12 inches inside the perimeter of the outside walls of the enclosure, or a fixed bumper rail to prevent damage from receptacle impacts.

(C) The requirements under subsections (e)(2)(A) and (B) of this section shall not apply if the enclosure is designed to be separated:

- (i) A minimum distance of two feet from the sides of the container or receptacles; and
- (ii) A minimum of three feet from the rear of the container or receptacles.

(3) *Enclosure gates.* Any gate across the front opening of an enclosure shall swing freely without obstructions. For any enclosure opening with an unobstructed width of less than 15 feet, the gates shall open a minimum of 120 degrees. For any enclosure opening with an unobstructed width of 15 feet or greater, the gates shall open a minimum of 90 degrees. All gates shall have restrainers in the open and closed positions.

Applicant's Findings: *As mentioned above, detailed solid waste plans have not been included for land use submittal; however, the applicant intends on meeting the solid waste service area enclosure standards as outlined above.*

(4) *Prohibited enclosures.* Receptacles shall not be stored in buildings or entirely enclosed structures unless the receptacles are:

- (A) Stored in areas protected by an automatic sprinkler system approved by the City Fire Marshal; or
- (B) Stored in a building or structure of a fire resistive Type I or Type IIA construction that is located not less than ten feet from other buildings and used exclusively for solid waste receptacle storage.

Applicant's Findings: *The receptables are not proposed within the building nor an entirely enclosed structure; therefore, this standard is not applicable.*

(f) *Solid waste service area vehicle access.*

(1) Vehicle operation area.

- (A) A vehicle operation area shall be provided for solid waste collection service vehicles that is free of obstructions and no less than 45 feet in length and 15 feet in width; provided, however, where the front opening of an enclosure is wider than 15 feet, the width of the vehicle operation area shall be increased to equal the width of the front opening of the enclosure. Vehicle operation areas shall be made available perpendicular to the front of every receptacle, or, in the case of multiple receptacles within an enclosure, perpendicular to every enclosure opening.

- (B) For solid waste service areas having receptacles of two cubic yards or less, the vehicle operation area may be located:
 - (i) Perpendicular to the permanent location of the receptacle or the enclosure opening (see Figure 800-8);
 - (ii) Parallel to the permanent location of the receptacle or the enclosure opening (see Figure 800-9); or
 - (iii) In a location where the receptacle can be safely maneuvered manually not more than 45 feet into a position at one end of the vehicle operation area for receptacle servicing.
- (C) The vehicle operation area may be coincident with a parking lot drive aisle, driveway, or alley provided that such area is kept free of parked vehicles and other obstructions at all times except for the normal ingress and egress of vehicles.
- (D) Vertical clearance. Vehicle operation areas shall have a minimum vertical clearance of 14 feet.
- (E) In the event that access to the vehicle operation area is not a direct approach into position for operation of the service vehicle, a turnaround, in conformance with the minimum dimension and turning radius requirements shown in Figure 800-10, shall be required to allow safe and convenient access for collection service.

Applicant's Findings: *The proposed solid waste service area access is a direct approach and no parking spaces are proposed that would obstruct the access to the enclosure. The operation area meets the 15-foot width and exceeds the 45-feet in length for the solid waste collection provider. As mentioned above, the applicant intends to meet all of the standards regarding solid waste service areas.*

- (2) Vehicle operation areas shall be designed so that waste collection service vehicles are not required to back onto a public street or leave the premises.

Applicant's Findings: *The site has been designed to ensure that waste collection service vehicles are not required to back onto a public street. This standard is met.*

- (3) Vehicle operation areas shall be paved with asphalt, concrete, or other hard surfacing approved by the Director, and shall be adequately designed, graded, and drained to the approval of the Director.

Applicant's Findings: The vehicle operation area will be paved with asphalt. Civil plans have been provided demonstrating how the paved surface is designed, graded and drained. This standard is met.

- (4) Signs. "No Parking" signs shall be placed in a prominent location on the enclosure, or painted on the pavement in front of the enclosure or receptacle, to ensure unobstructed and safe access for the servicing of receptacles.

Applicant's Findings: The applicant will have signage to ensure unobstructed and safe access for servicing of receptacles. This will be met.

- (g) Notice to solid waste collection franchisee. Upon receipt of an application to vary or adjust the standards set forth in this section, notification and opportunity to comment shall be provided to the applicable solid waste collection franchisee. Notice required under this subsection shall be in addition to the notification required for a variance or adjustment under SRC chapter 300.

Applicant's Findings: The applicant is not applying to vary or adjust any of the standards and therefore, notification to the solid waste collection franchisee is not required.

Section 800.060 – Exterior Lighting

- (a) Exterior lighting shall not shine or reflect onto adjacent properties, or cast glare onto the public right-of-way.
- (b) Exterior light fixtures shall be located and designed so that the light source, when viewed at a height of five feet above the ground at a distance of five feet outside the boundary of the lot, shall be either:
 - (1) Completely shielded from direct view; or
 - (2) No greater than five foot-candles in illumination.

Applicant's Findings: The applicant understands the lighting requirements and will ensure that lighting shall not shine or reflect onto adjacent properties or cast glare onto the public right-of-way. The applicant will provide detailed lighting plans at the time of building permit in conformance with the lighting requirements of this section. This standard will be met.

Section 800.065 – Pedestrian access

Except where pedestrian access standards are provided elsewhere under the UDC, and unless otherwise provided in this section, all developments, other than development of single-family, two-family, three-family, and four-family uses, and multiple family uses subject to SRC chapter 702, shall include an on-site pedestrian circulation system developed in conformance with the standards in this section. For purposes of this section development means the construction of, or addition to, a building or accessory structure or the construction of, or alteration or addition to, an off-street parking or vehicle use area. Development does not include construction of, or

additions to, buildings or accessory structures that are less than 200 square feet in floor area. Development also does not include the installation of electric vehicle charging stations in existing approved parking lots or vehicle use areas.

(a) *Pedestrian connections required.* The on-site pedestrian circulation system shall provide pedestrian connectivity throughout the development site as follows:

(1) *Connection between building entrances and streets.*

(A) Except as otherwise provided in this subsection, a pedestrian connection shall be provided between the primary building entrance of each building on the development site and each adjacent street. Where a building has more than one primary building entrance, a single pedestrian connection from one of the building's primary entrances to each adjacent street is allowed; provided each of the building's primary entrances are connected, via a pedestrian connection, to the required connection to the street (see Figure 800-11).

(B) Where an adjacent street is a transit route and there is an existing or planned transit stop along street frontage of the development site, at least one of the required pedestrian connections shall connect to the street within 20 feet of the transit stop (see Figure 800-12).

(C) A pedestrian connection is not required between the primary building entrance of a building and each adjacent street if:

(i) The development site is a corner lot and the building has a primary building entrance that is located within 20 feet of, and has a pedestrian connection to, the property line abutting one of the adjacent streets; or

(ii) The building is a service, storage, maintenance, or similar type building not primarily intended for human occupancy.

Applicant's Findings: *As demonstrated on the plans, pedestrian connections are proposed that connect the primary building entrance to each adjacent street; Gaffin Road, Macleay Road SE, and Cordon Road SE. This standard is met.*

(2) *Connection between buildings on the same development site.*

(A) Except as otherwise provided in this subsection, where there is more than one building on a development site, a pedestrian connection, or pedestrian connections, shall be provided to connect the primary building entrances of all of the buildings.

- (B) A pedestrian connection, or pedestrian connections, is not required between buildings on the same development site if:
- (i) The buildings have a primary building entrance that is located within 20 feet of, and has a pedestrian connection to, the property line abutting a street; and
 - (ii) A public sidewalk within the adjacent street right-of-way provides pedestrian access between the primary building entrances; or
 - (iii) The buildings are service, storage, maintenance, or similar type buildings not primarily intended for human occupancy.

Applicant's Findings: *There is only one building proposed on the development site; therefore, this is not applicable.*

(3) *Connection through off-street parking areas.*

(A) Surface parking areas. Except as provided under subsection (a)(3)(A)(iii) of this section, off-street surface parking areas greater than 25,000 square feet in size or including four or more consecutive parallel drive aisles shall include pedestrian connections through the parking area to the primary building entrance or where there is no building, through the parking area as provided in this subsection.

- (i) The pedestrian connections shall be:
 - a. Provided in a minimum amount of either one connection for every four drive aisles or one connection for every 250 feet (See Figure 800-13); provided, however, in no case shall less than one pedestrian connection be provided. Where the pedestrian connection requirements of this subsection result in a fractional number, any fractional number greater than 0.5 shall be round up to require an additional pedestrian connection;
 - b. Spaced a minimum of two drive aisles apart; and
 - c. Connected to a pedestrian connection, or pedestrian connections, that lead to the

primary building entrance. Where there is no building, the pedestrian connections shall connect to the street either at the sidewalk or at the public street right-of-way when there is no sidewalk.

- (ii) Where the off-street surface parking area is adjacent to a street that is a transit route and there is an existing or planned transit stop along the street frontage of the development site, at least one of the required pedestrian connections shall connect to the street within 20 feet of the transit stop.
 - (iii) A pedestrian connection provided between a primary building entrance and a street may be counted as a required connection through an off-street surface parking area.
 - (iv) Regardless of the size of the off-street parking area, pedestrian connections are not required through off-street surface parking areas that have a depth, in all locations, of not more than 124 feet. For purposes of this subsection, parking area depth is measured through the parking area from its outside edge towards the building.
 - (v) For purposes of this subsection, off-street surface parking area means:
 - a. An off-street surface parking area that is separated from other off-street surface parking areas on the development site by either a driveway, which begins at the street and extends into the site, or other physical separation; or
 - b. An off-street surface parking area located in a separate location on the development site from other off-street surface parking areas.
- (B) Parking structures and parking garages. Where an individual floor of a parking structure or parking garage exceeds 25,000 square feet in size, a pedestrian connection shall be provided through the parking area on that floor to an entrance/exit.

Applicant's Findings: *There are no parking areas that exceed 25,000 square feet. This is not applicable.*

- (4) *Connection to existing or planned paths and trails.* Where an existing or planned path or trail identified in the Salem Transportation System Plan (TSP) or the Salem Comprehensive Parks System Master Plan passes through a development site, the path or trail shall:
- (A) Be constructed, and a public access easement or dedication provided; or
 - (B) When no abutting section of the trail or path has been constructed on adjacent property, a public access easement or dedication shall be provided for future construction of the path or trail.

Applicant's Findings: *There are no planned paths or trails identified adjacent to the subject property for connection. This is not applicable.*

- (5) *Connection to abutting properties.* Whenever a vehicular connection is provided from a development site to an abutting property, a pedestrian connection shall also be provided. A pedestrian connection is not required, however:
- (A) To abutting properties used for activities falling within the following use classifications, use categories, and uses under SRC chapter 400:
 - (i) Single-family;
 - (ii) Two-family;
 - (iii) Group living;
 - (iv) Industrial;
 - (v) Infrastructure and utilities; and
 - (vi) Natural resources.
 - (B) Where the use of an abutting property has specific security needs that make providing a connection impractical or undesirable;
 - (C) Where on-site activities on abutting properties, such as the operation of trucks, forklifts, and other equipment and machinery would present safety conflicts with pedestrians;
 - (D) Where buildings or other improvements on abutting properties physically preclude a connection now or in the future; or
 - (E) Where physical conditions of the land, such as topography or existing natural resource areas, including, but not limited to, wetlands, ponds, lakes, streams, or rivers, make providing a connection impractical.

Applicant's Findings: *There are no vehicle connections to the adjacent property to the south of the subject property. This is not applicable.*

- (b) *Design and materials.* Required pedestrian connections shall be in the form of a walkway, or may be in the form of a plaza. Where a path or trail identified in the Salem Transportation System Plan (TSP) or Salem Comprehensive Parks System Master Plan is required, the path or trail shall conform to the applicable standards of the TSP or Salem Comprehensive Parks System Master Plan in-lieu of the standards in this subsection.

- (1) Walkways shall conform to the following:

- (A) Material and width. Walkways shall be paved with a hard-surface material meeting the Public Works Design Standards, and shall be a minimum of five feet in width.

Applicant's Findings: *The pedestrian connections are proposed to be paved with hard surface material. The pedestrian connections are proposed to be a minimum of five-feet in width, except where they abut the vehicle parking spaces the pedestrian connection is proposed to be seven feet.*

- (B) Where a walkway crosses driveways, parking areas, parking lot drive aisles, and loading areas, the walkway shall be visually differentiated from such areas through the use of elevation changes, a physical separation, speed bumps, a different paving material, or other similar method. Striping does not meet this requirement, except when used in a parking structure or parking garage.

Applicant's Findings: *The pedestrian connections proposed do not cross any of the vehicular areas; therefore, this is not applicable.*

- (C) Where a walkway is located adjacent to an auto travel lane, the walkway shall be raised above the auto travel lane or separated from it by a raised curb, bollards, landscaping or other physical separation. If the walkway is raised above the auto travel lane it must be raised a minimum of four inches in height and the ends of the raised portions must be equipped with curb ramps. If the walkway is separated from the auto travel lane with bollards, bollard spacing must be no further than five feet on center.

Applicant's Findings: *The pedestrian connections adjacent to the auto travel lanes/drive aisles and proposed to be separated either by raised curb or landscaping. This is met.*

- (2) Wheel stops or extended curbs shall be provided along required pedestrian connections to prevent the encroachment of vehicles onto pedestrian connections.

Applicant's Findings: *As demonstrated on the plans, the applicant intends on installing wheel stops within the parking spaces. The pedestrian connection along the vehicle parking is over 7 feet wide, making the wheel stops not required, but installed for preference of the applicant. This is met.*

- (c) *Lighting.* The on-site pedestrian circulation system shall be lighted to a level where the system can be used at night by employees, customers, and residents.

Applicant's Findings: *A lighting plan will be provided at the time of building permit to ensure the lighting standards are met. This will be met.*

- (d) *Applicability of standards to development sites comprised of lots under separate ownership.*

- (1) When a development site is comprised of lots under separate ownership, the pedestrian access standards set forth in this section shall apply only to the lot, or lots, proposed for development, together with any additional contiguous lots within the development site that are under the same ownership as those proposed for development.
- (2) Where the pedestrian access standards of this section would otherwise require additional pedestrian connections throughout the development site beyond just the lot, or lots, proposed for development and any contiguous lots under the same ownership, the required pedestrian connections shall be extended to the boundaries of the lot, or lots, proposed for development and any contiguous lots under the same ownership in order to allow for future extension of required pedestrian connections through the other lots within the development site in conformance with the standards in this section.

Applicant's Findings: *The subject property does not contain any additional lots under same ownership; therefore, these pedestrian connectivity standards do not apply.*

Chapter 806 – Off-Street Parking, Loading, and Driveways

Section 806.001 – Purpose

The purpose of this chapter is to establish standards for off-street parking and vehicle use areas, bicycle parking, loading areas, and driveways.

Section 806.015 – Amount of Off-Street Parking

- (a) *Maximum off-street parking.* Except as otherwise provided in this section, and unless otherwise provided under the UDC, off-street parking shall not exceed the amounts set

forth in Table 806-1. For the purposes of calculating the maximum amount of off-street parking allowed, driveways shall not be considered off-street parking spaces.

Applicant's Findings: Pursuant to table 806-1, the proposed convenience store classified as a retail sales use is granted 1 parking space per 200 square feet. The proposed convenience store is 4,999 square feet, affording 25 parking spaces for the proposed development. The proposed fueling pumps and canopy is classified as a motor vehicle service use, granting 1 parking space per 600 square feet. The fueling pump canopy is 3,600 square feet, affording 6 parking spaces. The maximum parking allowed on the site is a total of 31 parking spaces and the proposal includes 12 parking spaces, which is less than the maximum allowed. This is met.

- (b) *Compact parking.* Up to 75 percent of the off-street parking spaces provided on a development site may be compact parking spaces.

Applicant's Findings: No compact parking spaces are proposed with the development; therefore, this is not applicable.

- (c) *Carpool and vanpool parking.* New developments with 60 or more required off-street parking spaces, and falling within the public services and industrial use classifications, and the business and professional services use category, shall designate a minimum of five percent of their total off-street parking spaces for carpool or vanpool parking.

Applicant's Findings: No carpool or vanpool parking is proposed with the development; therefore, this is not applicable.

- (d) *Required electric vehicle charging spaces.* For any newly constructed building with five or more dwelling units on the same lot, including buildings with a mix of residential and nonresidential uses, a minimum of 40 percent of the off-street parking spaces provided on the site for the building shall be designated as spaces to serve electrical vehicle charging. In order to comply with this subsection, such spaces shall include provisions for electrical service capacity, as defined in ORS 455.417.

Applicant's Findings: There are no dwelling units included with the development; therefore, this is not applicable.

Section 806.020 – Method of Providing Off-Street Parking

- (a) *General.* If provided, off-street parking shall be accommodated through one or more of the following methods:
 - (1) *Ownership.* Ownership in fee by the owner of the property served by the parking;
 - (2) *Easement.* A permanent and irrevocable easement appurtenant to the property served by the parking;
 - (3) *Lease Agreement.* A lease agreement

- (4) *Lease or rental agreement in parking structure.* A lease or rental agreement in an off-street parking facility established pursuant to ORS 223.805 to 223.845;

Applicant's Findings: *The applicant is providing parking via method (1) as outlined above. This is met.*

Section 806.035 – Off-Street Parking and Vehicle Use Area Development Standards for Uses of Activities Other Than Single-Family, Two-Family, Three-Family, and Four-Family

Unless otherwise provided under the UDC, off-street parking and vehicle use areas, other than driveways and loading areas, for uses or activities other than single family, two family, three family, and four family shall be developed and maintained as provided in this section.

- (a) *General applicability.* The off-street parking and vehicle use area development standards set forth in this section shall apply to:

- (1) The development of new off-street parking and vehicle use areas;
- (2) The expansion of existing off-street parking and vehicle use areas, where additional paved surface is added;
- (3) The alteration of existing off-street parking and vehicle use areas, where the existing paved surface is replaced with a new paved surface; and
- (4) The paving of an unpaved area.

Applicant's Findings: *The proposal includes the development of a new off-street parking and vehicle use area; therefore, triggering the applicability of this section.*

- (b) *Location.*

- (1) *Generally.* Off-street parking and vehicle use areas shall not be located within required setbacks.

Applicant's Findings: *As demonstrated on the submitted plans, the off-street parking and vehicle use area is not located within the established setbacks. This is met.*

- (2) *Carpool and vanpool parking.* Carpool and vanpool parking shall be located so it is the closest employee parking to the building entrance normally used by employees; provided, however, it shall not be located closer than any parking designated for disabled parking.

Applicant's Findings: *No carpool or vanpool parking is proposed with the development; therefore, this is not applicable.*

- (3) *Underground parking.* Off-street parking may be located underground in all zones, except the RA and RS zones. Such underground parking may be located beneath required setbacks; provided, however, no portion of the structure enclosing the underground parking shall project into the required setback, and all required

setbacks located above the underground parking structure shall be landscaped as otherwise required under the UDC.

Applicant's Findings: *Underground parking is not proposed with the development; therefore, this is not applicable.*

(c) *Perimeter setbacks and landscaping.*

(1) *Perimeter setbacks and landscaping, generally.*

(i) *Perimeter setbacks.* Perimeter setbacks, as set forth in this subsection, shall be required for off-street parking and vehicle use areas abutting streets, abutting interior front, side, and rear property lines, and adjacent to buildings and structures. Perimeter setbacks for parking garages are set forth under subsection (c)(5) of this section. Perimeter setbacks are not required for:

- (i) Off-street parking and vehicle use areas abutting an alley.
- (ii) Vehicle storage areas within the IG zone.
- (iii) Temporary and seasonal gravel off-street parking areas, approved pursuant to SRC chapter 701, abutting nonresidential zones, uses or activities other than household living, or local streets.
- (iv) Gravel off-street parking areas, approved through a conditional use permit, abutting nonresidential zones, uses or activities other than household living, or local streets.
- (v) Underground parking.

(B) *Perimeter landscaping.* Required perimeter setbacks for off-street parking and vehicle use areas shall be landscaped as set forth in this subsection.

Applicant's Findings: *The applicant understands the general requirements for perimeter setbacks and landscaping and has provided findings below to address each requirement.*

(2) *Perimeter setbacks and landscaping abutting streets.* Unless a greater setback is required elsewhere within the UDC, off-street parking and vehicle use areas abutting a street shall be setback and landscaped according to one the methods set forth in this subsection. Street trees located along an arterial street may be counted towards meeting the minimum required number of plant units.

(A) *Method A.* The off-street parking and vehicle use area shall be setback a minimum of ten feet (see Figure 806-1). The setback

shall be landscaped according to the Type A standard set forth in SRC chapter 807.

- (B) *Method B.* The off-street parking and vehicle use area shall be setback to accommodate a berm, the top of which shall be a minimum of 2.5 feet higher than the elevation of the abutting off-street parking or vehicle use area (see Figure 806-2). The berm shall have a slope no steeper than a 3:1 on all sides, and shall be landscaped according to the Type A standard set forth in SRC chapter 807 with plant materials to prevent erosion. The berm shall not alter natural drainage flows from abutting properties. Any portion of the berm that encroaches into a vision clearance area set forth in SRC chapter 805 shall have a height no greater than the maximum allowed under SRC 805.010.
- (C) *Method C.* The off-street parking and vehicle use area shall be setback a minimum six feet to accommodate a minimum three-foot drop in grade from the elevation at the right-of-way line to the elevation of the abutting off-street parking or vehicular use area (see Figure 806-3). The setback shall be landscaped according to the Type A standard set forth in SRC chapter 807.
- (D) *Method D.* The off-street parking and vehicle use area shall be setback a minimum six feet in conjunction with a minimum three-foot-tall brick, stone, or finished concrete wall (see Figure 806-4). The wall shall be located adjacent to, but entirely outside, the required setback. The setback shall be landscaped according to the Type A standard set forth in SRC chapter 807. Any portion of the wall that encroaches into a vision clearance area set forth in SRC chapter 805 shall have a height no greater than the maximum allowed under SRC 805.010.
- (E) *Method E.* The off-street parking and vehicle use area shall be setback a minimum of six feet to accommodate green stormwater infrastructure meeting the Public Works Design Standards.

Applicant's Findings: *The applicant is meeting the parking and vehicle use area setback abutting the adjacent streets through Method A. As shown on the submitted plans, the setbacks abutting the street meet the 10-foot minimum. The standard is met.*

- (3) *Perimeter setbacks and landscaping abutting interior front, side, and rear property lines.* Unless a greater setback is required elsewhere within the UDC, off-street parking and vehicle use areas abutting an interior front, side, or rear property line shall be setback a

minimum of five feet (see Figure 806-5). The setback shall be landscaped according to the Type A standard set forth in SRC chapter 807.

Applicant's Findings: *As demonstrated on the site plan included with the application submittal, the portion of off-street parking and vehicle use area setback abutting the interior side setback exceeds the 5-foot minimum and is proposed to be landscaped. The building does not have a required setback from the property line abutting the adjacent property to the south. This is met.*

- (4) *Setback adjacent to buildings and structures.* Except for drive-through lanes, where an off-street parking or vehicular use area is located adjacent to a building or structure, the off-street parking or vehicular use area shall be setback from the exterior wall of the building or structure by a minimum five-foot-wide landscape strip, planted to the Type A standard set forth in SRC chapter 807, or by a minimum five-foot-wide paved pedestrian walkway (see Figure 806-6). A landscape strip or paved pedestrian walkway is not required for drive-through lanes located adjacent to a building or structure.

Applicant's Findings: *The proposed off-street parking is located adjacent to the proposed building and is separated from the building with a minimum 7-foot paved pedestrian walkway. This standard is met.*

- (5) *Perimeter setbacks and landscaping for parking garages.* Perimeter setbacks and landscaping as set forth in subsection (c) of this section shall be required for parking garages; provided, however, perimeter setbacks and landscaping are not required for:
- (A) Any portion of a parking garage with frontage on a street and containing ground floor uses or activities other than parking.
 - (B) Any parking garage within an industrial zone, public zone, or commercial zone, other than a CO zone, that abuts an interior front, side, or rear property line where there is no required building setback.
 - (C) Any parking garage abutting an alley.

Applicant's Findings: *Parking garages are not proposed with this development; therefore, this is not applicable.*

(d) *Interior landscaping.*

- (1) *Interior landscaping, generally.* Interior landscaping, as set forth in this subsection, shall be required for off-street parking areas 5,000 square feet or greater in size; provided, however, interior landscaping is not required for:
- (i) Vehicle storage areas.
 - (ii) Vehicle display areas.
 - (iii) Temporary and seasonal gravel off-street parking areas, approved pursuant to SRC chapter 701.

- (iv) Gravel off-street parking areas, approved through a conditional use permit.
- (v) Underground parking.
- (vi) Parking garages.

Applicant's Findings: Including the 22-foot width for two-way traffic behind the parking spaces, the off-street parking area is less than 5,000 square feet in size; therefore, interior landscaping is not required.

(e) *Off-street parking area dimensions.* Off-street parking areas shall conform to the minimum dimensions set forth in Table 806-5; provided, however, minimum off-street parking area dimensions shall not apply to:

- (1) Vehicle storage areas.
- (2) Vehicle display areas.

Applicant's Findings: As demonstrated on the site plan included with the application submittal, the parking area includes 12 off-street standard parking stalls meeting the 19-foot in depth and the 9-foot in width. The stalls meet the dimensions for 90-degree parking angle standards. This is met.

(f) *Off-street parking area access and maneuvering.* In order to ensure safe and convenient vehicular access and maneuvering, off-street parking areas shall:

- (1) Be designed so that vehicles enter and exit the street in a forward motion with no backing or maneuvering within the street; and
- (2) Where a drive aisle terminates at a dead-end, include a turnaround area as shown in Figure 806-9. The turnaround shall conform to the minimum dimensions set forth in Table 806-6.

Applicant's Findings: The parking area access has been designed so that all vehicles enter and exit the street in a forward motion. In no case will any vehicles back out into the adjacent streets. There are no drive aisles that terminate in a dead end.

(g) *Grade.* Off-street parking and vehicle use areas shall not exceed a maximum grade of ten percent. Ramps shall not exceed a maximum grade of 15 percent.

Applicant's Findings: As demonstrated on the civil plans, the off-street parking and vehicle use area does not exceed the maximum grade established within this section.

(h) *Surfacing.* Off-street parking and vehicle use areas shall be paved with a hard surface material meeting the Public Works Design Standards; provided, however, up to two feet of the front of a parking space may be landscaped with ground cover plants (see Figure 806-10). Such two-foot landscaped area may count towards meeting interior off-street parking area landscaping requirements when provided abutting a landscape island or planter bay

with a minimum width of five feet but shall not count towards meeting perimeter setbacks and landscaping requirements. Paving is not required for:

- (1) Vehicle storage areas within the IG zone.
- (2) Temporary and seasonal gravel off-street parking areas, approved pursuant to SRC chapter 701.
- (3) Gravel off-street parking areas, approved through a conditional use permit.

Applicant's Findings: *As demonstrated on the submitted plans, the off-street parking and vehicle use areas are proposed to be paved with a hard surface material.*

- (i) *Drainage.* Off-street parking and vehicle use areas shall be adequately designed, graded, and drained according to the Public Works Design Standards, or to the approval of the Director.

Applicant's Findings: *As demonstrated on the civil plans, the off-street parking and vehicle use areas have been designed for adequate drainage pursuant to the public works design standards.*

- (j) *Bumper guards or wheel barriers.* Off-street parking and vehicle use areas shall include bumper guards or wheel barriers so that no portion of a vehicle will overhang or project into required setbacks and landscaped areas, pedestrian accessways, streets or alleys, or abutting property; provided, however, bumper guards or wheel barriers are not required for:
 - (1) Vehicle storage areas.
 - (2) Vehicle sales display areas.

Applicant's Findings: *As demonstrated on the submitted plans, the proposed vehicle parking is adjacent to the building and is separated by a minimum 7-foot pedestrian accessway; therefore, wheel stops or bumper guards are not required. There are no other areas on the site where vehicles would project into setbacks, landscaped areas, streets, or proposed pedestrian accessways.*

- (k) *Off-street parking area striping.* Off-street parking areas shall be striped in conformance with the off-street parking area dimension standards set forth in Table 806-6; provided, however, off-street parking area striping shall not be required for:
 - (1) Vehicle storage areas.
 - (2) Vehicle sales display areas.
 - (3) Temporary and seasonal gravel off-street parking areas, approved pursuant to SRC chapter 701.
 - (4) Gravel off-street parking areas, approved through a conditional use permit.

Applicant's Findings: *As demonstrated on the submitted plans, the off-street parking area is proposed to be striped in conformance with the dimension standards set forth in table 806-6. This is met.*

(l) *Marking and signage.*

- (1) *Off-street parking and vehicle use area circulation.* Where directional signs and pavement markings are included within an off-street parking or vehicle use area to control vehicle movement, such signs and marking shall conform to the Manual of Uniform Traffic Control Devices.

Applicant's Findings: *The proposed parking area is designed in a manner that maneuvering is intuitive; it is not anticipated directional markings or signage will be necessary to control vehicular movement. However, if markings or signage are determined to be necessary, the applicant will ensure they conform to the Manual or Uniform Traffic Control Devices. If applicable, this criterion will be met.*

- (2) *Compact parking.* Compact parking spaces shall be clearly marked indicating the spaces are reserved for compact parking only.

Applicant's Findings: *No compact parking is proposed with the development; therefore, this is not applicable.*

- (3) *Carpool and vanpool parking.* Carpool and vanpool parking spaces shall be posted with signs indicating the spaces are reserved for carpool or vanpool use only before 9:00 a.m. on weekdays.

Applicant's Findings: *No carpool or vanpool parking is proposed, therefore this is not applicable.*

- (m) *Lighting.* Lighting for off-street parking and vehicle use areas shall not shine or reflect onto adjacent residentially zoned property, or property used for uses or activities falling under household living, or cast glare onto the street.

Applicant's Findings: *A lighting plan will be submitted at the time of building permit meeting the lighting requirements established in SRC.*

Section 806.040 – Driveway Development Standards for Uses of Activities Other Than Single-Family, Two-Family, Three-Family, and Four-Family

Unless otherwise provided under the UDC, driveways for uses or activities other than single family, two family, three family, or four family shall be developed and maintained as provided in this section.

- (a) *Access.* Off-street parking and vehicle use areas shall have either separate driveways for ingress and egress, a single driveway for ingress and egress with an adequate turnaround that is always available, or a loop to the single point of access. The driveway approaches to the driveways shall conform to SRC chapter 804.

Applicant's Findings: *The proposed driveways include ingress and egress and at no point will a vehicle have to back out into the right-of-way. This is met.*

(b) *Location.* Driveways shall not be located within required setbacks except where:

- (1) The driveway provides direct access to the street, alley, or abutting property.
- (2) The driveway is a shared driveway located over the common lot line and providing access to two or more uses.

Applicant's Findings: *The proposed driveways provide direct access to the street; therefore, this is met.*

(c) *Setbacks and landscaping.*

- (1) *Perimeter setbacks and landscaping, generally.* Perimeter setbacks and landscaping as set forth in this subsection shall be required for driveways abutting streets and abutting interior front, side, and rear property lines; provided, however, perimeter setbacks and landscaping are not required where:

(A) The driveway provides direct access to the street, alley, or abutting property.

(B) The driveway is a shared driveway located over the common lot line and providing access to two or more uses.

- (2) *Perimeter setbacks and landscaping abutting streets.* Unless a greater setback is required elsewhere within the UDC, driveways abutting a street shall be setback and landscaped according to the off-street parking and vehicle use area perimeter setbacks and landscaping standards set forth under SRC 806.035(c)(2).
- (3) *Perimeter setbacks and landscaping abutting interior front, side, and rear property lines.* Unless a greater setback is required elsewhere within the UDC, driveways abutting an interior front, side, or rear property line shall be setback a minimum of five feet. The setback shall be landscaped according to the Type A standard set forth in SRC chapter 807.

Applicant's Findings: *The driveway provides direct access to the street, there is no driveway setback or landscaping required. This criterion is not applicable.*

(d) *Dimensions.* Driveways shall conform to the minimum width set forth in Table 806-7.

Applicant's Findings: *Pursuant to table 806-8 the minimum driveway width for a two-way driveway is 22-feet, as demonstrated on the plans, the driveways are proposed to be approximately 30-32 feet, exceeding the minimum standard. This is met.*

(e) *Surfacing.* All driveways, other than access roads required by the Public Works Design Standards to provide access to City utilities, shall be paved with a hard surface material meeting the Public Works Design Standards. Access roads required by the Public Works Design Standards to provide access to City utilities shall be an all-weather surface material meeting the Public Works Design Standards; provided, however, the first ten feet of the

access road leading into the property, as measured from the property line, shall be paved with a hard surface material.

Applicant's Findings: *As demonstrated on the plans, the driveways are proposed to be paved with a hard surface material that meets the public works design standards. This is met.*

(f) *Drainage.* Driveways shall be adequately designed, graded, and drained according to the Public Works Design Standards, or to the approval of the Director.

Applicant's Findings: *The proposed driveway is designed to meet the drainage requirements established in the public works designed standards. This is met.*

(g) *"No Parking" signs.* Driveways shall be posted with one "no parking" sign for every 60 feet of driveway length, but in no event shall less than two signs be posted.

Applicant's Findings: *As shown on the submitted plans, there are no driveway lengths that exceed 60 feet in length. This is not applicable.*

Section 806.045 – Bicycle Parking; When Required

(a) *General applicability.* Bicycle parking shall be provided as required under this chapter for:

- (1) Each proposed new use or activity.
- (2) Any change of use or activity.
- (3) Any intensification, expansion, or enlargement of a use or activity.

Applicant's Findings: *The proposal includes a new use or activity, triggering the applicability of this section.*

Section 806.050 – Proximity of Bicycle Parking to Use or Activity Served

Except as otherwise provided in this chapter, bicycle parking shall be located on the same development site as the use or activity it serves.

Applicant's Findings: *The proposed bicycle parking is located on the same development site as the use and activity it serves, as demonstrated on the submitted plans. This is met.*

Section 806.055 – Amount of Bicycle Parking

(a) *Minimum required bicycle parking.* Unless otherwise provided under the UDC, bicycle parking shall be provided in amounts not less than those set forth in Table 806-9.

Applicant's Findings: *Pursuant to table 806-9, the minimum bicycle parking spaces for the retail sales use is four spaces as the convenience store is less than 10,000 square feet. The motor vehicle service use requires a minimum one bicycle parking space for 9,000 square feet. The*

total minimum required bicycle parking is five bicycle parking spaces. As demonstrated on the submitted plans, six spaces are being provided, exceeding the minimum required. This is met.

- (b) *Long-term bicycle parking.* Long-term bicycle parking may be provided to satisfy a percentage of the minimum bicycle parking spaces required under this chapter. Such long-term bicycle parking shall not exceed the amounts set forth in Table 806-8. The maximum percentage of long-term bicycle parking allowed is based solely on the minimum number of bicycle parking spaces required. This standard shall not be construed to prohibit the provision of additional long-term bicycle parking spaces provided the minimum number of required spaces is met. *(Example: A restaurant requiring a minimum of four bicycle parking spaces may, but is not required to, designate one of the required spaces as a long-term space. Additional short-term and long term spaces may be provided as long as the minimum required three short-term spaces are maintained).*

Applicant's Findings: *No long-term bicycle parking is proposed; therefore, this is not applicable.*

Section 806.060 – Bicycle Parking Development Standards

Unless otherwise provided under the UDC, bicycle parking shall be developed and maintained as set forth in this section. The standards set forth in this section shall not apply to City approved bike share stations which utilize bike docking stations.

(a) *Location.*

- (1) *Short-term bicycle parking.* Short-term bicycle parking shall be located outside a building within a convenient distance of, and clearly visible from, the primary building entrance. In no event shall bicycle parking be located more than 50 feet from the primary building entrance, as measured along a direct pedestrian access route.

Applicant's Findings: *As demonstrated on the submitted plans, the proposed short term bicycle parking spaces are located within 50-feet of the primary building entrance. This is met.*

(2) *Long-term bicycle parking.*

(A) *Generally.* Long-term bicycle parking shall be located:

- (i) Within a building, on the ground floor or on upper floors when the bicycle parking areas are easily accessible by an elevator; or
- (ii) On-site, outside of a building, in a well-lighted secure location that is sheltered from precipitation and within a convenient distance of the primary entrance.

- (B) *Long-term bicycle parking for residential uses.* Long-term bicycle parking spaces for residential uses shall be located within:
 - (i) A residential dwelling unit;
 - (ii) A lockable garage;
 - (iii) A restricted access lockable room serving an individual dwelling unit or multiple dwelling units;
 - (iv) A lockable bicycle enclosure; or
 - (v) A bicycle locker.
- (C) *Long-term bicycle parking for non-residential uses.* Long-term bicycle parking spaces for non-residential uses shall be located within:
 - (i) A restricted access lockable room;
 - (ii) A lockable bicycle enclosure; or
 - (iii) A bicycle locker.

Applicant's Findings: *No long-term bicycle parking is proposed for the development; therefore, this is not applicable.*

- (b) *Access.* All bicycle parking areas shall have direct and accessible access to the public right-of-way and the primary building entrance that is free of obstructions and any barriers, such as curbs or stairs, which would require users to lift their bikes in order to access the bicycle parking area.

Applicant's Findings: *The bicycle parking has direct and accessible access to the public right-of-way via the pedestrian connections. Users will not need to lift their bikes in order to access the bicycle parking area. This is met.*

- (c) *Dimensions.* All bicycle parking areas shall meet the following dimension requirements:
 - (1) *Bicycle parking spaces.* Bicycle parking spaces shall conform to the minimum dimensions set forth in Table 806-10.
 - (2) *Access aisles.* Bicycle parking spaces shall be served by access aisles conforming to the minimum widths set forth in Table 806-10. Access aisles serving bicycle parking spaces may be located within the public right-of-way.

Applicant's Findings: *Detailed bicycle parking plans will be provided at the time of building permit. The applicant has taken the dimension grid from SRC and has shown it on the plan and the access aisle is approximately 6-feet where the code requires 4-feet. These standards are met.*

- (d) *Surfacing.* Where bicycle parking is located outside a building, the bicycle parking area shall consist of a hard surface material, such as concrete, asphalt pavement, pavers, or similar material, meeting the Public Works Design Standards.

Applicant's Findings: *The proposed bicycle parking is located on a hard surface material as demonstrated on the submitted plans. This is met.*

(e) *Bicycle racks.* Where bicycle parking is provided in racks, the racks may be horizontal or vertical racks mounted to the ground, floor, or wall. Bicycle racks shall meet the following standards:

(1) Racks must support the bicycle in a stable position.

(A) For horizontal racks, the rack must support the bicycle frame in a stable position in two or more places a minimum of six inches horizontally apart without damage to the wheels, frame, or components.

(B) For vertical racks, the rack must support the bicycle in a stable vertical position in two or more places without damage to the wheels, frame, or components.

(2) Racks must allow the bicycle frame and at least one wheel to be locked to the rack with a high security, U-shaped shackle lock;

(3) Racks shall be of a material that resists cutting, rusting, and bending or deformation; and

(4) Racks shall be securely anchored.

(5) Examples of types of bicycle racks that do, and do not, meet these standards are shown in Figure 806-11.

Applicant's Findings: *Detailed bicycle parking plans, including rack type, will be submitted at the time of building permit. The applicant intends to meet all of the standards for bicycle racks for the proposed development.*

(f) *Bicycle lockers.* Where bicycle parking is provided in lockers, the lockers shall meet the following standards:

(1) Lockers shall conform to the minimum dimensions set forth in Table 806-10.

(2) Lockers shall be served by an access aisle conforming to the minimum width set forth in Table 806-10 in front of each locker opening.

(3) Lockers shall be securely anchored.

Applicant's Findings: *No bicycle lockers are proposed with the development; therefore, this is not applicable.*

Section 806.065 – Off-Street Loading Areas; When Required

(a) *General applicability.* Off-street loading shall be provided and maintained as required under this chapter for:

(1) Each proposed new use or activity.

- (2) Any change of use or activity, when such change of use or activity results in a greater number of required off-street loading spaces than the previous use or activity.
- (3) Any intensification, expansion, or enlargement of a use or activity.

Applicant's Findings: *The proposal includes a new use or activity, triggering the applicability of this section. However, pursuant to table 806-11 the retail sales use on the site for a building less than 5,000 square feet does not trigger an off-street loading area and none is proposed on the site.*

Chapter 807 – Landscaping and Screening

Section 807.001 – Purpose

The purpose of this chapter is to establish standards for required landscaping and screening under the UDC to improve the appearance and visual character of the community, promote compatibility between land uses, encourage the retention and utilization of existing vegetation, and preserve and enhance the livability of the City.

Section 807.010 – Applicability

The provisions of this chapter apply to all required landscaping and screening under the UDC.

Applicant's Findings: *The development triggers the landscaping requirements of Chapter 807. Below the applicant provides findings regarding how the proposal meets the applicable criteria.*

Section 807.015 – Landscaping and Screening

Unless otherwise provided under the UDC, required landscaping and screening shall conform to the standards set forth in this section.

- (a) *Landscaping types.* Required landscaping shall be provided according to one of the landscaping types set forth in Table 807-1. Where landscaping is required under the UDC without a reference to a specific landscaping type, the required landscaping shall meet the Type A standard.

Applicant's Findings: *The landscape type required for the development site is Type A: one plant unit per 20 square feet. At the time of building permit submittal, the applicant will provide a landscape plan which demonstrates compliance with the minimum plan unit requirements. This criterion will be met.*

- (b) *Plant materials and corresponding plant unit values.* Plant materials, their corresponding minimum plant unit values, and minimum plant material size at time of planting for landscaping within required landscaped areas are set forth in Table 807-2. A minimum of 40 percent of the required number of plant units shall be a combination of mature trees, shade trees, evergreen/conifer trees, or ornamental trees. Plant materials shall

provide for a minimum 75 percent coverage of required landscaped areas within five years.

Applicant's Findings: *The applicant will provide a landscaping plan, meeting the landscape requirements of Chapter 807 at the time of building permit submittal. A plant unit breakdown including how the site meets the 40 percent tree requirement will be demonstrated. This criterion will be met.*

- (c) *Preservation of existing trees and vegetation.* The preservation of existing trees and vegetation is encouraged. If preserved, existing trees as defined under SRC chapter 808, existing trees less than ten inches dbh, and existing vegetation may be utilized to satisfy required landscaping if they conform to the minimum plant unit requirements specified in this chapter.

Applicant's Findings: *At the time of building permit, the applicant will provide a detailed landscaping plan outlining the existing landscaping percentage that is to remain and new landscaping percentage to be installed. The applicant is aware that existing landscaping may be utilized to satisfy required landscaping.*

- (d) *Tree replanting requirements.* In addition to the landscaping required under this chapter, when existing trees, as defined under SRC chapter 808, are proposed for removal from within required setbacks or from a development site, replanting shall be required as provided in this subsection. The provisions of this subsection do not apply to lots used for single family uses, two family uses, three family uses, four family uses, or cottage clusters.

- (1) *Removal of trees within required setbacks.* When an existing tree or trees, as defined under SRC chapter 808, within a required setback are proposed for removal, two new trees shall be planted for each tree removed. Replanted trees shall be of either a shade or evergreen variety with a minimum 1.5 inch caliper.

Applicant's Findings: *There are no trees proposed for removal within a required setback; therefore, the replating requirement outlined above is not applicable.*

- (2) *Removal of trees from development site.* When more than 75 percent of the existing trees, as defined under SRC chapter 808, on a development site are proposed for removal, two new trees shall be planted for each tree removed in excess of 75 percent. Replanted trees shall be of either a shade or evergreen variety with a minimum 1.5 inch caliper. For purposes of this section, existing trees within vision clearance areas, or within areas to be cleared for required roads, utilities, sidewalks, trails, or stormwater facilities, shall not be counted in the total percentage of trees removed from the development site.

Applicant's Findings: The applicant has applied for a tree removal permit separately from this application to remove one significant tree, which is the only tree located on the subject property. The tree proposed for removal is being impacted by the proposed green stormwater facility work in addition to the necessary pavement after the stormwater work is completed for adequate vehicle maneuverability around and to the fueling pumps. As the tree proposed for removal is being removed due to the proposed stormwater facility, the tree does not count towards the percentage of trees removed from the development site and the replanting requirement outlined above is not applicable.

(e) *Screening standards.* Unless otherwise provided under the UDC, where screening is required in the form of a fence, wall, or landscaping, it shall conform to the following standards:

- (1) *Height.* Fences and walls shall be a minimum of six feet in height. Landscaping shall be of a species that will attain a height of at least six feet within three years after planting.
- (2) *Opacity.* Screening shall be sight-obscuring. Fences, walls, and landscaping shall be at least 75 percent opaque when viewed from any angle at a point 25 feet away from the fence, wall, or landscaping. Landscaping shall be of an evergreen species that will attain required opacity within three years after planting.
- (3) *Maintenance.* Fences and walls shall be maintained in safe condition, and shall be maintained as opaque. Landscaping shall be replaced within six months after dying or becoming diseased to the point that required opacity can no longer be maintained.

Applicant's Findings: Screening is not required for the proposed development; therefore, this is not applicable.

(f) *Berm.* Unless otherwise provided under the UDC, where screening is required in the form a berm, the berm shall be an earthen mound no less than three feet in height above the existing grade, and shall be constructed with a slope no steeper than 3:1 on all sides. The berm shall be planted with plant materials to prevent erosion. The berm shall not alter natural drainage flows from abutting properties.

Applicant's Findings: There is no screening in the form of berms for the proposed development; therefore, this is not applicable.

(g) *Street trees.* Development adjacent to public streets shall provide street trees that meet the standards and specifications set forth in SRC chapter 86.

Applicant's Findings: The applicant understands that street tree plantings are required along the streets that are under the City of Salem's jurisdiction. The applicant will plant street trees to the maximum extent feasible along the required street frontages.

Section 5: Findings Applicable to Class 2 Adjustment

Chapter 250 – Adjustments

Section 250.001 – Purpose

The purpose of this chapter is to provide a process to allow deviations from the development standards of the UDC for developments that, while not meeting the standards of the UDC, will continue to meet the intended purpose of those standards. Adjustments provide for an alternative way to meet the purposes of the Code and provide for flexibility to allow reasonable development of property where special conditions or unusual circumstances exist.

Section 250.005 – Adjustments

(a) *Applicability.*

(1) *Classes.*

- (A) A Class 1 adjustment is an adjustment to any numerical development standard in the UDC that increases or decreases the standard by not more than 20 percent.
- (B) A Class 2 adjustment is an adjustment to any development standard in the UDC other than a Class 1 adjustment, including an adjustment to any numerical development standard in the UDC that increases or decreases the standard by more than 20 percent.

Applicant's Findings: *The requested adjustments trigger the applicability of a class 2 adjustment.*

(2) *Prohibition.* Notwithstanding subsection (a)(1) of this section, an adjustment shall not be granted to:

- (A) Allow a use or activity not allowed under the UDC;
- (B) Change the status of a use or activity under the UDC;
- (C) Modify a definition or use classification;
- (D) Modify a use standard;
- (E) Modify the applicability of any requirement under the UDC;
- (F) Modify a development standard specifically identified as non-adjustable;
- (G) Modify a development standard that contains the word "prohibited";
- (H) Modify a procedural requirement under the UDC;
- (I) Modify a condition of approval placed on property through a previous planning action;

- (J) A design review guideline or design review standard, except Multiple Family Design Review Standards in SRC Chapter 702, which may be adjusted; or
- (K) The required landscaping in the Industrial Business Campus (IBC) Zone.

Applicant's Findings: *The requested adjustments are not prohibited as described above; therefore, the applicant is applying for the adjustments.*

- (b) *Procedure type.* Class 1 and Class 2 adjustments are processed as a Type II Procedure under SRC chapter 300.

Applicant's Findings: *The applicant has applied for a consolidated application and all applications will be reviewed using the type II procedures outlined in SRC chapter 300.*

- (c) *Submittal requirements.* In addition to the submittal requirements for a Type II application under SRC chapter 300, an application for a Class 1 or Class 2 adjustment shall include the following:
 - (1) A site plan, of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing all information necessary to establish satisfaction with the approval criteria. By way of example, but not of limitation, such information may include the following:
 - (A) The total site area, dimensions, and orientation relative to north;
 - (B) The location of all proposed primary and accessory structures and other improvements, including fences, walls, and driveway locations, indicating distance to such structures from all property lines and adjacent on-site structures;
 - (C) All proposed landscape areas on the site, with an indication of square footage and as a percentage of site area;
 - (D) The location, height, and material of fences, berms, walls, and other proposed screening as they relate to landscaping and screening required by SRC chapter 807;
 - (E) The location of all trees and vegetation required to be protected pursuant to SRC chapter 808; and
 - (F) Identification of vehicle, pedestrian, and bicycle parking and circulation areas, including handicapped parking stalls, disembarking areas, accessible routes of travel, and proposed ramps.

Applicant's Findings: *A site plan, including applicable information above, has been provided. This is met.*

- (2) An existing conditions plan, of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing the following information:

- (A) The total site area, dimensions, and orientation relative to north;
- (B) The location of existing structures and other improvements on the site, including accessory structures, fences, walls, and driveways, noting their distance from property lines;
- (C) The location of the 100-year floodplain, if applicable; and
- (D) The location of drainage patterns and drainage courses, if applicable.

Applicant's Findings: *An existing conditions plan has been provided containing applicable information above. This is met.*

(d) *Criteria.*

- (1) An application for a Class 1 adjustment shall be granted if all of the following criteria are met:

- (A) The purpose underlying the specific development standard proposed for adjustment is:
 - (i) Clearly inapplicable to the proposed development;
 - or
 - (ii) Clearly satisfied by the proposed development.
- (B) The proposed adjustment will not unreasonably impact surrounding existing or potential uses or development.

Applicant's Findings: *The applicant is applying for class 2 adjustments; therefore, the class 1 adjustment approval criteria is not applicable.*

- (2) An application for a Class 2 adjustment shall be granted if all of the following criteria are met:

- (A) The purpose underlying the specific development standard proposed for adjustment is:
 - (i) Clearly inapplicable to the proposed development;
 - or
 - (ii) Equally or better met by the proposed development.

Applicant's Findings:

SRC 804.035(d) Spacing. Except for driveway approaches providing access to a single family, two family, three family, or four family use, driveway approaches onto a major or minor arterial shall be no less than 370 feet from the nearest driveway or street intersection, measured from

centerline to centerline. The applicant is requesting two adjustments to the spacing standard on each side of the driveway approach to Macleay Road SE. The applicant is proposing access to Macleay Road SE, classified as a minor arterial in the Salem TSP. This proposed access is in the best location possible to access the development site from Macleay Road SE due to the adjacent intersections, wetlands, and classification of street frontages abutting the site. The access is necessary for fueling trucks to access the development site. The City of Salem Traffic Engineer has reviewed the proposed access and has no concerns; therefore, the adjustment meets (ii) above as the proposed driveway approach is in the best location possible to serve the site.

SRC 804.035(c)(2) For a corner lot that abuts a local or collector street, the driveway approach shall provide access to the street with the lower street classification. The applicant is requesting an adjustment to this standard to provide an additional driveway approach to a higher classification of street abutting the subject property. The property is a corner lot abutting three streets, an existing driveway approach to Gaffin Road SE is proposed to be used and a second driveway approach is proposed to the Macleay Road SE. The applicant requests an adjustment to allow the additional driveway approach to Macleay Road SE as fueling trucks would be unable to access the site without the driveway approach to Macleay Road SE. There is no access proposed to the highest classification of street abutting the subject property, Cordon Road SE, classified as a parkway in the Salem TSP. This adjustment meets (ii) above as the property does contain a driveway approach to the lowest classification of street and the request for the second driveway approach to a higher classification is justified for access, maneuvering, and safety concerns for vehicles accessing the site.

- (B) If located within a residential zone, the proposed development will not detract from the livability or appearance of the residential area.

Applicant's Findings: The proposal is not located within a residential zone; therefore, this criterion is not applicable.

- (C) If more than one adjustment has been requested, the cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone.

Applicant's Findings: The application includes three adjustments to driveway standards; the on-site development meets all of the code requirements for development within the zone and no adjustments are being sought that would make the development inconsistent with the purpose of the zone. This criterion is met.

- (e) *Transfer of adjustments.* Unless otherwise provided in the final decision granting the adjustment, an adjustment shall run with the land.

Applicant's Findings: *The applicant understands that unless otherwise indicated in the final decision, adjustments shall run with the land.*

Section 6: Findings Applicable to Driveway Approach Permit

Chapter 804 – Driveway Approaches

Section 804.001 – Purpose

The purpose of this chapter is to establish development standards for safe and efficient access to public streets.

Section 804.010 – Applicability

This chapter applies to the design, construction, relocation, reconstruction, enlargement, or alteration of any driveway approach.

Applicant's Findings: *The applicant is proposing one new driveway approach to Macleay Road SE. The site is served by an existing driveway approach to Gaffin Road. Triggering the applicability and requirement of one class 2 driveway approach permit.*

Section 804.025 – Class 2 Driveway Approach Permit

(a) *Required.* A Class 2 driveway approach permit is required for:

- (1) A driveway approach onto a local, collector, minor arterial, major arterial, or parkway street providing access to a use other than single family, two family, three family, or four family;
- (2) Maintenance, repair, or replacement of an existing permitted driveway approach, which is part of, or needed for, redevelopment of commercial or industrially zoned property.

Applicant's Findings: *The applicant is proposing one new driveway approach to Macleay Road SE, classified as a minor arterial in the Salem TSP, to serve a non-residential use. The site is served by an existing driveway approach to Gaffin Road. Triggering the applicability and requirement of one class 2 driveway approach permit.*

(b) *Procedure type.* A Class 2 driveway approach permit is processed as a Type II procedure under SRC chapter 300.

Applicant's Findings: *The applicant has applied for consolidated applications that will be reviewed using the type II procedures outlined in SRC chapter 300.*

(c) *Submittal requirements.* In lieu of the application submittal requirements under SRC chapter 300, an application for a Class 2 driveway approach permit shall include the following:

- (1) A completed application form.

- (2) A site plan, of a size and form and in the number of copies meeting the standards established by the Director, containing the following information:
 - (A) The location and dimensions of the proposed driveway approach;
 - (B) The relationship to nearest street intersection and adjacent driveway approaches;
 - (C) Topographic conditions;
 - (D) The location of all utilities;
 - (E) The location of any existing or proposed buildings, structures, or vehicular use areas;
 - (F) The location of any trees and vegetation adjacent to the location of the proposed driveway approach that are required to be protected pursuant to SRC chapter 808; and
 - (G) The location of any street trees adjacent to the location of the proposed driveway approach.
- (3) Identification of the uses or activities served, or proposed to be served, by the driveway approach.
- (4) Any other information, as determined by the Director, which may be required to adequately review and analyze the proposed driveway approach for conformance with the applicable criteria.

Applicant's Findings: *The applicant has submitted the applicable information above to review the proposed driveway approaches. This is met.*

- (d) *Criteria.* A Class 2 driveway approach permit shall be granted if:
 - (1) The proposed driveway approach meets the standards of this chapter and the Public Works Design Standards;
 - (2) No site conditions prevent placing the driveway approach in the required location;
 - (3) The number of driveway approaches onto an arterial are minimized;
 - (4) The proposed driveway approach, where possible:
 - (A) Is shared with an adjacent property; or
 - (B) Takes access from the lowest classification of street abutting the property;
 - (5) The proposed driveway approach meets vision clearance standards;
 - (6) The proposed driveway approach does not create traffic hazards and provides for safe turning movements and access;
 - (7) The proposed driveway approach does not result in significant adverse impacts to the vicinity;
 - (8) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and

- (9) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets.

Applicant's Findings: As demonstrated on the submitted plans, the proposed driveway approaches meet the public works design standards. The driveway approaches have been placed in the best possible location to serve the development and not create traffic hazards. The proposed driveway approaches have been reviewed by the City Traffic Engineer and there are no concerns. These criteria are met.

Section 804.030 – Access onto Local and Collector Streets

- (a) *Number of driveway approaches.* Except as otherwise provided in this chapter, a lot or parcel is entitled to one driveway approach onto a local or collector street. Additional driveway approaches from a single family, two family, three family, or four family use onto a local or collector street may be allowed through Class 1 driveway permit approval.

Applicant's Findings: The subject property has an existing driveway approach to Gaffin Road, classified as a local street in the Salem TSP.

- (b) *Permitted access.*

- (1) Driveway approaches onto local and collector streets shall only provide access to a permitted parking or vehicular use area, except where the driveway approach will provide access to a site controlled by a franchised utility service provider or a governmental entity.
- (2) No access shall be provided onto a local or collector street from a proposed new single family, two family, three family, or four family use on an existing lot abutting an alley.

Applicant's Findings: The driveway approach to Gaffin Road provides access to a parking and vehicle use area that will be permitted with the approval of these applications. This will be met.

- (c) *Spacing.* Driveway approaches providing direct access to a collector street shall be located no less than 200 feet from intersections with major arterials or minor arterials, measured from centerline to centerline.

Applicant's Findings: The development does not abut a collector street; therefore, this is not applicable.

- (d) *Vision clearance.* Driveway approaches onto local and collector streets shall comply with the vision clearance requirements set forth in SRC chapter 805.

Applicant's Findings: As demonstrated on the submitted plans, the driveway approach to Gaffin Road, a local street, meets the vision clearance requirements established in SRC chapter 805.

Section 804.035 – Access onto major and minor arterials

(a) *Number of driveway approaches.*

- (1) Except as otherwise provided in this chapter, a complex is entitled to one driveway approach onto a major or minor arterial. Additional driveway approaches for a complex may be allowed where:
 - (A) A complex has more than 370 feet of frontage abutting a major or minor arterial;
 - (B) There is a shared access agreement between two or more complexes; or
 - (C) It is impracticable to serve the complex with only one driveway approach.

Applicant's Findings: *The proposal is not a complex; therefore, this is not applicable.*

- (2) Development that is not a complex, and is other than a single family, two family, three family, or four family use, is entitled to one driveway approach onto a major or minor arterial where:
 - (A) The driveway approach provides shared access;
 - (B) The development does not abut a local or collector street; or
 - (C) The development cannot be feasibly served by access onto a local or collector street.

Applicant's Findings: *The proposal includes a driveway approach to Macleay Road SE, a minor arterial, because the development cannot be feasibly served with only the existing access to the abutting local street, Gaffin Road. Fueling trucks need to access this site and the driveway approach to Macleay Road is the only feasible way for them to access the development, with the existing driveway to Gaffin Road for additional maneuverability. Both driveway approaches are necessary for the functionality of the fueling station.*

- (3) A single family, two family, three family, or four family use is entitled to one driveway approach onto a major or minor arterial where:
 - (A) The driveway approach provides access to an existing single family, two family, three family, or four family use; or
 - (B) The driveway approach provides access to a proposed single family, two family, three family, or four family use on a lot created prior to March 16, 2022.

Applicant's Findings: *The proposal does not include a single family, two family, three family, or four family use. Therefore, this is not applicable.*

- (b) *Traffic volume threshold.* No driveway approach onto a major or minor arterial shall be allowed unless the development generates 30 or more vehicle trips per day or the

driveway approach provides access to a city park or a single family, two family, three family, or four family use.

Applicant's Findings: *The proposed development generated more than 30 vehicle trips per day. The City Traffic Engineer has reviewed the proposal and has no issues with the proposed driveway. The fueling trucks that need to reach this site will not be able to do so without the proposed driveway approach to Macleay Road SE.*

(c) *Permitted access.*

- (1) Driveway approaches onto major and minor arterials shall only provide access to a permitted parking or vehicular use area, except where the driveway approach will provide access to a site controlled by a franchised utility service provider or a governmental entity.

Applicant's Findings: *The driveway approach proposed to Macleay Road SE, a minor arterial, provides access to a parking and vehicle use area that will be permitted with the approval of the submitted applications. This is met.*

- (2) For a corner lot that abuts a local or collector street, the driveway approach shall provide access to the street with the lower street classification.

Applicant's Findings: *The property is a corner lot abutting three streets, an existing driveway approach to Gaffin Road SE is proposed to be used and a second driveway approach is proposed to the Macleay Road SE. The applicant requests an adjustment to allow the additional driveway approach to Macleay Road SE as fueling trucks would be unable to access the site without the driveway approach to Macleay Road SE. Findings addressing the requested adjustment are provided under section five of this narrative. There is no access proposed to the highest classification of street abutting the subject property, Cordon Road SE, classified as a parkway in the Salem TSP.*

- (3) No access shall be provided onto a major or minor arterial from a proposed new single family, two family, three family, or four family use on an existing lot abutting an alley.

Applicant's Findings: *The proposal is not for any residential uses; therefore, this is not applicable.*

- (4) No access shall be provided onto a major or minor arterial from a single family, two family, three family, or four family use constructed as part of a subdivision or partition.

Applicant's Findings: *The proposal is not for any residential uses; therefore, this is not applicable.*

- (5) Only forward in/forward out access shall be allowed onto a major or minor arterial.

Applicant's Findings: As demonstrated on the submitted plans, the proposed driveway approach to Macleay Road SE, designated as a minor arterial, is forward in/forward out. No vehicles will back out into the public right-of-way.

- (d) *Spacing.* Except for driveway approaches providing access to a single family, two family, three family, or four family use, driveway approaches onto a major or minor arterial shall be no less than 370 feet from the nearest driveway or street intersection, measured from centerline to centerline.

Applicant's Findings: The proposed driveway approach onto Macleay Road SE is approximately 325 feet from the intersection of Cordon Road SE and approximately 215 feet from the intersection of Gaffin Road, both of which are less than the 370 feet requirement as outlined above. The applicant is requesting two adjustments to this standard as the location of the driveway is in the best possible placement from the intersection of Gaffin Road and Cordon Road. The adjustment findings are provided within the adjustment section of this narrative.

- (e) *Vision clearance.* Driveway approaches onto major and minor arterials shall comply with the vision clearance requirements set forth in SRC chapter 805.

Applicant's Findings: The applicant understands the vision clearance requirements for driveway approaches to arterials and as demonstrated on the submitted plans, no obstructions are proposed within any vision clearance areas. This is met.

Chapter 805 – Vision Clearance

Section 805.001 – Purpose

The purpose of this chapter is to ensure visibility for vehicular, bicycle, and pedestrian traffic at the intersections of streets, alleys, flag lot accessways, and driveways.

Section 805.005 – Vision Clearance Areas

Vision clearance areas that comply with this section shall be provided at the corners of all intersections; provided, however, vision clearance areas are not required in the Central Business (CB) Zone.

- (a) *Street intersections.* Vision clearance areas at street intersections shall comply with the following:
- (1) *Uncontrolled intersections.* At uncontrolled intersections, the vision clearance area shall have 30-foot legs along each street (see Figure 805-1).

- (2) *Controlled intersections.* At controlled intersections, the vision clearance area shall have a ten-foot leg along the controlled street and a 50-foot leg along the uncontrolled street (see Figure 805-2).
- (3) *One-way streets.* Notwithstanding subsections (a)(1) and (2) of this section, at an uncontrolled or controlled intersection of a one-way street, no vision clearance area is required on the corners of the intersection located downstream from the flow of traffic (see Figure 805-3).

Applicant's Findings: *The applicant will ensure that the vision clearance area at any intersections will be met.*

- (b) *Intersections with driveways, flag lot accessways, and alleys.* Vision clearance areas at intersections of streets and driveways, streets and flag lot accessways, streets and alleys, and alleys and driveways shall comply with the following:

- (1) *Driveways.*

- (A) Driveways serving single family and two family uses. Driveways serving single family and two family uses shall have a vision clearance area on each side of the driveway. The vision clearance area shall have ten-foot legs along each side of the driveway, and ten-foot legs along the intersecting street or alley (see Figure 805-4).
- (B) Driveways serving uses other than single family and two family. Driveways serving uses other than single family and two family shall have a vision clearance area on each side of the driveway. The vision clearance area shall have ten-foot legs along the driveway and 50-foot legs along the intersecting street or alley (see Figure 805-5).

Applicant's Findings: *As demonstrated on the submitted plans, there are no obstructions proposed within the vision clearance areas adjacent to the proposed driveways. This is met.*

- (2) *Flag lot accessways.*

Applicant's Findings: *There are no flag lot accessways involved in the proposal. This is not applicable.*

- (3) *Alleys.* Alleys shall have a vision clearance area on each side of the alley. The vision clearance area shall have ten-foot legs along the alley and ten-foot legs along the intersecting street (see Figure 805-8).

Applicant's Findings: *No alleys are involved in the proposal. This is not applicable.*

- (4) *Measurement.* The legs of a vision clearance area shall be measured along the right-of-way line and along the intersecting driveway, flag lot accessway, or alley.

Applicant's Findings: *The applicant understands how to measure vision clearance areas.*

Section 7: Conclusion

Based on the facts and findings presented by the applicant within this detailed written narrative, the applicant believes they have satisfied the burden of proof required by the Unified Development Code and demonstrated how the proposed class 3 site plan review, class 2 adjustment, and class 2 driveway approach permits satisfies all applicable criteria.

Section 8: Exhibits

Exhibit A – Marion County Tax Map

SE1/4 SEC32 T7S R2W W.M.

LEGEND

Taxlot Boundary

Historical Boundary

Road Right-of-Way

Easement

Railroad Right-of-Way

Railroad Centerline

Private Road ROW

Taxcode Line

Subdivision/Plat Bndry

Map Boundary

Waterline - Taxlot Bndry

Waterline - Non Bndry

+ 1/16TH Section Cor.

 1/4 Section Cor.

© DLC Corner

5 15

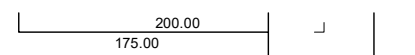
NUMBERS

00 00 0

Acreage
0.25 AC

All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW



700

800
801
802
803
804
2900
4600
5000->
17400

DISCLAIMER: THIS MAP WAS PREPARED
FOR ASSESSMENT PURPOSES ONLY



Assessors Office
Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT
www.co.marion.or.us

PLOT DATE: 3/11/2024

SALEM
07 2W 32D

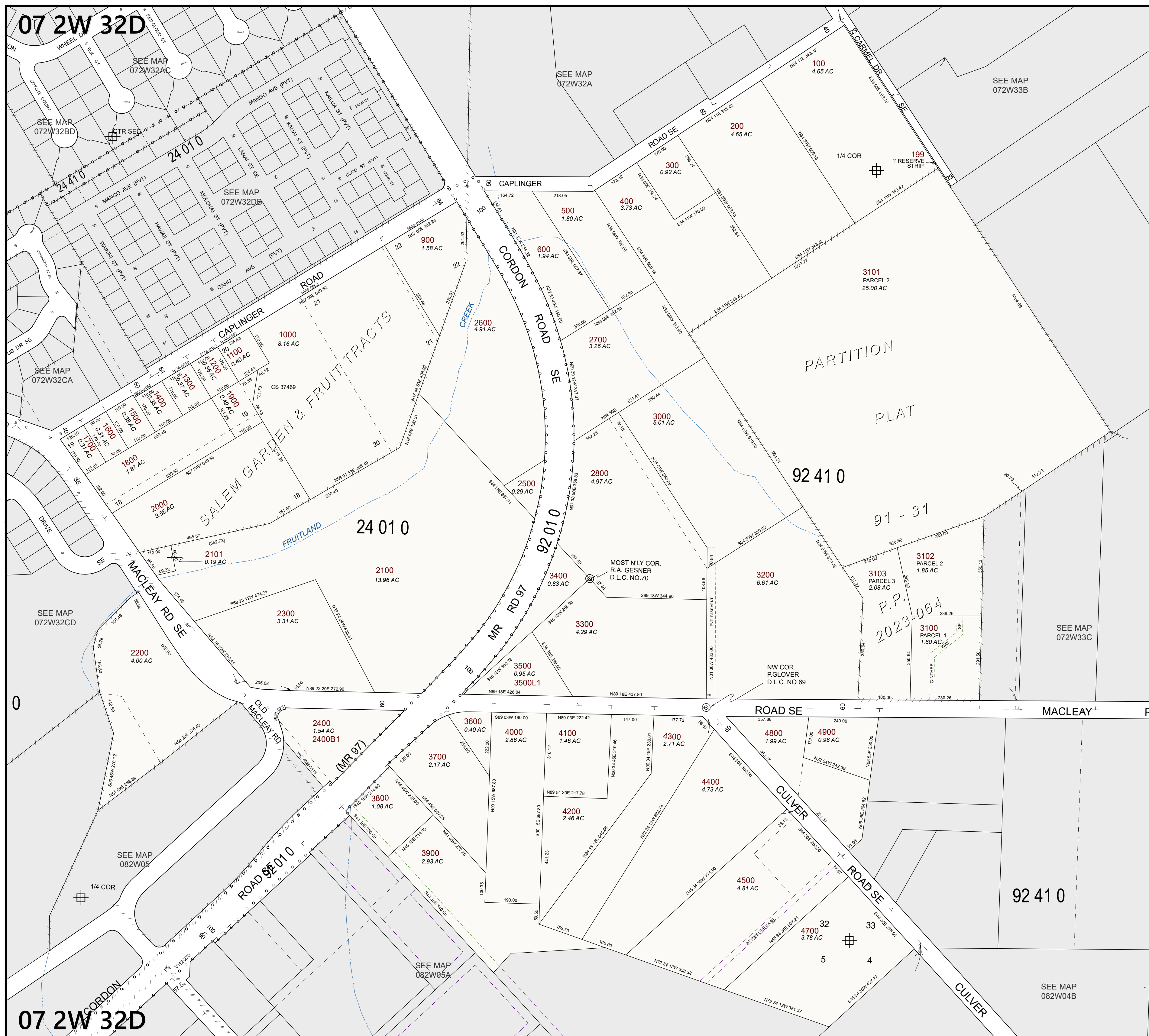


Exhibit B – Deed



THIS SPACE RESERVED FOR RECORDER'S USE

After recording return to:

7 Star Salem LLC

3812 Galloway St S

Salem, OR 97302

Until a change is requested all tax statements shall be sent to the following address:

7 Star Salem LLC

3812 Galloway St S

Salem, OR 97302

File No. 628121AM

MARION COUNTY RECORDS

2024-23066

D-DEED

07/26/2024 02:10 PM

\$10.00 \$11.00 \$10.00 \$60.00

\$91.00



I, Bill Burgess, County Clerk for Marion County, Oregon, certify that the instrument identified herein was recorded in the Official Records.

Bill Burgess

Pgs=2 DMI

STATUTORY WARRANTY DEED

Gary Cameron and John Knebes,

Grantor(s), hereby convey and warrant to

7 Star Salem LLC,

Grantee(s), the following described real property in the County of Marion and State of Oregon free of encumbrances except as specifically set forth herein:

All the following real property situated in Marion County, Oregon, described as follows:

Beginning at the point of intersection of the West line of Cordon Road, Marion County, Oregon and the North line of the original alignment of Macleay Road; thence Northerly along the West line of said Cordon Road to a point on the South line of the newly realigned Macleay Road; thence Westerly along the South line of the new alignment of said Macleay Road to a point on the North line of the original alignment of Macleay Road; thence Southeasterly along the North line of said original alignment of Macleay Road to the point of beginning.

SAVE AND EXCEPT that portion conveyed to the City of Salem, an Oregon municipal corporation in Reel 3898, Page 251, recorded January 6, 2017, deed records, Marion County, Oregon.

FOR INFORMATION PURPOSES ONLY, THE MAP/TAX ACCT #(S) ARE REFERENCED HERE:

072W32D002400

072W32D002400B1

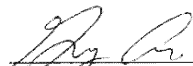
The consideration paid for the transfer is SPURSUANT TO AN IRC 1031 TAX DEFERRED EXCHANGE ON BEHALF OF GRANTOR/GRANTEE.

The above-described property is free of encumbrances except all those items of record, if any, as of the date of this deed and those shown below, if any:

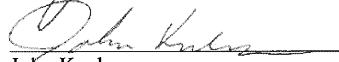
Real property taxes due, if any, but not yet payable

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated this 26 day of July, 2024



Gary Cameron



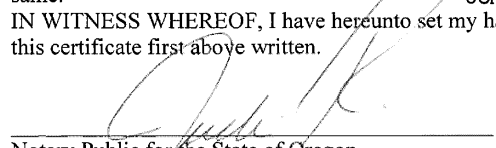
John Knebes

State of Oregon } ss
County of Marion }

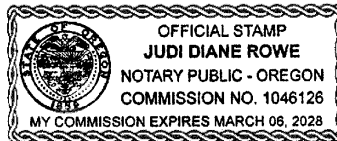
On this 26 day of July, 2024, before me, Judi Rowe a Notary Public in and for said state, personally appeared Gary Cameron, known or identified to me to be the person(s) whose name(s) is/are subscribed to the within Instrument and acknowledged to me that he/she/they executed same.

*John Knebes

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.



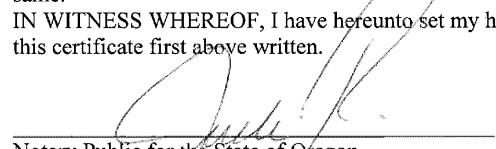
Notary Public for the State of Oregon
Residing at: Salem, OR
Commission Expires: 3-6-28



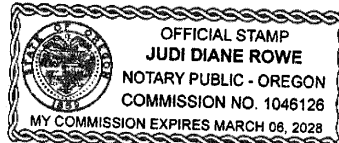
State of Oregon } ss
County of Marion }

On this 26 day of July, 2024, before me, Judi Rowe a Notary Public in and for said state, personally appeared Gary Cameron, known or identified to me to be the person(s) whose name(s) is/are subscribed to the within Instrument and acknowledged to me that he/she/they executed same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.



Notary Public for the State of Oregon
Residing at: Salem, OR
Commission Expires: 3-6-28



Marion County
Document Separator Page

Instrument # 2024-23066

July 26, 2024 02:10 PM

State of Oregon
County of Marion

I hereby certify that the attached
instrument was received and duly
recorded by me in Marion County
records:

Fee: \$91.00

Bill Burgess
Marion County Clerk

This is not an invoice.

Exhibit C – Articles of Organization

ARTICLES OF ORGANIZATION



Corporation Division
sos.oregon.gov/business

E-FILED

Jul 22, 2024

OREGON SECRETARY OF STATE

REGISTRY NUMBER

228963393

TYPE

DOMESTIC LIMITED LIABILITY COMPANY

1. ENTITY NAME

7 STAR SALEM LLC

2. MAILING ADDRESS

3812 GALLOWAY ST S
SALEM OR 97302 USA

3. PRINCIPAL PLACE OF BUSINESS

2400 MACLEAY RD SE
SALEM OR 97317 USA

4. NAME & ADDRESS OF REGISTERED AGENT

AMRITPAL SINGH

3812 GALLOWAY ST S
SALEM OR 97302 USA

5. ORGANIZERS

AMRITPAL SINGH

3812 GALLOWAY ST S
SALEM OR 97302 USA

JASPAL SINGH

3812 GALLOWAY ST S
SALEM OR 97302 USA

PRITPAL SINGH

3785 ABERDEEN ST S
SALEM OR 97302 USA

6. INDIVIDUALS WITH DIRECT KNOWLEDGE

AMRITPAL SINGH

3812 GALLOWAY ST S
SALEM OR 97302 USA



7. DURATION

PERPETUAL

8. MANAGEMENT

This Limited Liability Company will be member-managed by one or more members

I declare, under penalty of perjury, that this document does not fraudulently conceal, fraudulently obscure, fraudulently alter or otherwise misrepresent the identity of the person or any officers, managers, members or agents of the limited liability company on behalf of which the person signs. This filing has been examined by me and is, to the best of my knowledge and belief, true, correct, and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment, or both.

By typing my name in the electronic signature field, I am agreeing to conduct business electronically with the State of Oregon. I understand that transactions and/or signatures in records may not be denied legal effect solely because they are conducted, executed, or prepared in electronic form and that if a law requires a record or signature to be in writing, an electronic record or signature satisfies that requirement.

ELECTRONIC SIGNATURE

NAME

AMRITPAL SINGH

TITLE

PRESIDENT

DATE

07-21-2024

Exhibit D – HOA Statement

BRAND

Homeowners Association Information

The applicant is submitting this statement to confirm there is no homeowners association (HOA) which is active or registered with the Oregon Secretary of State which impacts the subject property.

Exhibit E – HCRPZ Acknowledgement

BRAND

Historic and Cultural Resources Protection Zone Acknowledgement

The applicant is aware the subject site is identified on the City of Salem's Historic and Cultural Resources Protection Zone map. The applicant's consultant has discussed properties within these areas with the city's Historic Preservation Officer, Kimberli Fitzgerald. No public funding will be utilized to develop the subject site. At the time the site is developed, the applicant's contractors will have an inadvertent discovery plan on file with the city.

Exhibit F – TGE Form

CITY OF *Salem*
AT YOUR SERVICE

Traffic Engineering Section
Public Works Department
555 Liberty Street SE, Room 325 Telephone: 503-588-6211
Salem, Oregon 97301-3513 TTY: 503-588-6292

Trip Generation Estimate

Street _____

Bin # _____ TGE # _____

Date Received _____

Section 1 (To be completed by applicant.)

Applicant Name: BRAND Land Use Telephone: 503-370-8704

Applicant Mailing Address: 1720 Liberty St SE

Location of New Development: Marion County Tax Lot 072W32D002400

(Please provide street address. If unknown, provide approximate address and geographical description/nearest cross streets.)

Description and Size of New Development: New 4,999 square foot convenience store and 6 fueling pumps

(e.g., 150 single-family homes, 20,000 sq. ft. office addition, 12-pump gas station, 50-student day care, additional parking, etc.)

Description and Size of Existing/Past Development, if any (note whether to remain or be removed): _____

Planning Action Involved, if any: _____ Building Permit Involved:
(e.g., zone change, subdivision, partition, conditional use, PUD, mobile home park, etc.) Yes ☐ No ☐

Section 2 (To be completed by City staff.)

Proposed Use	Existing Use
Development Quantity: _____	Development Quantity: _____
ITE Land Use Code: _____	ITE Land Use Code: _____
Trip Generation Rate/Equation: _____	Trip Generation Rate or Equation: _____
Average Daily Trips: _____	Average Daily Trips: _____
ELNDT Adjustment Factors	ELNDT Adjustment Factors
Trip Length: _____ Linked Trip: _____	Trip Length: _____ Linked Trip: _____
TSDC Trips: _____	TSDC Trips: _____

Section 3 (To be completed by City staff.)

Transportation Impact Analysis (TIA)	Transportation Systems Development Charge
Net Increase in Average Daily Trips: _____ (Proposed use minus existing use.)	Net Increase in TSDC Trips: _____ (Proposed use minus existing use.)
<input type="checkbox"/> A TIA will be required:	<input type="checkbox"/> A TSDC will be required.
<input type="checkbox"/> Arterial/Collector—1000 Trip/day Threshold <input type="checkbox"/> Local Street/Alley—200 Trip/day Threshold <input type="checkbox"/> Other: _____	(Fee determined by Development Services.)
<input type="checkbox"/> A TIA will not be required.	<input type="checkbox"/> A TSDC will not be required.

(For additional information, refer to the back of this application.)

Section 4 (To be completed by City staff.)

Remarks: _____ Date: _____

cc: ☐ Chief Development Services Engineer
☐ Community Development
☐ Building Permit Application
☐ _____

By: _____

Information Required to Assess the Need for a Traffic Impact Analysis and Transportation Systems Development Charge



The following information is required in order to assess the need for a Traffic Impact Analysis (TIA) and to calculate the Transportation Systems Development Charge (TSDC) to be levied on a proposed new development.

TIA Determination:

The City of Salem may require that a TIA be prepared as part of the approval process for major new development. The purpose of a TIA is to estimate the traffic impacts created by a new development on the surrounding street system. Any significantly adverse traffic impacts identified in the TIA must be mitigated by the applicant.

The estimated daily traffic generation of a new development is used as the criteria for determining whether a TIA is needed. If the new development access is located on an arterial or collector and the estimated daily traffic generation is more than 1000 trips, a TIA may be required. If access is located on a local street or alley and the generated trips exceed 200, a TIA may be required. Other criteria such as site access issues, driveway restrictions, and existing facilities deficiencies may also be used, if recommended by City Traffic Engineering staff.

The City Traffic Engineer makes the determination as to whether a TIA is required. (For more information on TIA criteria, see Development Bulletin No. 19 dated January 20, 1995.) When the determination has been made, copies of the Trip Generation Estimate form are sent to Public Works Development Services Division and the applicant. If a planning action is required, a copy is also forwarded to the Community Development Department.

TSDC Analysis:

The City of Salem charges a TSDC on all new development that creates a net increase in traffic on the surrounding street system. The total charge is assessed on a per trip fee times the TSDC trips calculated for the development. For more information on the TSDC, see Council Staff Report dated October 9, 1995.

To assist in estimating the daily trips generated by a new development, please answer the questions in Section 1 of this sheet and return it to Room 325 of the Civic Center. If you have any questions, Traffic Engineering staff are available at 503-588-6211. A copy of the completed trip generation estimate will be returned to you at the address provided in Section 1.

No Land Use, Planning, or Development Approval applications requiring Trip Generation Estimates will be processed until this information has been provided and the TIA/TSDC assessment has been made by City Traffic Engineering staff.

Exhibit G – Neighborhood Association/Transit Contact

Britany Randall

To: elna@salemneighbors.org; alan@rasmussenlegacygroup.com;
Kenneth.Spencer@pgn.com; planning@cherriots.org
Cc: Shelby Guizar
Subject: NOTICE of Land Use Application Submittal - 5100 Block of Macleay Road SE

Email Sent to:

elna@salemneighbors.org
alan@rasmussenlegacygroup.com
planning@cherriots.org
Kenneth.Spencer@pgn.com

Dear SEMCA Neighborhood Association Chair and Land Use Chair,

We are reaching out to you regarding a project within the boundaries of your Neighborhood Association. Please review the enclosed letter and plan and let our team know if you have any questions.

Thank you,

Britany Randall

BRAND
Land Use

Owner & Principal Planner

Office: (503) 370-8704

Cell: (503) 680-0949

Place: 1720 Liberty Street SE

Salem, OR 97302

www.brandlanduse.com



Notice of Land Use Application Submittal

September 25, 2024

SEMCA Neighborhood Association

Cory Poole (Chair)
elna@saalemneighbors.org

Alan Rasmussen (Land Use Chair)
alan@rasmussenlegacygroup.com

RE: Site Plan Review, Driveway Approach Permits, and Adjustments for property identified as 5100 Block of Macleay Road SE

Dear SEMCA Neighborhood Association Chair and Land Use Chair,

We are reaching out to you regarding a project within the boundaries of your Neighborhood Association.

The applicant/property owners are seeking approval of a Site Plan Review, Driveway Approach Permits, and Adjustments. Upon approval of the requested applications, the applicant will construct a new fueling station and convenience store on the subject property.

This application will be processed using Type II procedures. The neighborhood association, property owners, and tenants within 250-feet of all portions of the property will receive notice of the application and have an opportunity to provide comments.

We hope that you find this letter and attached conceptual plan informative. If you have any questions regarding this notice, please contact the applicant's land use representative.

Thank you.

Applicant Information
7 Star Salem, LLC

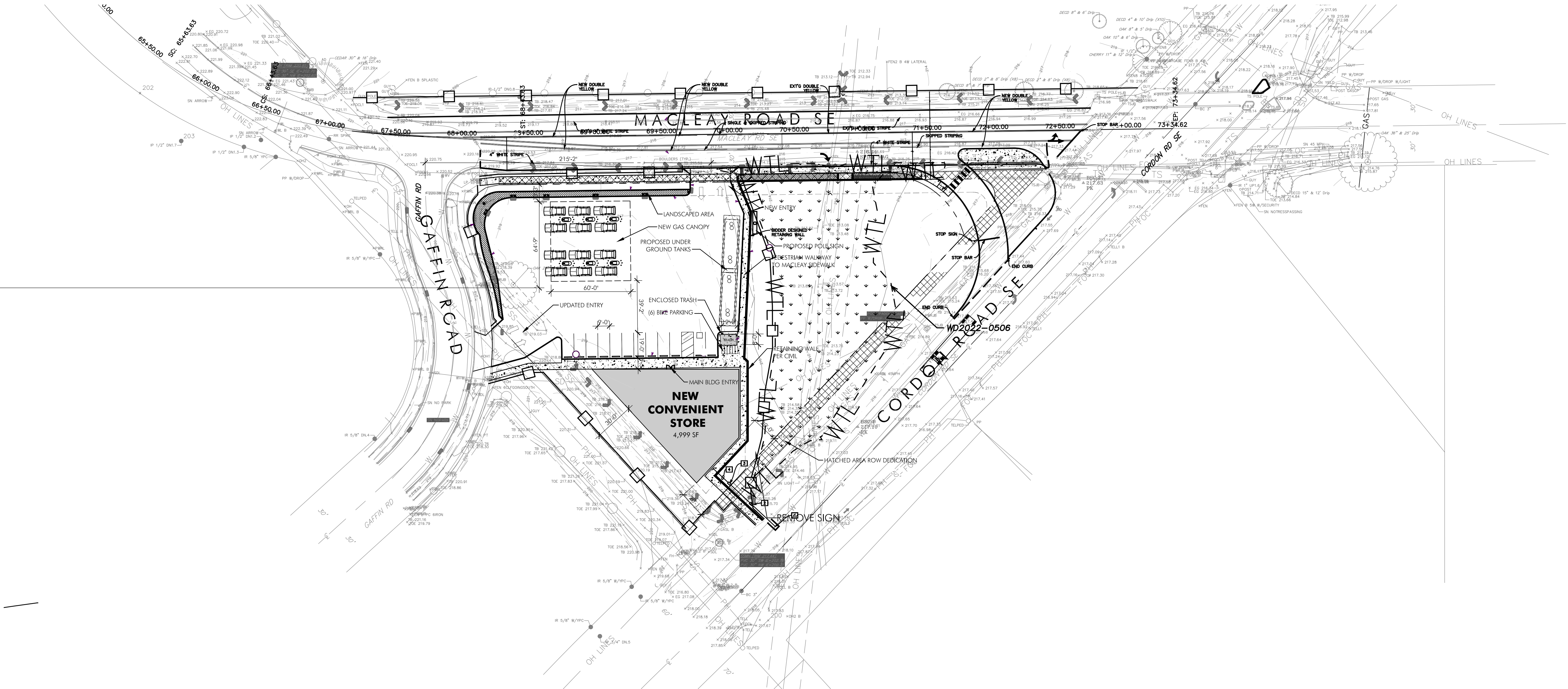
Applicant Representative Information
BRAND Land Use, LLC | Brittany Randall
Ph: 503-370-8704
Britany@BRANDlanduse.com

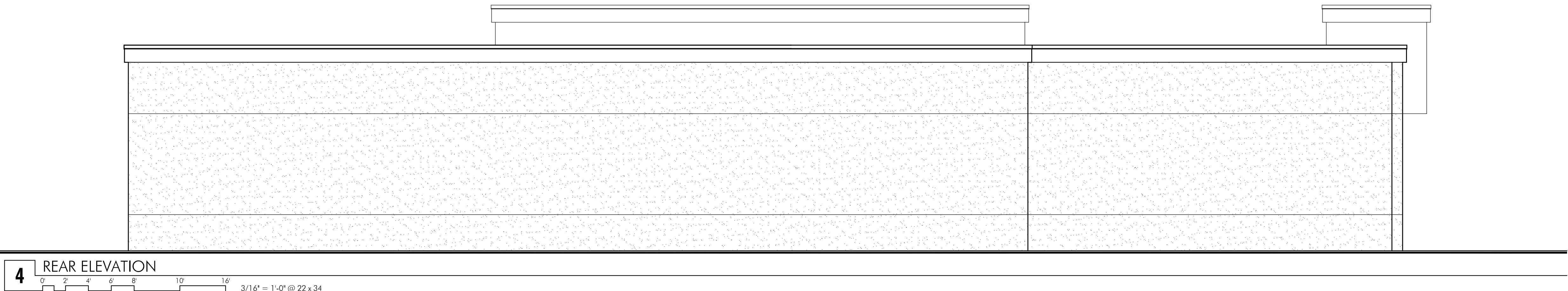
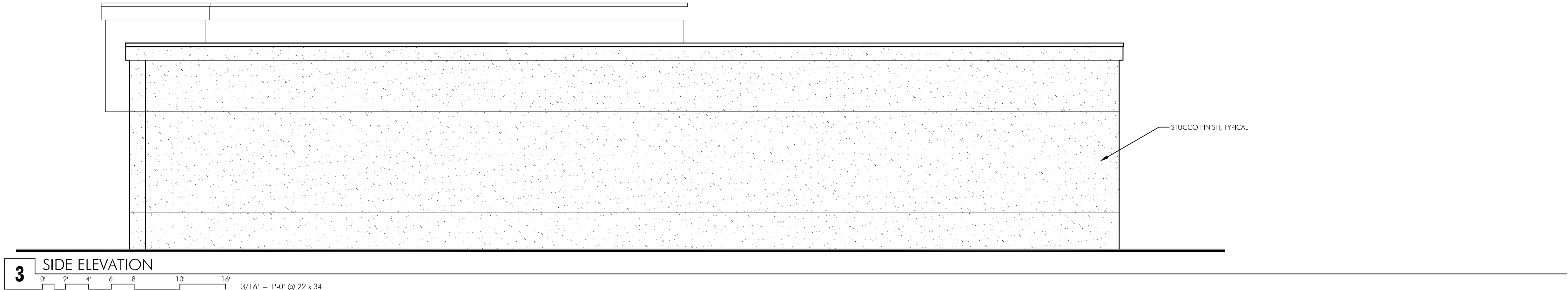
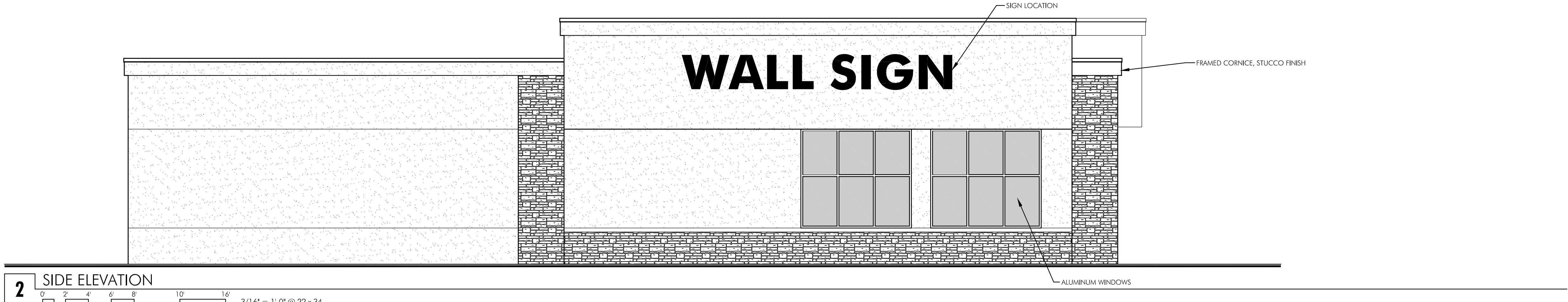
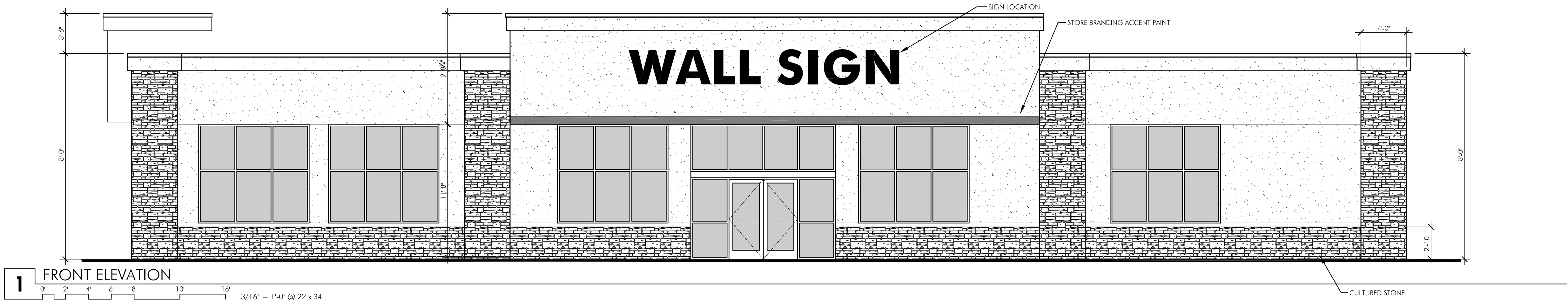
Exhibit H – Architectural Plans

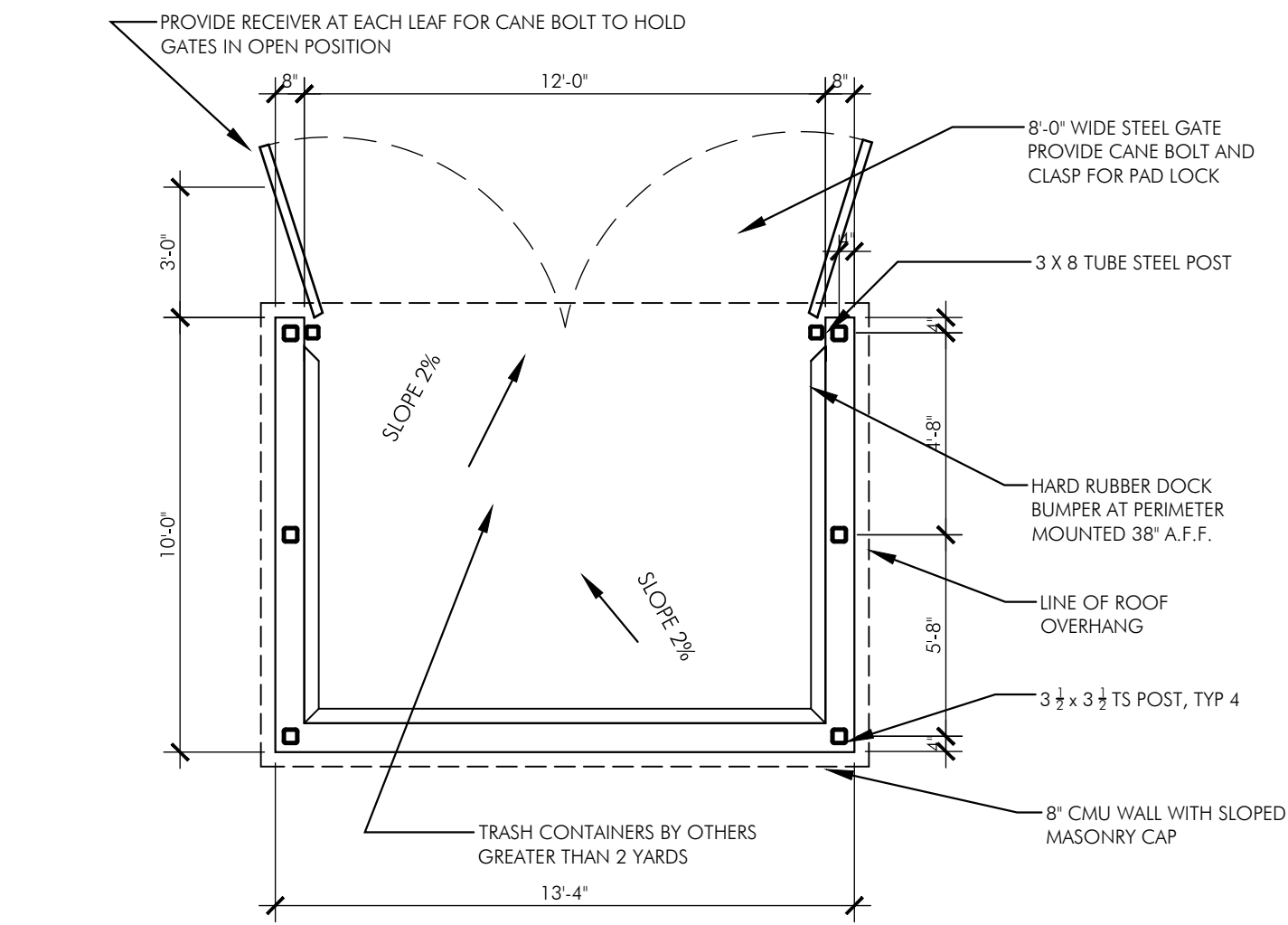
SITE SUMMARY

BUILDING 4,999 SF
PAVEMENT 26,391 SF (INCLUDES 3,600 SF UNDER CANOPY)
CANOPY 3,600 SF
LANDSCAPED AREA 11,939 SF

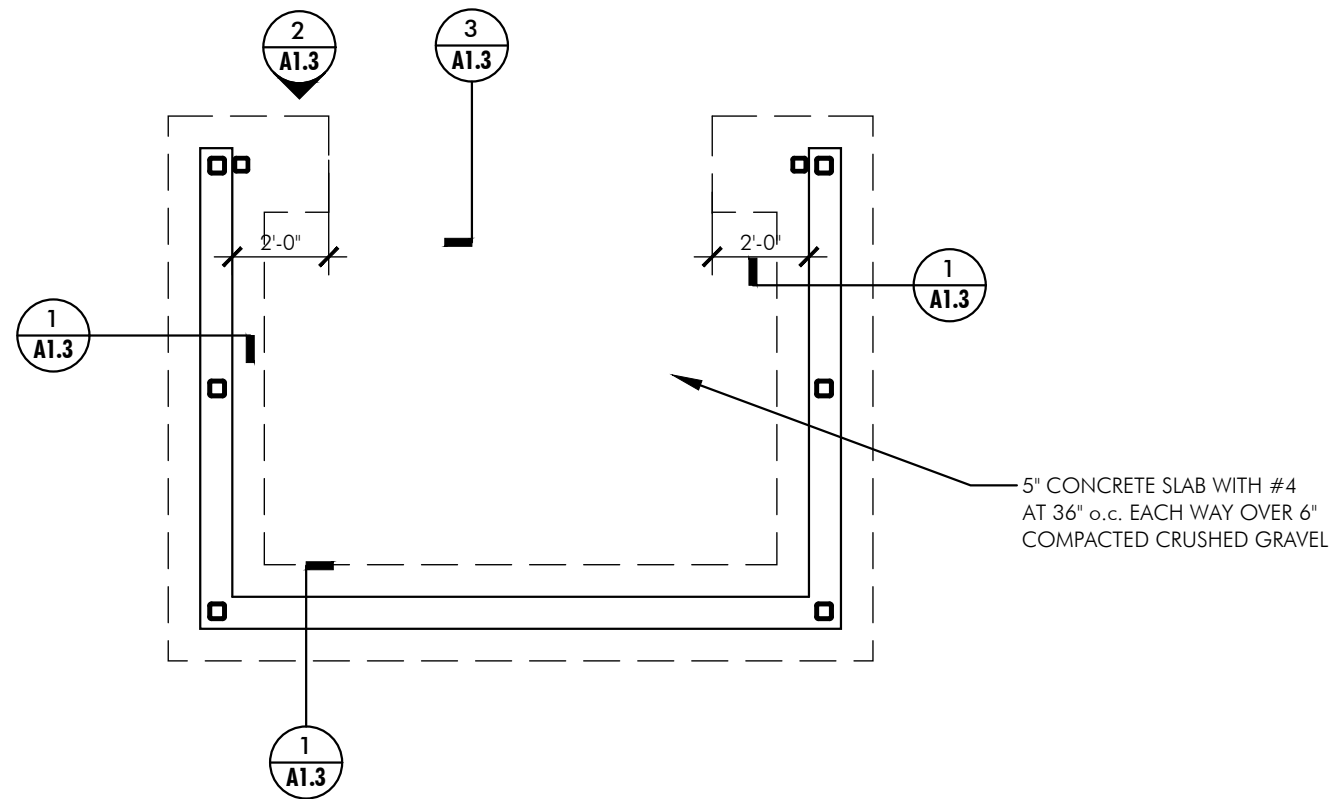
BUILDING HEIGHT 24'-0"
CANOPY HEIGHT 18'-0"



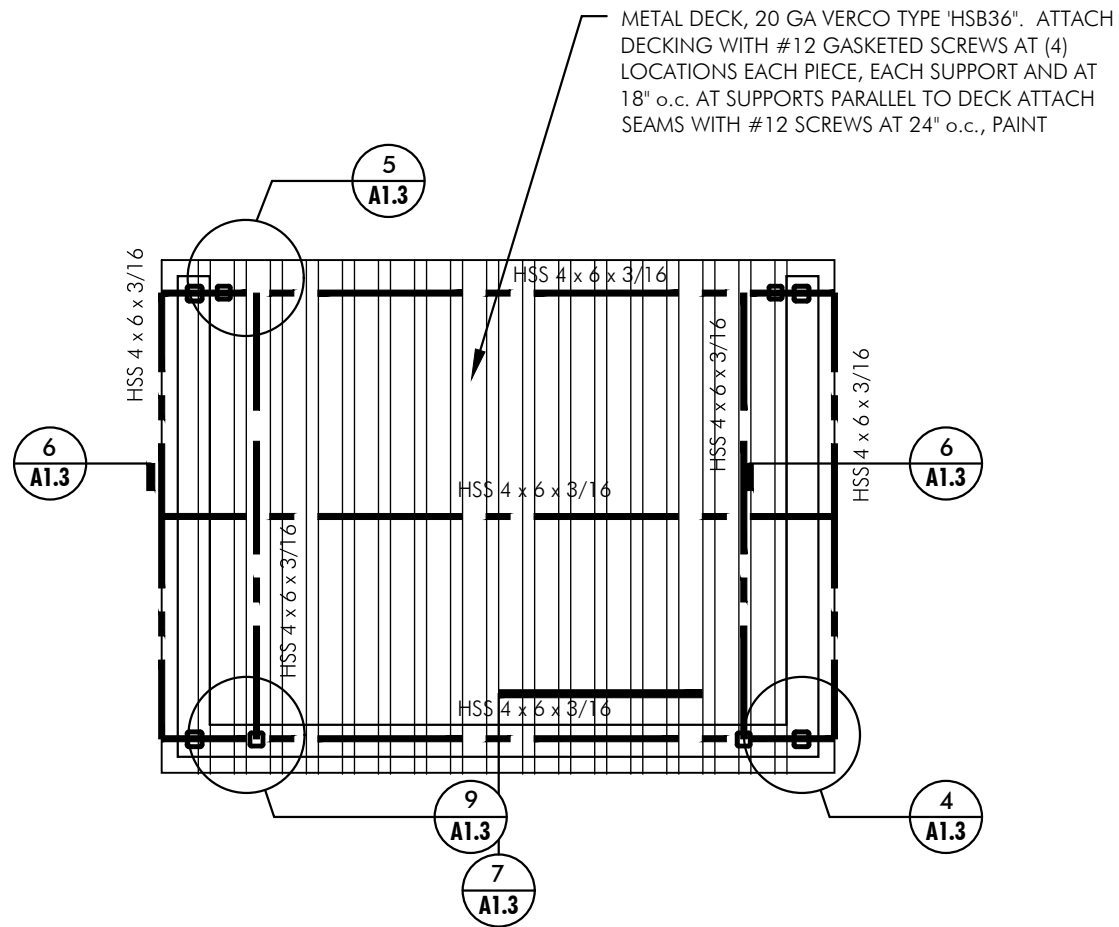




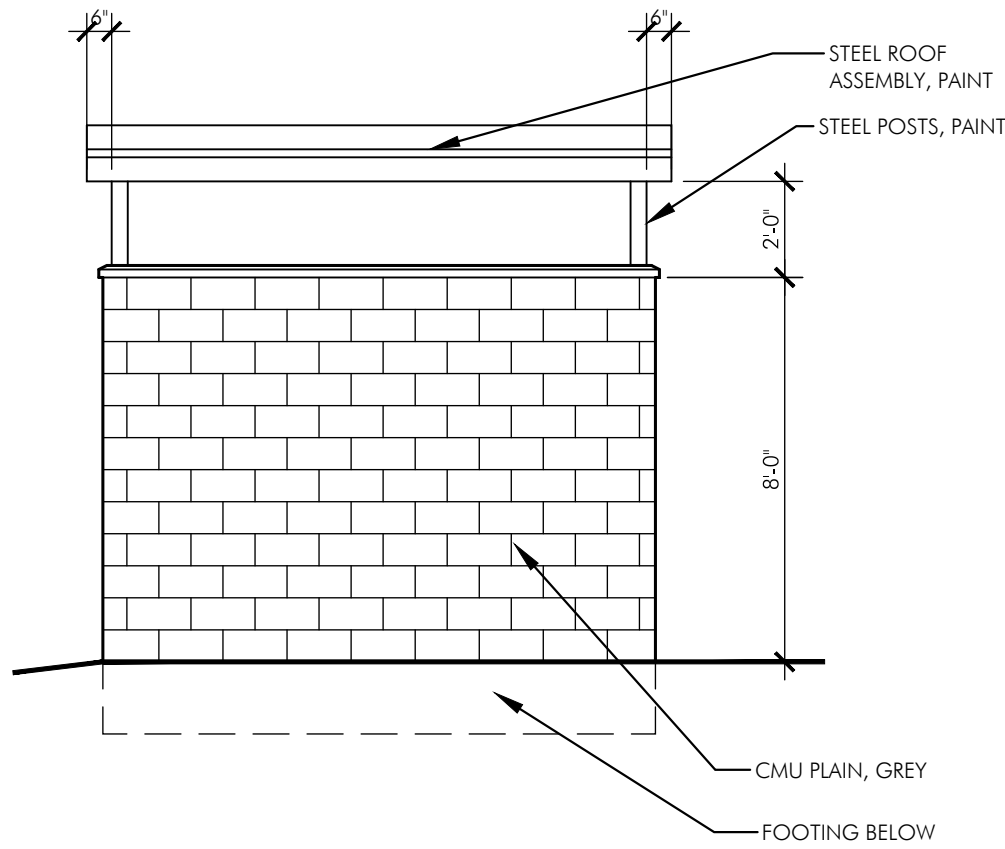
1 TRASH ENCLOSURE PLAN VIEW



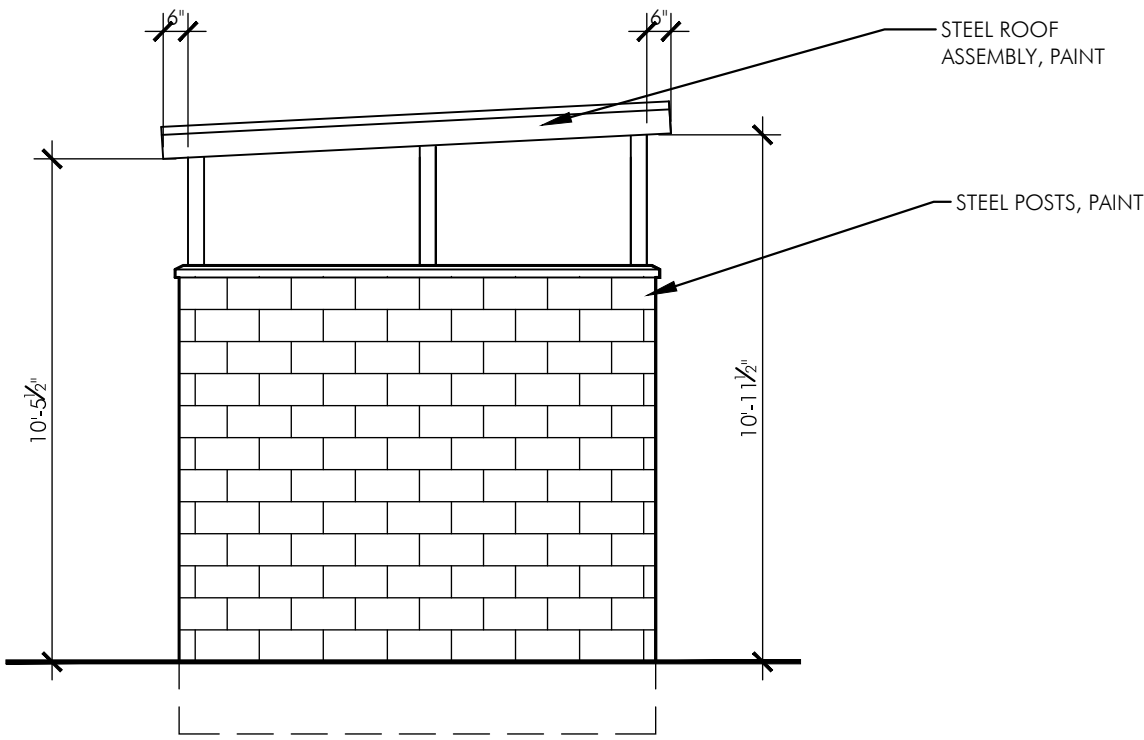
2 TRASH ENCLOSURE FOUNDATION PLAN



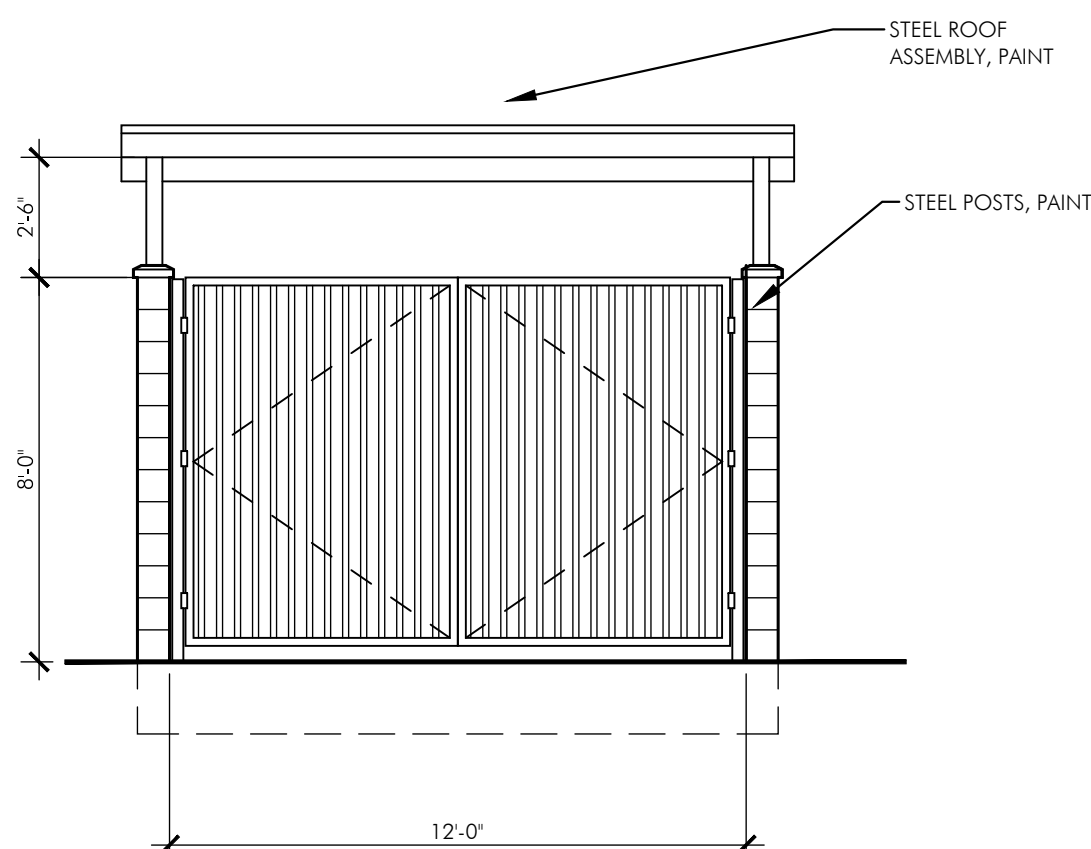
3 TRASH ENCLOSURE ROOF PLAN



4 TRASH ENCLOSURE BACK ELEVATION



5 TRASH ENCLOSURE SIDE ELEVATION, TYP OF BOTH



6 TRASH ENCLOSURE FRONT ELEVATION

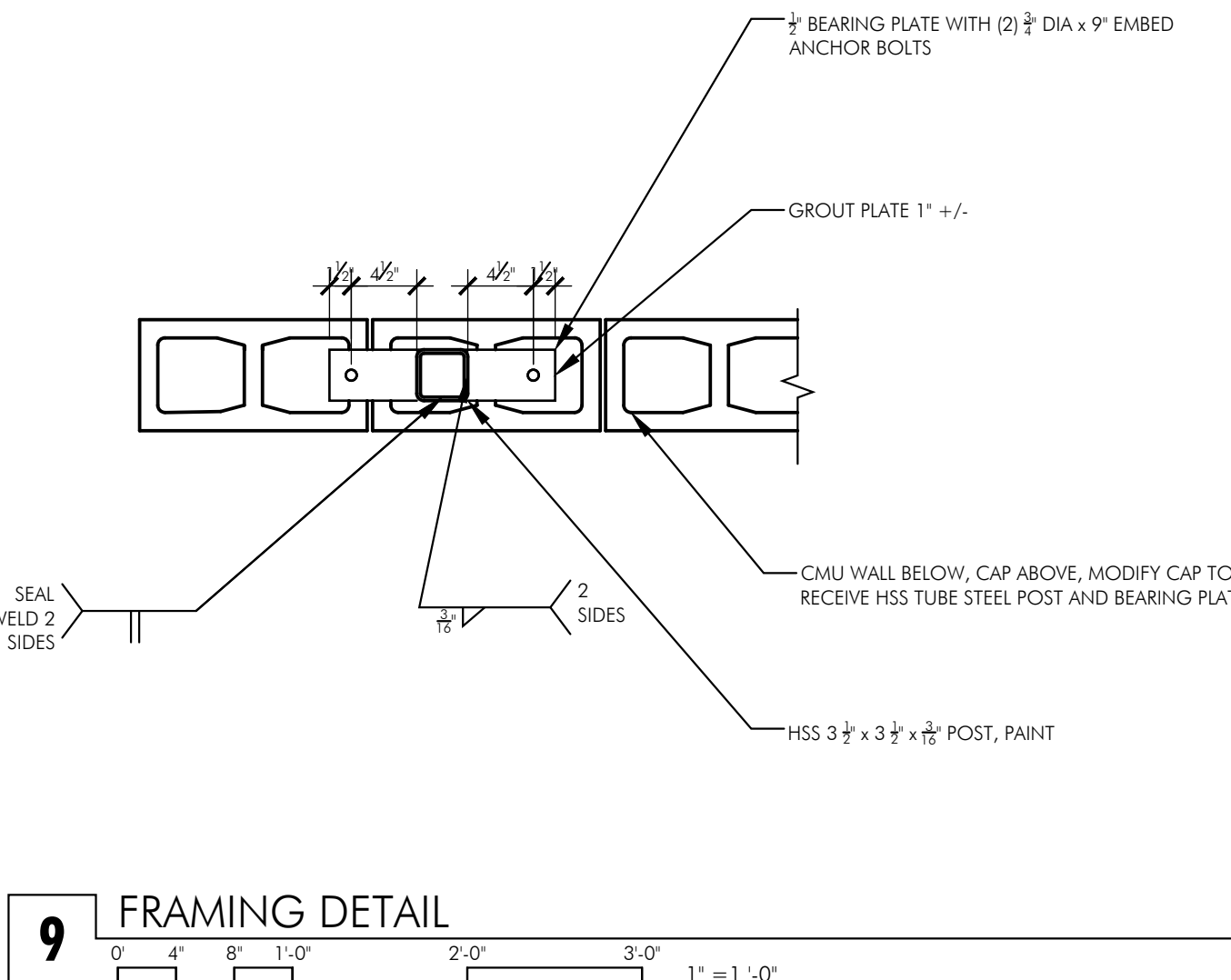
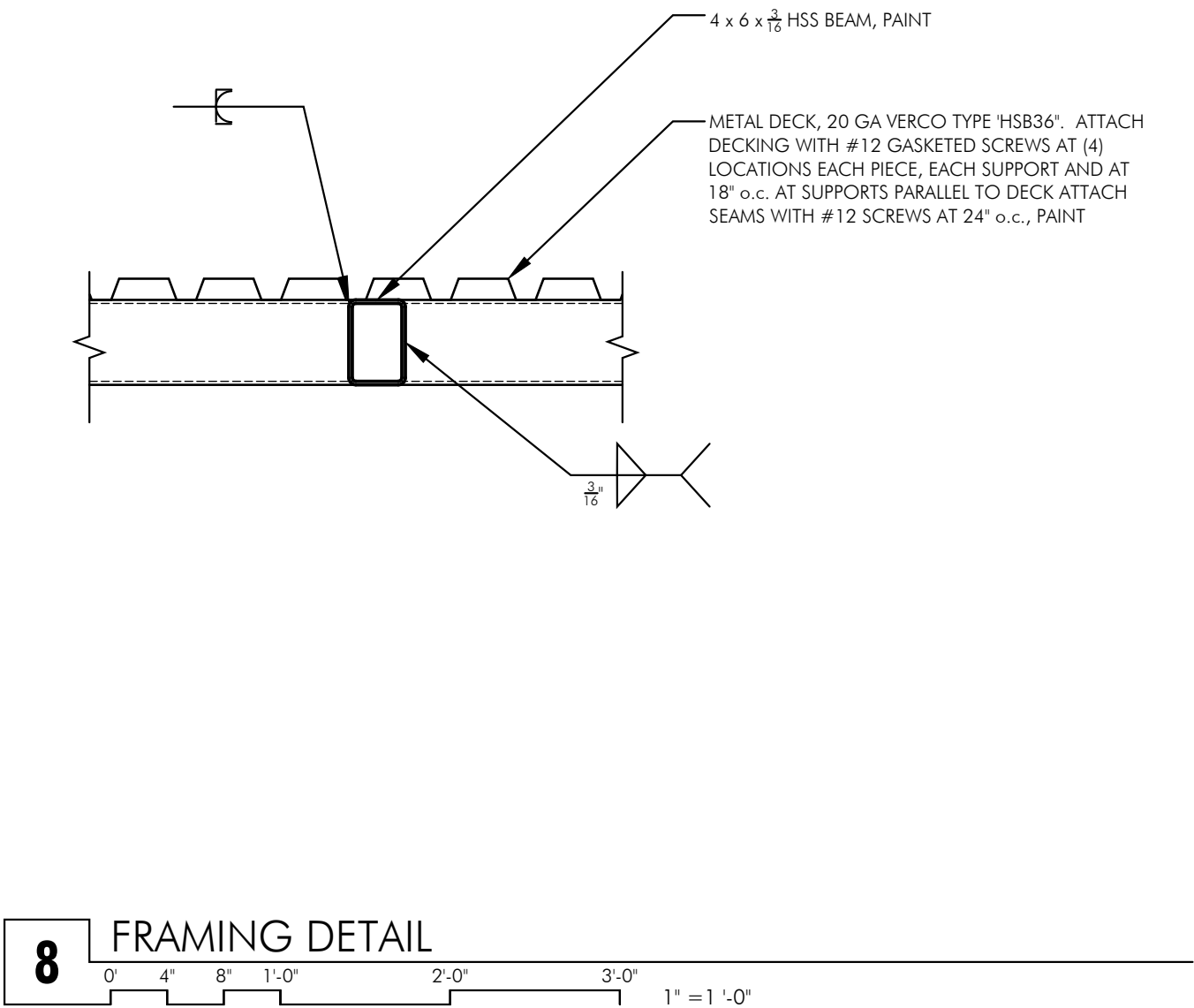
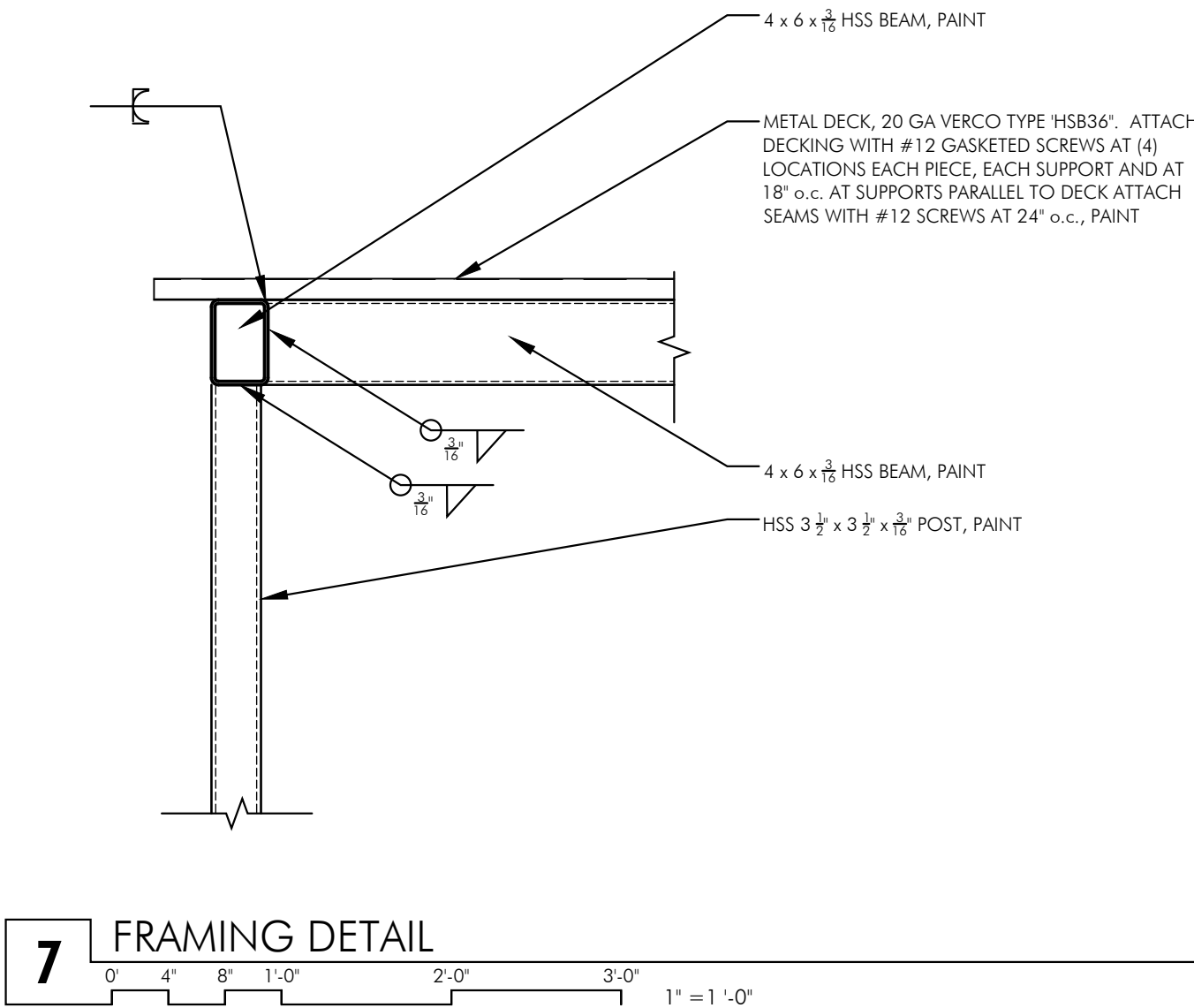
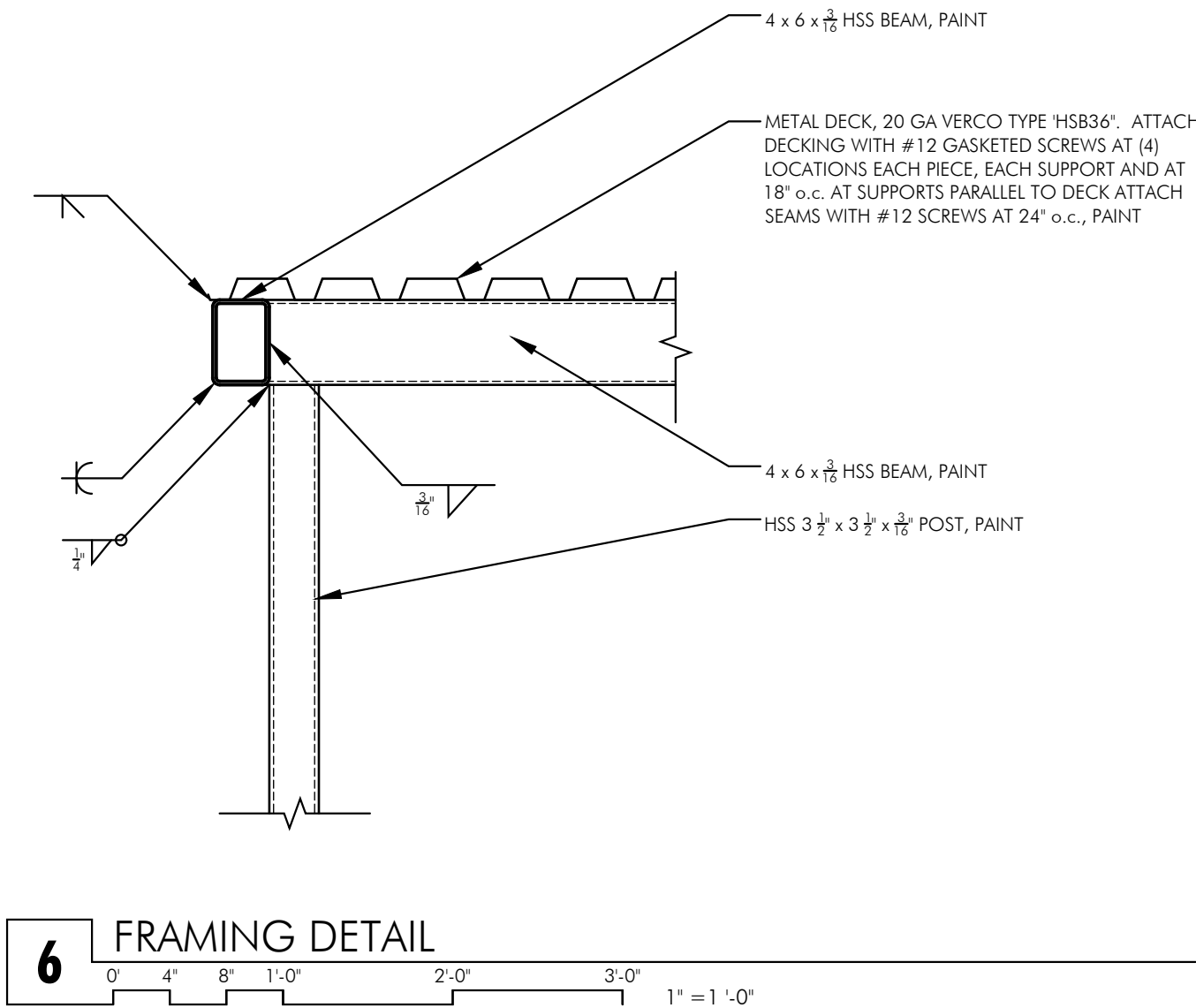
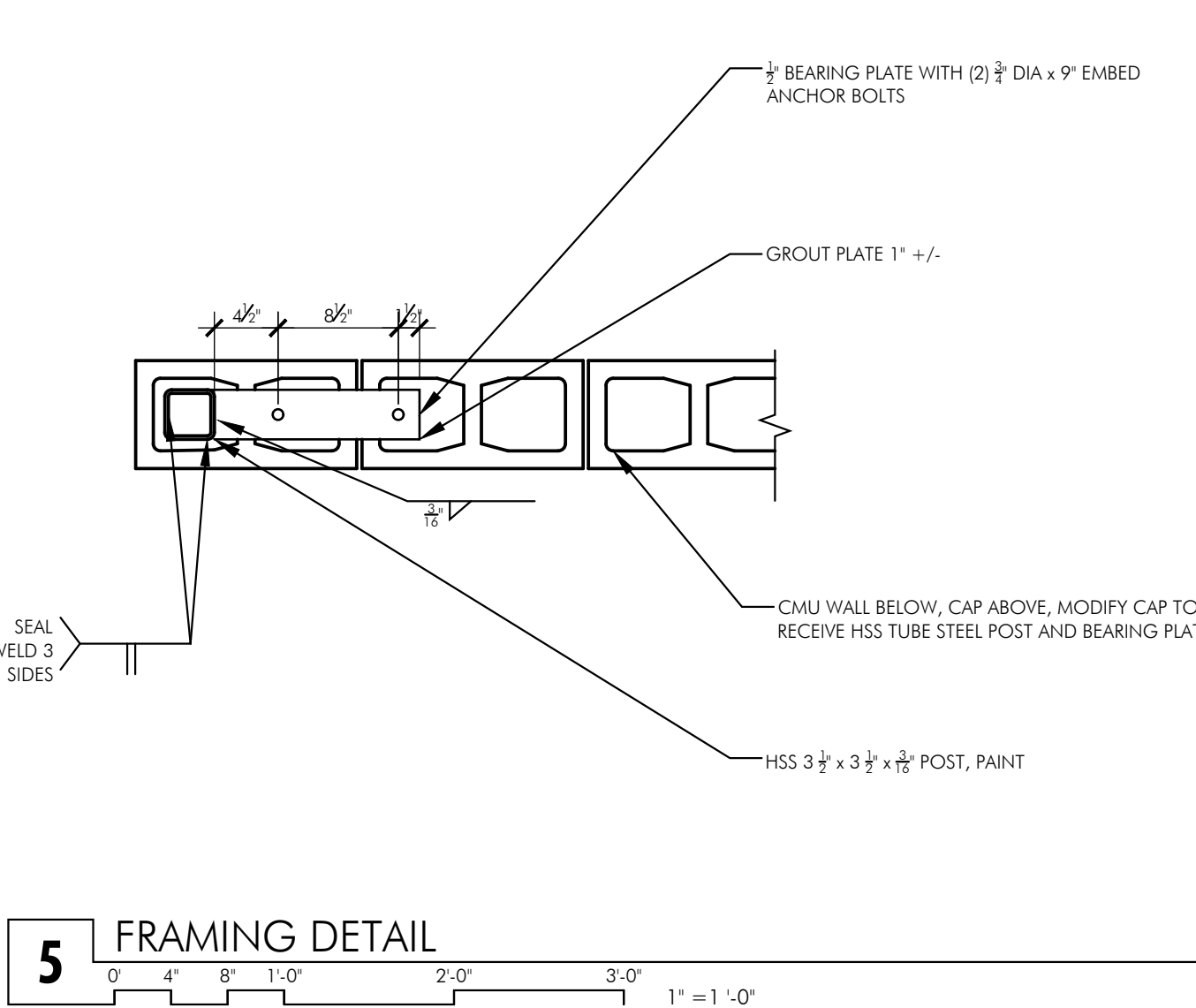
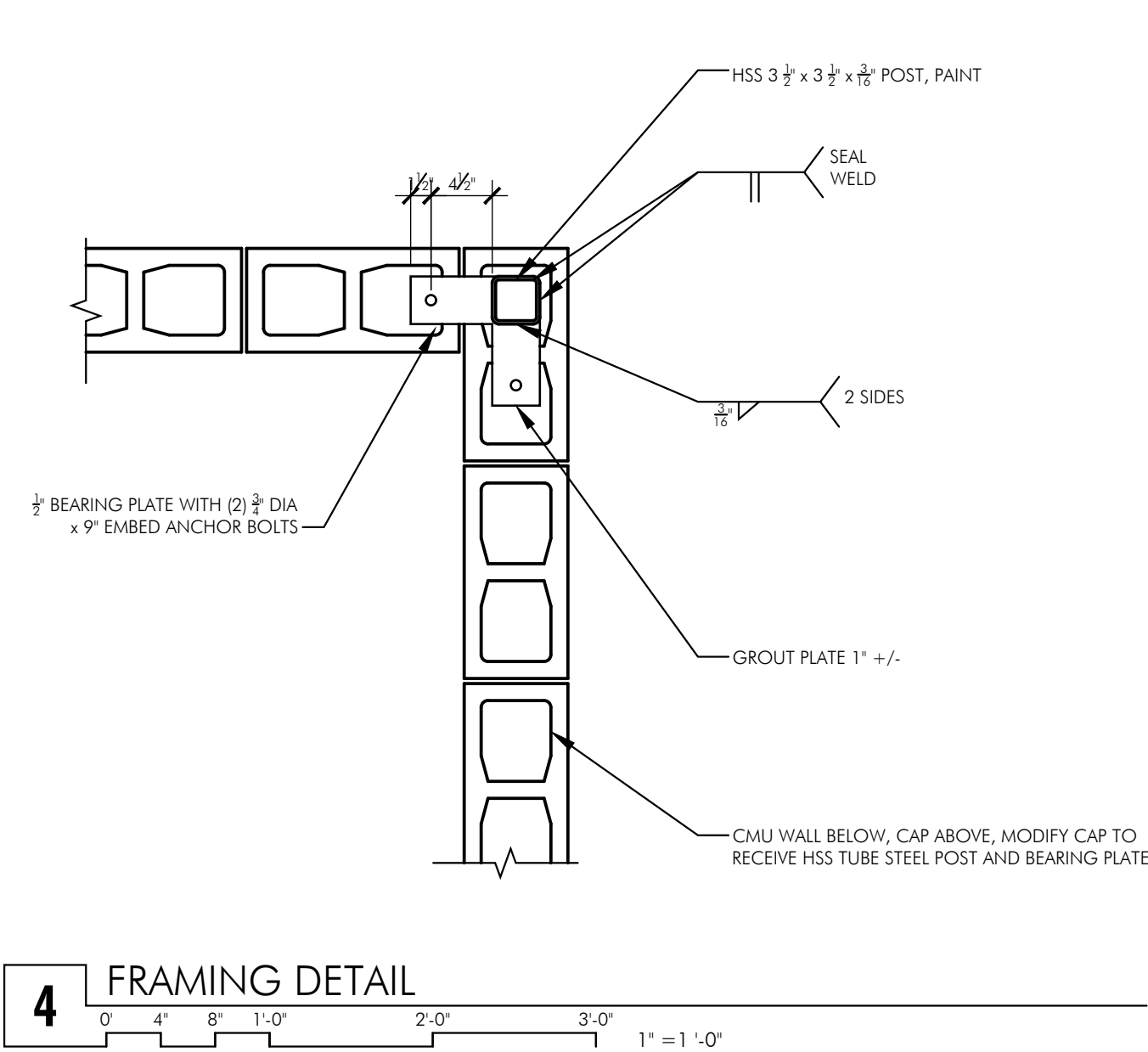
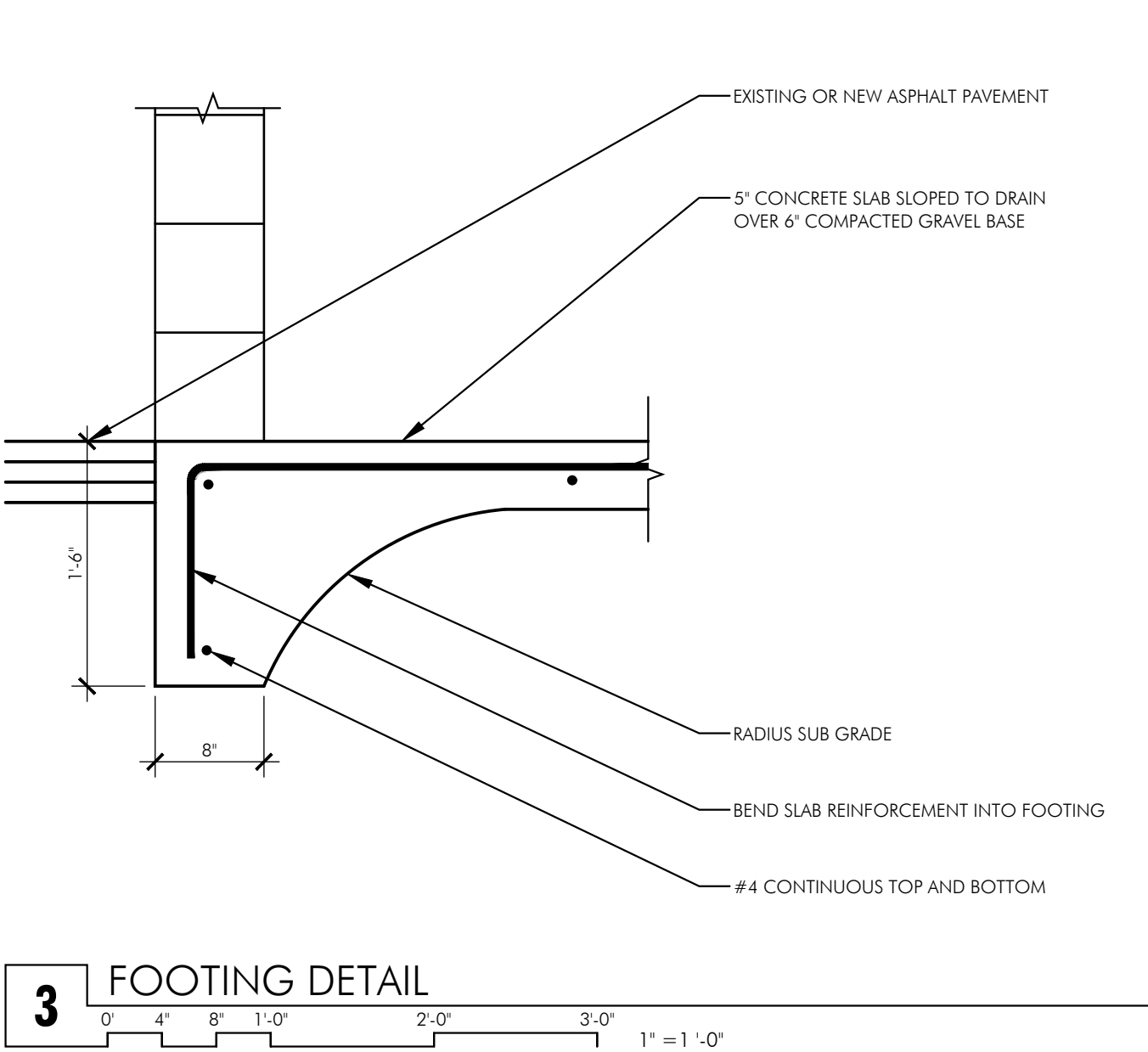
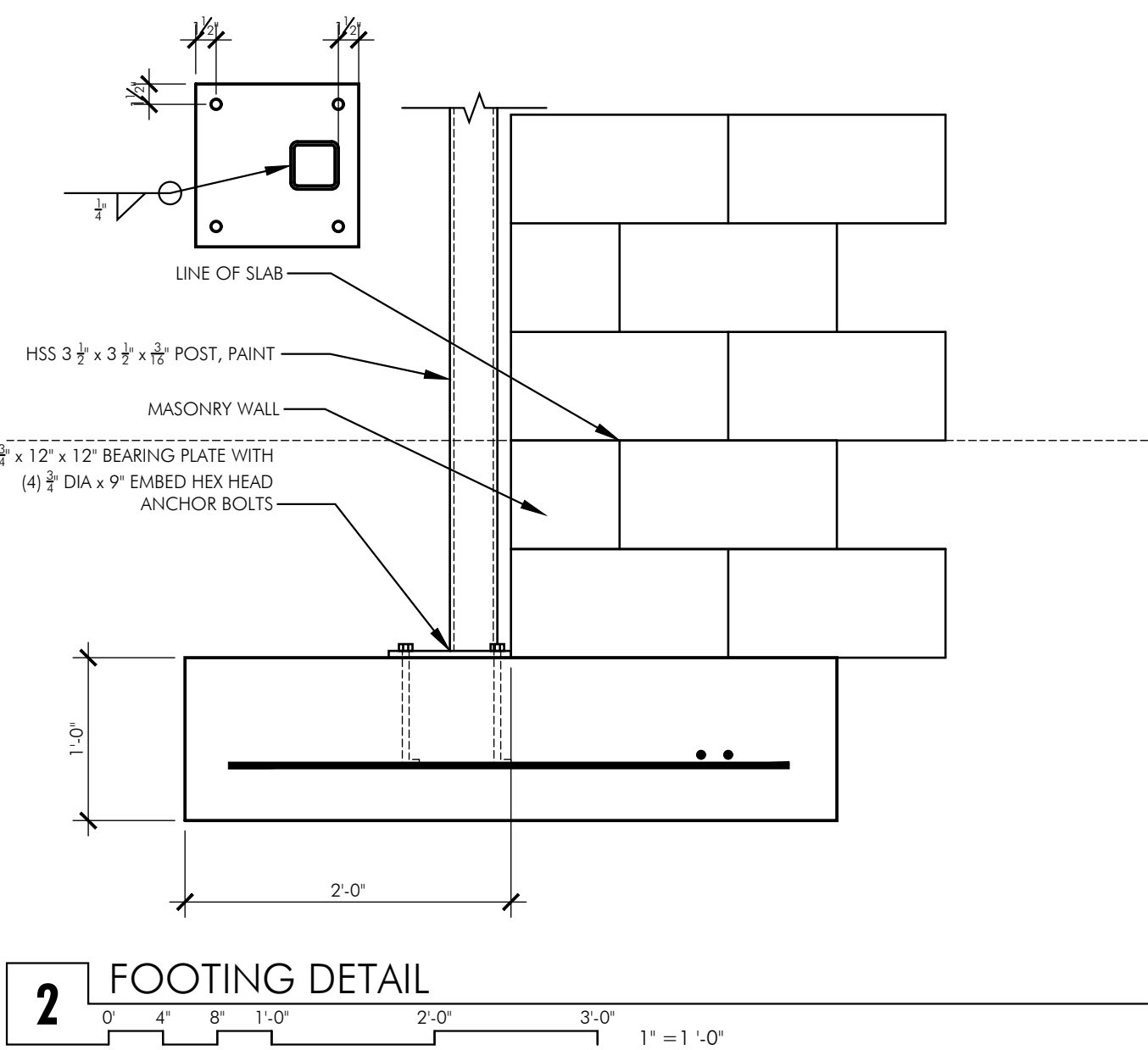
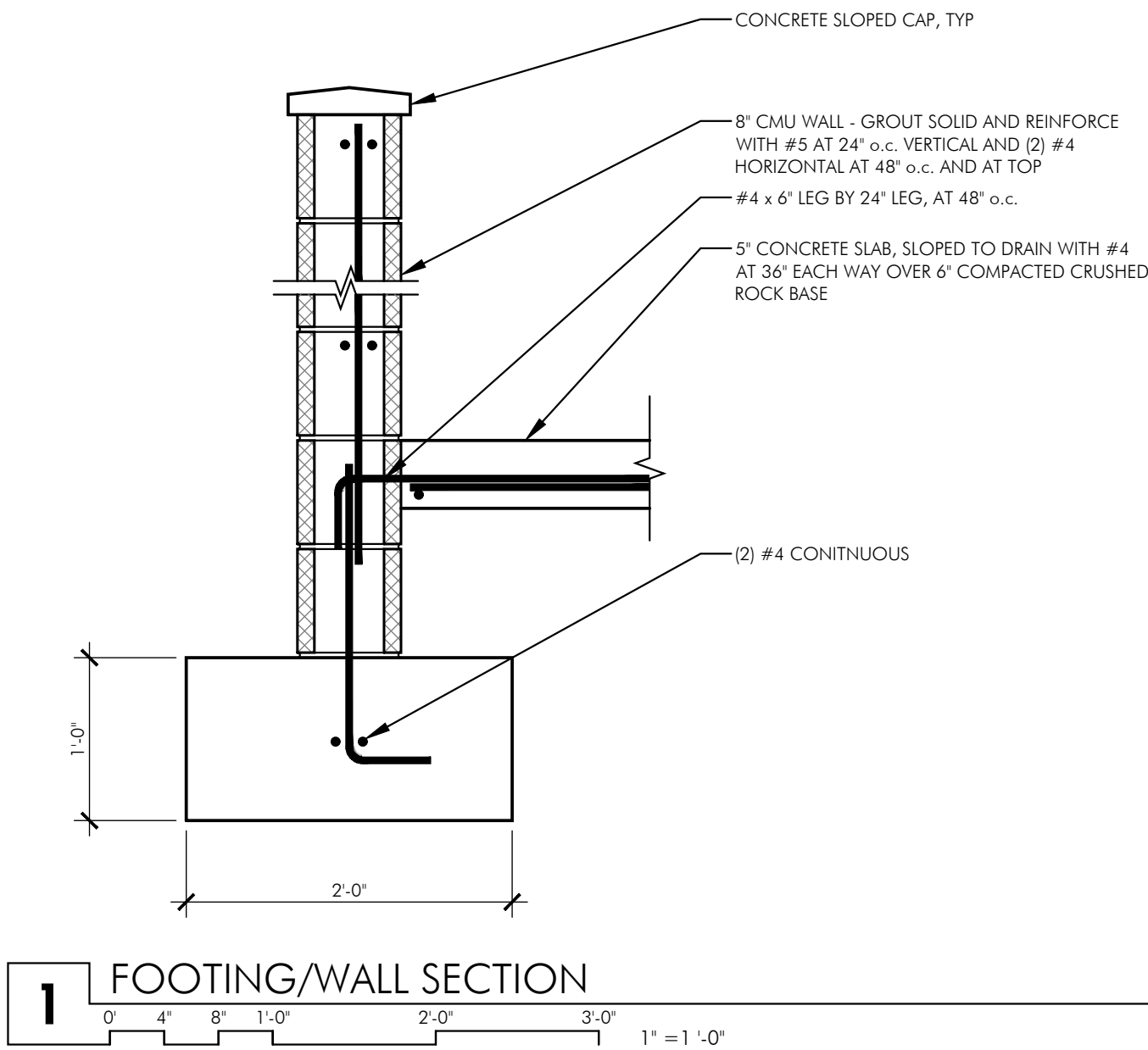


Exhibit I – Civil Plans

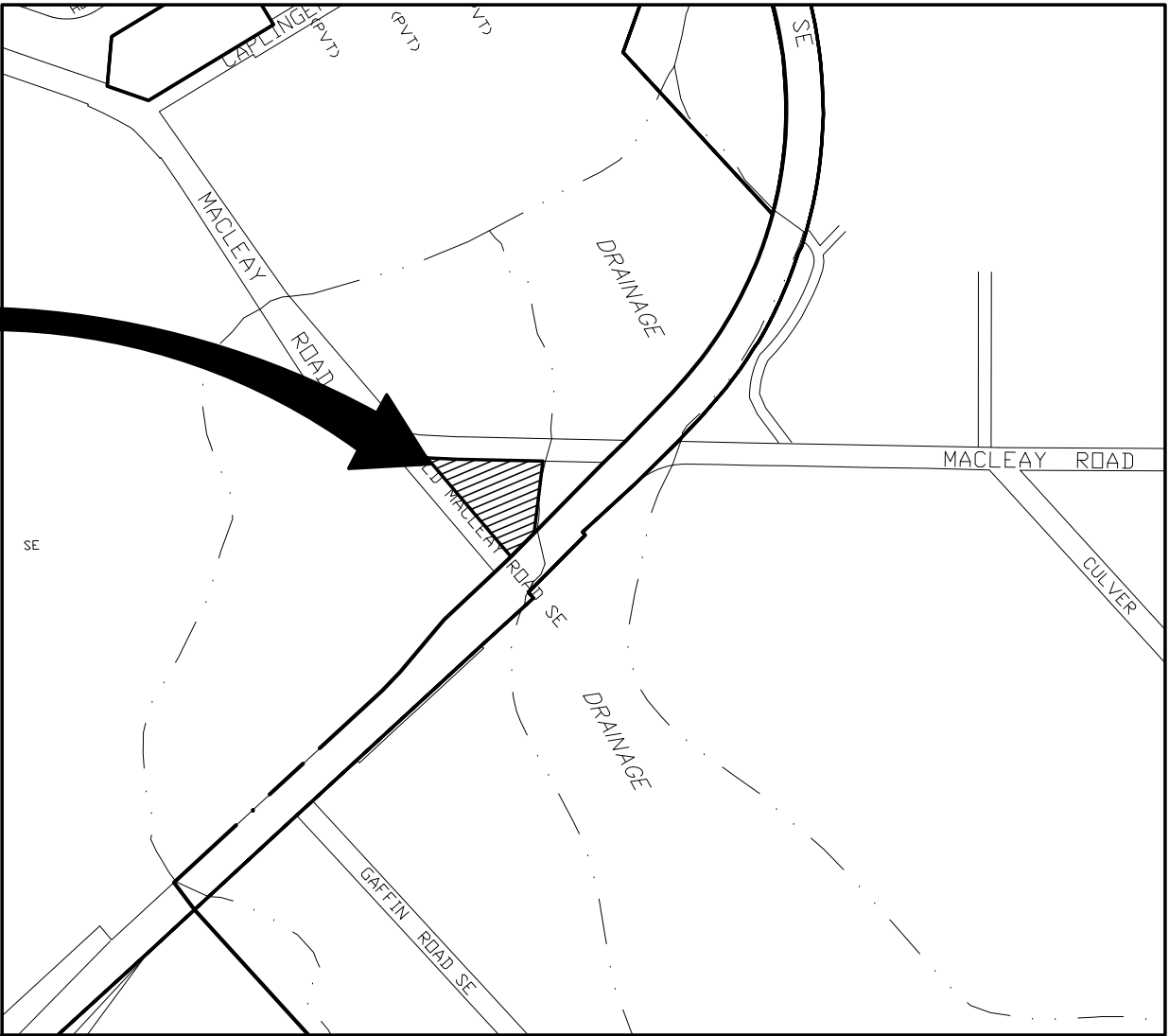
DRAWINGS FOR:
GAS STATION SITE
IMPROVEMENTS
SW CORNER OF MACLEAY RD
SE & CORDON RD SE
SALEM, OR 97317
FOR:

STUDIO 3 ARCHITECTURE
275 COUR ST NE
SALEM, OR 97301
503.390.6500

PROJECT LOCATION
TAX LOT 072W32D002400,
SECTION 32, T7S., R2W., W.M.



Know what's below.
Call before you dig.



VICINITY MAP

SHEET LIST TABLE	
#	TITLE
C0.0 COVER SHEET, INDEX, & VICINITY MAP	
C1.0 EROSION CONTROL DEMOLITION & CLEARING	
C1.1 EROSION CONTROL PLAN STREETS & UTILITIES	
C1.2 EROSION CONTROL PLAN VERTICAL CONSTRUCTION	
C1.3 EROSION CONTROL PLAN FINAL LANDSCAPING & STABILIZATION	
C1.4 EROSION CONTROL NOTES	
C1.5 EROSION CONTROL NOTES	
C1.6 EROSION CONTROL DETAILS	
C2.0 GRADING & DRAINAGE PLAN	
C2.1 STORMWATER PLANTER PLAN & PROFILE	
C3.0 UTILITY PLAN	
C4.0 SURFACING PLAN	
C5.0 MACLEAY RD SE STRIPING PLAN	
C5.1 MACLEAY RD SE PLAN & PROFILES	
C5.2 MACLEAY RD SE X-SECTIONS	
C5.3 MACLEAY RD SE X-SECTIONS & TYPICAL SECTION	
C5.4 PUBLIC STORMWATER PLANTER PLAN & PROFILE	
C5.5 STORM DRAIN PLAN & PROFILE	
C5.6 TRUCK TURNING DESIGN	
C5.7 TRAFIC ISLAND PLAN & PROFILE	
C6.0 NOTES	
C7.0 DETAILS	

ITEM	PROPOSED	EXISTING
SANITARY SEWER	— — — — —	—SS— — — — —
STORM DRAIN	— — — — —	—SD— — — — —
WATER	— — — — —	—W— — — — —
GAS	— — — — —	—G— — — — —
TELEPHONE	— — — — —	—T— — — — —
POWER	— — — — —	—P— — — — —
TELEVISION	— — — — —	—TV— — — — —
FENCE	—X—X—	—X—X—
RAILROAD	— — — — —	— — — — —
CURB, DRIVEWAY, P.C.C. SIDEWALK	— — — — —	— — — — —
HEDGE OR BRUSH	— — — — —	— — — — —
TREES	— — — — —	— — — — —
STREET OR ALLEY RIGHT OF WAY	— — — — —	— — — — —
PLATTED LOT LINE	— — — — —	— — — — —
PLATTED LOT LINE (ABANDONED)	— — — — —	— — — — —
OWNERSHIP LINE	— — — — —	— — — — —
EASEMENT OR TEMPORARY RIGHT OF WAY	— — — — —	— — — — —
IMPROVEMENT DISTRICT BOUNDARY	— — — — —	— — — — —
PROJECT CENTERLINE AND STATIONING	2 3 4 5+00	
CITY LIMITS LINE	— — — — —	— — — — —

ITEM	PROPOSED	EXISTING
BARRICADE	— — — — —	— — — — —
FLOW DIRECTION	— — — — —	— — — — —
TELEPHONE MANHOLE	— — — — —	— — — — —
TELEPHONE PEDESTAL	— — — — —	— — — — —
SANITARY SEWER MANHOLE	— — — — —	— — — — —
STORM DRAIN MANHOLE	— — — — —	— — — — —
CATCH BASIN	— — — — —	— — — — —
JUNCTION BOX	— — — — —	— — — — —
FIRE HYDRANT AND VALVE	— — — — —	— — — — —
WATER METER	— — — — —	— — — — —
WATER VALVE	— — — — —	— — — — —
POWER POLE	— — — — —	— — — — —
POWER POLE W/ANCHOR	— — — — —	— — — — —
POLE W/LUMINARE	— — — — —	— — — — —
LIGHT POLE	— — — — —	— — — — —
SIGN POST	— — — — —	— — — — —
MAILBOX	— — — — —	— — — — —
TRAFFIC SIGNAL	— — — — —	— — — — —
X-WALK SIGNAL	— — — — —	— — — — —

BENCHMARK UTILIZED:
C.O.S. #2098

ELEV: 369.46' NGVD 29

MARK IS A 2" ALUMINUM DISK SET IN THE EAST CURB OF BATTLE
CREEK ROAD, 220' NORTH OF THE INTERSECTION WITH BOONE ROAD
SE, 10' SOUTHWEST OF A UTILITY VAULT, 27' SOUTHWEST OF A
POWER POLE, 4' NORTHWEST OF A WATER METER, AND 12'
SOUTHEAST OF A WATER VALVE.

ABBREVIATIONS

ASPH	ASPHALT	IRR	IRRIGATION
AD	AREA DRAIN	IE	INVERT ELEVATION
ASSY	ASSEMBLY	JB	JUNCTION BOX
BLDG, BLD	BUILDING	LP	LIGHT POLE
BW	BOTTOM OF WALL	M	METER, MAIN
CATV	CABLE TELEVISION	MB	MAILBOX
CB	CATCH BASIN	MH	MANHOLE
CO	CLEAN-OUT	OH	OVER-HEAD
CONC	CONCRETE	P/L	PROPERTY LINE
CL	CENTERLINE	PP	POWER POLE
CL, E	DUCTILE IRON PIPE	PVC	POLYVINYL CHLORIDE
DIP	EDGE OF GRAVEL	PWR	POWER
EOP, EP	EDGE OF PAVEMENT	R, RAD	RADIUS
ELEV	ELEVATION	ROW, R/W	RIGHT-OF-WAY
EX, EXIST	EXISTING	SS	SANITARY SEWER
FDC	FIRE DEPT. CONNECTOR	SD	STORM DRAIN
FF	FEET	SVC	SERVICE
FT	FINISH FLOOR	SWK, S/W	SIDEWALK
FG	FINISH GRADE	TC	TOP OF CURB
FH	FIRE HYDRANT	TEL	TELEPHONE
FI	FIELD INLET	TR	TRANSFORMER
FM	FORCE MAIN	TS	TRAFFIC SIGNAL
GRAV	GRAVEL	TW	TOP OF WALL
GM	GAS METER	TYP	TYPICAL
GP	GATE POST	UG, U/G	UNDER GROUND
GS	GROUND SHOT	UTL	UTILITY
GV	GAS VALVE	VLT	VAULT
HC	HANDICAP	W	WITH
HDPE	HIGH-DENSITY POLYETHYLENE	WM	WATER METER
HYD	HYDRANT	WLM	WETLANDS MARKER
IR	IRON ROD	YPC	YELLOW PLASTIC CAP
IP	IRON PIPE		

SYMBOLS

AD	AREA DRAIN	—	SIGN POST
CD or CD	CATCH BASIN	PED	PEDESTAL
COO	CLEANOUT	MB	MAIL BOX
—	FIRE HYDRANT	—	IRRIGATION VALVE
gv	GAS VALVE	—	LIGHT POLE
wv	WATER VALVE	—	UTILITY/POWER POLES
—	GAS/POWER/WATER METER	—	TEST PIT
DSO	DOWN SPOUT	—	MONUMENT FOUND
—	MANHOLE TELEPHONE		
—	MANHOLE STORM DRAIN		
—	MANHOLE SANITARY SEWER		
—	TREES - *TREENAME* DIAMETER (INCHES)/DRIP RADIUS (FEET)		
	NOTE: DIAMETER MEASURED AT BREAST HEIGHT		

LINE TYPES

CATV LINE	—CATV—CATV—CATV—CATV—CATV—CATV—CATV—
COMMUNICATION LINE	—COM—COM—COM—COM—COM—COM—COM—
EASEMENT LINE	— — — — —
FENCE LINE	— — — — —
FIBER OPTIC LINE	—FOC—FOC—FOC—FOC—FOC—FOC—FOC—
GAS LINE	—GAS—GAS—GAS—GAS—GAS—GAS—GAS—
EDGE OF GRAVEL LINE	— — — — —
OVERHEAD LINE	—OH LINES—OH LINES—OH LINES—OH LINES—OH LINES—
PHONE LINE	—PH—PH—PH—PH—PH—PH—PH—
POWER LINE	—ELEC—ELEC—ELEC—ELEC—ELEC—ELEC—ELEC—
SANITARY SEWER LINE	—SS—SS—SS—SS—SS—SS—SS—
STORM DRAIN LINE	—SD—SD—SD—SD—SD—SD—SD—
WATER LINE	—W—W—W—W—W—W—W—

NEW GAS STATION:

MACLEAY RD SE
SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:
C0.0
COVER SHEET,
INDEX, & VICINITY
MAP

STUDIO

3

ARCHITECTURE
INCORPORATED

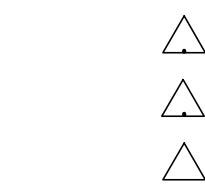
222 COMMERCIAL ST. NE
SALEM, OR 97301-3410
P: 503.390.6500
F: 503.390.6501
www.studio3architecture.com



RENEWS: 6/30/2026
IN THE EVENT CONFLICTS ARE
DISCOVERED BETWEEN THE ORIGINAL
SIGNED AND SEALED DOCUMENTS
PREPARED BY THE ARCHITECTS AND/OR
THEIR CONSULTANTS, AND ANY COPY OF
THE DOCUMENTS TRANSMITTED BY MAIL,
FAX, ELECTRONICALLY OR OTHERWISE,
THE ORIGINAL SIGNED AND SEALED
DOCUMENTS SHALL GOVERN.

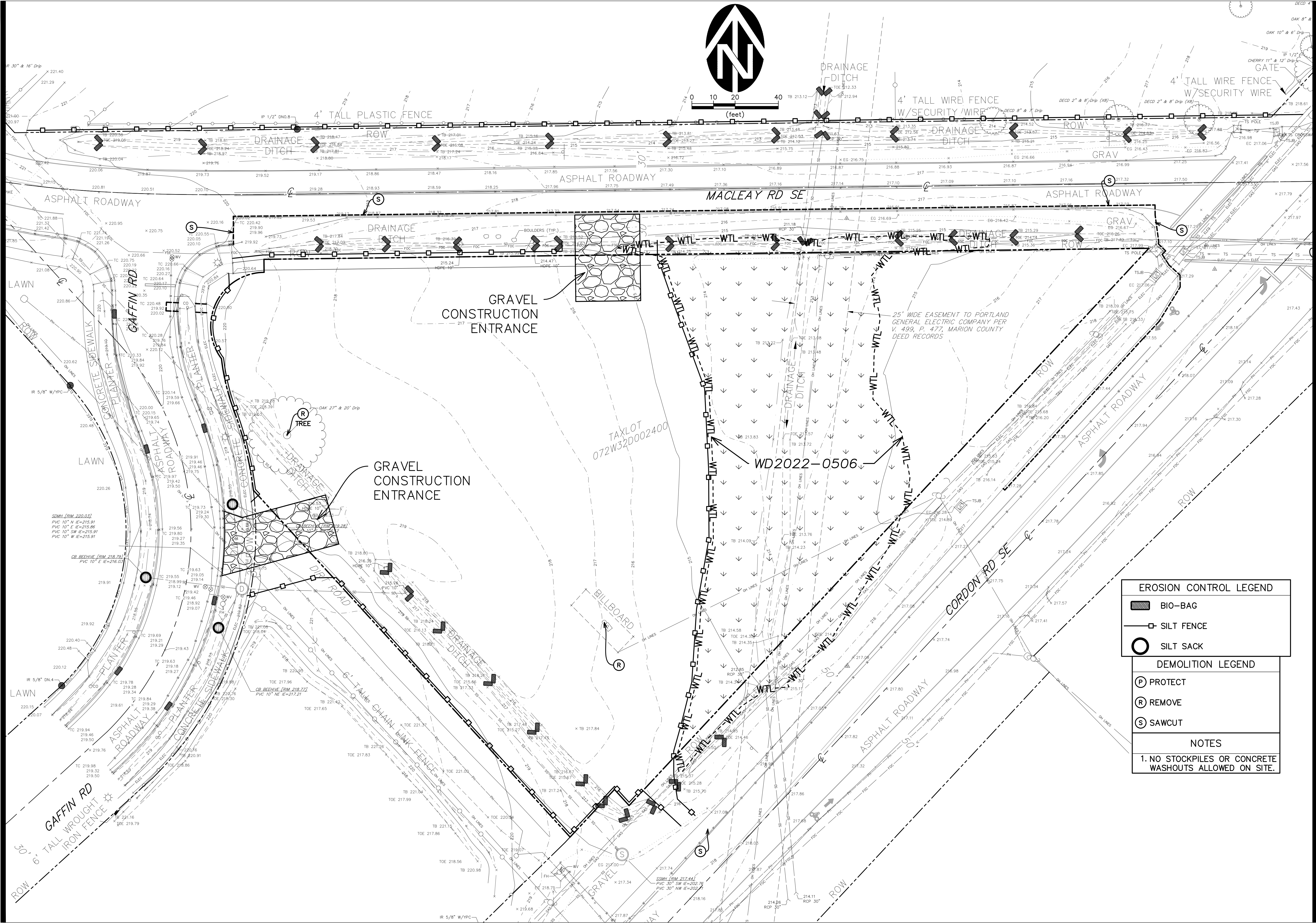
PROJECT #3535.0000.0
DATE: 08/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS:



WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2472 Fax: (503) 585-3986
E-mail: westtech@westtech-eng.com





EROSION CONTROL LEGEND	
	BIO-BAG
	SILT FENCE
	SILT SACK
DEMOLITION LEGEND	
	PROTECT
	REMOVE
	SAWCUT
NOTES	
1. NO STOCKPILES OR CONCRETE WASHOUTS ALLOWED ON SITE.	

STUDIO

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ARCHITECTURE INCORPORATED

222 COMMERCIAL ST. NE
SALEM, OR 97301-3410
P: 503.390.6500
F: 503.390.6501
www.studio3architecture.com

REGISTERED PROFESSIONAL ENGINEER

NOV 12, 2008

WILLIAM J. WELLS

REVIEW

REVISIONS: 6/30/2026

IN THE EVENT CONFLICTS ARE DISCOVERED BETWEEN THE ORIGINAL SIGNED AND SEALED DOCUMENTS PREPARED BY THE ARCHITECTS AND/OR THEIR CONSULTANTS, AND ANY COPY OF THE DOCUMENTS TRANSMITTED BY MAIL, FAX, ELECTRONICALLY OR OTHERWISE, THE ORIGINAL SIGNED AND SEALED DOCUMENTS SHALL GOVERN.

PROJECT #3535.0000.0
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DRAWN BY: AK
CHECKED BY: JW

REVISIONS

WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2472 Fax: (503) 585-5986
E-mail: westtech@westtech-eng.com

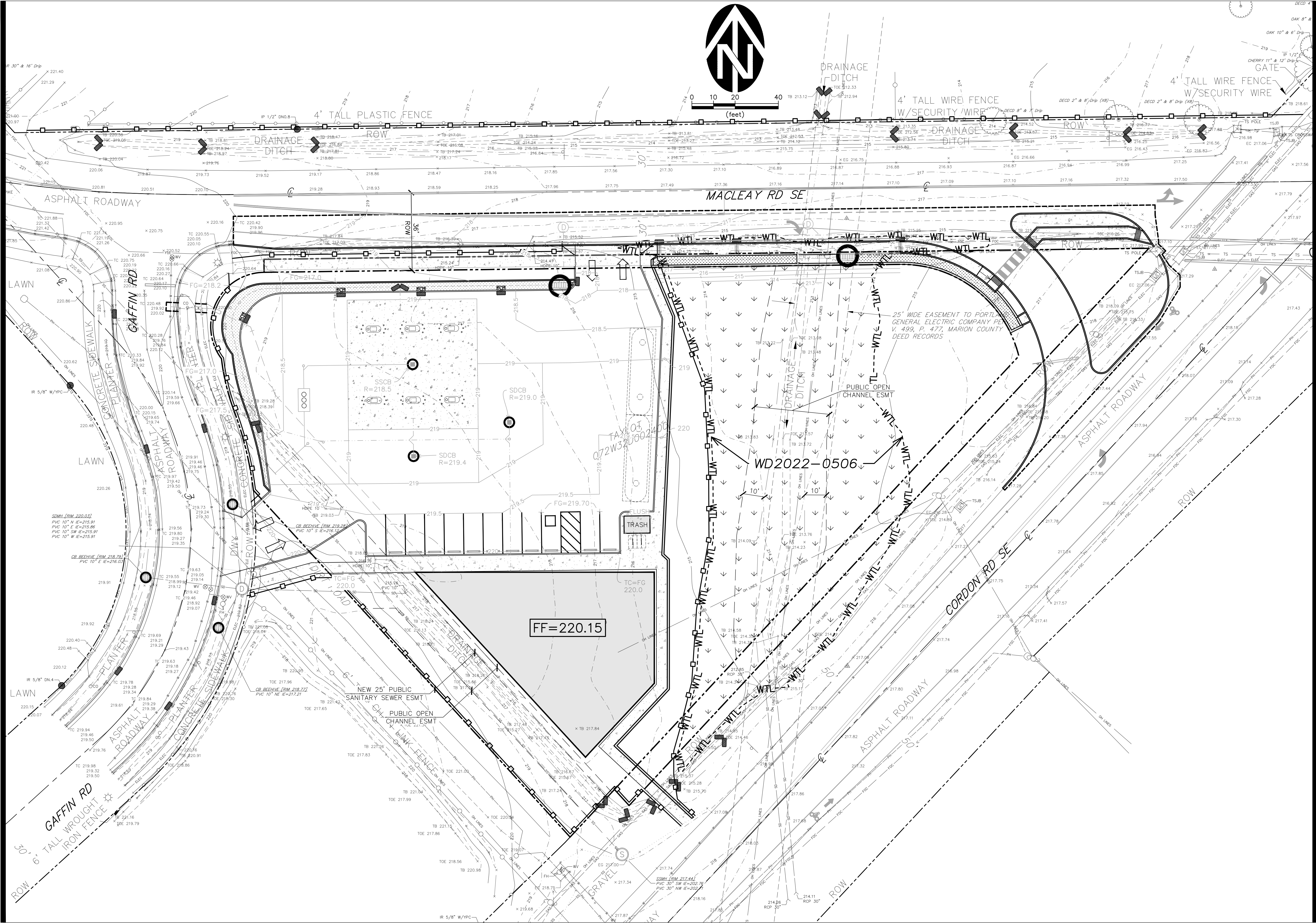
NEW GAS STATION:

MACLEAY RD SE
SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:

C1.0

EROSION CONTROL
DEMOLITION & CLEARING



STUDIO

3

ARCHITECTURE
INCORPORATED

222 COMMERCIAL ST. NE
SALEM, OR 97301-3410
P: 503.390.6500
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REGISTERED PROFESSIONAL
ENGINEER
NOV 12, 2008
REVIEW
WILLIAM J. WELLS

RENEWS: 6/30/2026

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WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

WE

3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-9474 Fax: (503) 585-5986
E-mail: westtech@westtech-eng.com

NEW GAS STATION:

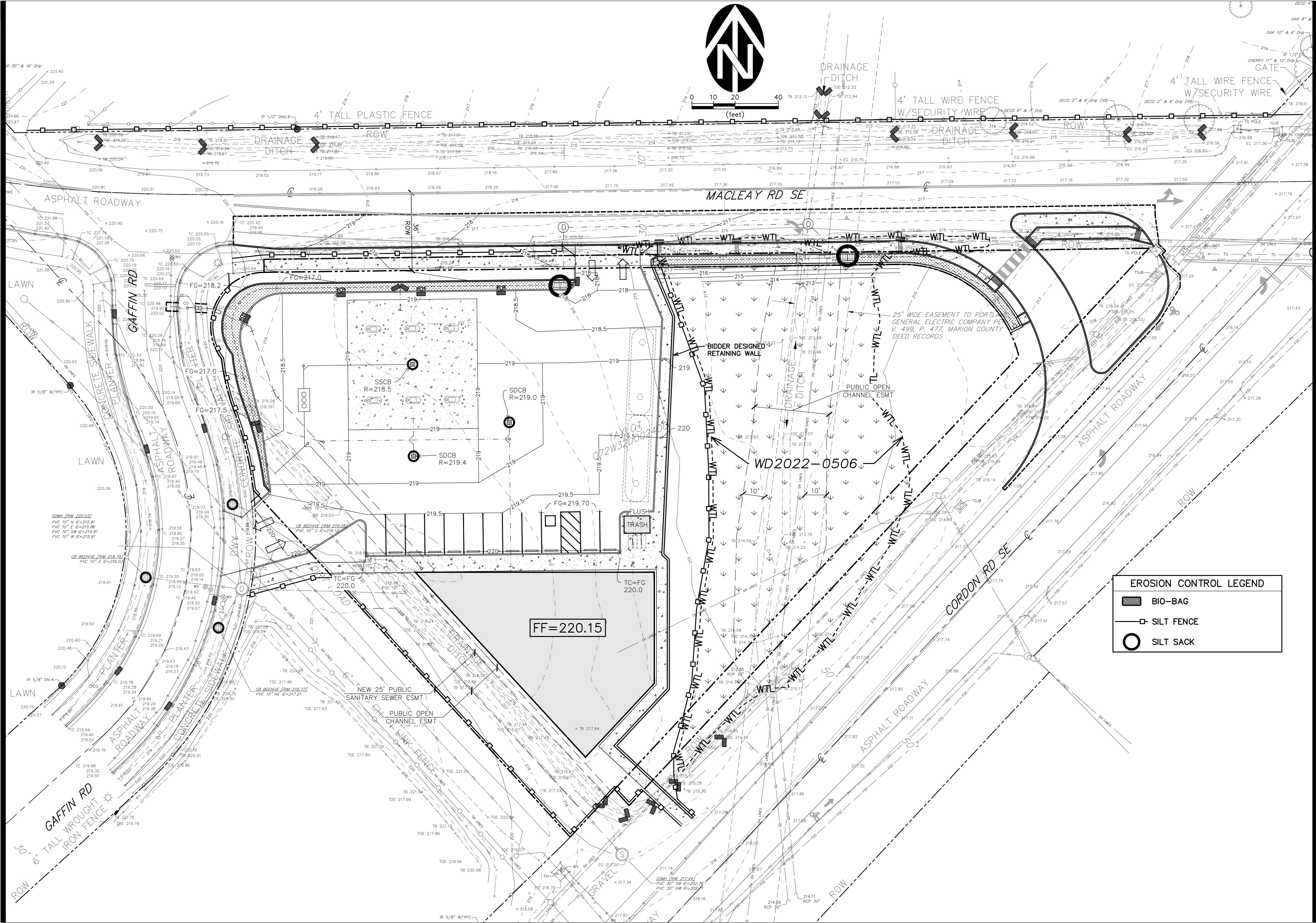
MACLEAY RD SE

SALEM, OR

MACLEAY RD SE & CORDON RD SE

SHEET:
C1.1

EROSION CONTROL PLAN
STREETS & UTILITIES



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ARCHITECTURE
INCORPORATED

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SALEM, OR 97301-3410
P: 503.390.6500
F: 503.390.6501
www.studio3architecture.com

REGISTERED PROFESSIONAL
ENGINEER
NOV 12, 2008
REVIEW
WILLIAM J. WELLS

REVISIONS: 6/30/2026

IN THE EVENT OF A DISCREPANCY BETWEEN THE ORIGINAL SIGNED AND SEALED DOCUMENTS PREPARED BY THE ARCHITECTS AND/OR THEIR CONSULTANTS, AND ANY COPY OF THE DOCUMENTS TRANSMITTED BY MAIL, FAX, ELECTRONICALLY OR OTHERWISE, THE ORIGINAL SIGNED AND SEALED DOCUMENTS SHALL GOVERN.

PROJECT #3535.0000.0
DATE: 08/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS: △
△
△
△

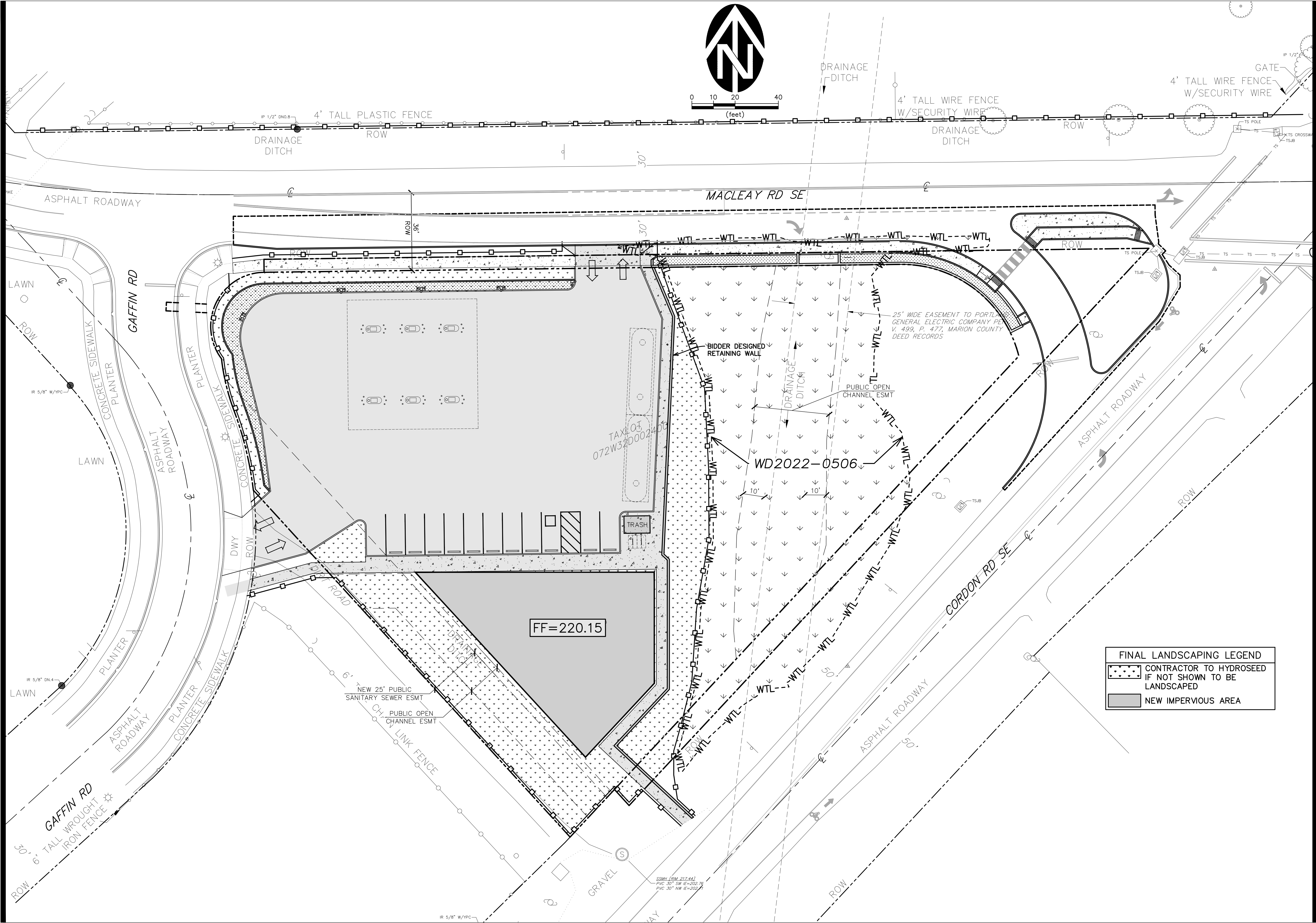
WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

WE

3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-9474 Fax: (503) 585-5986
E-mail: westtech@westtech-eng.com

NEW GAS STATION:
MACLEAY RD SE
SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:
C1.2
EROSION CONTROL PLAN
VERTICAL CONSTRUCTION



STUDIO

3

ARCHITECTURE
INCORPORATED

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SALEM, OR 97301-3410
P: 503.390.6500
F: 503.390.6501
www.studio3architecture.com

REGISTERED PROFESSIONAL
ENGINEER
NOV. 12, 2008
WILLIAM J. WELLS

REVIEW

RENEWS: 6/30/2026

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3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2472 Fax: (503) 585-5986
E-mail: westech@westech-eng.com

NEW GAS STATION:

MACLEAY RD SE
SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:
C1.3

EROSION CONTROL PLAN
FINAL LANDSCAPING
& STABILIZATION

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DEQ EROSION CONTROL STANDARD NOTES:

1. Include a list of all personnel (by name and position) that are responsible for the design, installation and maintenance of stormwater control measures (e.g. ESCP developer, BMP installer (see Section 4.10), as well as their individual responsibilities. (Section 4.4.c.ii)
2. Visual monitoring inspection reports must be made in accordance with DEQ 1200–C permit requirements. (Section 6.5)
3. Inspection logs must be kept in accordance with DEQ's 1200–C permit requirements. (Section 6.5.g)
4. Retain a copy of the ESCP and all revisions on site and make it available on request to DEQ, Agent, or the local municipality. (Section 4.7)
5. The permit registrant must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit. (Sections 4 and 4.11)
6. The ESCP must be accurate and reflect site conditions. (Section 4.8)
7. Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions. Submit all necessary revision to DEQ or Agent within 10 days. (Section 4.9)
8. Sequence clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Section 2.2.2)
9. Create smooth surfaces between soil surface and erosion and sediment controls to prevent stormwater from bypassing controls and ponding. (section 2.2.3)
10. Identify, mark, and protect (by construction fencing or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas. (Section 2.2.1)
11. Preserve existing vegetation when practical and re–vegetate open areas. Re–vegetate open areas when practicable before and after grading or construction. Identify the type of vegetative seed mix used. (Section 2.2.5)
12. Maintain and delineate any existing natural buffer within the 50–feet of waters of the state. (Section 2.2.4)
13. Install perimeter sediment control, including storm drain inlet protection as well as all sediment basins, traps, and barriers prior to land disturbance. (Sections 2.1.3)
14. Control both peak flow rates and total stormwater volume, to minimize erosion at outlets and downstream channels and streambanks. (Sections 2.1.1. and 2.2.16)
15. Control sediment as needed along the site perimeter and at all operational internal storm drain inlets at all times during construction, both internally and at the site boundary. (Sections 2.2.6 and 2.2.13)
16. Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Section 2.2.14)
17. Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses. Temporary or permanent stabilizations measures are not required for areas that are intended to be left unvegetated, such as dirt access roads or utility pole pads. (Sections 2.2.20 and 2.2.21)
18. Establish material and waste storage areas, and other non–stormwater controls. (Section 2.3.7)
19. Keep waste container lids closed when not in use and close lids at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, provide either (1) cover (e.g., a tarp, plastic sheeting, temporary roof) to prevent exposure of wastes to precipitation, or (2) a similarly effective means designed to prevent the discharge of pollutants (e.g., secondary containment). (Section 2.3.7)
20. Prevent tracking of sediment onto public or private roads using BMPs such as: construction entrance, graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land–disturbing activities. (Section 2.2.7)
21. When trucking saturated soils from the site, either use water–tight trucks or drain loads on site. (Section 2.2.7.f)
22. Control prohibited discharges from leaving the construction site, i.e., concrete wash–out, wastewater from cleanout of stucco, paint and curing compounds. (Sections 1.5 and 2.3.9)
23. Ensure that steep slope areas where construction activities are not occurring are not disturbed. (Section 2.2.10)
24. Prevent soil compaction in areas where post–construction infiltration facilities are to be installed. (Section 2.2.12)
25. Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, fertilizer, pesticides and herbicides, paints, solvents, curing compounds and adhesives from construction operations.(Sections 2.2.15 and 2.3)
26. Provide plans for sedimentation basins that have been designed per Section 2.2.17 and stamped by an Oregon Professional Engineer. (See Section 2.2.17.a)
27. If engineered soils are used on site, a sedimentation basin/impoundment must be installed. (See Sections 2.2.17 and 2.2.18)
28. Provide a dewatering plan for accumulated water from precipitation and uncontaminated groundwater seepage due to shallow excavation activities. (See Section 2.4)
29. Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies. (Section 2.3)
30. Use water, soil–binding agent or other dust control technique as needed to avoid wind–blown soil. (Section 2.2.9)
31. The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time–release fertilizers within any waterway riparian zone. (Section 2.3.5)
32. If an active treatment system (for example, electro–coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain Environmental Management Plan approval from DEQ before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications. (Section 1.2.9)
33. Temporarily stabilize soils at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year. (Section 2.2)
34. As needed based on weather conditions, at the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters. (Section 2.2.8)
35. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal. (Section 2.1.5.b)
36. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height and before BMP removal. (Section 2.1.5.c)
37. Catch basins: clean before retention capacity has been reduced by fifty percent. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project. (Section 2.1.5.d)
38. Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence of the discharge within the same 24 hours. Any in–stream clean–up of sediment shall be performed according to the Oregon Department of State Lands required timeframe. (Section 2.2.19.a)
39. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments. (Section 2.2.19)
40. Document any portion(s) of the site where land disturbing activities have permanently ceased or will be temporarily inactive for 14 or more calendar days. (Section 6.5.f.)
41. Provide temporary stabilization for that portion of the site where construction activities cease for 14 days or more with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Section 2.2.20)
42. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. Once construction is complete and the site is stabilized, all temporary erosion controls and retained soils must be removed and disposed of properly, unless needed for long term use following termination of permit coverage. (Section 2.2.21)

Rev. 12/15/20
By: Blair Edwards

YEAR: MONTH:	'24 09	'24 10	'24 11	'24 12	'25 01	'25 02	'25 03	'25 04	'25 05	'25 06	'25 07	'25 08
CLEARING	X	X	X	X	X	X						
EXCAVATION	X	X	X	X	X	X	X	X	X	X		
GRADING	X	X	X	X	X	X	X	X	X	X	X	
CONSTRUCTION	X	X	X	X	X	X	X	X	X	X	X	X
SEDIMENT CONTROLS:												
Silt Fencing	X	X	X	X	X	X	X	X	X	X	X	X
Sediment Traps	X	X	X	X	X	X	X	X	X	X	X	X
Sediment Basins	X	X	X	X	X	X	X	X	X	X	X	X
Storm Inlet Protection	X	X	X	X	X	X	X	X	X	X	X	X
Drainage Swales												
Check Dams												
Contour Furrows												
Terracing												
Pipe Slope Drains												
Rock Outlet Protection						X	X	X	X	X	X	X
Gravel Construction Entrance	X	X										
Grass–lined Channel (Turf Reinforcement Mats)												
Protection of trees with construction fences	X	X	X	X	X	X	X	X	X	X	X	X
Temporary Seeding and Planting												
Permanent Seeding and Planting									X	X	X	
Other:												

CONTROL MEASURE	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Silt Fencing	X	X	X	X	
Construction Entrance	X	X			
Sediment Traps			X	X	
Storm Inlet Protection	X	X	X	X	
Concrete Washout					
Rock Outlet Protection			X	X	X
Permanent Seeding and Planting					X
Phase 1: Prior to Ground Disturbance Phase 2: After Completion of Rough Grading Phase 3: After Installation of Storm Facilities Phase 4: After Paving & Construction Phase 5: After Project Completion and Cleanup					

BMP Rationale

A comprehensive list of available Best Management Practices (BMP) options based on DEQ's 1200–C Permit Application and ESCP Guidance Document has been reviewed to complete this Erosion and Sediment Control Plan. Some of the above listed BMPs were not chosen because they were determined to not effectively manage erosion prevention and sediment control for this project based on specific site conditions, including soil conditions, topographic constraints, accessibility to the site, and other related conditions. As the project progresses and there is a need to revise the ESCP, an Action Plan will be submitted.

SOIL TYPE(S): PER MARION CO. SOIL SURVEY THE SITE SOIL INCLUDES "SALEM GRAVELLY SILT LOAM."
EROSION HAZARD: PER MARION CO. SOIL SURVEY EROSION HAZARD IS "SLIGHT."
SITE AREA: 0.51 Ac
DISTURBANCE AREA: 0.30 Ac
LOCAL RAIN GAGE: MCNARY FIELD AIRPORT
LAT/LONG 44.905°; -123.0011°

INSPECTION FREQUENCY FOR BMP	
Site Condition	Minimum Frequency
1. Active period	On initial date that land disturbance activities commence. Within 24 hours of any storm event, including runoff from snow melt, that results in discharge from the site. At least once every 14 days, regardless of whether stormwater runoff is occurring.
2. Inactive periods greater than fourteen (14) consecutive calendar days	The Inspector may reduce the frequency of inspections in any area of the site where the stabilization steps in Section 2.2.20 have been completed to twice per month for the first month, no less than 14 calendar days apart, then once per month.
3. Periods during which the site is inaccessible due to inclement weather	If safe, accessible and practical, inspections must occur daily at a relevant discharge point or downstream location of the receiving waterbody.
4. Periods during which construction activities are suspended and runoff is unlikely due to frozen conditions.	Visual monitoring inspections may be temporarily suspended. Immediately resume monitoring upon thawing, or when weather conditions make discharges likely.
5. Periods during which construction activities are conducted and runoff is unlikely during frozen conditions.	Visual monitoring inspections may be reduced to once a month. Immediately resume monitoring upon thawing, or when weather conditions make discharges likely.

Spill Prevention Procedures and Response

- Spill prevention is an important factor in the successful operation of a storm water injection management system. All contractor employees will be trained on this plan so that they are certain of the location of materials, who to notify in case of a spill, and how to initially contain the spill of hazardous materials. Contractor employees shall never dispose waste materials into the storm water collection/treatment system. Contractor employees will be observant of other potential contamination occurrences. All contractor employees will review this plan especially with regards to the detailed spill response steps.
- This data will be posted in an accessible area at the site.

What to do in case of a spill

1. Spill kit to be located near the job trailer or another conspicuous location and clearly marked.
2. Get the spill kit.
 - a. If possible, determine visually what types of fluids have been spilled.
 - b. Put on gloves and glasses or any other necessary Personal Protective Equipment (PPE).
 - c. Get the absorbent material provided in the kit and the drain block cover.
 - d. Place the absorbent materials in the path of the spill.
 - e. Remove any debris from the vicinity of the inlet where the spill is draining.
 - f. Unroll the drain block cover and place it snugly over the inlet.
 - g. Verify that the cover has full contact with the rim of the inlet.
 - h. Use snakes, pillow or pigs to completely contain the area.
3. Notify the following personnel immediately:
 - a. Owner's Representative: Troy Croft, Phone: 503–375–7168.
 - b. When a spill includes any of the below, notify the Oregon Emergency Response System as soon as the Owner's Representative has knowledge of the release. Oregon Emergency Response System Phone: 1–800–452–0311
 - i. Any amount of oil to waters of the state;
 - ii. Oil spills on land in excess of 42 gallons;
 - iii. Hazardous materials that are equal to, or greater than, the quantity listed in the Code of Federal Regulations, 40 CFR Part 302 (List of Hazardous Substances and Reportable Quantities), and amendments adopted before July 1, 2002

NOTE: Only dry cleanup methods will be employed to clean up spills (i.e., no use of water to wash spilled materials from pavement will be conducted). All spill cleanups shall be conducted in accordance with applicable regulations.

Responsible Personnel

In case of spill contact the General Contractor and Owner's Representative immediately. The General Contractor will be responsible for either managing the spill clean up for minor spills or contacting/retaining a company for the cleanup of major spills.

Waste Management Procedures

Activities performed onsite shall implement the following to eliminate the discharge of waste:

1. Locate activities that include waste products away from waters of the state and stormwater inlets or conveyances so that stormwater coming into contact with these activities cannot reach waters of the state;
2. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of liquids, and provide secondary containment (e.g. spill berms, decks, spill containment pallets);
3. Have a spill kit available on site and ensure personnel are available to respond expeditiously in the event of a leak or spill;
4. Clean up spills or contaminated surfaces immediately using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge; and
5. Store materials in a covered area (e.g., plastic sheeting, temporary roofs), or in secondary containment to prevent the exposure of these containers to precipitation or stormwater runoff, or a similarly effective means designed to prevent the discharge of pollutants from these areas.
6. Building Materials & Building Products: Minimize material exposure in cases where the exposure to precipitation or to stormwater will result in a discharge of pollutants (e.g. elevate materials from soil to prevent leaching of pollutants).

Fertilizers, pesticides, herbicides, & insecticides

Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label. When applying fertilizers, registrants must:

1. Apply at a rate and in amounts consistent with manufacturer's specifications;
2. Apply at the appropriate time of year for the location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;
3. Avoid applying before heavy rains that could cause excess nutrients to be discharged;
4. Never apply to frozen ground;
5. Never apply to stormwater conveyance channels; and
6. Follow all other federal, state, and local requirements regarding fertilizer application.

Authorized non–stormwater discharges anticipated for the proposed project:
1. Landscape irrigation 2. Dust control water 3. Water line flushing (potable)
Potential pollutant–generating activities anticipated for the proposed project including an inventory of pollutants for each activity:
1. Mass Grading, Street & Utility Construction <ol style="list-style-type: none">a.Sedimentb.Vehicle and machinery related pollutants (Fuels, hydraulic fluid, oils)
2. Vertical Construction <ol style="list-style-type: none">a.Paints, caulks, sealants, solventsb.Fluorescent light ballastsc.Sedimentd.Vehicle and machinery related pollutants (Fuels, hydraulic fluid, oils)
2. Landscaping & Irrigation <ol style="list-style-type: none">a.Fertilizersb.Pesticides, Herbicides, Insecticides

STUDIO

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RENEWS: 6/30/2026
IN THE EVENT CONFLICTS ARE DISCOVERED BETWEEN THE ORIGINAL SIGNED AND SEALED DOCUMENTS PREPARED BY THE ARCHITECTS AND/OR THEIR CONSULTANTS, AND ANY COPY OF THE DOCUMENTS TRANSMITTED BY MAIL, FAX, ELECTRONICALLY OR OTHERWISE, THE ORIGINAL SIGNED AND SEALED DOCUMENTS SHALL GOVERN.

PROJECT #3535.0000.0
DATE: 08/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS:

1

2

3

4



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NEW GAS STATION:

MACLEAY RD SE

SALEM, OR

MACLEAY RD SE & CORDON RD SE

SHEET:
C1.4
EROSION CONTROL
NOTES

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SUPPLEMENTAL WESTECH NOTES:

- Erosion control measures shall be maintained in such a manner as to ensure that sediment and sediment-laden water does not enter the drainage system, roadways, or violate applicable water quality standards.
- The erosion control construction, maintenance, replacement and upgrading of the erosion control facilities is the responsibility of the Contractor until all construction is completed and approved, and permanent erosion control (i.e. vegetation/landscaping) is established on all disturbed areas.
- All recommended erosion control procedures are dependent on construction methods, staging, site conditions, weather and scheduling. During the construction period, erosion control facilities shall be upgraded as necessary due to unexpected storm events and to ensure that sediment and sediment laden water does not leave the site.
- The Contractor is responsible for control of sediment transport within project limits. If an installed erosion control system does not adequately contain sediment on site, then the erosion control measures shall be adjusted or supplemented by the Contractor as necessary to ensure that sediment laden water does not leave the site. Additional measures shall be provided as required to ensure that all paved areas are kept clean for the duration of the project. Additional interim measures will include, at a minimum, installation of silt fences in accordance with the details shown on the drawings. These measures shall be installed along all exposed embankments and cut slopes to prevent sediment transport.
- All existing and newly constructed storm inlets and drains shall be protected until pavement surfaces are completed and/or vegetation is established.
- Erosion control facilities and sediment fences on active sites shall be inspected by the Contractor at least daily during any period with measurable precipitation. Any required repairs or maintenance shall be completed immediately. The erosion control facilities on inactive sites shall be inspected and maintained by the Contractor a minimum of once a month or within 24 hours following the start of a storm event.
- All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system. The Contractor shall remove all accumulated sediment from all impacted catch basins and storm pipes prior to acceptance by the Owner.
- The Contractor is solely responsible for protection of all adjacent property and downstream facilities from erosion and siltation during project construction. Any damage resulting from such erosion and siltation shall be corrected at the sole expense of the Contractor.
- The Contractor shall provide site watering as necessary to prevent wind erosion of fine-grained soils.
- Unless otherwise indicated on the drawings, all temporary erosion control facilities, including sediment fences, silt sacks, bio-bags, etc. shall be removed by the Contractor within 30 days after permanent landscaping/vegetation is established.
- Sediment fences shall be constructed of continuous filter fabric to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and both ends securely fastened to a post.
- Sediment fence shall be installed per drawing details. Sediment fences shall have adequate support to contain all silt and sediment captured.
- The standard strength filter fabric shall be fastened securely to stitched loops installed on the upslope side of the posts, and 6 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
- Bio-filter bags shall be clean 100 percent wood product waste. Bags shall be 18-inch x 18-inch x 30-inch, weigh approximately 45 lbs., and be contained in a bag made of 1/2-inch plastic mesh.
- Sediment barriers shall be maintained until the up-slope area has been permanently stabilized. At no time shall more than 10-inches of sediment be allowed to accumulate behind sediment fences. No more than 2 inches of sediment shall be allowed to accumulate behind bio-filter bags. Sediment shall be removed prior to reaching the above stated depths. New sediment barriers shall be installed uphill as required to control sediment transport.
- Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to ensure that all paved areas are kept clean for the duration of the project.
- The Contractor shall verify that all trucks are well sealed when transporting saturated soils from the site. Water dripage from trucks transporting saturated soils must be reduced to less than 1 gallon per hour prior to leaving the site.
- The entrance shall be maintained in a condition that will prevent tracking or flow of mud onto the public right-of-way or approved access point. The entrance may require periodic top dressing as conditions demand, and repair and/or cleanout of any structures used to trap sediment.
- All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately, and the Contractor shall provide protection of downstream inlets and catch basins to ensure sediment laden water does not enter the storm drain system.
- Temporary grass cover measures must be fully established by October 15th, or other cover measures (i.e. erosion control blankets with anchors, 3-inches minimum of straw mulch, 6 mil HDPE plastic sheet, etc.) shall be in place over all disturbed soil areas until April 30th. To establish an adequate grass stand for controlling erosion by October 15th, it is recommended that seeding and mulching occur by September 1st. Straw mulch, if used, shall not leave any bare ground visible through the straw.
- Minimum wet weather slope protection. For slopes steeper than 3H:1V but less than 2H:1V, use Tensor/North American Green Type S150 erosion control blanket. For slopes 2H:1V or steeper, use Tensor/North American Green Type S150 erosion control blanket. Use a minimum of 2-inches straw mulch or Tensor/North American Green Type S150 for slopes flatter than 3H:1V. Slope protection shall be placed on all disturbed areas immediately after completion of each section of construction activity, until the erosion control seeding has been established. As an option during temporary or seasonal work stoppages, a 6-mil HDPE plastic sheet may be placed on exposed slopes. The plastic sheet shall be provided with an anchor trench at the top and bottom of the slope, and shall be sandbagged on the slopes as required to prevent damage or displacement by wind.
- Permanent erosion control vegetation on all embankments and disturbed areas shall be re-established as soon as construction is completed.
- Soil preparation. Topsoil should be prepared according to landscape plans, if available, or recommendations of grass seed supplier. It is recommended that slopes be textured before seeding by rack walking (i.e. driving a crawling tractor up and down the slopes to leave a pattern of cleat imprints parallel to slope contours) or other method to provide stable areas for seeds to rest.
- When used, hydromulch shall be applied with grass seed at a rate of 2000 lbs. per acre between April 30 and June 10, or between September 1 and October 1. On slopes steeper than 10 percent, hydroseed and mulch shall be applied with a bonding agent (tackifier). Application rate and methodology to be in accordance with seed supplier recommendations.
- When used in lieu of hydromulch, dry, loose, weed free straw used as mulch shall be applied at a rate of 4000 lbs. per acre (double the hydromulch application requirement). Anchor straw by working in by hand or with equipment (rollers, cleat trackers, etc.). Mulch shall be spread uniformly immediately following seeding.
- When conditions are not favorable to germination and establishment of the grass seed, the Contractor shall irrigate the seeded and mulched areas as required to establish the grass cover.
- Seeding. Recommended erosion control grass seed mix is as follows. Dwarf grass mix (low height, low maintenance) consisting of dwarf perennial ryegrass (80 % by weight), creeping red fescue (20 % by weight). Application rate shall be 100 lbs. per acre minimum.
- Grass seed shall be fertilized at a rate of 10 lbs. per 1000 S.F with 16- 16-16 slow release type fertilizer. Development areas within 50 feet of water bodies and wetlands must use a non-phosphorous fertilizer.
- Prior to starting construction contractor shall acquire the services of a DEQ Certified Erosion and Sediment Control Inspector and shall submit an "Action Plan" to DEQ identifying their names, contact information, training and experience as required in Schedule A.6.b.i-ii of the 1200-C Permit
- Contractor shall submit "Notice of Termination" to DEQ to end the 1200-C permit coverage once all soil disturbance activities have been completed and final stabilization of exposed soils has occurred.

CITY OF SALEM PUBLIC WORKS DESIGN STANDARDS:

Division 007 Appendix A-EPSC Plan Standard Notes

(a) PRE-CONSTRUCTION

(1). Prior to any land disturbing activities, the boundaries of the clearing and grading limits, vegetated buffers, and any sensitive areas shown on this plan shall be clearly delineated in the field. Unless otherwise approved, no disturbance is permitted beyond the clearing limits. The Contractor must maintain the delineation for the duration of the project. Note: vegetated corridors to be delineated with orange construction fence or approved equal.

(2). BMPs that must be installed prior to land disturbing activities are construction entrance, perimeter sediment control, and inlet protection.

(3). Hold a preconstruction conference to review the EPSCP and with the City's Project Manager and Inspector.

(b) CONSTRUCTION

(1). All sediment is required to stay on site. Sediment amounts greater than 1/2-cubic foot which leave the site must be cleaned up within 24 hours and placed back on the site and stabilized or properly disposed. Vacuuming or dry sweeping must be used to clean up released sediment and it must not be swept or washed into storm sewers, drainage ways, or water bodies. The cause of the sediment release must be found and prevented from causing a recurrence of the discharge within the same 24 hours. Any in-stream clean up of sediment shall be performed according to the DSL required time frame.

(2). Construction, maintenance, replacement, and upgrading of erosion prevention and sediment control facilities is the sole responsibility of the Contractor until all construction is completed, approved, and permanent erosion control (i.e., vegetation/landscaping) is established on all disturbed areas.

(3). All recommended erosion prevention and sediment control procedures are dependent on construction methods, staging, site conditions, weather, and scheduling. During the construction period, erosion control facilities shall be revised, upgraded, replaced, or added, to comply with SRC and State and Federal regulatory requirements.

(4). The Contractor is solely responsible for protection of all adjacent property and downstream facilities from erosion and siltation during project construction. Any damage resulting from such erosion and siltation shall be corrected at the sole expense of the Contractor.

(5). When saturated soil is present, water-tight trucks must be used to transport saturated soils from the construction site. Soil may be drained on site at a designated location, using appropriate BMPs. Soil must be drained sufficiently to drip less than one gallon per hour prior to leaving the site.

(6). All materials spilled, dropped, or washed into storm drains must be removed immediately, and the Contractor shall provide protection of downstream inlets and catch basins to ensure sediment-laden water does not enter the storm drain system.

(7). All discharge of sediment-laden water must be treated with an appropriate BMP to remove sediment from discharge waters and to comply with SRC and State and Federal Regulatory Permits.

(8). In areas subject to wind erosion, appropriate BMPs must be used which may include the application of fine water spraying, plastic sheeting, mulching, or other approved measures.

(9). The EPSC measures and BMPs shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these measures shall be upgraded as needed to maintain compliance with all regulations.

(10). The contractor shall provide onsite water or other appropriate BMPs to prevent dust and wind erosion of fine grain soils.

(11). Disturbed areas must be stabilized after 14 days of inactivity, or immediately if rain is forecasted. See Subsection 7A.1(d)-Wet Weather Period.

(12). During the wet weather work period or when rain is forecasted, all active and inactive soil stock piles must be covered with appropriate plastic sheeting. Plastic sheeting must cover the entire stock pile and be sufficiently anchored.

(c) POLLUTANTS, SOLID WASTE AND HAZARDOUS MATERIALS MANAGEMENT

(1). Any use of toxic or other hazardous materials must include proper storage, application, and disposal.

(2). The contractor is solely responsible to properly manage pollutants, hazardous wastes, used oils, contaminated soils, concrete waste, sanitary waste, liquid waste, or other toxic substances discovered or generated during construction to prevent leakage, spills or release of pollutants to the environment and surface waters.

(3). Contractor shall develop a project specific written spill prevention and response procedures that includes employee training on spill prevention and proper disposal procedures; regular maintenance schedule for vehicles and machinery; and material delivery and storage controls, signage, material use, and use of covered storage areas for waste and supplies. The plan shall comply with SRC and Federal and State requirements, and shall be available on site at all times.

(d) WET WEATHER PERIOD (OCTOBER 15 THROUGH APRIL 30)

(1). Construction activities must avoid or minimize the duration of disturbed areas.

(2). Temporary stabilization of the site including covering of bare soils with approved BMPs, must be installed at the end of the shift before a holiday or weekend, or at the end of each workday if rainfall is forecast in the next 24 hours.

(3). Temporary stabilization or covering of soil stockpiles and protection of stockpiles located away from construction activity must occur at the end of each workday.

(e) MAINTENANCE

(1). Erosion control measures shall be maintained in such a manner as to ensure that erosion is prevented and sediment-laden water does not enter a drainage system, roadway, or violate applicable water quality standards.

(2). Sediment shall not be washed or swept into storm sewers, drainage ways, or water bodies.

(3). Sediment must be removed from behind all sediment control measures when it has reached a height of 1/3 the barrier height, and prior to the control measures removal.

(4). Removal of trapped sediment in a sediment basin or sediment trap or catch basins must occur when the sediment retention capacity has been reduced by 50 percent; is not functioning properly and/or at the completion of project.

(5). Cleaning of all structures, inlet protection BMPs, and sump pumps must be completed regularly and as required to ensure structures and inlets function properly and flow freely.

(6). Construction site exits shall be maintained in a condition that will prevent tracking or flow of mud onto the ROW or approved access point. The entrance may require periodic top dressing as conditions demand, and repair and/or cleanout of any structures used to trap sediment. Wheel washing shall be required to prevent sediment and material tracking on road surfaces if passive BMPs are not effective.

(f) INSPECTION

(1). The EPSCP must be kept onsite at all times. All measures shown on the plan must be installed properly to ensure compliance with SRC and State and Regulatory permits, and that sediment does not enter a surface water system, roadway, or other properties.

(2). Written EPSC inspection logs shall be maintained onsite and available to City inspectors upon request.

(3). All BMPs shall be inspected at least every week. When a rainfall event exceeds 1/2-inch in a 24-hour period, daily inspection of the erosion controls, sediment controls, and discharge outfalls must be conducted and documented. Inspections shall be done by a representative of the permit registrant who is knowledgeable and experienced in the principles, practices, installation, and maintenance of erosion and sediment controls.

(g) INACTIVE CONSTRUCTION PERIODS AND POST-CONSTRUCTION

(1). Should work cease in any area for 14 days, the inactive area must be stabilized with appropriate soil stabilization BMPs. If all construction activity ceases the entire site must be temporarily stabilized using vegetation, heavy mulch layer, temporary seeding, or other method.

(2). All temporary erosion prevention and sediment control facilities shall be removed by the contractor within 30 days after permanent landscaping/vegetation is established and the threat of erosion and sediment transport has been mitigated.

(3). Temporary grass cover measures must be fully established by October 15 or other cover measures (i.e., erosion control blankets with anchors, one-inch of straw mulch, six mil HDPE plastic sheet, etc.) shall be in place over all disturbed soil areas until April 30. To establish an adequate grass stand for controlling erosion by October 15, it is recommended that seeding and mulching occur by September 1.

(4). Permanent erosion control vegetation on all embankments and disturbed areas shall be re-established as soon as construction is completed.

(h) SPECIFICATIONS

(1). Soil preparation. Topsoil should be prepared according to the landscape plans, if available, or recommendations of the grass seed supplier. Slopes shall be textured before seeding by rack walking (i.e., driving a crawling tractor up and down the slopes to leave a pattern of cleat imprints parallel to slope contours) or other method to provide stable areas for seeds to rest.

(2). Seeding. Erosion control grass seed mix shall be as follows: Dwarf grass mix (low height, low maintenance) consisting of dwarf perennial ryegrass (80 percent by weight), creeping red fescue (20 percent by weight). Application rate shall be 100 pounds per acre minimum.

(3). Grass seed shall be fertilized at a rate of ten pounds per 1,000 square feet with 16-16-16 slow release type fertilizer. Disturbed areas within 50 feet of water bodies and wetlands must use a non-phosphorous fertilizer.

(4). The application rate of fertilizers used to reestablish vegetation shall follow manufacturer's recommendations. Nutrient releases from fertilizers to surface waters shall be minimized. Time release fertilizers shall be used. Care shall be made in the application of fertilizers within any waterway riparian zone to prevent leaching into the waterway.

(5). When used, hydromulch shall be applied with grass seed at a rate of 2,000 pounds per acre between April 30 and June 10, or between September 1 and October 1. On slopes steeper than ten percent, hydroseed and mulch shall be applied with a bonding agent (tackifier). Application rate and methodology shall be in accordance with seed supplier recommendations.

(6). When used in lieu of hydromulch, dry, loose, weed-free straw used as mulch shall be applied at a rate of 4,000 pounds per acre (double the hydromulch application requirement). Anchor straw by working in by hand or with equipment (rollers, cleat trackers, etc.). Mulch shall be spread uniformly immediately following seeding.

(7). When conditions are not favorable to germination and establishment of the grass seed, the Contractor shall irrigate the seeded and mulched areas as required to establish the grass cover.

(8). Sediment fences shall be constructed of continuous filter fabric to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum six-inch overlap, and both ends securely fastened to a post.

(9). The standard strength filter fabric shall be fastened securely to stitched loops installed on the upslope side of the posts, and six inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

(10). Bio-filter bags shall be clean 100 percent wood product waste. Bags shall be 18-inch x 18-inch x 30-inch, weigh approximately 45 pounds, and be contained in a bag made of 1/2-inch plastic mesh.

(11). Minimum wet weather slope protection. For 3H:1V or steeper slopes use Bon Terra Type C2 or North American Green Type C125 erosion control blankets. Use a minimum of two inches straw mulch or North American Green Type S150 for slopes flatter than 3H:1V and greater than 6H:1V. Slopes flatter than 6H:1V use one inch straw mulch, hydroseed with hydromulch and tackifier. Slope protection shall be placed on all disturbed areas immediately after completion of each section of construction activity, until the erosion control seeding has been established. As an option during temporary or seasonal work stoppages, a six-mil HDPE plastic sheet may be placed on exposed slopes. The plastic sheet shall be provided with an anchor trench at the top and bottom of the slope, and shall be sandbagged on the slopes as required to prevent damage or displacement by wind.

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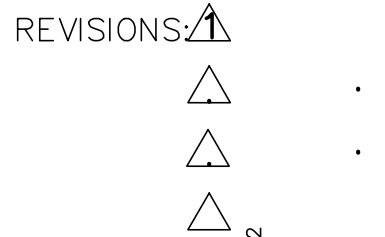
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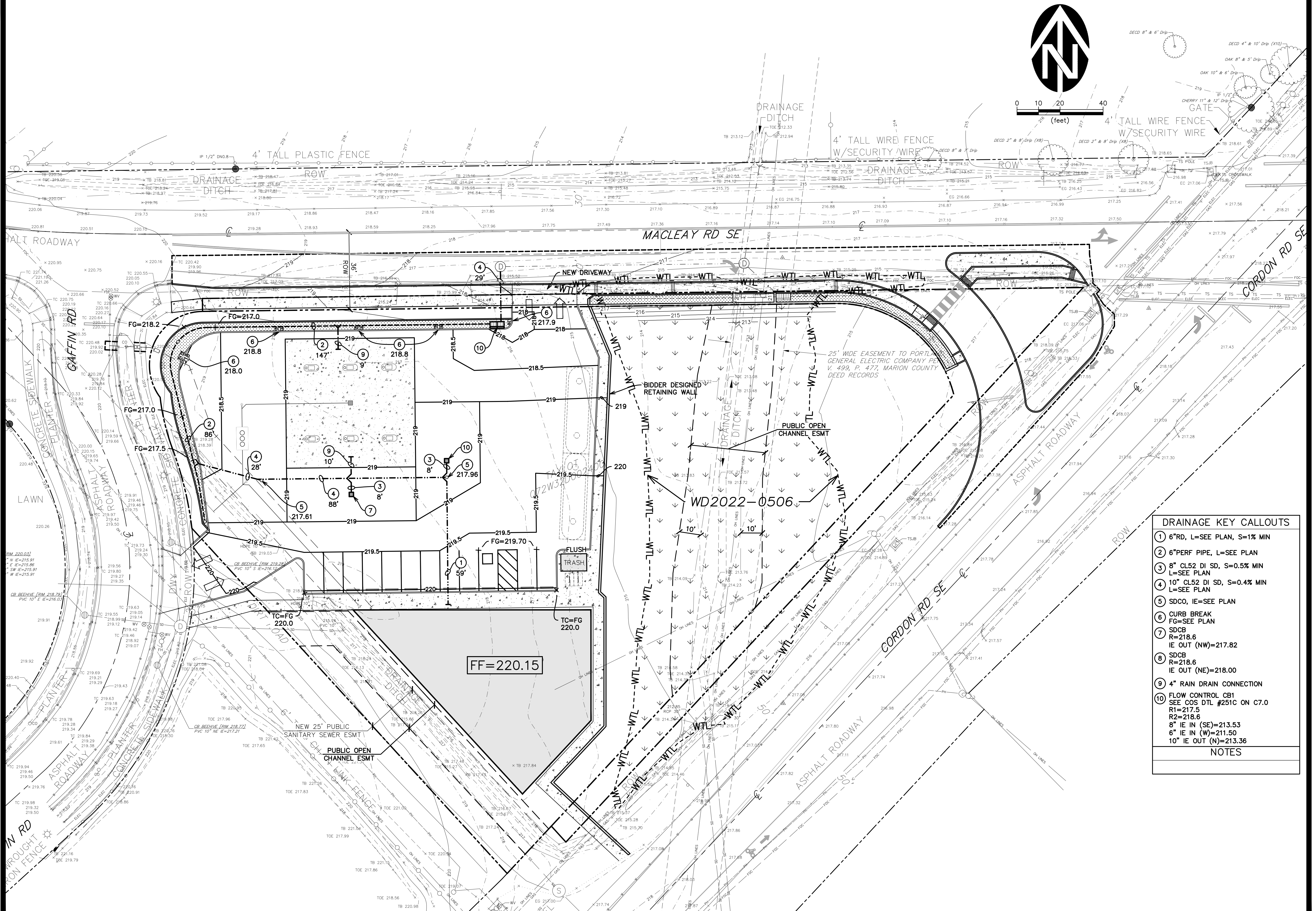


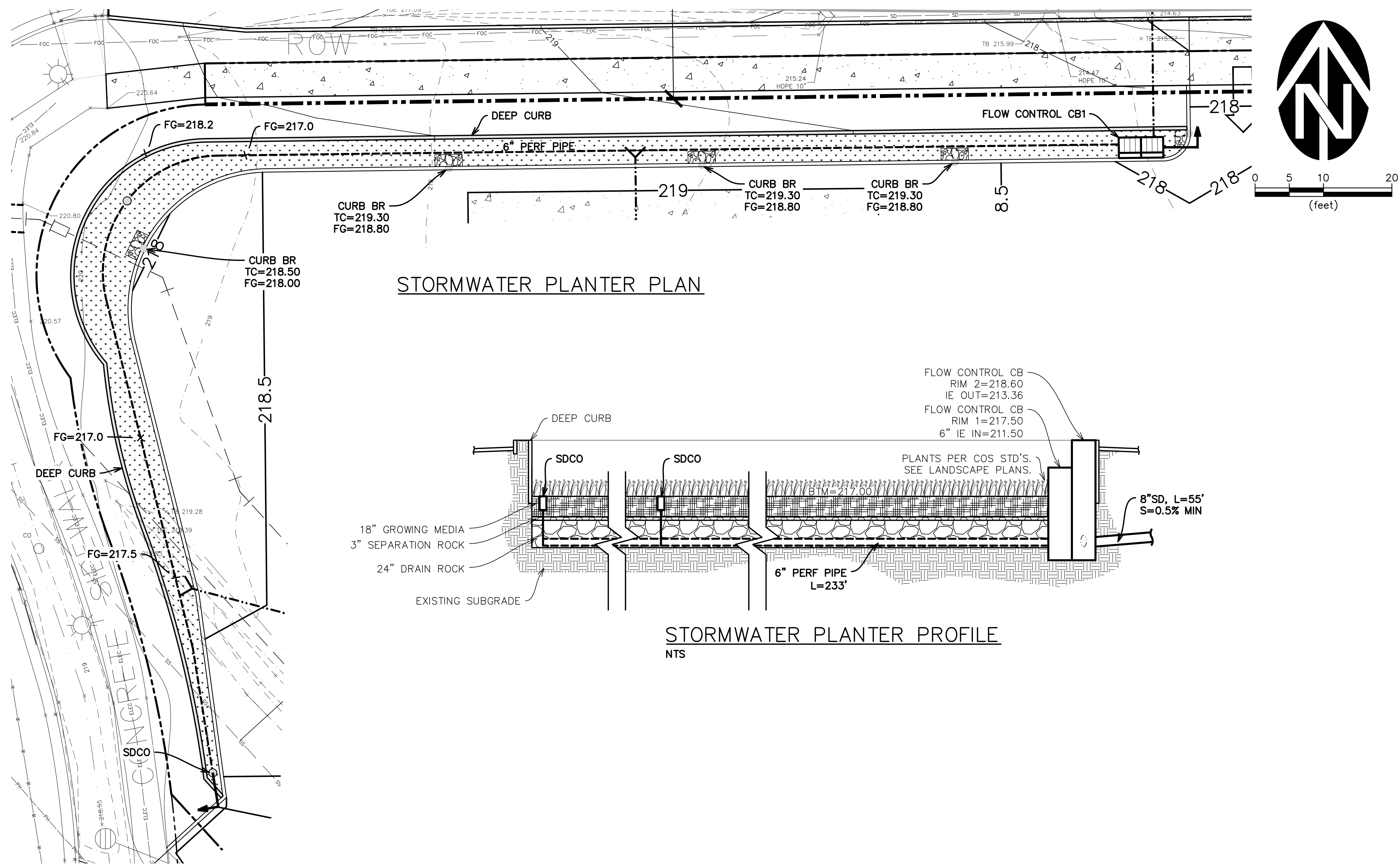
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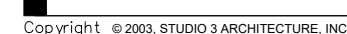


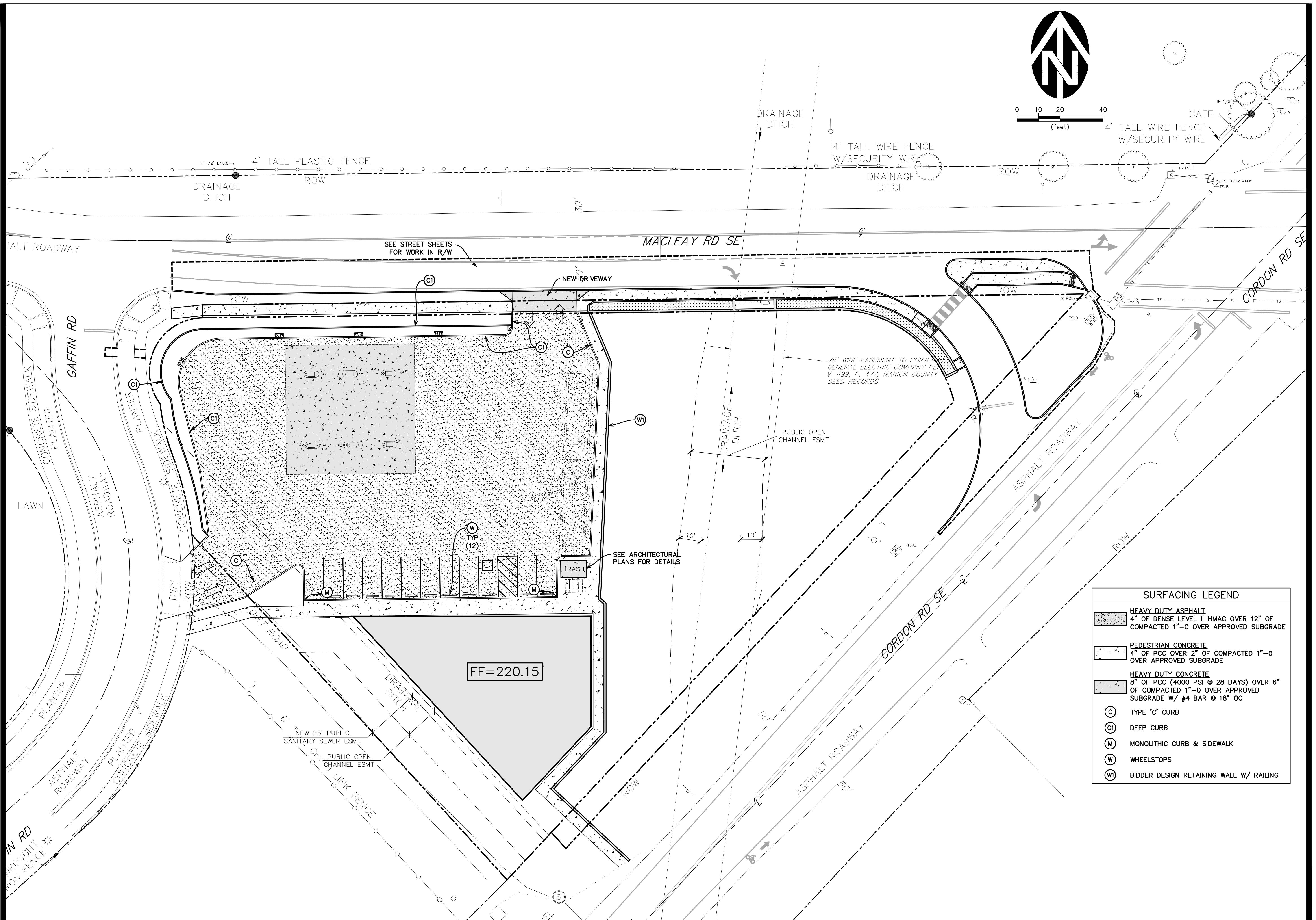
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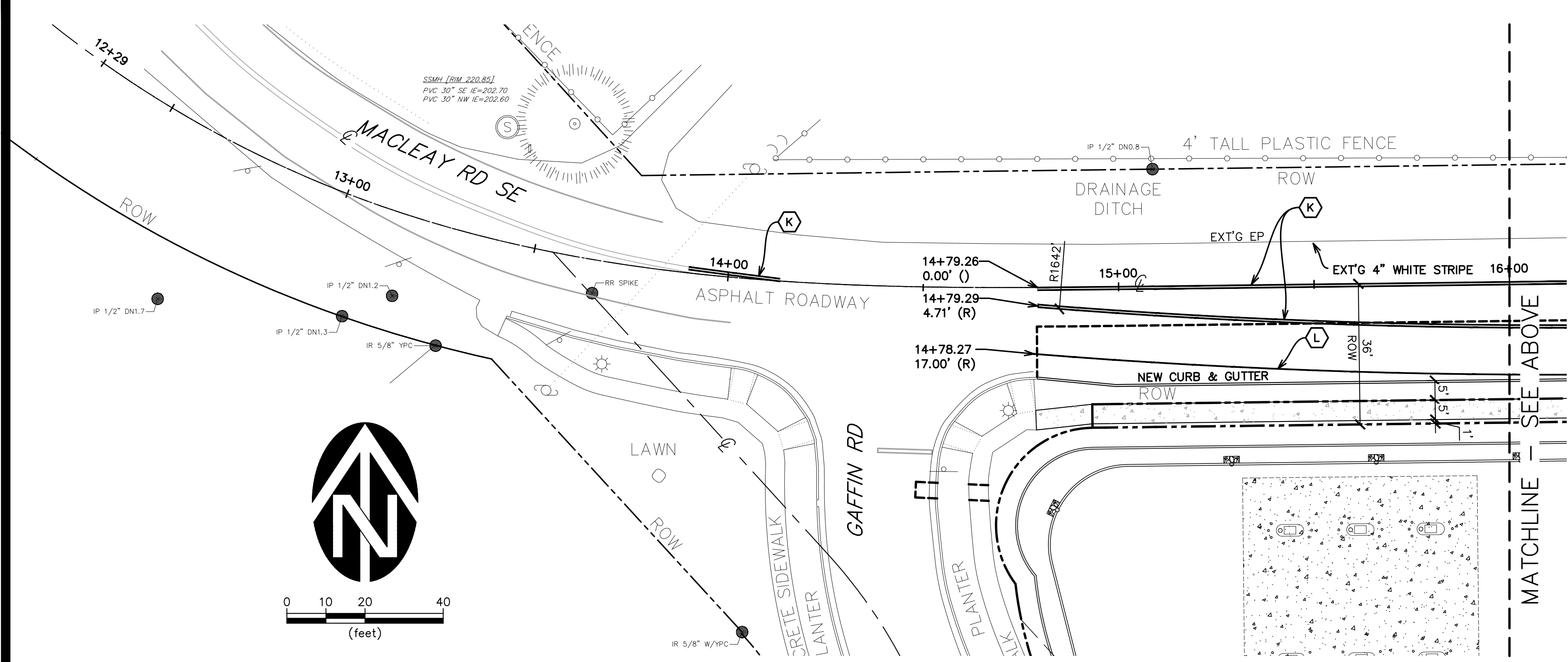
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EROSION CONTROL
NOTES











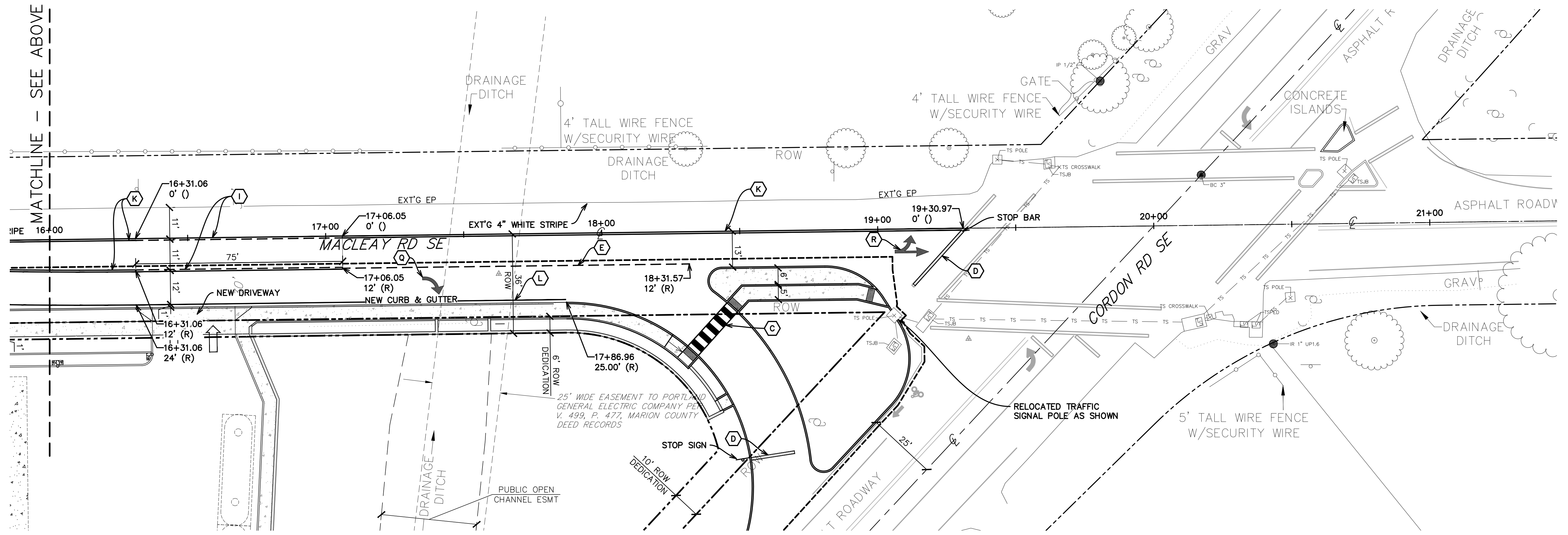
C UNCONTROLLED CROSSWALK - 24" WHITE, WITH 12" WHITE, TYPE B-HS, PAVEMENT BARS.	D STOP BAR - 12" WHITE, TYPE B-HS, PAVEMENT BAR.	E LANE LINE SKIP STRIPE - 4" WHITE, MMA PROFILE STRIPING LINE, WITH WHITE, TYPE I MONO-DIRECTIONAL, RAISED PAVEMENT MARKERS.
G CENTER LINES - TWO 4" YELLOW, MMA PROFILE STRIPING LINES, WITH YELLOW, TYPE I MONO-DIRECTIONAL, RAISED PAVEMENT MARKERS.	H TURN LANE LINE - 8" WHITE, MMA PROFILE STRIPING LINE, WITH WHITE, TYPE I MONO-DIRECTIONAL, RAISED PAVEMENT MARKERS.	I TWO-WAY LEFT TURN STRIPE - TWO 4" YELLOW, MMA PROFILE STRIPING LINES, WITH YELLOW, TYPE I BI-DIRECTIONAL, RAISED PAVEMENT MARKERS. OUTSIDE LINE IS SOLID. INSIDE AT 10'/30' PATTERN.
K DOUBLE YELLOW LINE - TWO 4" YELLOW, MMA PROFILE STRIPING LINES.	L CURB OR EDGE OF PAVEMENT - VARIES (18" MIN).	P RIGHT TURN LANE MARKINGS - WHITE, TYPE B-HS PAVEMENT LEGENDS. SEE CURRENT EDITION OF FHWA STANDARD HIGHWAY SIGNS FOR ARROW PROPORTION.
Q LEFT TURN LANE MARKINGS - WHITE, TYPE B-HS PAVEMENT LEGENDS. SEE CURRENT EDITION OF FHWA STANDARD HIGHWAY SIGNS FOR ARROW PROPORTION.	R THRU AND TURN LANE MARKINGS - WHITE, TYPE B-HS PAVEMENT LEGENDS. SEE CURRENT EDITION OF FHWA STANDARD HIGHWAY SIGNS FOR ARROW PROPORTION.	

LEGEND
TYPE B-HS PAVEMENT MARKINGS - PREFORMED, FUSED THERMOPLASTIC FILM THAT HAS INTERMIXED REFLECTIVE ELEMENTS WITH FACTORY INSTALLED CRUSHED GLASS OR AGGREGATE ON THE SURFACE.
MMA PAVEMENT MARKINGS - METHYL METHACRYLATE BY GRAVITY AND EXTRUSION METHOD, TO FULL WIDTH SHOWN, IN A SINGLE APPLICATION. PAVEMENT MARKINGS SHALL BE INTERMIXED REFLECTIVE ELEMENTS AND PLACED TO APPLICABLE THICKNESS SHOWN BELOW.

NOTE:
1. ALL PAVEMENT MARKING DESIGNS AND INSTALLATION SHALL MEET OR EXCEED THE SPECIFICATIONS CONTAINED IN THE LATEST EDITION OF THE OREGON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION INCLUDING ANY SUPPLEMENTAL GUIDES REFERENCED OR SPECIFIED AND ALL SPECIAL PROVISIONS AND ADDENDUMS TO THESE SPECIFICATIONS.

**CITY OF SALEM
DEPARTMENT OF PUBLIC WORKS
STANDARD PLAN
PAVEMENT MARKING DETAILS
NO.322A**

APPROVED	<i>[Signature]</i>	12/27/19	DRAWN BY	JAK	10/2019
	CITY ENGINEER	DATE	CHECKED BY	KDH	10/2019



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REGISTERED PROFESSIONAL
ENGINEER
NOV. 12, 2008
WILLIAM J. WELLS

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SALEM, OR

MACLEAY RD SE & CORDON RD SE

SHEET:

C5.0

MACLEAY RD SE STRIPING
PLAN



NOTES



H SCALE: 1"=20' V SCALE: 1"=4'



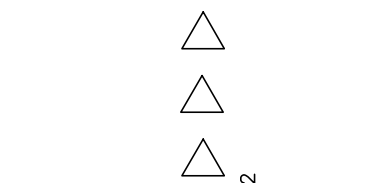
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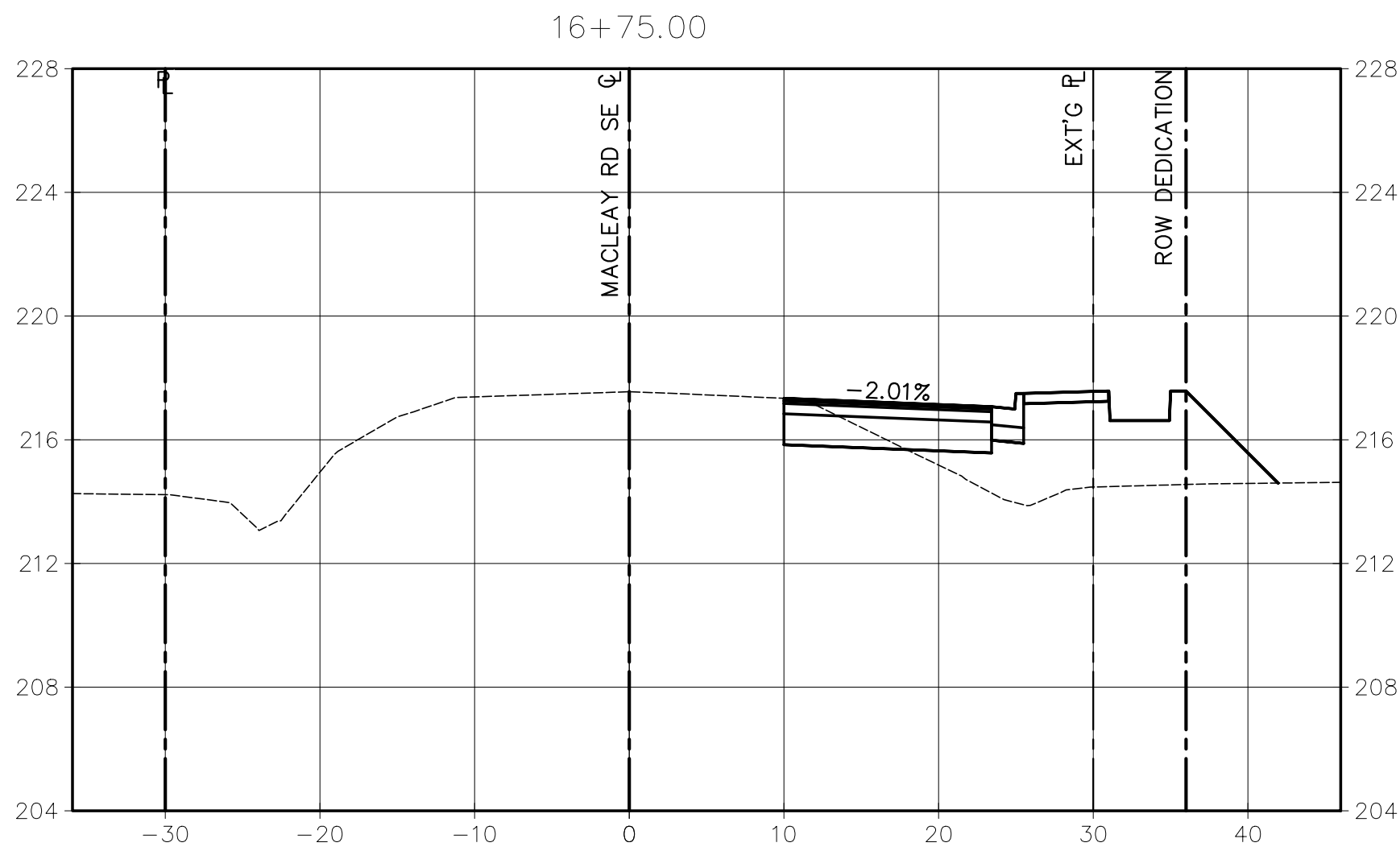
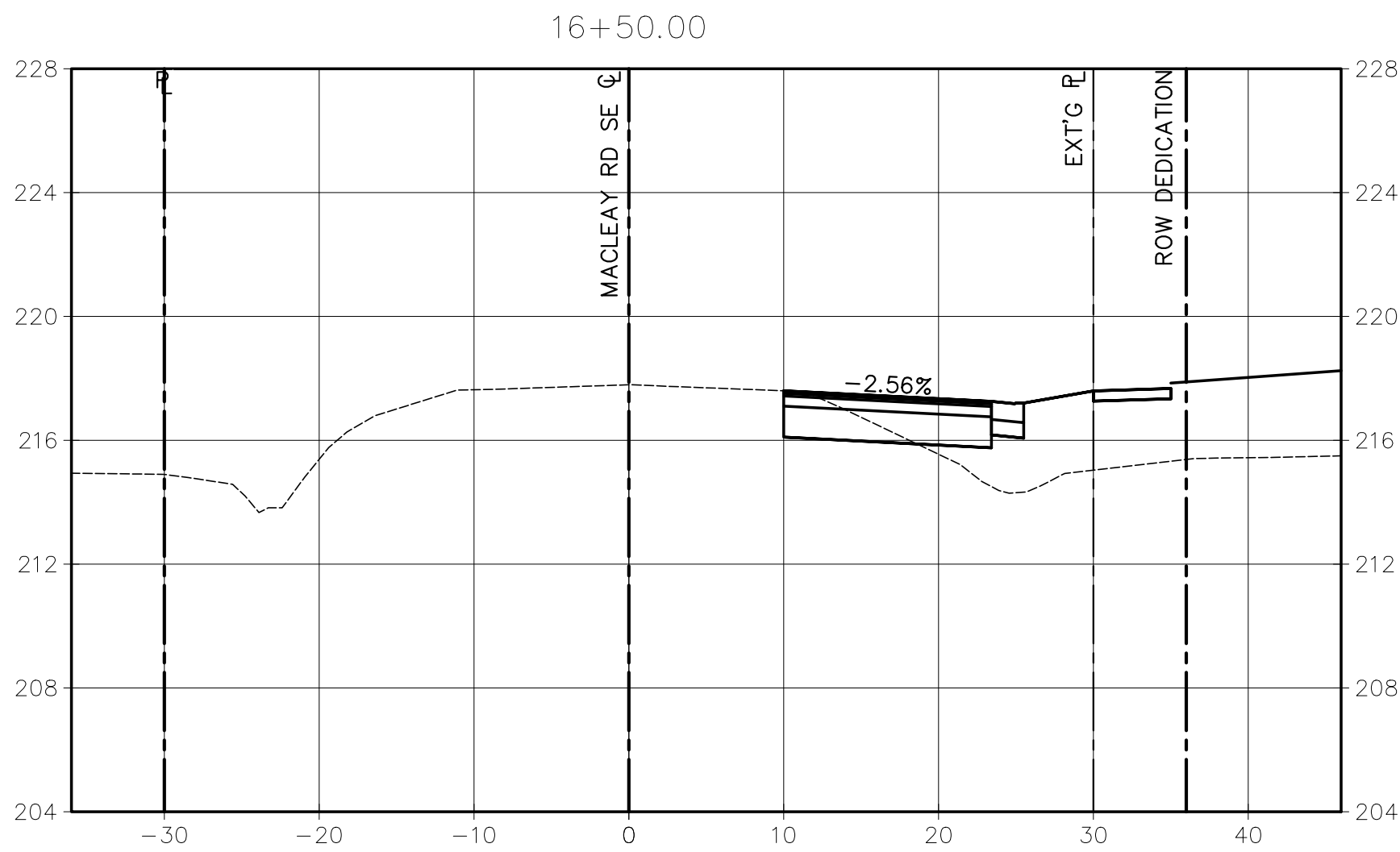
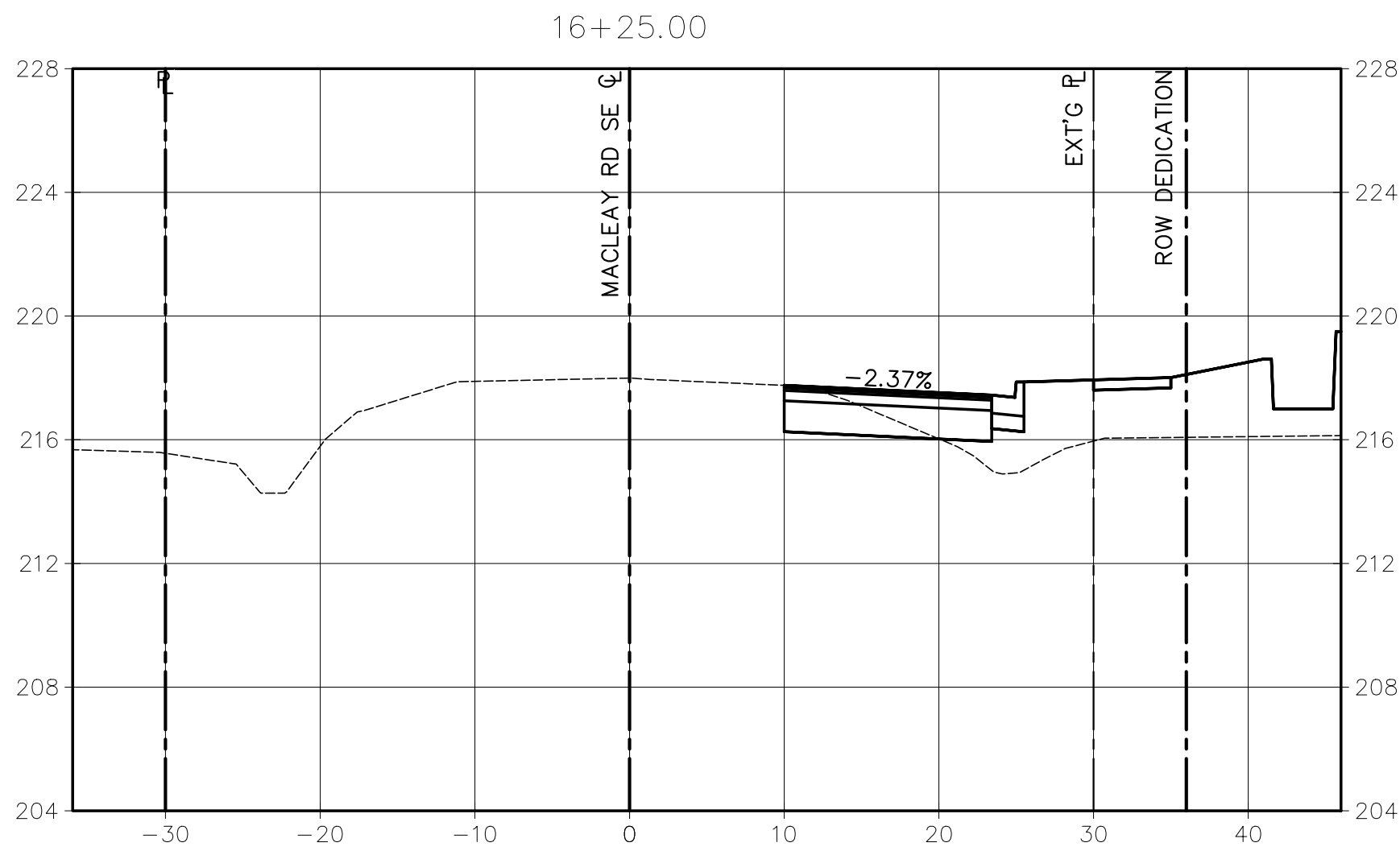
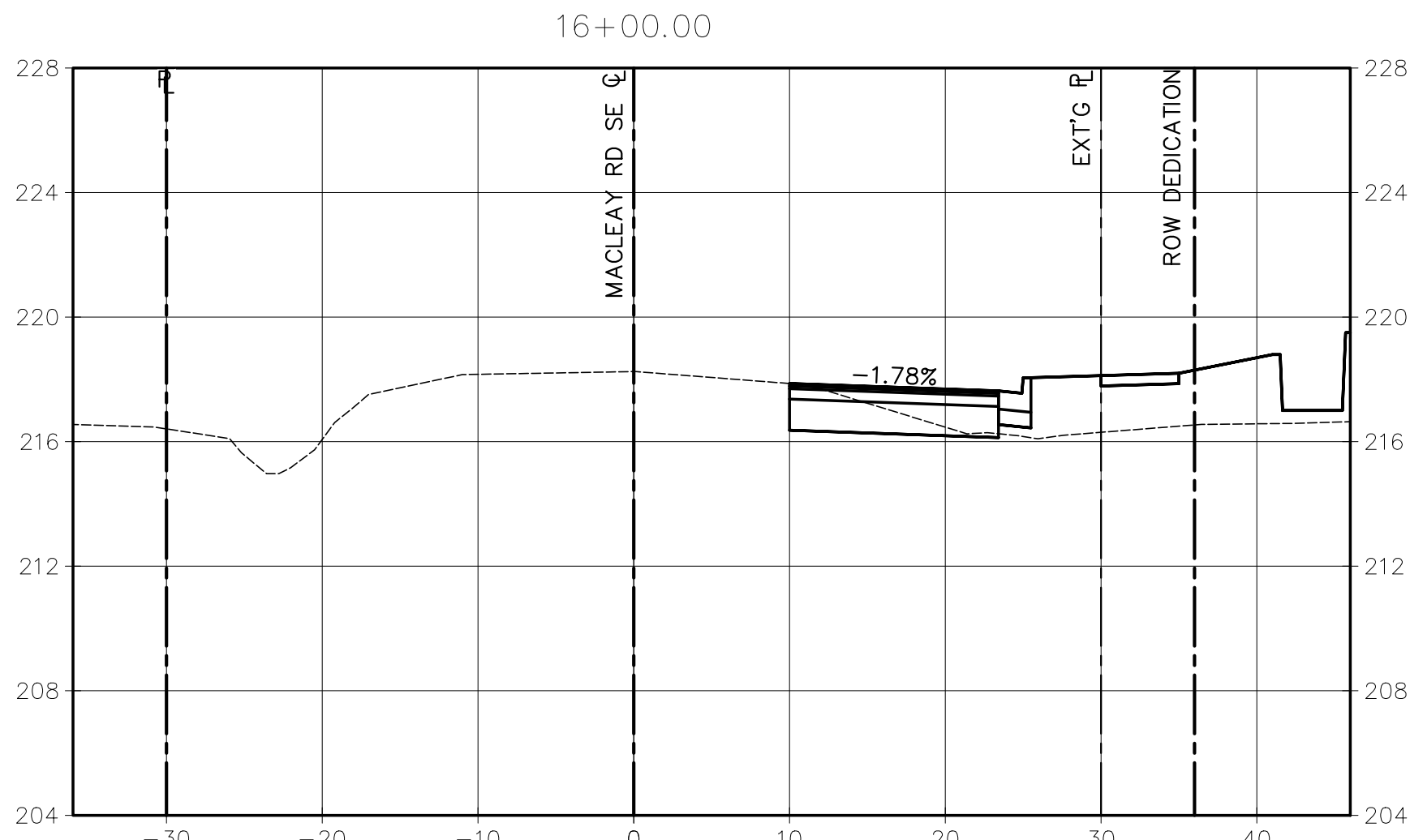
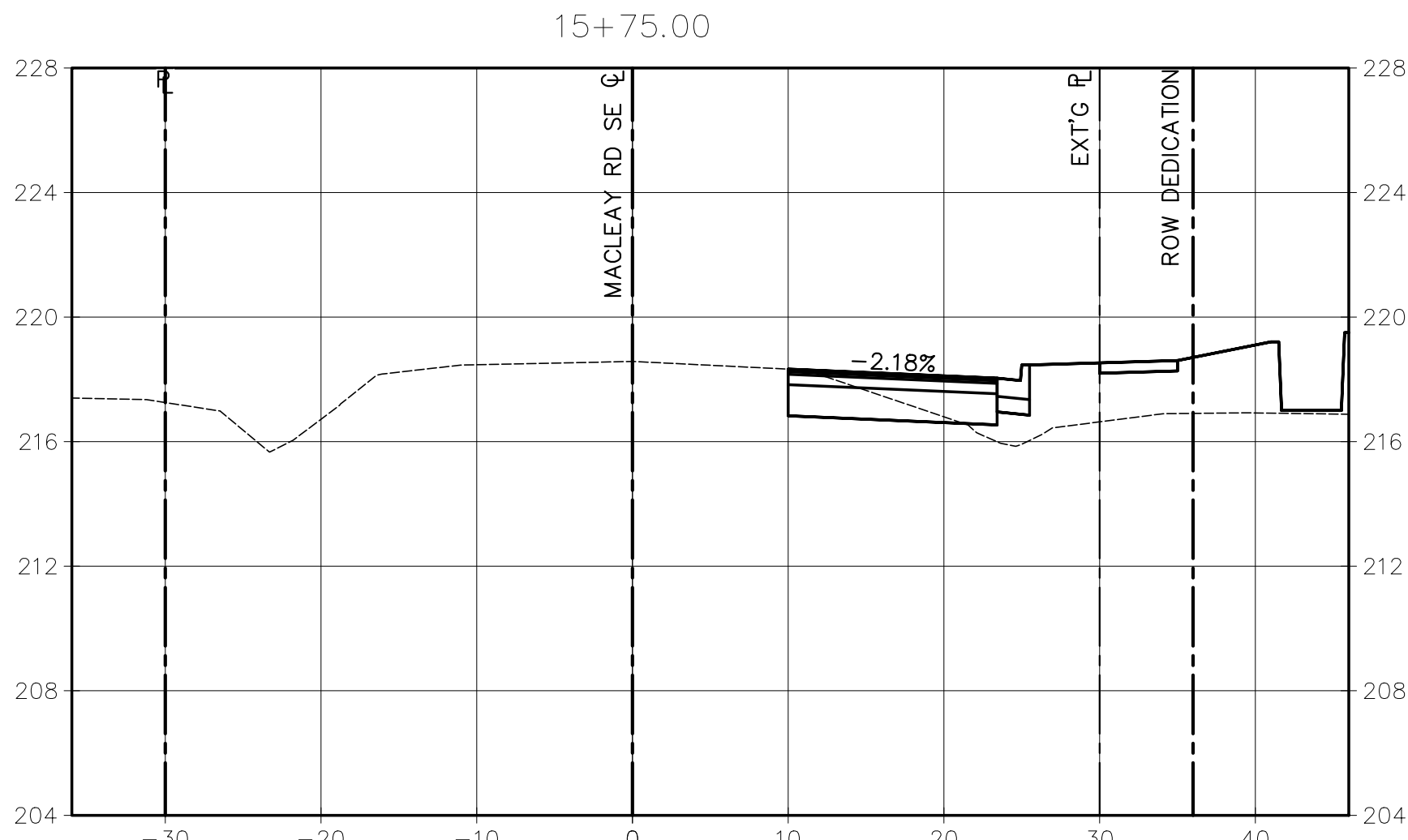
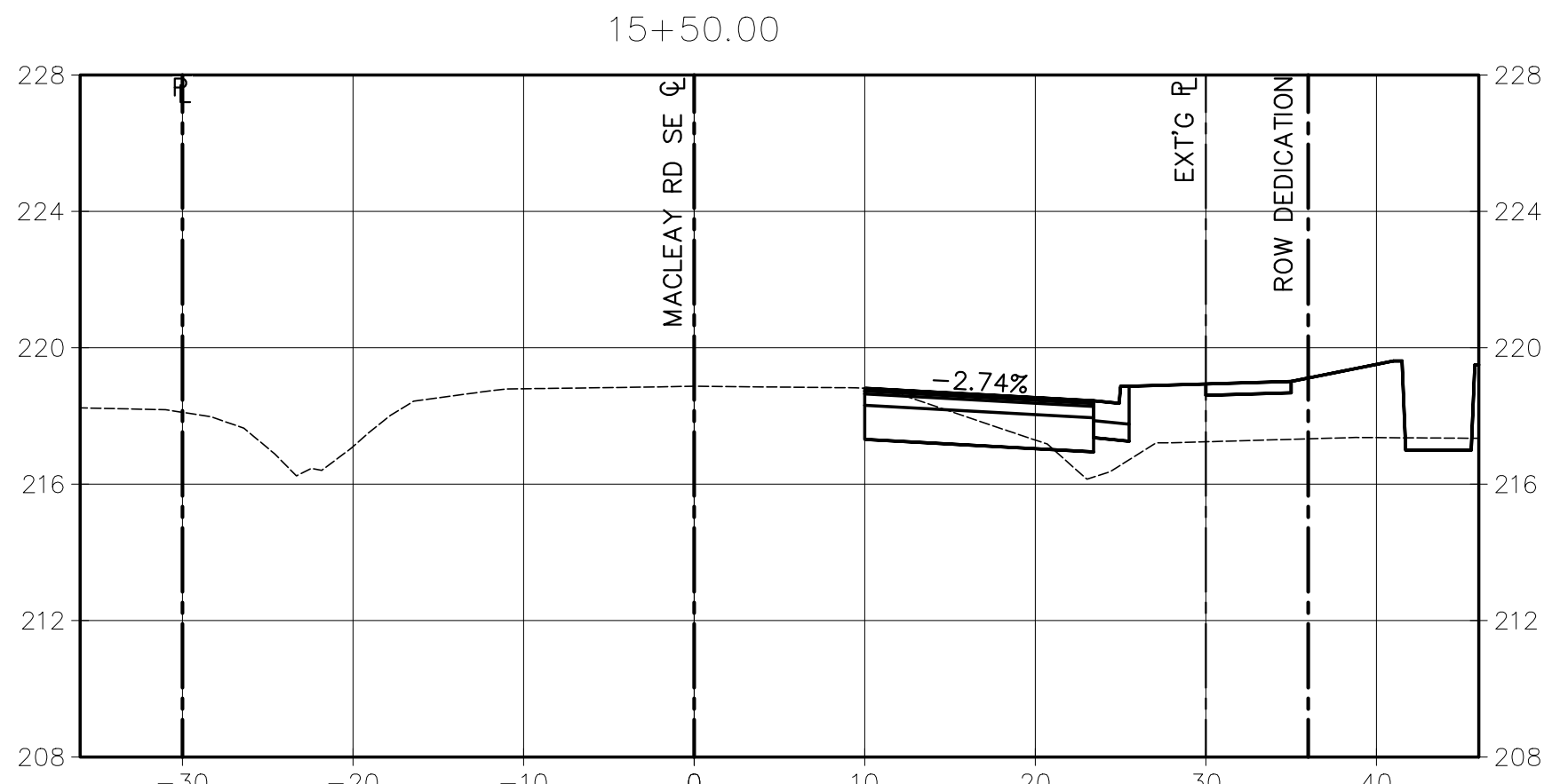
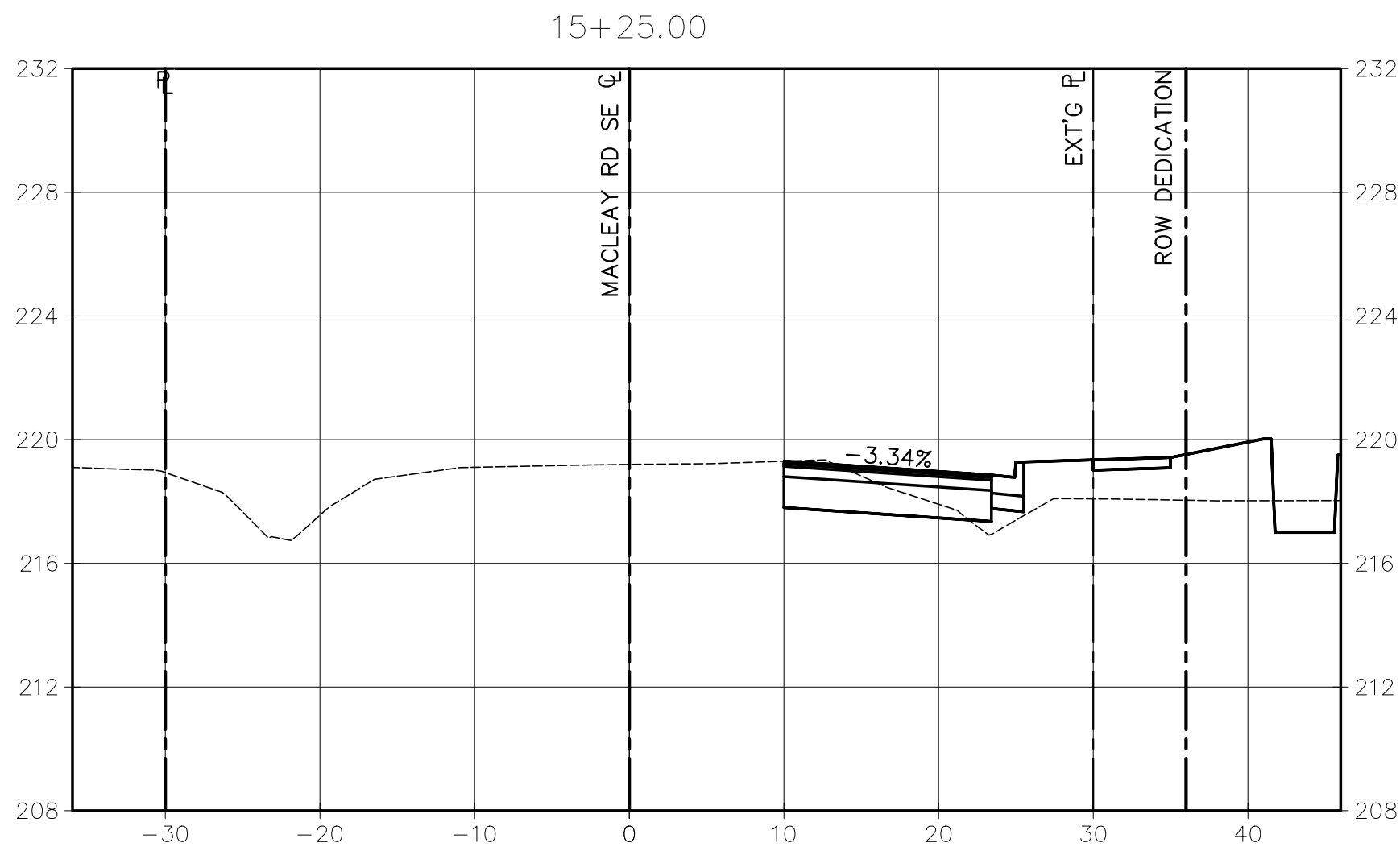
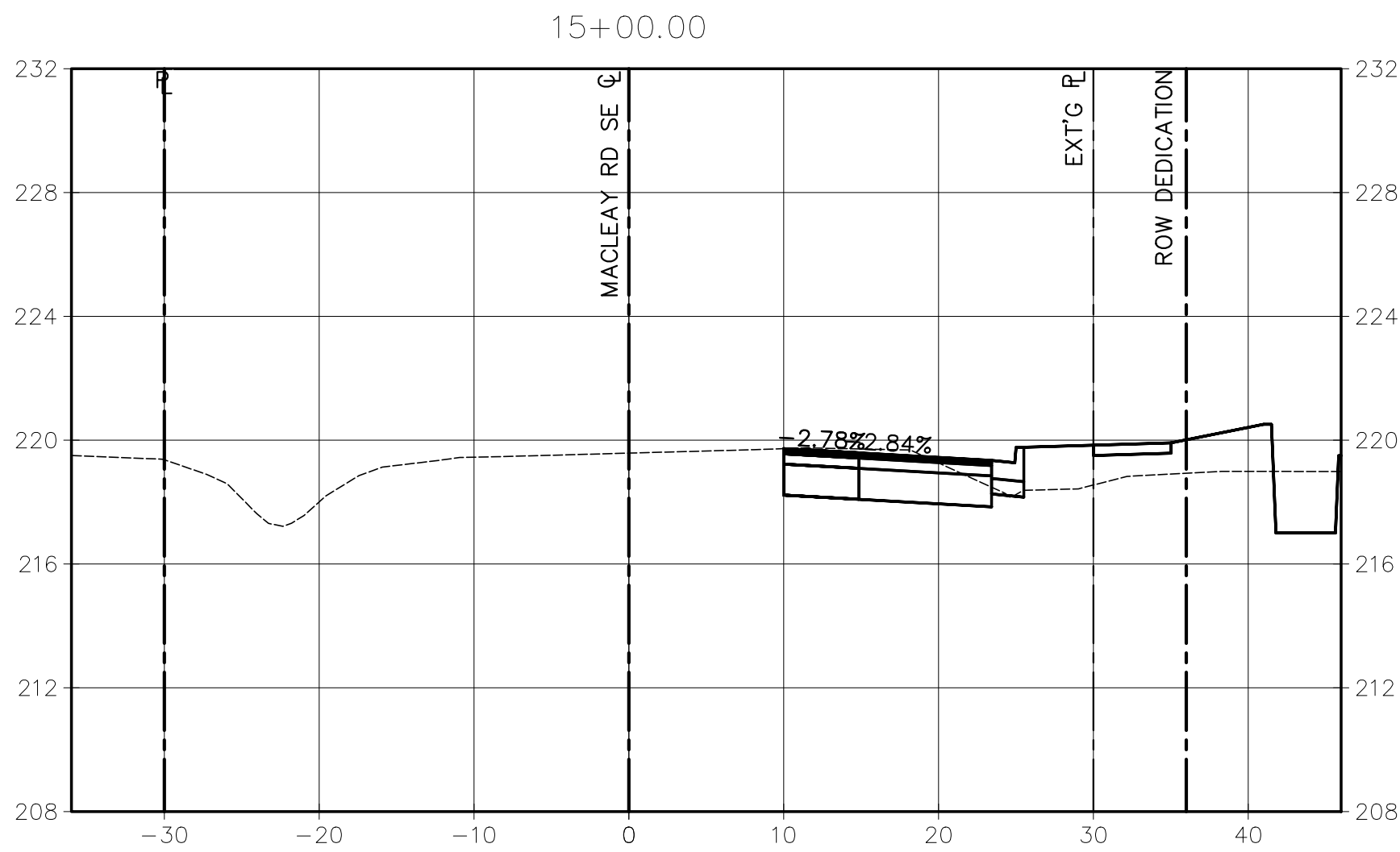
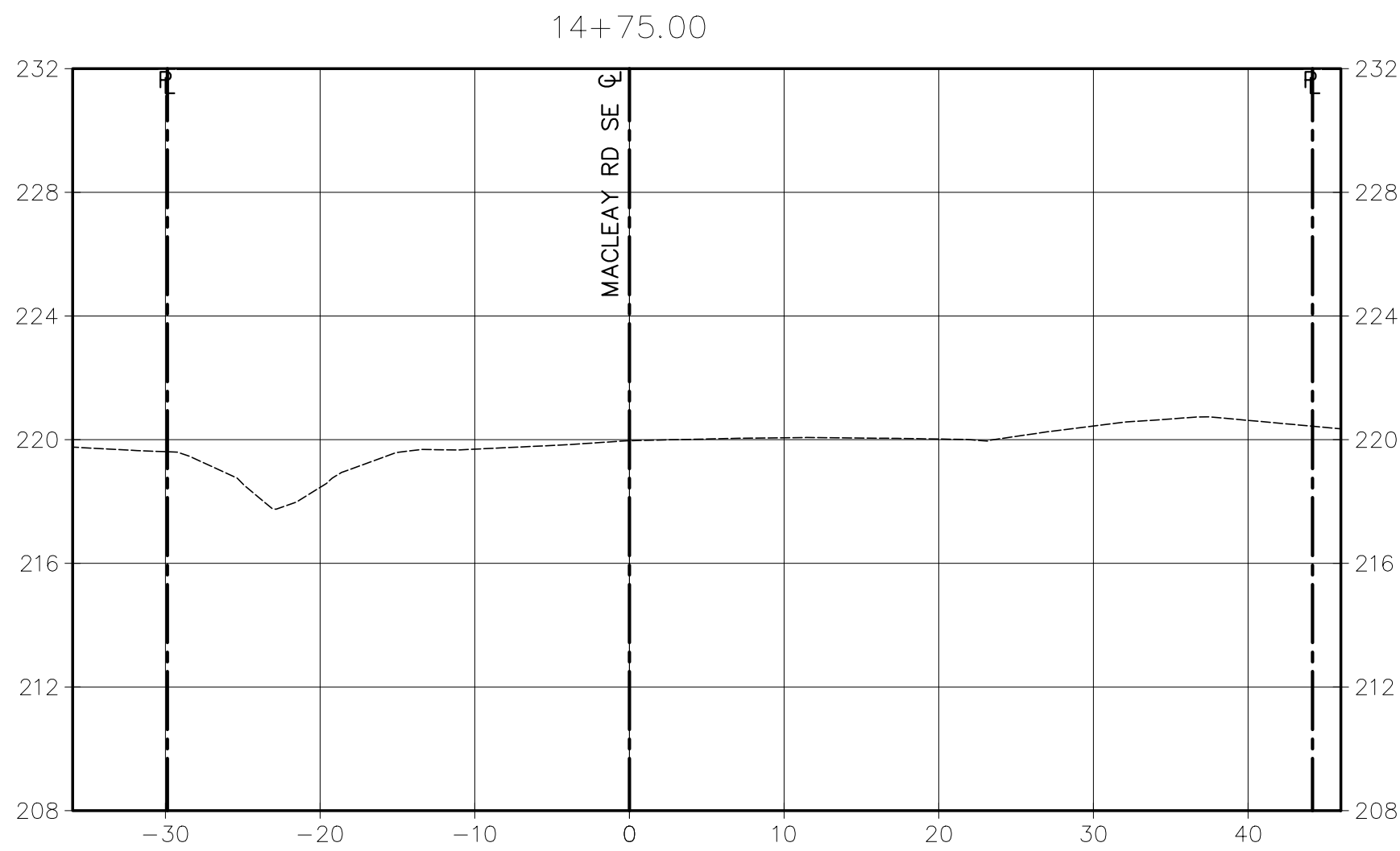


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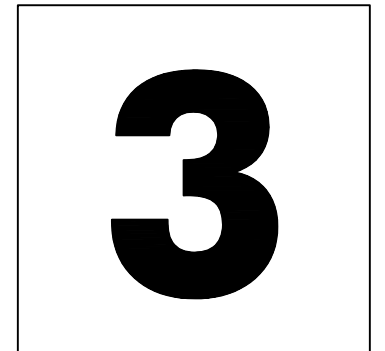


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SHEET:
C5.2
MACLEAY RD SE
X-SECTIONS



MACLEAY RD SE X-SECTIONS
H SCALE: 1"=10' V SCALE: 1"=5'



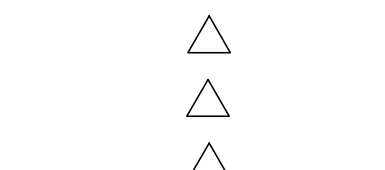
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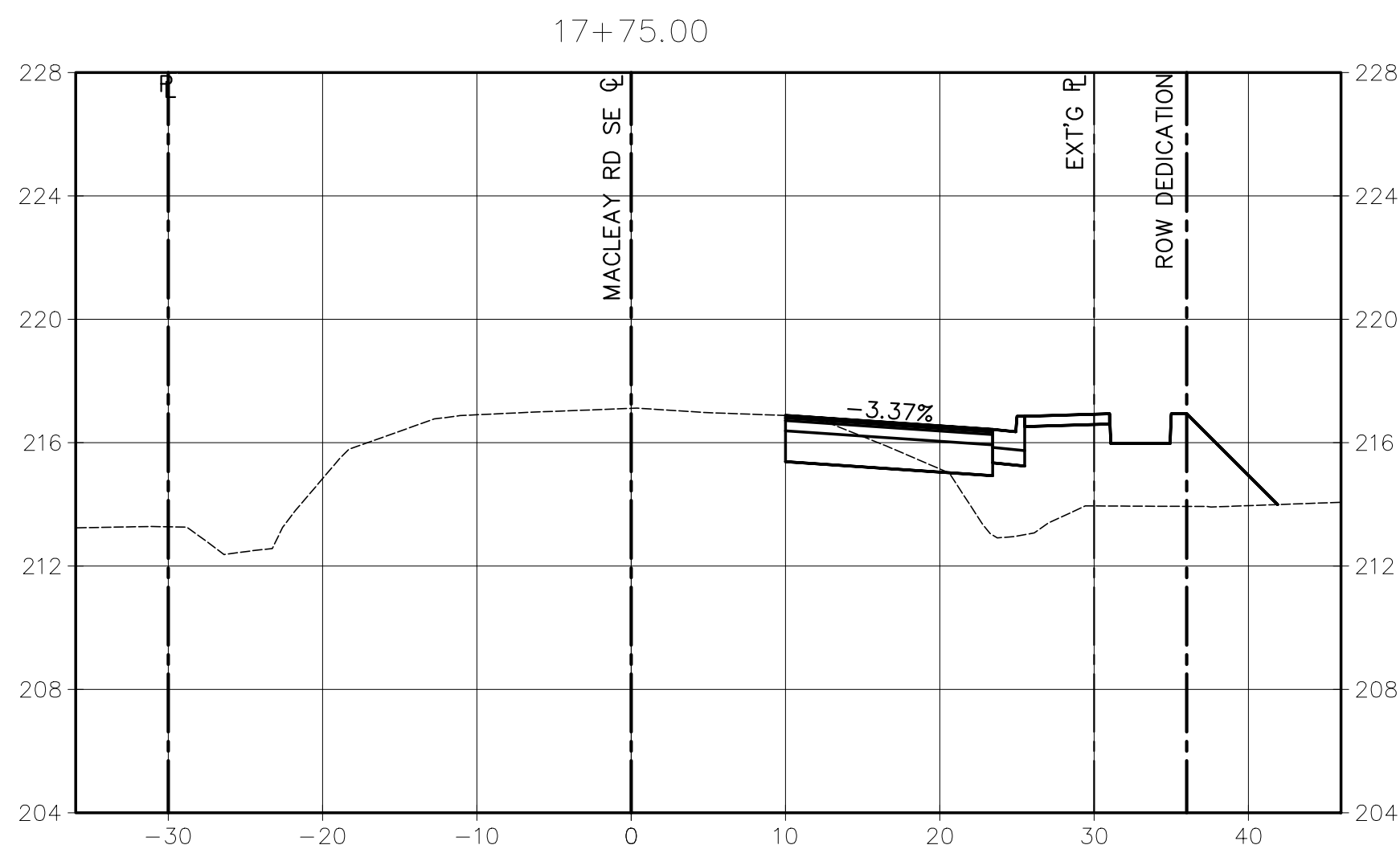
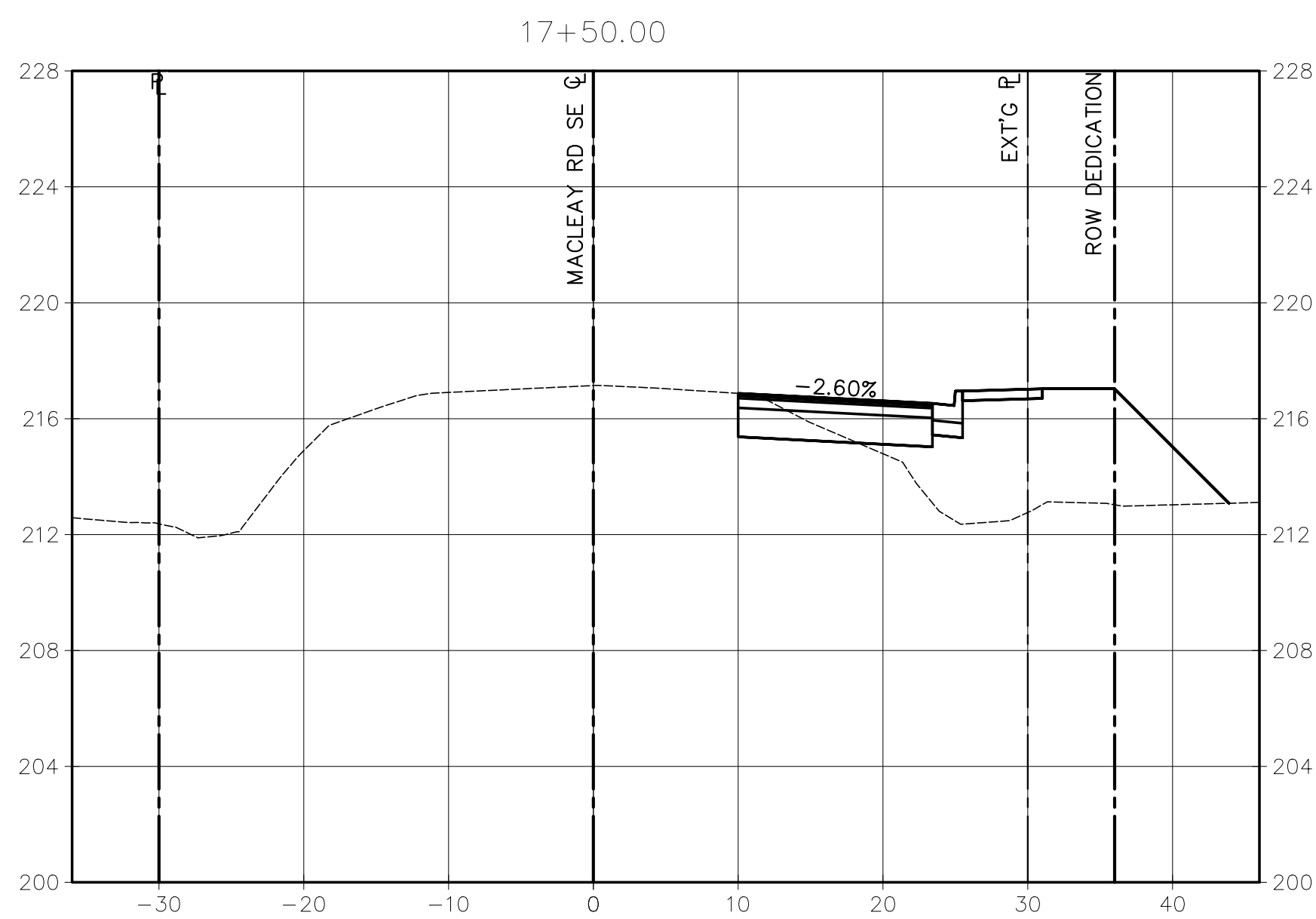
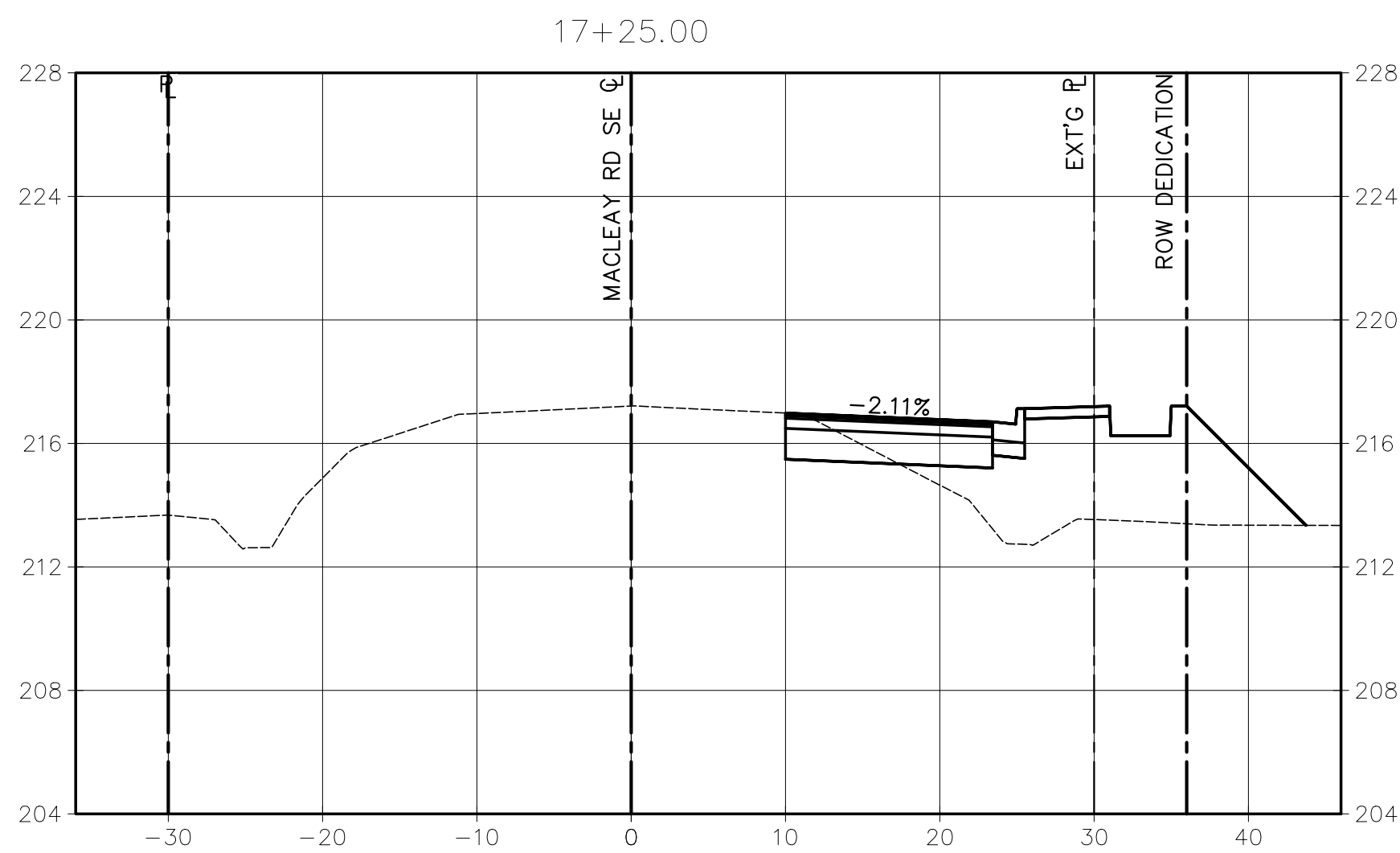
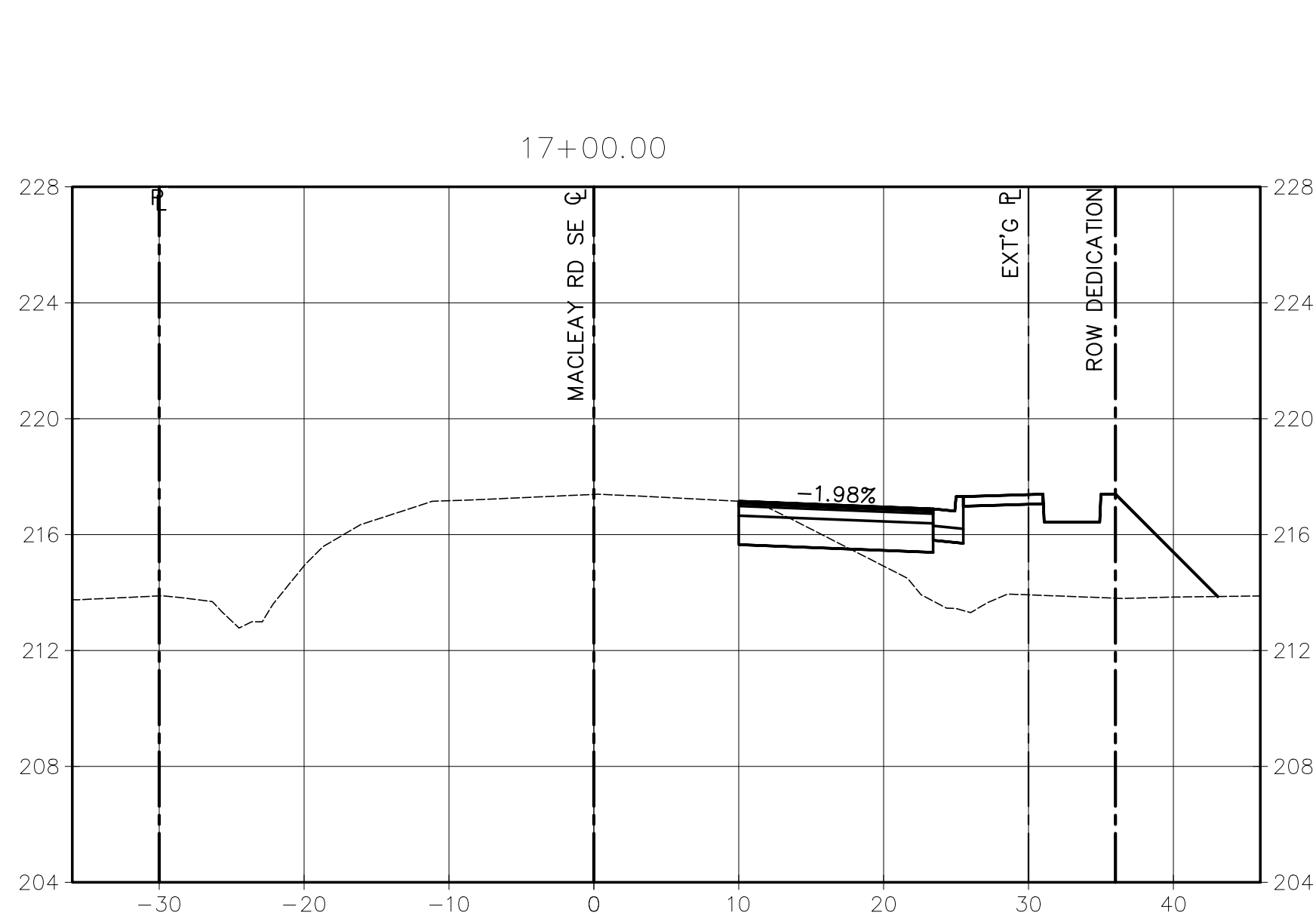


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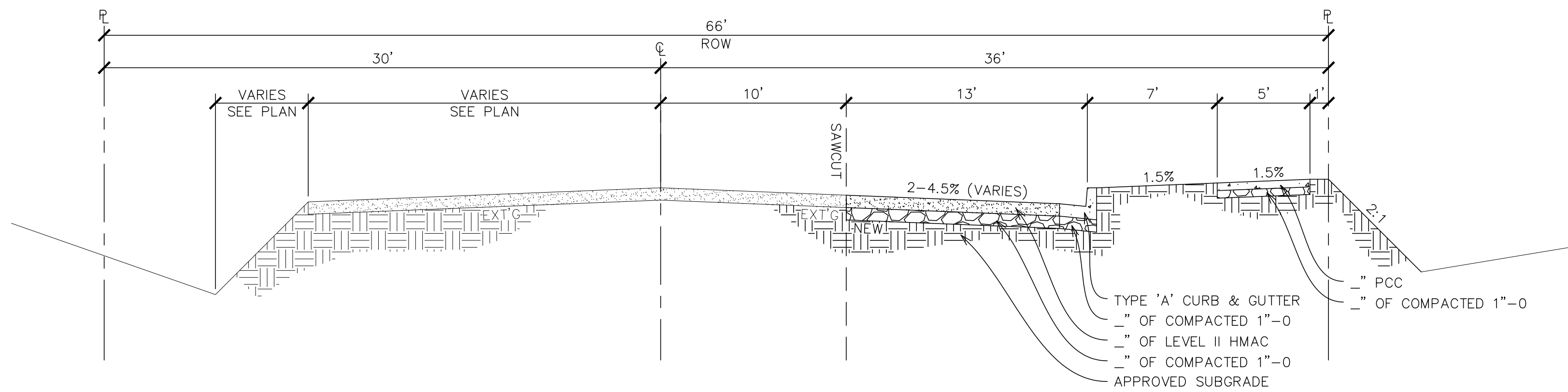


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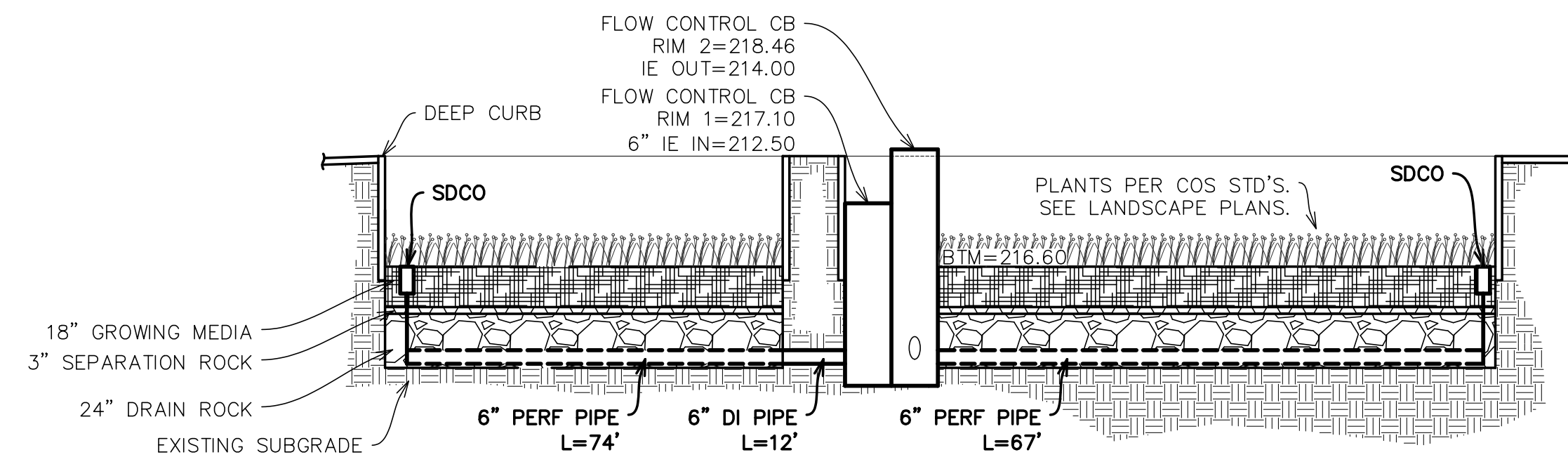
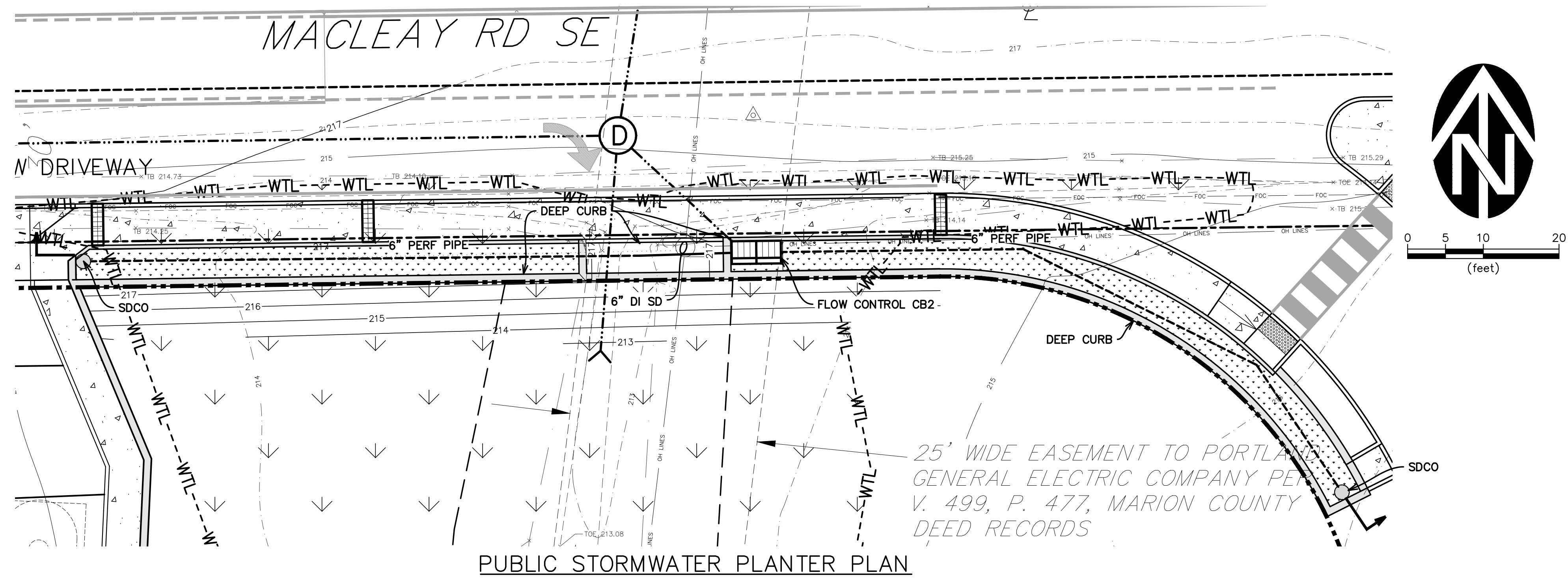
SHEET:
C5.3
MACLEAY RD SE
X-SECTIONS & TYPICAL
SECTION



MACLEAY RD SE PROFILE
H SCALE: 1"=20' V SCALE: 1"=4'



MACLEAY RD TYPICAL SECTION
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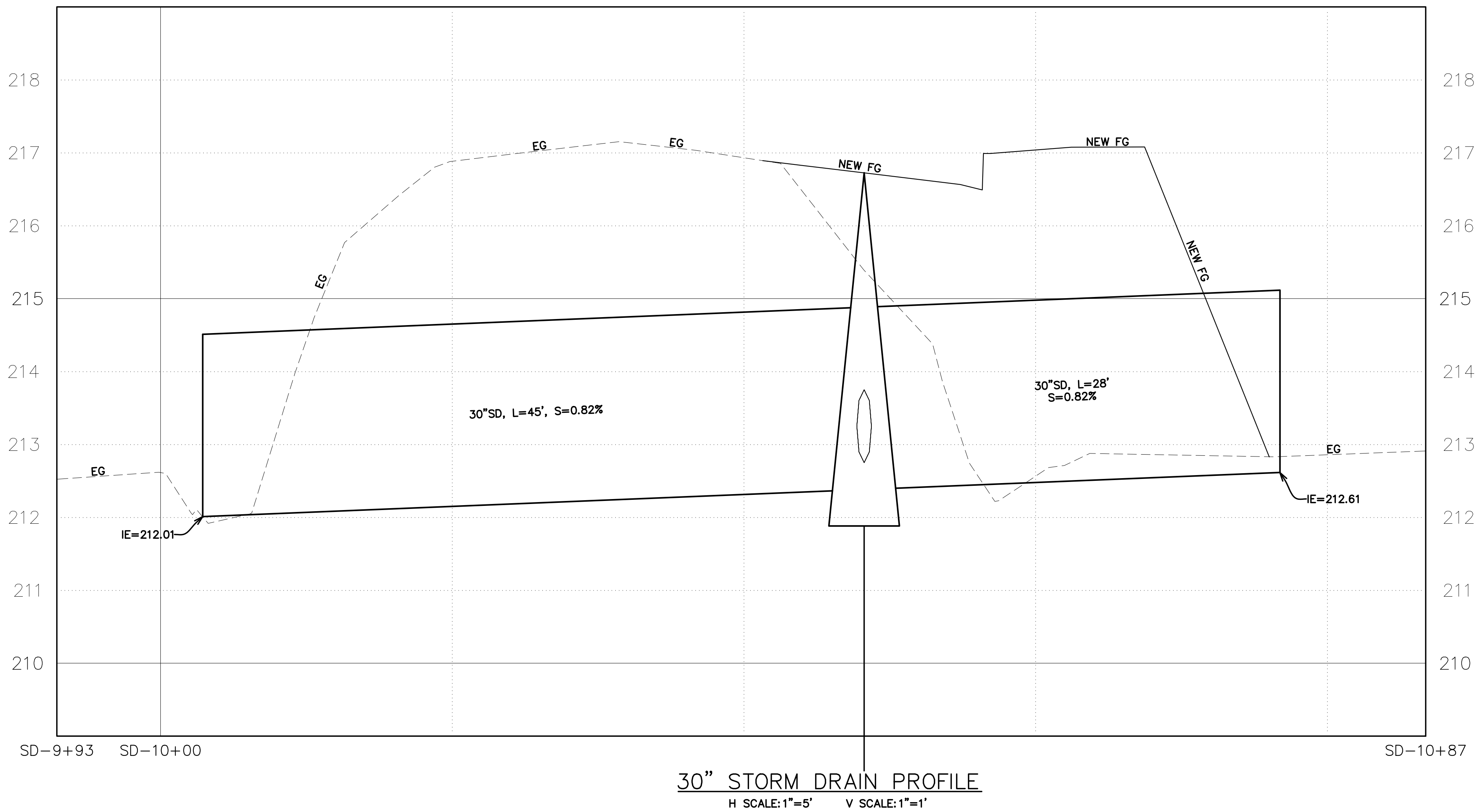
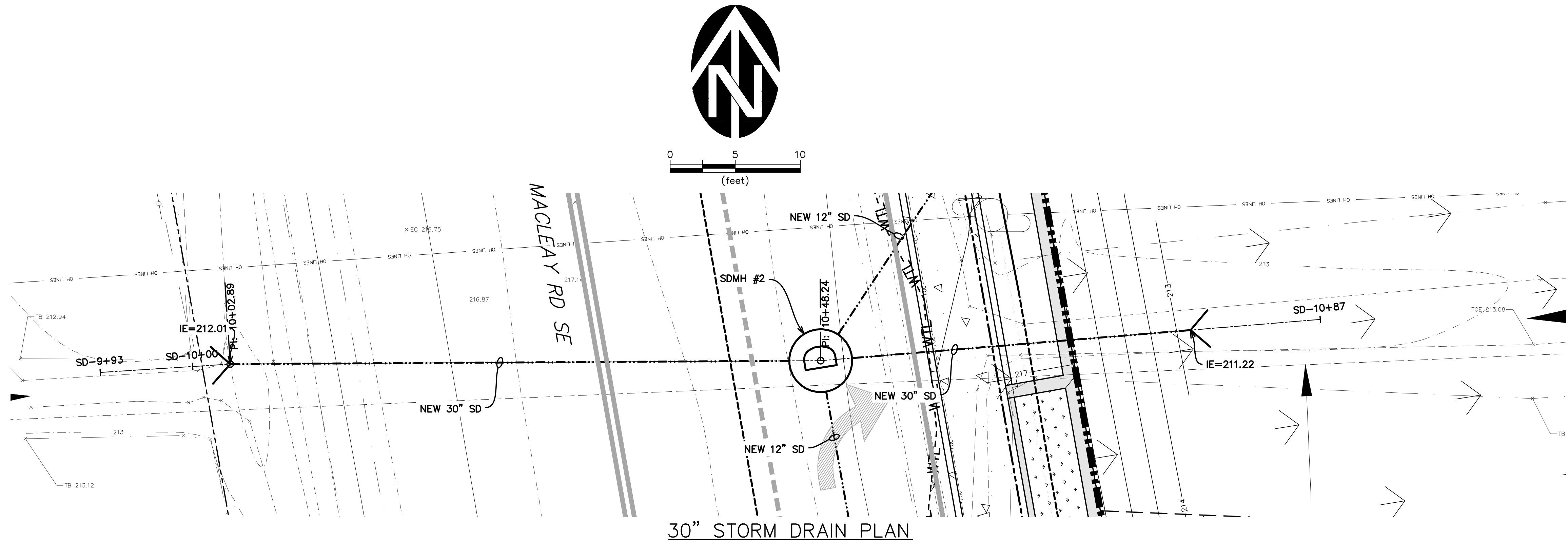
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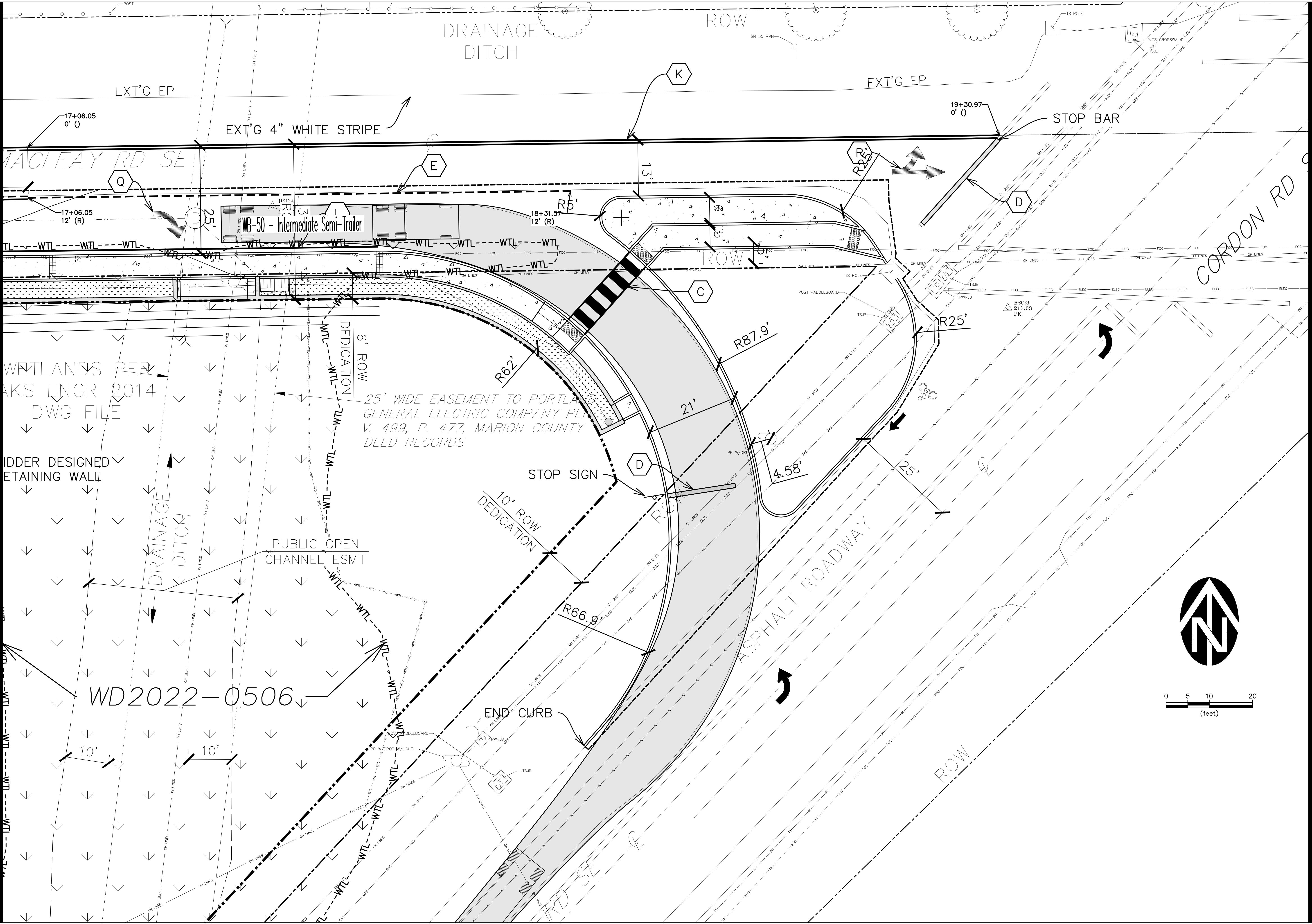
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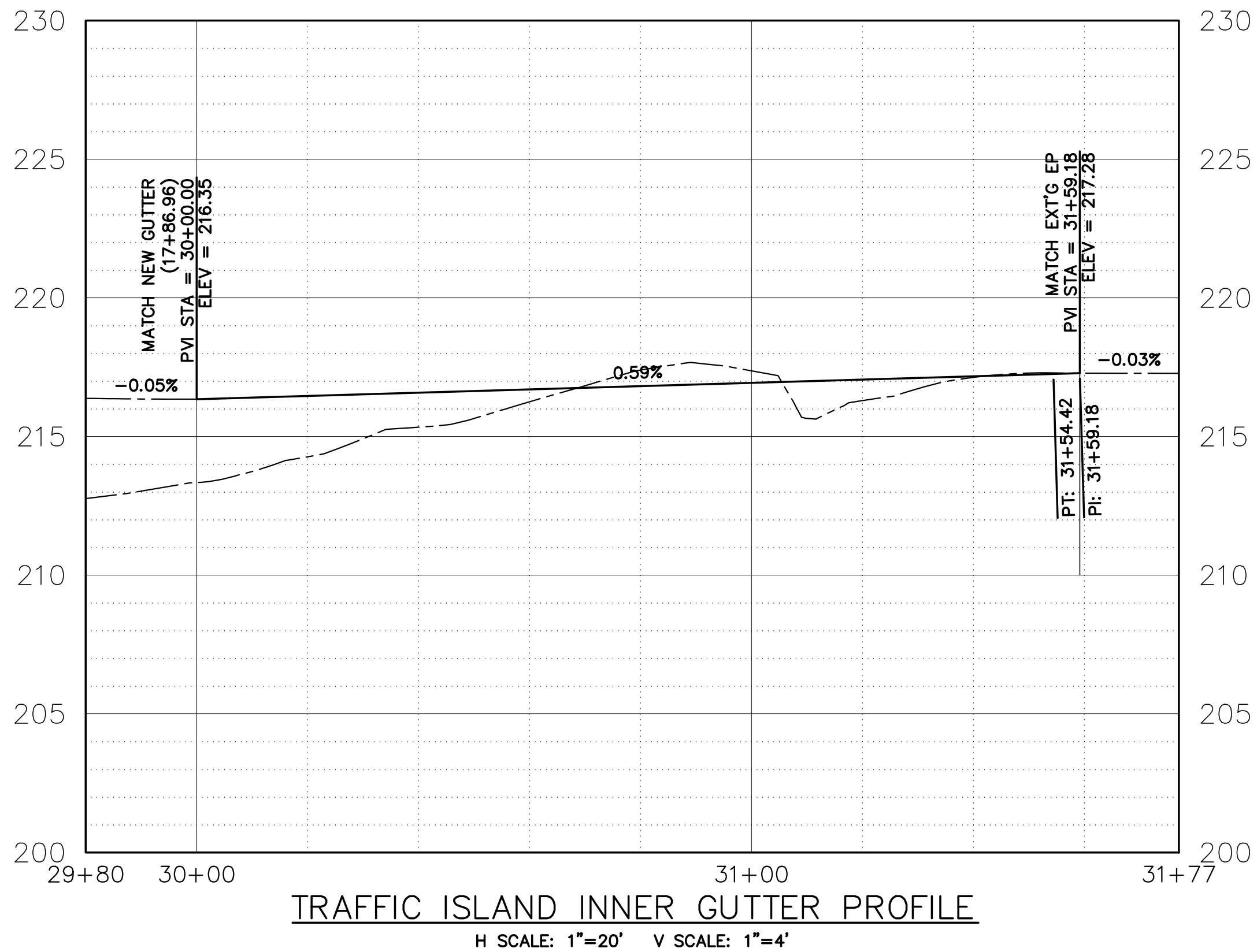
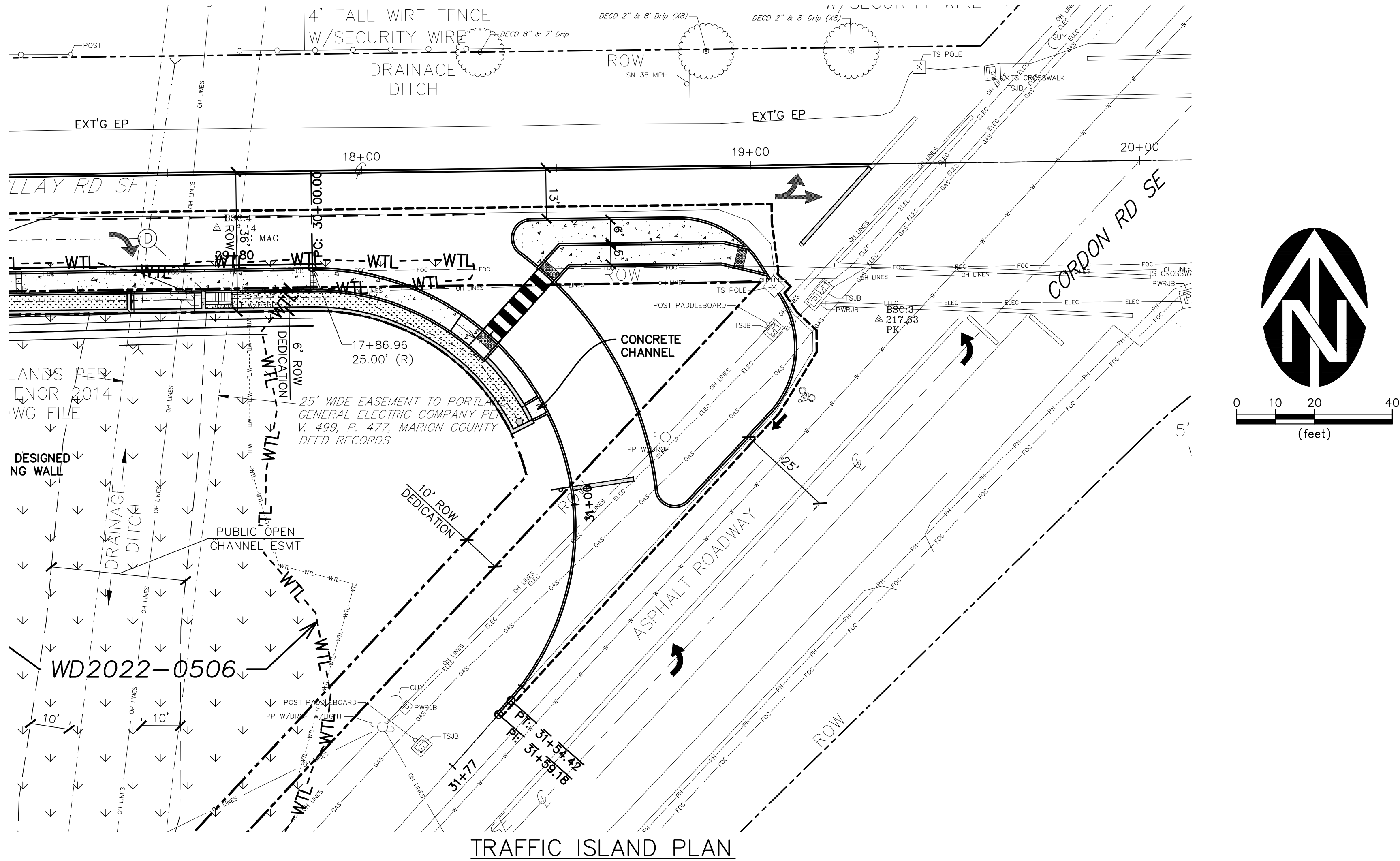
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TRAFFIC ISLAND PLAN &
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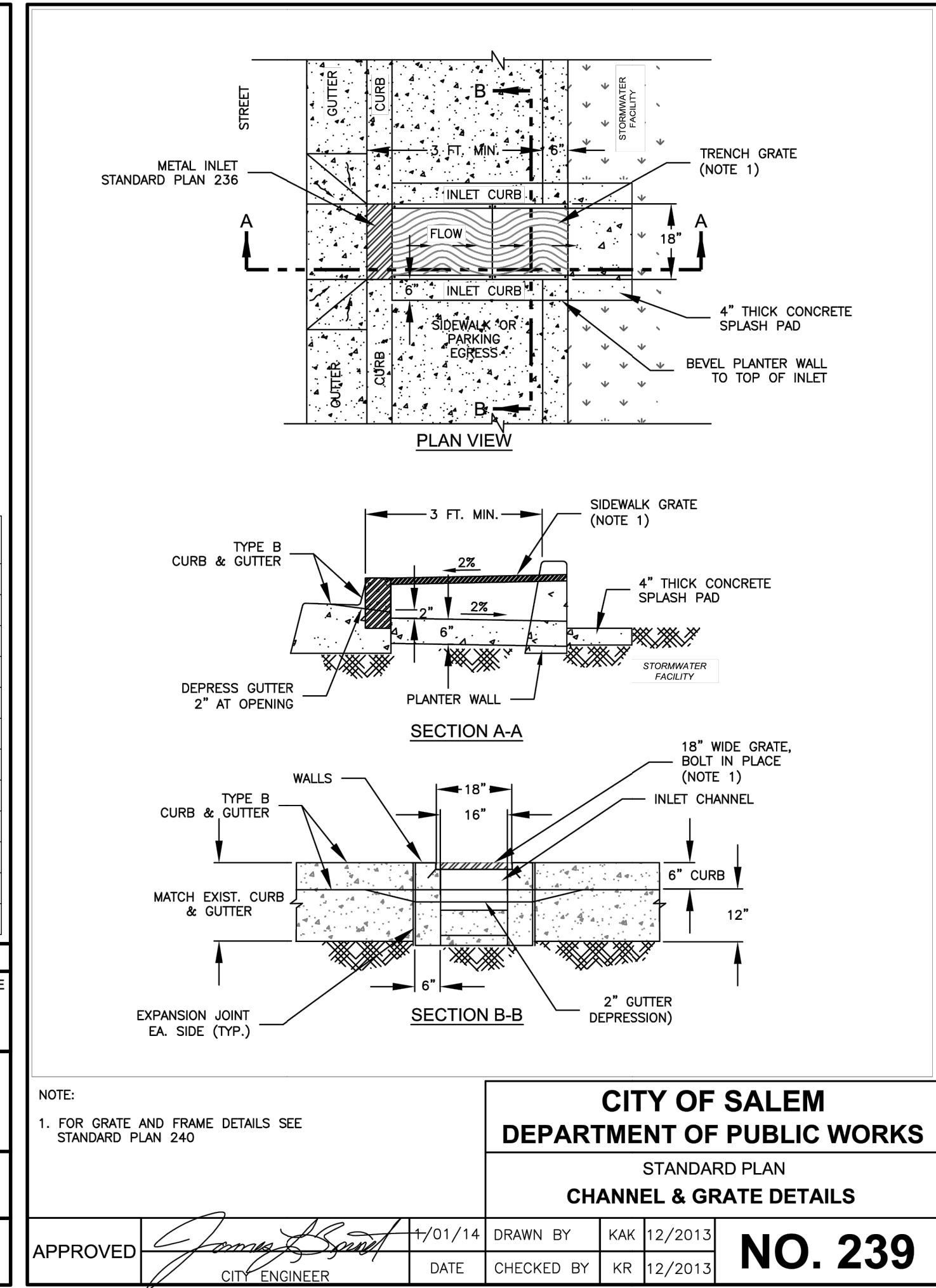
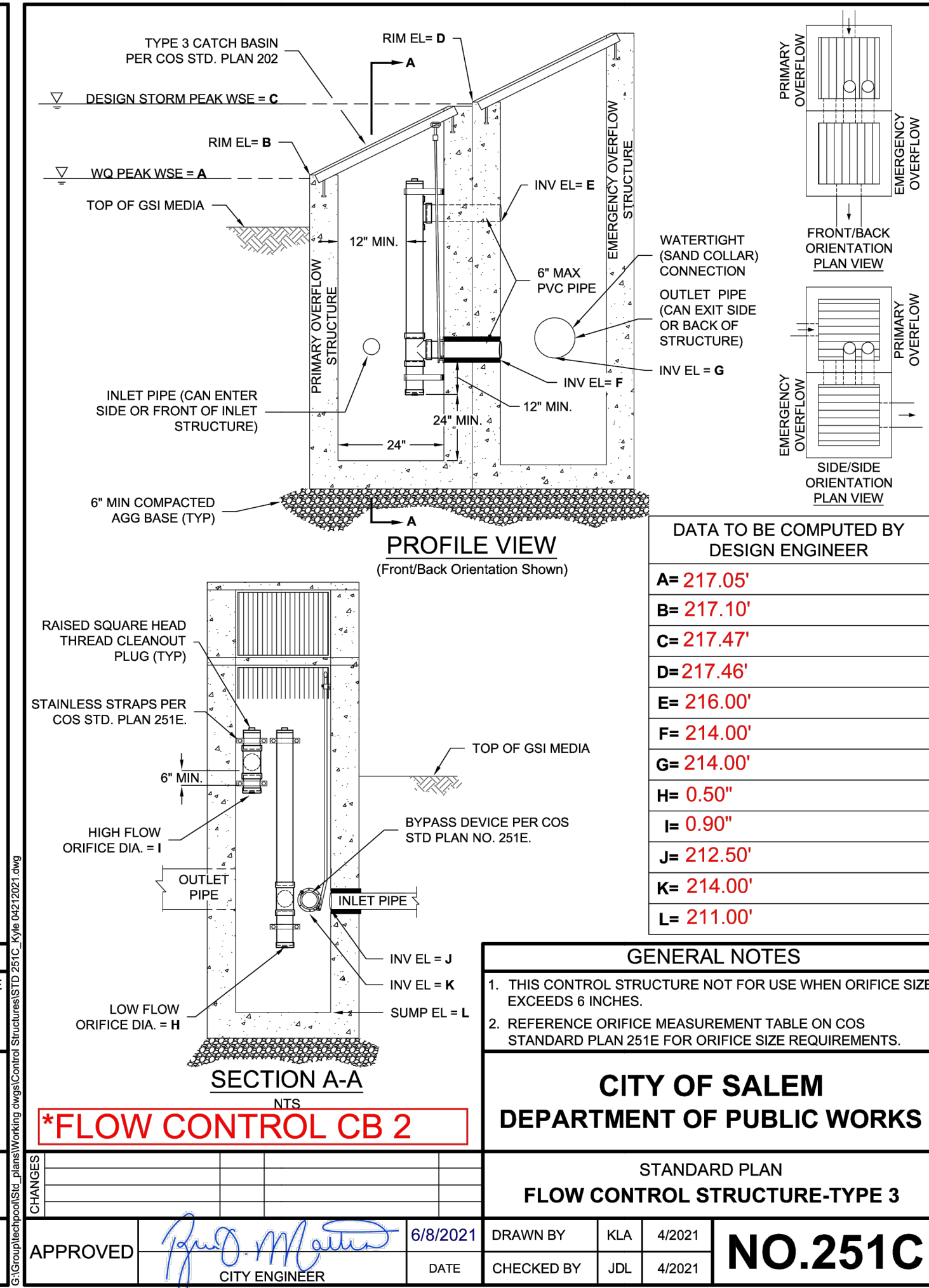
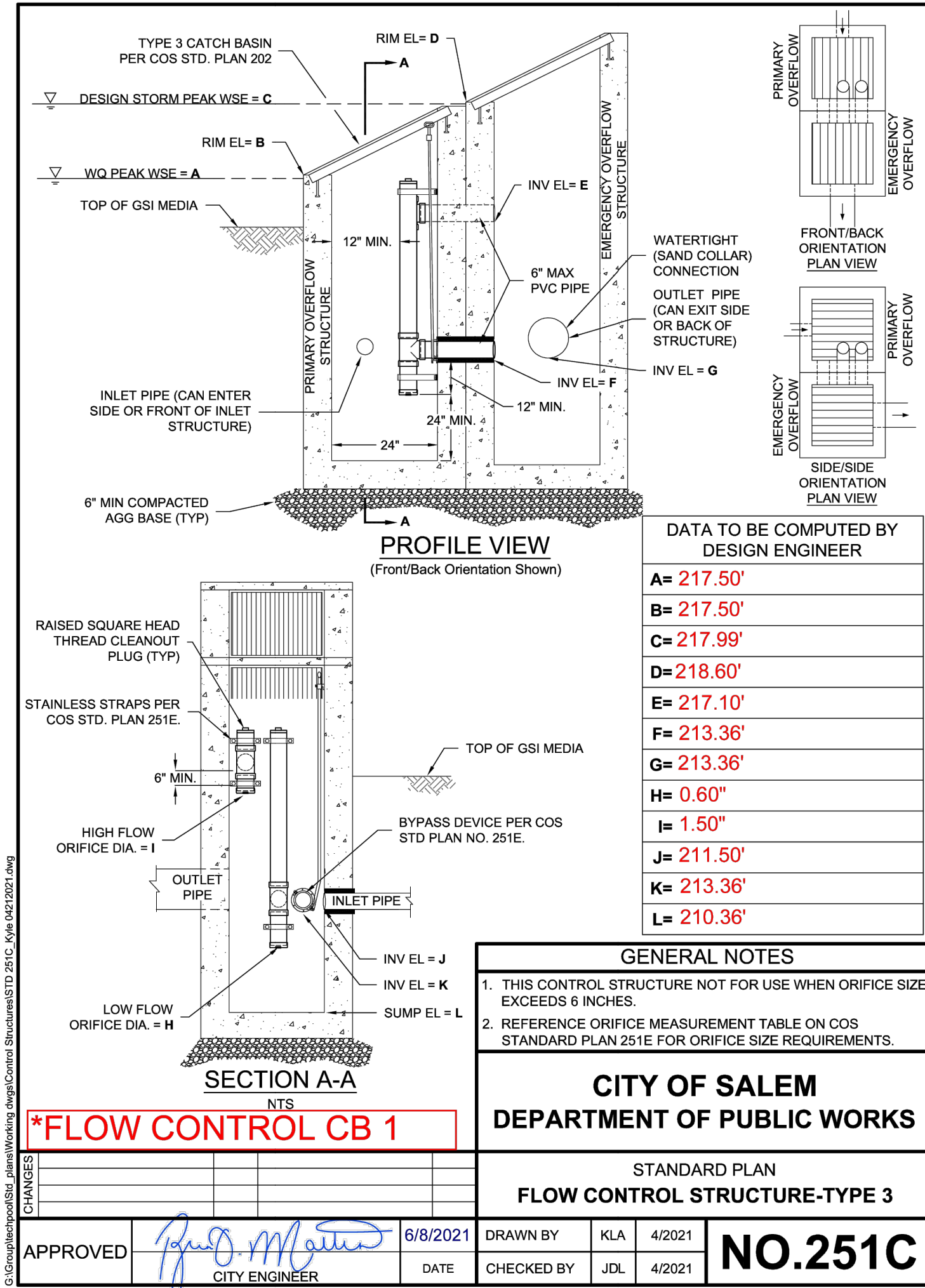
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MACLEAY RD SE & CORDON RD SE

SHEET:

C6.0
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NEW GAS STATION:

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SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:
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REGISTERED PROFESSIONAL
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WE

Exhibit J – Stormwater Report

STORMWATER MANAGEMENT REPORT

Prepared For:

Studio 3 Architecture
222 Commercial St. NE
Salem, OR 97301

Project Location:

Macleay Gas Station
Macleay Rd. SE
Salem, OR 97317

Prepared By:



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Section A. Project Introduction

Summary of Improvements

The proposed project is located at the intersection of Macleay and Cordon Road in Salem, Oregon. The project site contains a total area of approximately 1.54 acres. The proposed project impacts approximately 0.69 acres within the site. Refer to the Supplemental Civil Drawings in Appendix VI for a site map of the project area.

The project scope is to construct a new gas station. The project scope includes site preparation and construction of the facilities which will include a new building, a parking lot, and associated improvements.

Stormwater improvements associated with the project include the construction of stormwater quality treatment and detention facilities.

Purpose of Stormwater Quality & Detention

The purpose of the stormwater quality and detention facilities are to remove pollutants from the stormwater and to control the stormwater release rates to mimic the runoff rates that occur for predeveloped site conditions. Management of stormwater for quality and quantity is required within the project drainage area to mitigate stormwater impacts in order to comply with project DEQ 401 Certification, Section 404 permit, City of Salem stormwater design standards, and National Marine Fisheries Service (NMFS) SLOPES V standards.

Regulatory Agency Approvals

Construction of site improvements are proposed which will impact jurisdictional wetlands. It is anticipated that conformance to the SLOPES V regulations will be required due to the wetland impacts. The hydrology of the remaining wetlands onsite will not be changed by the proposed project.

In order to expedite projects, the Army Corps of Engineers (COE) in cooperation with NMFS has created the SLOPES V guidelines, dated March 14, 2014. In this document NMFS has issued a programmatic biological opinion with a conclusion by NMFS that compliance with SLOPES V guidelines is not likely to jeopardize the continued existence of a variety of endangered native salmon and steelhead fish species.

The SLOPES V document specifies a number of criteria that have to be met for design and construction and/or refurbishment of a facility that impacts the regulated body of water as well as criteria for management of stormwater discharged from improved roadway surfaces within the project's contributing drainage basin area.

This stormwater management report will address the stormwater requirements of the SLOPES V guidelines and the City of Salem stormwater design standards when City standards are more restrictive.

Summary of Agency Stormwater Quality and Detention Requirements

Below is a summary of the SLOPES V guidelines and City of Salem standards.

SLOPES V Guidelines:

- Water quality facilities must be designed to treat for post-construction stormwater runoff from all contributing impervious area for 50% of the 2-year event (i.e., 1.1 inches in a 24-hour period).
- 50% of the developed 2-year peak flow rate and duration matches 50% of the pre-developed 2-year peak flow and duration.
- The developed 10-year peak flow rate and duration matches the predeveloped 10-year peak flow rate and duration.
- Use low impact development (LID) to infiltrate or evaporate runoff to the maximum extent feasible (MEF).
- Stormwater treatment is required for all contributing impervious area.

City of Salem Stormwater Standards:

- Water quality facilities must be designed to treat 1.38 inches per 24-hour period.
- Half of the post developed 2-year peak flow must be equal to or less than half of the predeveloped 2-year peak flow.
- The developed 10-year, 25-year, and 100-year peak flow rate must be equal to or less than the peak runoff rate of the predeveloped 10-year, 25-year, and 100-year, 24-hour storm events.
- Non-GSI and volume-based stormwater detention facilities (e.g. dry detention pond) must be sized to pass the 100-year peak flow event without exceeding the predeveloped 100-year peak flow event.
- Green stormwater infrastructure (GSI) must be provided for 80% of the impervious surface or GSI is required to be a minimum of 10% of the total new impervious surface (GSI is equivalent to SLOPES V LID. For consistency the term LID will be used in this report).
- Achieve stormwater pollutant efficiency removal through the application of GSI to the MEF.
- Stormwater treatment is required for new impervious area.

For this project all contributing impervious area runoff is controlled to the City of Salem Design Standards which is the same as SLOPES V standards. Additionally, the project proposes to size water quality LID based on the City of Salem water quality storm event, which is more conservative than the SLOPES V required water quality storm.

Summary of Stormwater Facilities

The proposed stormwater quality treatment and detention facilities for the Macleay Gas Station project consists of a rain garden and streetside stormwater planter. The following sections describe the facilities used for stormwater treatment and detention. The entire site is analyzed as two drainage basins with runoff detained in a rain garden and stormwater planter.

1. Developed Basin

The Developed Basin consists primarily of roof, roadway and sidewalk area. The stormwater from the Developed Basin is treated and detained by a rain garden LID. The LID facility is located along the northwest property boundary of the site. This rain garden will detain runoff from a total basin area of approximately 30,620 square feet.

2. Macleay Road Basin

The Macleay Road Basin consists of the road widening and improvements along Macleay Road located north of the project site. Stormwater from Macleay Road Basin will drain to the proposed stormwater planter located in the east of the project site and south of Macleay Road. The stormwater planter will detain runoff from a total basin area of approximately 10,830 square feet. The Macleay Road Basin raingarden will treat 6260 square feet of existing impervious area in lieu of the 720 square feet of new impervious area added with the right-hand turn lane on Macleay Road.

Stormwater runoff from the overall developed site will not exceed predeveloped conditions for the design storms per SLOPES V and City of Salem standards.

Section B. Stormwater Plan Narrative

Pollutants of Concern

The Macleay Gas Station project consists of a new gas station, parking facilities, and landscaped areas. The impervious area within the project scope that contributes pollutants to the stormwater runoff primarily consists of roofs and roadways. These sources create project pollutants of concern most commonly associated with commercial development runoff. The Oregon Department of Environmental Quality (DEQ) lists the following as common pollutants associated with commercial development runoff:

- Solids and Sediment
- Metals (zinc, copper, lead, etc.)
- Petroleum Hydrocarbons (oil, grease, etc.)
- Nutrients (nitrogen, phosphorous, etc.)
- Pesticides, Herbicides & Fungicides

Name and Status of Receiving Waters

Stormwater from the project site discharges into a public storm system which then discharges into Upper Little Pudding River which flows into the Pudding River. Pudding River is 303(d) listed for multiple pollutants year-round, including: dissolved oxygen, iron, DDT, and Dieldrin. Pudding River is also TMDL approved for DDD 4,4'. Refer to Appendix I for a copy of DEQ's water quality assessment, identification of pollutants sampled and water body status for the streams mentioned above.

The SLOPES V standards are designed to protect streams from stormwater runoff from developed sites. By designing stormwater facilities to SLOPES V standards TMDLs will not be infringed upon. All fill material for the stormwater facilities will be new material, therefore, possible dieldrin contaminated soils will not come into contact with stormwater runoff. Dissolved oxygen (DO) will not be impacted because DO-reducing pollutants will be removed through contact with the vegetation and specialized growing medium in the designed rain garden. Iron will be removed through contact with the vegetation and water quality media in the designed rain garden. No trees are proposed for removal along the stream bank nor is the stream proposed to be modified.

Groundwater Management Area

Upon review of available groundwater management information on the Oregon DEQ website it does not appear that the project is within a groundwater management area or EPA-designated sole source aquifer.

NPDES Permit Sites

Refer to Appendix I for a list of Oregon DEQ water quality permitted facilities in the Salem area.

Contributing Impervious Area

The proposed project will generate 29,300 square feet of new or replaced impervious area onsite. The contributing area was analyzed as one basin for predeveloped and developed conditions as shown on the drawings in Appendix II. Refer to Table C-3 for a list of areas associated with the on-site post developed basins.

GSI/LID and MEF per City of Salem Design Standards

The City standards require stormwater facilities to meet their Green Stormwater Infrastructure (GSI) requirement. This requirement is the equivalent to the SLOPES V requirement of LID to the MEF. The GSI requirement includes providing treatment for 80% of the impervious surface or providing GSI that is a minimum of 10% of the total new impervious surface.

To meet the COS requirement of GSI/LID to the MEF the proposed stormwater design provides treatment for 100% of the impervious surface. This stormwater design also meets SLOPES V requirements. The design utilizes one rain garden and a stormwater planter as GSI/LID (see Appendix II and V for more details).

Narrative Description of Stormwater Management Plan

The proposed stormwater LID for the treatment of stormwater was designed per City of Salem design standards for rain gardens. Refer to Appendix II for a map of the site.

For design of the LID please refer to Sections C and D.

1. Constraints

In order to accommodate stormwater quality treatment and detention, project constraints were addressed. These constraints included wetland impacts, and low infiltration rates of the existing soils.

The following sections describe how project constraints were accommodated.

1) Developed Basins

Due to limited infiltration the detention facilities required a larger footprint. The site plan was modified to accommodate the required combination detention and water quality facilities.

Pollutant Removal Summary

An integrated approach has been taken to address the pollutants of concern (sediment, metals, pest-herb-fungicides, and hydrocarbons) that can be expected to be produced in this project. The proposed water quality LIDs in this document remove sediment, metals, organics, and petroleum hydrocarbons.

The LID is sized to meet the requirements of City of Salem design standards. Please refer to Section C for the facility sizing.

Section C. Basin Characteristic and Flow Control Summary

The following sections describe the hydrology of the predeveloped site and flow control provided to conform to City of Salem design standards.

Hydrological Summary

The Macleay Gas Station project site plan will utilize LID to the MEF per City of Salem and SLOPES V standards. The stormwater system will consist of one rain garden and a stormwater planter to treat and detain the stormwater generated from the developed basins. The LID facilities provide treatment for 100% of the contributing impervious area.

Hydrologic Parameters, Existing and Developed Conditions

The hydrologic parameters that were used to complete the water quality and detention calculations are discussed below. The hydrologic parameters include basin areas, curve numbers (CN), predeveloped and developed time of concentrations (Tc), 24-hour rainfall depths for each recurrence interval, and the hydrological analysis method used to generate hydrographs. These basin characteristics are summarized in Table C-1, Table C-2, and Table C-3.

1) Hydrologic Analysis Methodology

HydroCAD modeling software was used to size the stormwater facilities. The Santa Barbara Unit Hydrograph Type 1A storm was used to model the required design storms. Per the City of Salem design standards, the design storms used were the 1.38-inch, 24-hour (water quality storm), half the 2-year, 24-hour, the 10-year, 24-hour, the 25-year, 24-hour, and the 100-year, 24-hour storm events as listed in Table C-1.

2) 24-Hour Rainfall Depths

In accordance with City of Salem stormwater standards, which provide greater stormwater treatment than the SLOPES V guidelines, the storm events used in this report include the water quality storm (1.38 inches), half the 2-year, the 10-year 24-hour, the 25-year 24-hour, and the 100-year 24-hour rainfall events as listed in Table C-1. These stormwater depths were determined in a study issued by the City and performed by Brown and Caldwell, which evaluated rainfall data from 23 local gauges and one National Weather Service gauge located at the Salem Municipal Airport. Refer to Appendix III for the technical memorandum of the results of the performed analysis.

Table C-1 | 24-Hour Design Storm Rainfall Depths

		24-Hour Rainfall Depths for Salem, OR					
Recurrence Interval, Years	WQ	2	5	10	25	50	100
24-Hour Depths, Inches	1.38	2.2	2.7	3.2	3.6	4.1	4.4

Source: City of Salem Administrative Rules Chapter 109 – Division 004 Appendix D

3) Curve Number Determination

Curve numbers (CNs) were assigned per Appendix D of the City of Salem Design Standards. The pre-developed project site contains primarily hydrologic soil group C soils per the NRCS Soil Report. However, the poor infiltration rates of existing soils indicate soil characteristics corresponding with **D-rated soils per the Geotechnical Report. It is proposed to assume D-rated** soils for analysis of pre-developed conditions. Refer to Appendix III for the NRCS soil survey maps of the project area that correspond to basin CN's.

The predeveloped site is considered to be covered with woods and good-condition grass per City of Salem standards which corresponds to a CN of 72 with C-soils.

The developed impervious areas and pervious areas were assigned curve numbers of 98 and 74 respectively. The impervious areas were assigned a curve number of 98 which corresponds to roof, parking, and paved spaces. The pervious areas were assigned a curve number of 74 which correspond to hydrologic soil group C for amended soils, which is conservative considering much of the pervious area is vegetated LID infrastructure.

4) Time of Concentration Determination

Predeveloped and developed time of concentrations (Tc's) were calculated for each basin using the City of Salem design guidelines utilizing sheet and shallow concentrated flow equations.

Table C-2 summarizes the equation inputs for the predeveloped and developed Tc's. The developed Tc used was 5 minutes, which is the minimum Tc that can be used by the modeling software.

Table C-2 | Basin Time of Concentration Characteristics

Basin ID	Overland Flow Length (ft)	Manning's n	Slope of Overland Flow (ft/ ft)	Tc (Min.)
Pre-Developed	165	0.30	0.032	25.4
Macleay Pre-Dev	20	0.30	0.02	10
Developed Basin	-	-	-	5
Macleay Dev Basin	-	-	-	5

5) Basin Characteristics

Table C-3 provides a summary of the drainage basins' impervious and pervious area (used for the developed calculations), and the predeveloped and developed curve numbers (CN) as previously discussed.

Table C-3 | Hydrologic Parameters

Basin ID	Source (Roof/Road/ Other)	Impervious Area (sf)	Pervious Area (sf)	Design Storm				CN
				Half 2-Year (cfs)	10-Year (cfs)	25- Year (cfs)	100- Year (cfs)	
Pre-Developed	Native	-	30,620	0.01	0.07	0.11	0.18	72
Macleay Pre- Developed	Native	-	7,780	0.01	0.06	0.08	0.13	72
Dev. Basin	Roof/ Landscape	28,630	1,320	0.15	0.51	0.58	0.71	98/74 ¹
Macleay Dev. Basin	Road/ Landscape	7,780	-	0.07	0.24	0.27	0.34	98/74 ¹

¹ The first curve number listed is for the impervious area in the basin (98), then for the pervious area (74)

Hydrologic Analysis

The hydrological analysis as previously mentioned was completed using HydroCAD Modeling Software, utilizing the SBUH method, and a Type IA 24-hour rainfall distribution. A list of the predeveloped peak flows for the design storm events are found in Table C-3. Refer to Appendix III for hydrographs for each predeveloped and developed storm event.

Flow Control System Design

Based on the flow control requirements described in Section A, the flow control structures were sized to detain a number of developed storm events and release the stored runoff at predeveloped rates. Refer to the drawings in Appendix II for more details on detention and flow-control design. A summary of the stormwater detention requirements are listed below:

- Capture half the 2-yr developed runoff to be released at a rate equal to or less than half the 2-yr peak predeveloped rate.
- Capture the 100-yr developed runoff to be released at a rate equal to or less than the 100-yr peak predeveloped rate.

Subsurface drain rock will be placed below the rain garden and planter to improve detention and infiltration with a thickness of up to 48-inches and varying areas. A design infiltration rate of 0.05 was used from the measured site infiltration rate of 0-0.05 inches per hour per the Geotechnical Report in Appendix III. Refer to the Civil Drawings in Appendix VI for designed drain rock footprint.

The two separate flow control catch basins were designed to control stormwater runoff from the overall developed site to meet the stormwater release and detention requirements above. A 24-inch-wide, weir opening in the top of the flow control catch basin provides overflow protection for storms exceeding the 100-year event. See Table C-4 for a summary of orifice sizing and developed release rates.

Table C-4 | Summary of Flow Control

Storm Event	Orifice Size (in)	Orifice Elevation (ft)	Peak WSE ¹ (ft)	Developed Release Rate ² (cfs)	Pre-Developed Release Rate (cfs)	Overflow Elevation (ft)
<i>Rain Garden</i>						
Half 2-Year	0.6	213.36	214.67	0.01	0.01	219.0
Water Quality	-	-	217.51	0.01	-	219.0
10-Year	1.4	217.10	218.13	0.07	0.07	219.0
25-Year	-	-	218.50	0.08	0.11	219.0
100-Year ²	24	218.70	218.76	0.18	0.18	219.0
<i>Stormwater Planter</i>						
Half 2-Year	0.5	213.00	213.92	0.01	0.01	218.1
Water Quality	-	-	217.05	0.00	-	218.1
10-Year	0.9	216.00	217.54	0.06	0.04	218.1
25-Year	-	-	217.78	0.06	0.06	218.1
100-Year ²	24	218.05	218.06	0.13	0.09	218.1

¹ WSE = Water Surface Elevation² Overflow provided by 24-inch orifice in the top of the Flow Control Catch Basin.

Evaluation of the pre-developed and post-developed release rates in Table C-4 confirms that the stormwater design is in conformance with the design standards and the overall developed release from the site is less than or equal to that of the predeveloped site. Refer to Appendix III for the HydroCAD Analysis.

Section D. Water Quality Design

The HydroCAD modeled release rates from the facility shown in Table C-4 assume free-flow through the facility growing media. Release from the facility can also be controlled by the filtration capacity of the growing media. The flowrate through the growing media is calculated to verify the growing media will not be a control point:

RG:

During the water quality event, stormwater does not pond and has a total outflow from the facility of 0.01 cfs according to the HydroCAD modeling. The bottom surface of the rain garden is 1,270 square feet. Using the Darcy equation and an assumed growing media filtration rate of 2 inches/hour, the flowrate through the growing media is 0.06 cfs. Therefore, the growing media does not further constrain stormwater release from the facility and is not the control point.

SW Planter:

During the water quality event, stormwater does not pond and has a total outflow from the facility of 0.01 cfs according to the HydroCAD modeling. The bottom surface of the SW Planter is 650 square feet. Using the Darcy equation and an assumed growing media filtration rate of 2 inches/hour, the flowrate through the growing media is 0.03 cfs. Therefore, the growing media does not further constrain stormwater release from the facility and is not the control point.

Rain Garden & Planter

The wetlands onsite and limited grade deem infiltration-only stormwater facilities infeasible. Due to these constraints, a filtration rain garden and stormwater planter are proposed to treat the water quality storm with LID facilities. The site plan was modified to incorporate a filtration rain garden and stormwater planter, which is used to provide water quality treatment for the site and offsite Macleay Road improvements.

The filtration rain garden and stormwater planter contain specialized growing media and will be landscaped in accordance with City of Salem design standards (see Appendix V).

See Table D-1 below for a summary of the rain garden and stormwater planter designs. Refer to Appendix III for HydroCAD Analysis of the designed stormwater facilities and the drawings in Appendix VI for stormwater facility sizing summaries.

Table D-1 | Facility Sizing Summary

Facility ID	Facility Elevations ² (ft)		Facility Surface Area ¹ (sf)		Required Drain Rock Surface Area (sf)	Depth of Drain Rock (in)
	Top	Bottom	Top	Bottom		
RG	219	217	1,270	1,270	1,270	48
Planter	217.5	217	650	650	650	36

¹ Top elevation is the top of the facility berm or overflow. Bottom elevation is the surface of the growing media.

After treatment, the rain garden and planter discharge to a 12" pipe located to the north of the site within Macleay Road. The 12" pipe has capacity for up to 1.64 cfs. The developed site releases a total of 0.29 cfs during the 100-year storm event which is 18% of the total pipe capacity. Refer to the Supplemental Civil Drawings in Appendix VI for more details.

Section E. Storm Drain System Operation & Maintenance

All facilities constructed as a part of this project will be owned, operated, and maintained by [REDACTED]. [REDACTED] proposes to maintain the LID structures in accordance with the Operation and Maintenance Manuals included in Appendix IV.

Macleay Gas Station
Salem, Oregon
Stormwater Management Report

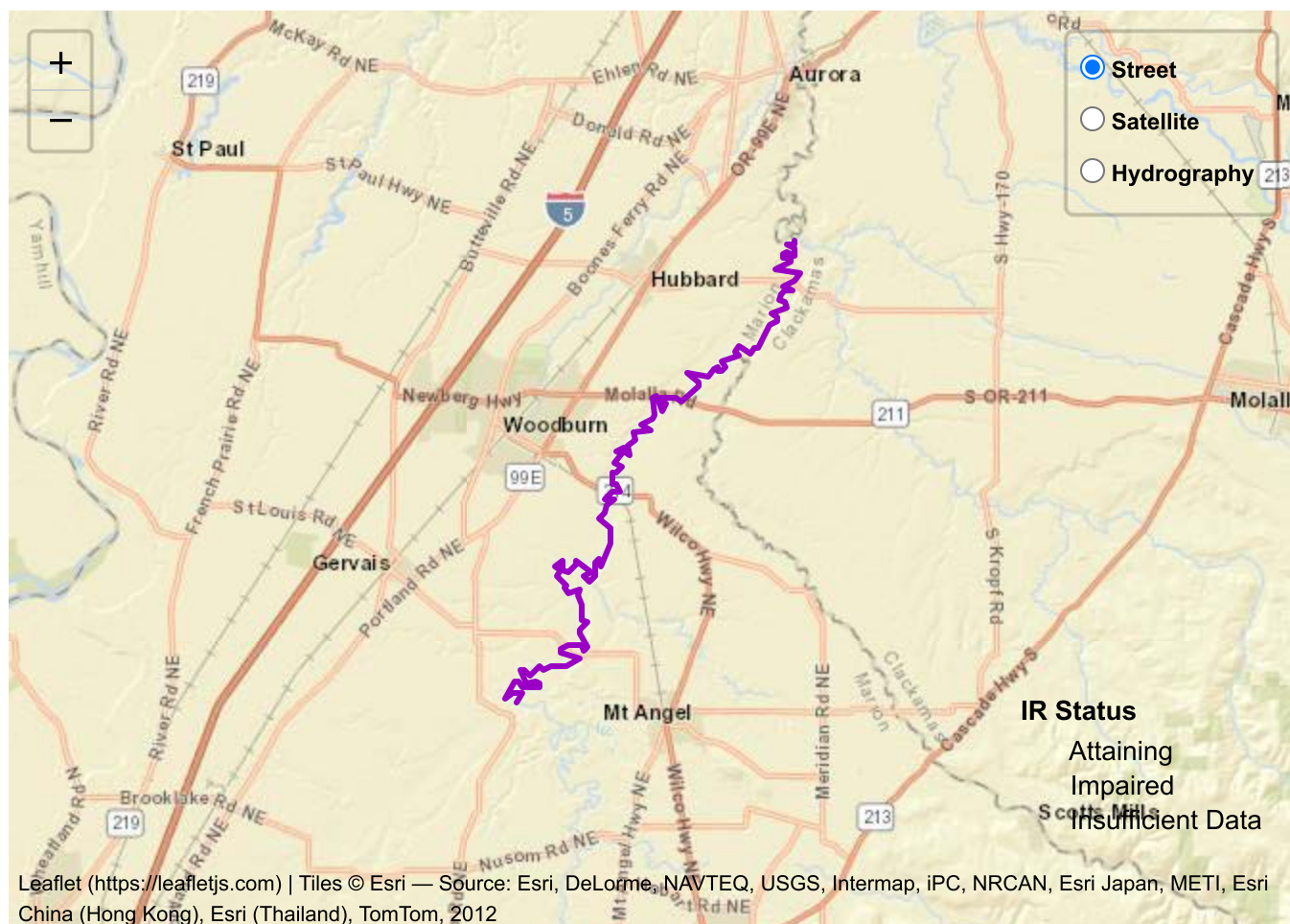
APPENDIX I

Environmental Watershed Data

RECEIVING WATERS TMDL STATUS

2022 Integrated Report Assessment Summary

OR_SR_1709000902_02_104073



Assessment Unit overall status

Assessment Unit Overall Status

- **AU Name:** Pudding River
- **AU Description:** Little Pudding River to Rock Creek
- **AU Type:** River / Stream Unit
- **Overall Status:** Impaired
- **Year first listed:** 2012
- **Year last assessed:** 2022

Assessment Unit Overview

OR_SR_1709000902_02_104073 is a River / Stream Unit type assessment unit. Data from all monitoring locations within this assessment unit are pooled together and assessed as a whole.

Overall, this waterbody is **impaired**.

- **Impaired parameters:** Dissolved Oxygen- spawn, Iron (total)- Aquatic Life Toxics, DDD 4,4'- Human Health Toxics, DDT 4,4'- Human Health Toxics, Dieldrin- Human Health Toxics
- **Attaining parameters:** E. coli, Chlorophyll-a, Dissolved Oxygen- year_round, pH, Aldrin- Aquatic Life Toxics, Arsenic, Inorganic- Aquatic Life Toxics, BHC Gamma (Lindane)- Aquatic Life Toxics, Chloride- Aquatic Life Toxics, Chlorpyrifos- Aquatic Life Toxics, Dieldrin- Aquatic Life Toxics, Guthion- Aquatic Life Toxics, Malathion- Aquatic Life Toxics, Methoxychlor- Aquatic Life Toxics, Cadmium- Aquatic Life Toxics, Lead- Aquatic Life Toxics, Nickel- Aquatic Life Toxics, Silver- Aquatic Life Toxics, Zinc- Aquatic Life Toxics, Pentachlorophenol- Aquatic Life Toxics, Ammonia- Aquatic Life Toxics, Endosulfan- Aquatic Life Toxics, Acenaphthene- Human Health Toxics, Anthracene- Human Health Toxics, Antimony- Human Health Toxics, Arsenic, Inorganic- Human Health Toxics, Barium- Human Health Toxics, BHC Alpha- Human Health Toxics, BHC Beta- Human Health Toxics, BHC Gamma (Lindane)- Human Health Toxics, Butylbenzyl Phthalate- Human Health Toxics, Chloroisopropyl Ether bis 2- Human Health Toxics, Chloronaphthalene 2- Human Health Toxics, Chlorophenoxy Herbicide (2,4-D)- Human Health Toxics, Chlorophenoxy Herbicide (2,4,5,TP)- Human Health Toxics, Copper- Human Health Toxics, Di-n-butyl Phthalate- Human Health Toxics, Dichlorobenzene(m) 1,3- Human Health Toxics, Dichlorobenzene(o) 1,2- Human Health Toxics, Dichlorobenzene(p) 1,4- Human Health Toxics, Diethyl Phthalate- Human Health Toxics, Dimethyl Phthalate- Human Health Toxics, Dinitrotoluene 2,4 x000D- Human Health Toxics, Endosulfan Alpha- Human Health Toxics, Endosulfan Beta- Human Health Toxics, Endosulfan Sulfate- Human Health Toxics, Endrin- Human Health Toxics, Fluoranthene- Human Health Toxics, Fluorene- Human Health Toxics, Hexachlorobutadiene- Human Health Toxics, Hexachlorocyclopentadiene- Human Health Toxics, Hexachloroethane- Human Health Toxics, Isophorone- Human Health Toxics, Methoxychlor- Human Health Toxics, Nickel- Human Health Toxics, Nitrobenzene- Human Health Toxics, Nitrosodiphenylamine, N- Human Health Toxics, Pentachlorobenzene- Human Health Toxics, Pentachlorophenol- Human Health Toxics, Pyrene- Human Health Toxics, Selenium- Human Health Toxics, Tetrachlorobenzene, 1,2,4,5- Human Health Toxics, Trichlorobenzene 1,2,4- Human Health Toxics, Zinc- Human Health Toxics, Copper- Aquatic Life Toxics
- **Insufficient parameters:** Alkalinity- Aquatic Life Toxics, Chlordane- Aquatic Life Toxics, DDE 4,4'- Aquatic Life Toxics, DDT 4,4'- Aquatic Life Toxics, Endosulfan Alpha- Aquatic Life Toxics, Endrin- Aquatic Life Toxics, Heptachlor- Aquatic Life Toxics, Heptachlor Epoxide- Aquatic Life Toxics, Mirex- Aquatic Life Toxics, Parathion- Aquatic Life Toxics, Aluminum- Aquatic Life Toxics, Aldrin- Human Health Toxics, Benz(a)anthracene- Human Health Toxics, Benzo(a)pyrene- Human Health Toxics, Benzo(b)fluoranthene 3,4- Human Health Toxics, Benzo(k)fluoranthene- Human Health Toxics, Chlordane- Human Health Toxics, Chloroethyl Ether bis 2- Human Health Toxics, Chrysene- Human Health Toxics, DDE 4,4'- Human Health Toxics, Dibenz(a,h)anthracene- Human Health Toxics, Dioxin (2,3,7,8-TCDD)- Human Health Toxics, Endrin Aldehyde- Human Health Toxics, Ethylhexyl Phthalate bis 2- Human Health Toxics, Heptachlor- Human Health Toxics, Heptachlor Epoxide- Human Health Toxics, Hexachlorobenzene- Human Health Toxics, Nitrates- Human Health Toxics, Nitrosodi-n-propylamine, N- Human Health Toxics, Nitrosodibutylamine, N- Human Health Toxics, Nitrosodiethylamine, N x000D- Human Health Toxics, Nitrosodimethylamine, N- Human Health Toxics, Nitrosopyrrolidine, N- Human Health Toxics, Polychlorinated Biphenyls (PCBs)- Human Health Toxics, Thallium- Human Health Toxics, Acrolein- Human Health Toxics, Benzene- Human Health Toxics, Bromoform- Human Health Toxics, Carbon Tetrachloride- Human Health Toxics, Chlorobenzene- Human Health Toxics, Chlorodibromomethane- Human Health Toxics, Chloroform- Human

Health Toxics, Dichloroethane 1,2- Human Health Toxics, Dichloroethylene 1,1- Human Health Toxics, Dichloroethylene trans 1,2- Human Health Toxics, Dichloropropane 1,2- Human Health Toxics, Dichloropropene 1,3- Human Health Toxics, Ethylbenzene- Human Health Toxics, Methyl Bromide- Human Health Toxics, Methylene Chloride- Human Health Toxics, Tetrachloroethane 1,1,2,2- Human Health Toxics, Tetrachloroethylene- Human Health Toxics, Toluene- Human Health Toxics, Trichloroethane 1,1,2- Human Health Toxics, Vinyl Chloride- Human Health Toxics, Trichloroethylene- Human Health Toxics, Polychlorinated Biphenyls (PCBs)- Aquatic Life Toxics

Detailed parameter assessments

In the 2022 Integrated Report, DEQ has 126 parameter assessments. Details of these parameter assessments can be found on the 2022 Assessment Database (<https://rstudioconnect.deq.state.or.us/content/0a964958-6ad4-49a4-aca0-54a644b96357/>). A limited selection of that database can be found below:

	AU_ID	Pollutant	Assessment	period	DC
1	OR_SR_1709000902_02_104073	E. coli	Bacteria		
2	OR_SR_1709000902_02_104073	Chlorophyll-a	Chlorophyll-a		
3	OR_SR_1709000902_02_104073	Dissolved Oxygen	Dissolved Oxygen	year_round	C
4	OR_SR_1709000902_02_104073	pH	pH		
5	OR_SR_1709000902_02_104073	Aldrin	Toxic Substances		

Copy

CSV

Excel

KNOWN NEARBY NPDES PERMITS

Macleay Gas Station
Salem, Oregon
Stormwater Management Report

APPENDIX II

Drainage Basin Maps

PREDEVELOPED BASIN MAP

Predeveloped Basin Map

This map illustrates the proposed erosion control measures for a predeveloped basin. The Macleay Road Basin, outlined in blue, has a total area of 10,830 SF. The Developed Basin, outlined in red, has a total area of 30,620 SF. The map shows the flow path (L = 165 FT, S = 3.2%) and the location of the gravel construction entrance. The map also includes a north arrow, a scale bar (0 to 40 feet), and a legend for erosion control measures (BIO-BAG, Silt Fence, Silt Sack) and demolition measures (Protect, Remove, Sawcut). The map shows the Macleay Road Basin and Developed Basin, both outlined in blue and red respectively. The Macleay Road Basin is located to the north of the Developed Basin. The Developed Basin is located to the south of the Macleay Road Basin. The map shows the flow path (L = 165 FT, S = 3.2%) and the location of the gravel construction entrance. The map also includes a north arrow, a scale bar (0 to 40 feet), and a legend for erosion control measures (BIO-BAG, Silt Fence, Silt Sack) and demolition measures (Protect, Remove, Sawcut). The map shows the Macleay Road Basin and Developed Basin, both outlined in blue and red respectively. The Macleay Road Basin is located to the north of the Developed Basin. The Developed Basin is located to the south of the Macleay Road Basin. The map shows the flow path (L = 165 FT, S = 3.2%) and the location of the gravel construction entrance. The map also includes a north arrow, a scale bar (0 to 40 feet), and a legend for erosion control measures (BIO-BAG, Silt Fence, Silt Sack) and demolition measures (Protect, Remove, Sawcut).

Macleay Road Basin:
Total Area = 10,830 SF

Developed Basin:
Total Area = 30,620 SF

Flow Path:
L = 165 FT
S = 3.2%

EROSION CONTROL LEGEND

- BIO-BAG
- SILT FENCE
- SILT SACK

DEMOLITION LEGEND

- PROTECT
- REMOVE
- SAWCUT

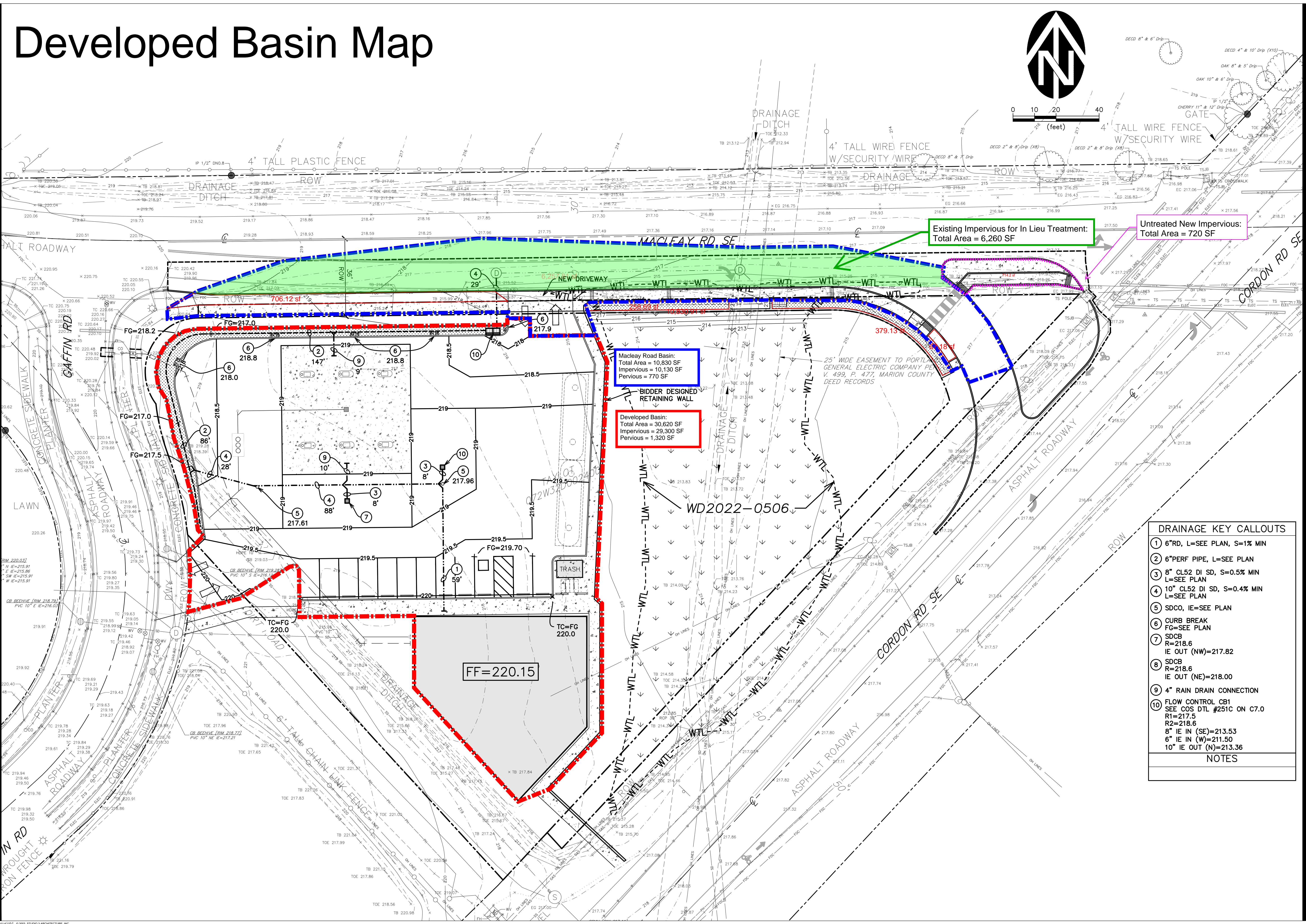
NOTES

- NO STOCKPILES OR CONCRETE WASHOUTS ALLOWED ON SITE.

SHEET:
C1.0
EROSION CONTROL
DEMOLITION & CLEARING

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Developed Basin Map



STUDIO

3

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www.studio3architecture.com

REGISTERED PROFESSIONAL
ENGINEER

REVIEW

NOV 12, 2023

WILLIAM J. WELLS

REVISIONS: 6/30/2026

IN THE EVENT CONFLICTS ARE DISCOVERED BETWEEN THE ORIGINAL SIGNED AND SEALED DOCUMENTS PREPARED BY THE ARCHITECTS AND/OR THEIR CONSULTANTS, AND ANY COPY OF THE DOCUMENTS TRANSMITTED BY MAIL, FAX, ELECTRONICALLY OR OTHERWISE, THE ORIGINAL SIGNED AND SEALED DOCUMENTS SHALL GOVERN.

PROJECT #3535.0000.0
DATE: 08/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS: 6/30/2026

WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

3541 Fairview Industrial Dr. S.E. Suite 100, Salem, OR 97302
Phone: (503) 585-2474 Fax: (503) 585-5986
E-mail: westech@westech-eng.com

NEW GAS STATION:

MACLEY RD SE
SALEM, OR
MACLEY RD SE & CORDON RD SE

DRAINAGE KEY CALLOUTS	
①	6" RD, L=SEE PLAN, S=1% MIN
②	6" PERF PIPE, L=SEE PLAN
③	8" CL52 DI SD, S=0.5% MIN L=SEE PLAN
④	10" CL52 DI SD, S=0.4% MIN L=SEE PLAN
⑤	SDCO, IE=SEE PLAN
⑥	CURB BREAK FG=SEE PLAN
⑦	SDCB R=218.6 IE OUT (NW)=217.82
⑧	SDCB R=218.6 IE OUT (NE)=218.00
⑨	4" RAIN DRAIN CONNECTION
⑩	FLOW CONTROL CB1 SEE COS DTL #251C ON C7.0 R1=217.5 R2=218.6 8" IE IN (SE)=213.53 6" IE IN (W)=211.50 10" IE OUT (N)=213.36
NOTES	

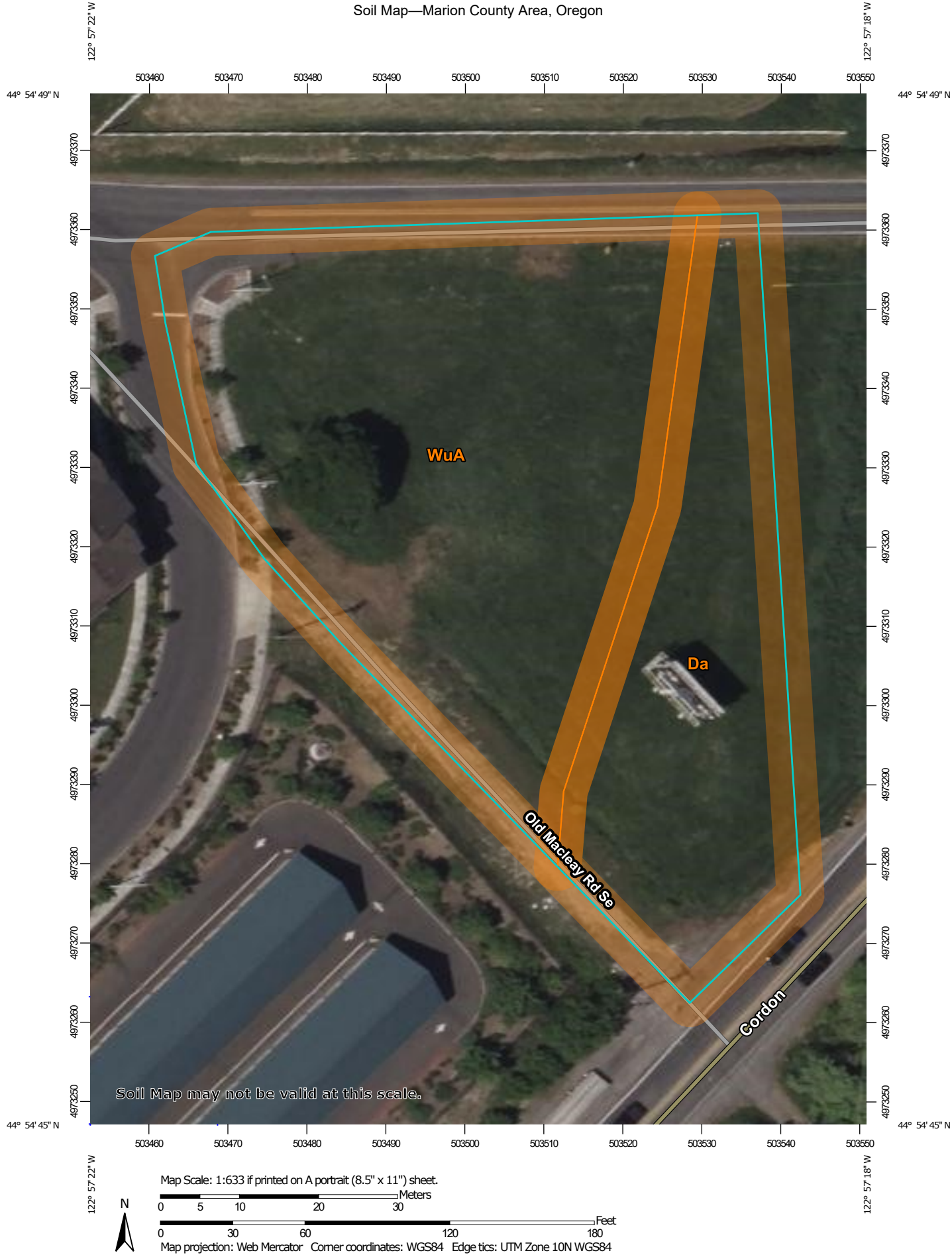
Macleay Gas Station
Salem, Oregon
Stormwater Management Report

APPENDIX III

Basin Hydrologic Characteristics


SOIL MAPS WITH HYDROLOGIC SOIL GROUP

Soil Map—Marion County Area, Oregon




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon

Survey Area Data: Version 22, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

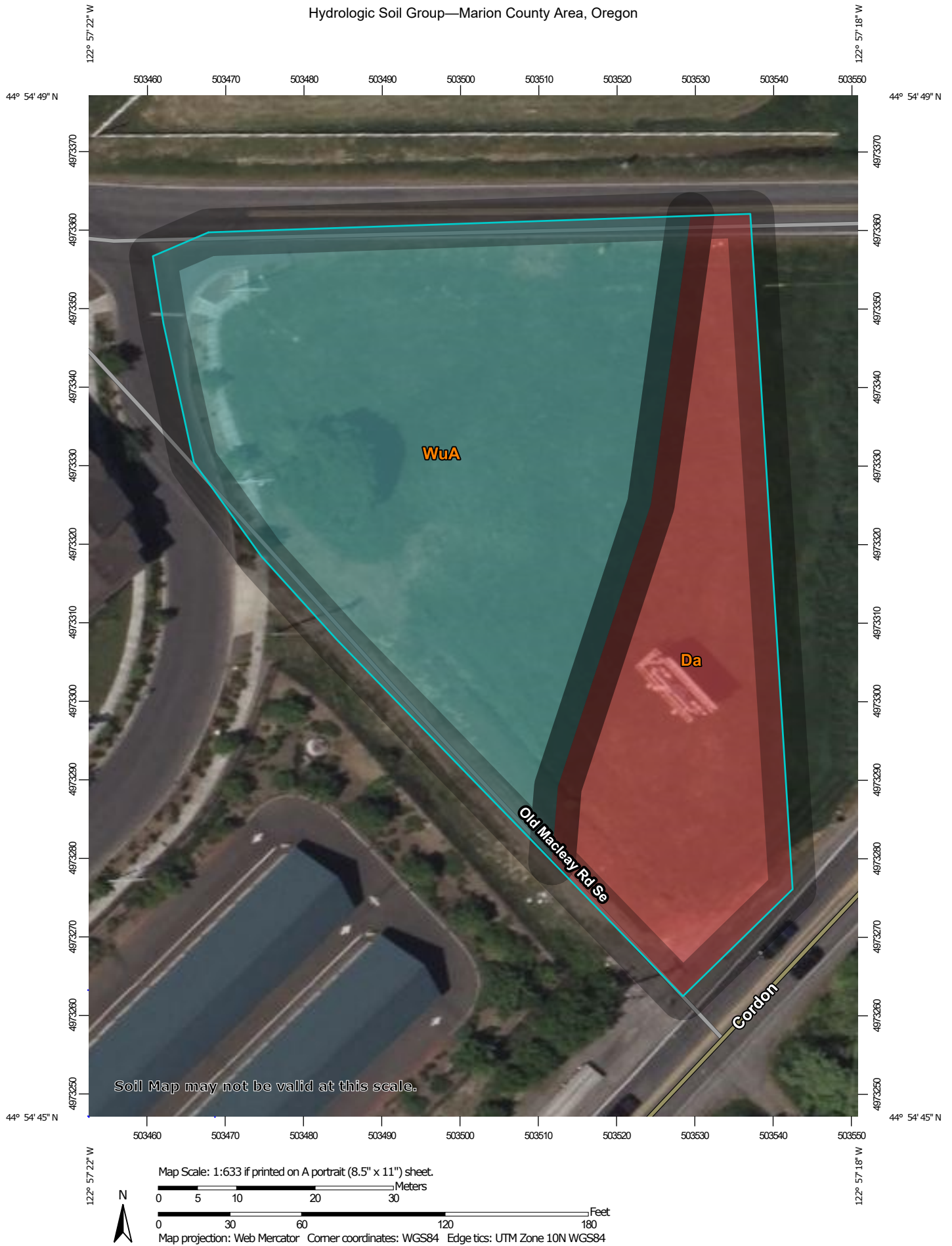
Date(s) aerial images were photographed: May 17, 2023—Jun 3, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Da	Dayton silt loam	0.4	33.9%
WuA	Woodburn silt loam, 0 to 3 percent slopes	0.9	66.1%
Totals for Area of Interest		1.3	100.0%









Hydrologic Soil Group—Marion County Area, Oregon



MAP LEGEND**Area of Interest (AOI)**
 Area of Interest (AOI)
Soils**Soil Rating Polygons**





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines






-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points

-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

Water Features
 Streams and Canals
Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background
 Aerial Photography
MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 22, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 17, 2023—Jun 3, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Da	Dayton silt loam	D	0.4	33.9%
WuA	Woodburn silt loam, 0 to 3 percent slopes	C	0.9	66.1%
Totals for Area of Interest			1.3	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

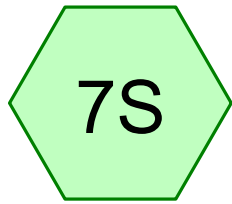
Rating Options

Aggregation Method: Dominant Condition

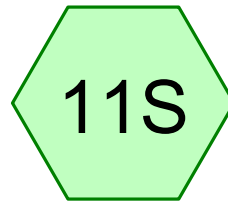
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

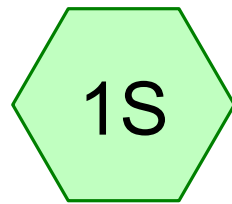
HYDROCAD ANALYSIS



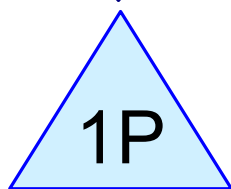
Pre-Dev



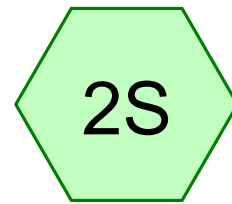
Macleay Rd Pre-Dev



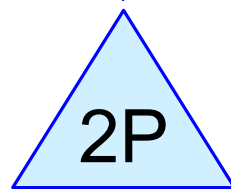
Developed Basin



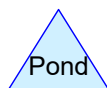
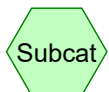
Rain Garden



Macleay Rd Basin



Macleay Planter



Summary for Subcatchment 7S: Pre-Dev

Runoff = 0.07 cfs @ 8.17 hrs, Volume= 0.054 af, Depth= 0.93"

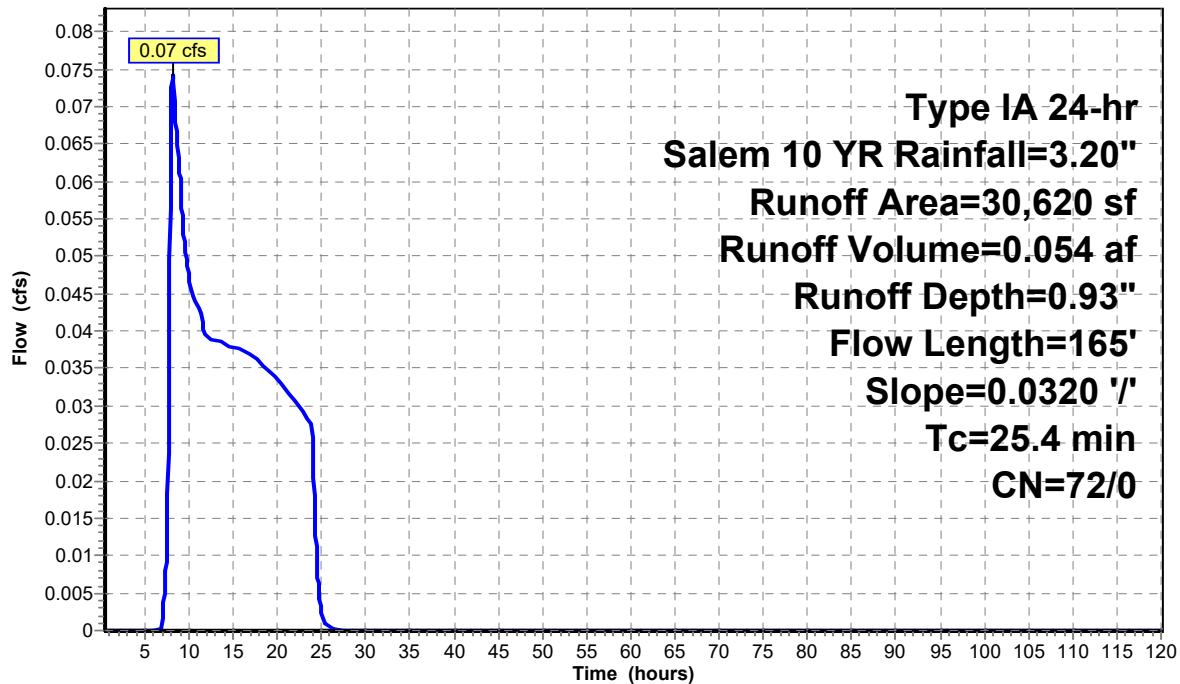
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
30,620	72	Woods/grass comb., Good, HSG C
30,620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.4	165	0.0320	0.11		Sheet Flow, n= 0.300 P2= 2.20"

Subcatchment 7S: Pre-Dev

Hydrograph



Macleay Gas

Prepared by Westech Engineering Inc

HydroCAD® 10.20-2f s/n 07289 © 2022 HydroCAD Software Solutions LLC

Type IA 24-hr Salem 10 YR Rainfall=3.20"

Page 2

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.06 cfs @ 8.00 hrs, Volume= 0.028 af, Depth= 0.93"

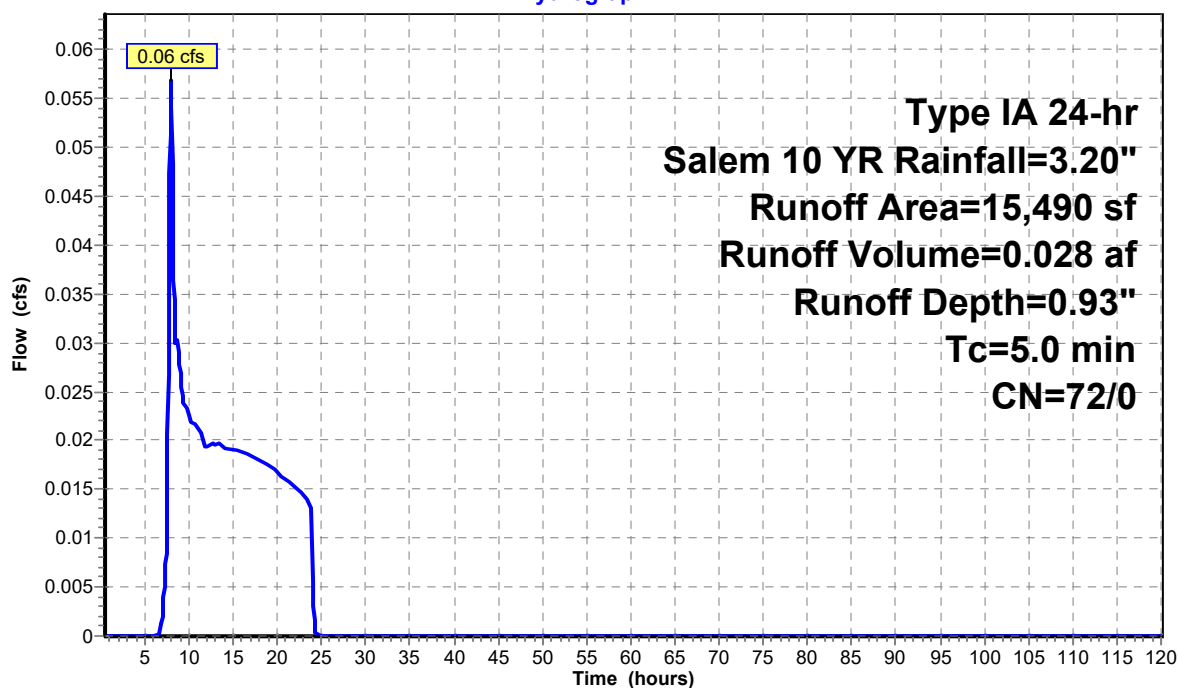
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
15,490	72	Woods/grass comb., Good, HSG C
15,490		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Macleay Gas

Prepared by Westech Engineering Inc

HydroCAD® 10.20-2f s/n 07289 © 2022 HydroCAD Software Solutions LLC

Type IA 24-hr Salem 100 YR Rainfall=4.40"

Page 3

Summary for Subcatchment 7S: Pre-Dev

Runoff = 0.18 cfs @ 8.07 hrs, Volume= 0.102 af, Depth= 1.75"

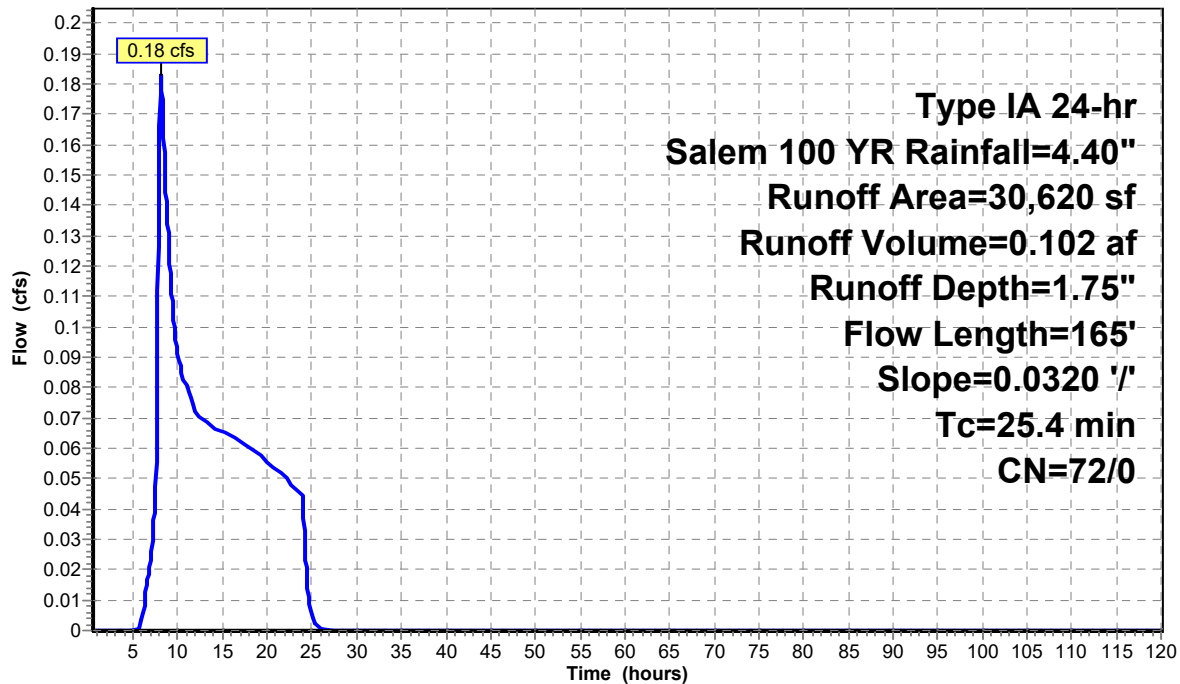
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 100 YR Rainfall=4.40"

Area (sf)	CN	Description
30,620	72	Woods/grass comb., Good, HSG C
30,620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.4	165	0.0320	0.11		Sheet Flow, n= 0.300 P2= 2.20"

Subcatchment 7S: Pre-Dev

Hydrograph



Macleay Gas

Prepared by Westech Engineering Inc

HydroCAD® 10.20-2f s/n 07289 © 2022 HydroCAD Software Solutions LLC

Type IA 24-hr Salem 100 YR Rainfall=4.40"

Page 4

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.13 cfs @ 7.99 hrs, Volume= 0.052 af, Depth= 1.75"

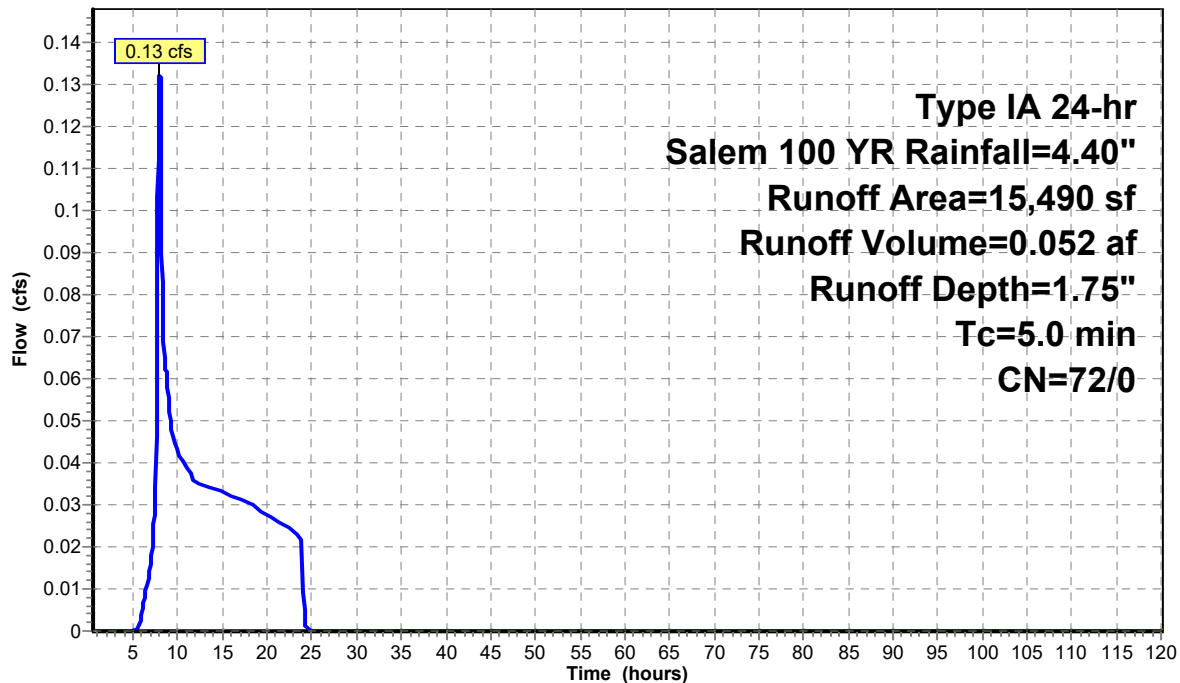
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 100 YR Rainfall=4.40"

Area (sf)	CN	Description
15,490	72	Woods/grass comb., Good, HSG C
15,490		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Summary for Subcatchment 7S: Pre-Dev

Runoff = 0.02 cfs @ 16.45 hrs, Volume= 0.022 af, Depth= 0.38"

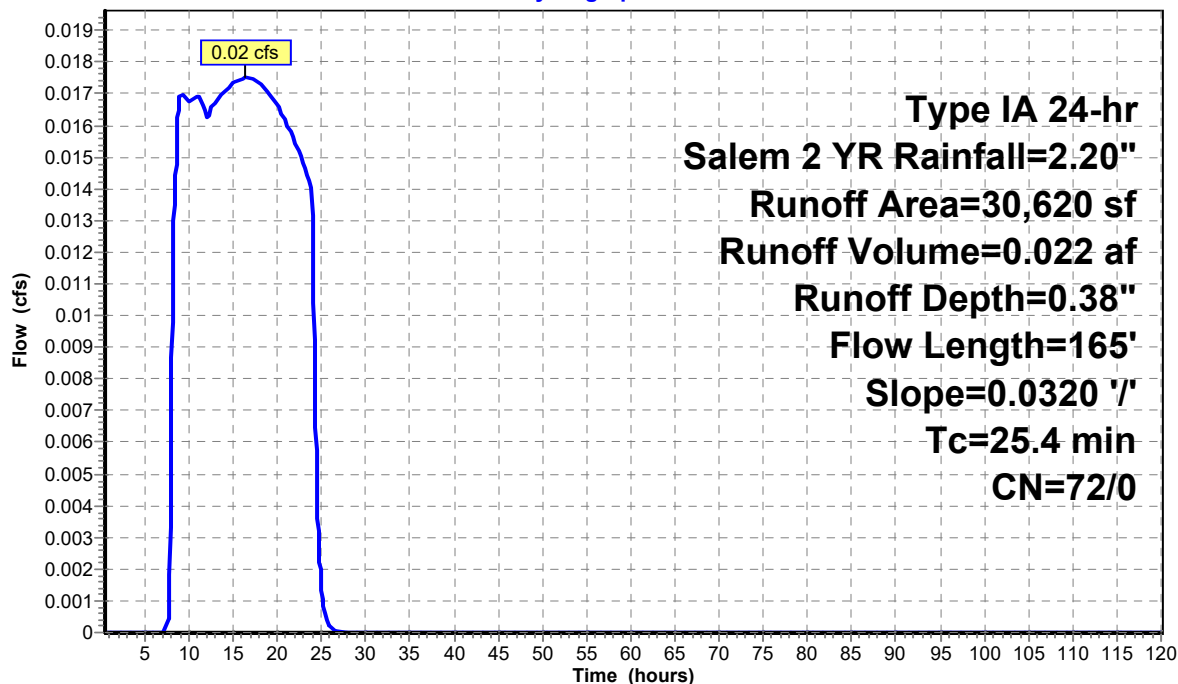
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

Area (sf)	CN	Description
30,620	72	Woods/grass comb., Good, HSG C
30,620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.4	165	0.0320	0.11		Sheet Flow, n= 0.300 P2= 2.20"

Subcatchment 7S: Pre-Dev

Hydrograph



Macleay Gas

Prepared by Westech Engineering Inc

HydroCAD® 10.20-2f s/n 07289 © 2022 HydroCAD Software Solutions LLC

Type IA 24-hr Salem 2 YR Rainfall=2.20"

Page 6

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.01 cfs @ 8.06 hrs, Volume= 0.011 af, Depth= 0.38"

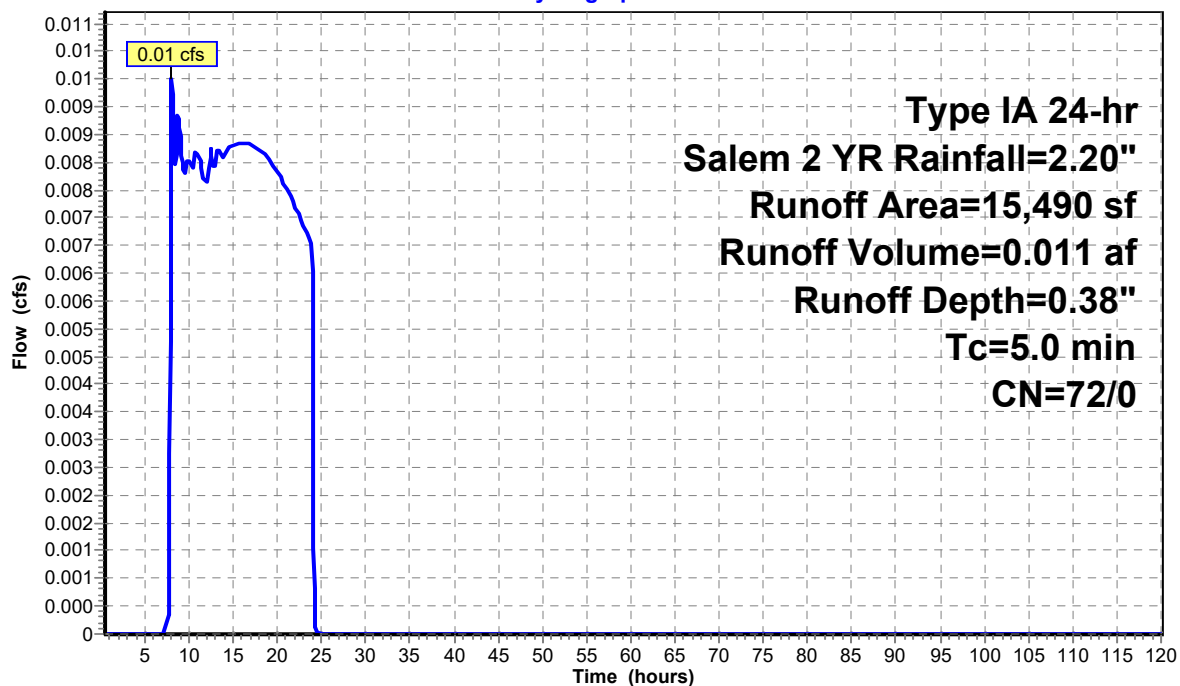
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

Area (sf)	CN	Description
15,490	72	Woods/grass comb., Good, HSG C
15,490		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Summary for Subcatchment 7S: Pre-Dev

Runoff = 0.11 cfs @ 8.12 hrs, Volume= 0.070 af, Depth= 1.19"

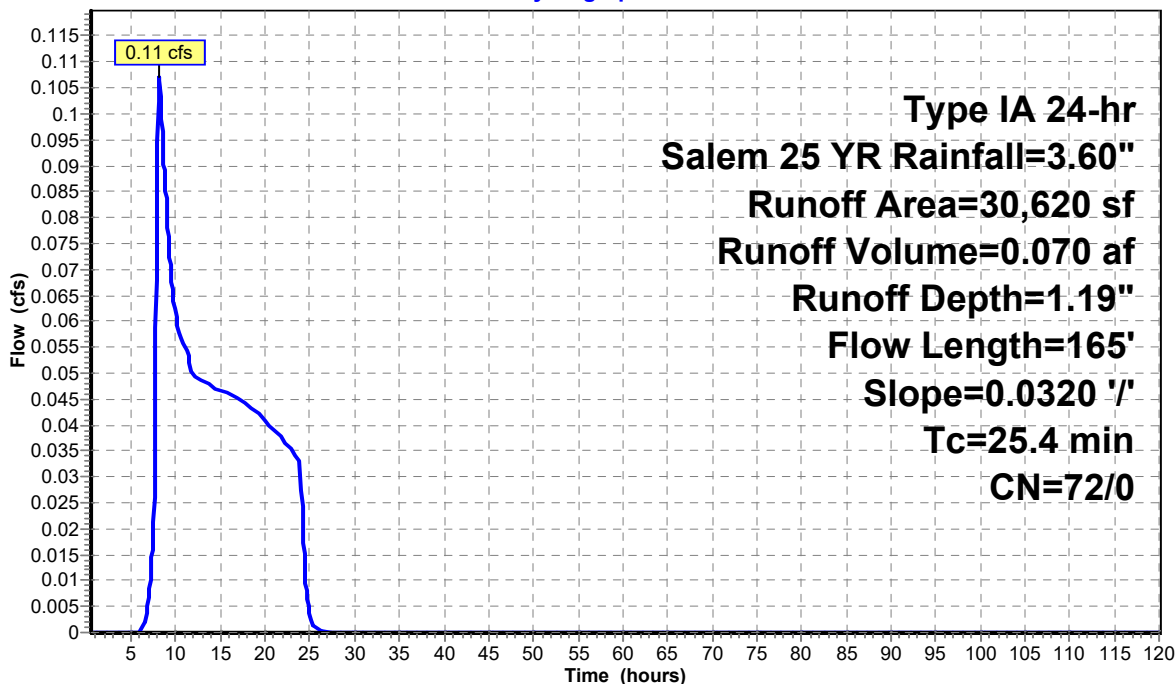
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
30,620	72	Woods/grass comb., Good, HSG C
30,620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.4	165	0.0320	0.11		Sheet Flow, n= 0.300 P2= 2.20"

Subcatchment 7S: Pre-Dev

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 25 YR Rainfall=3.60"

Page 8

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.08 cfs @ 7.99 hrs, Volume= 0.035 af, Depth= 1.19"

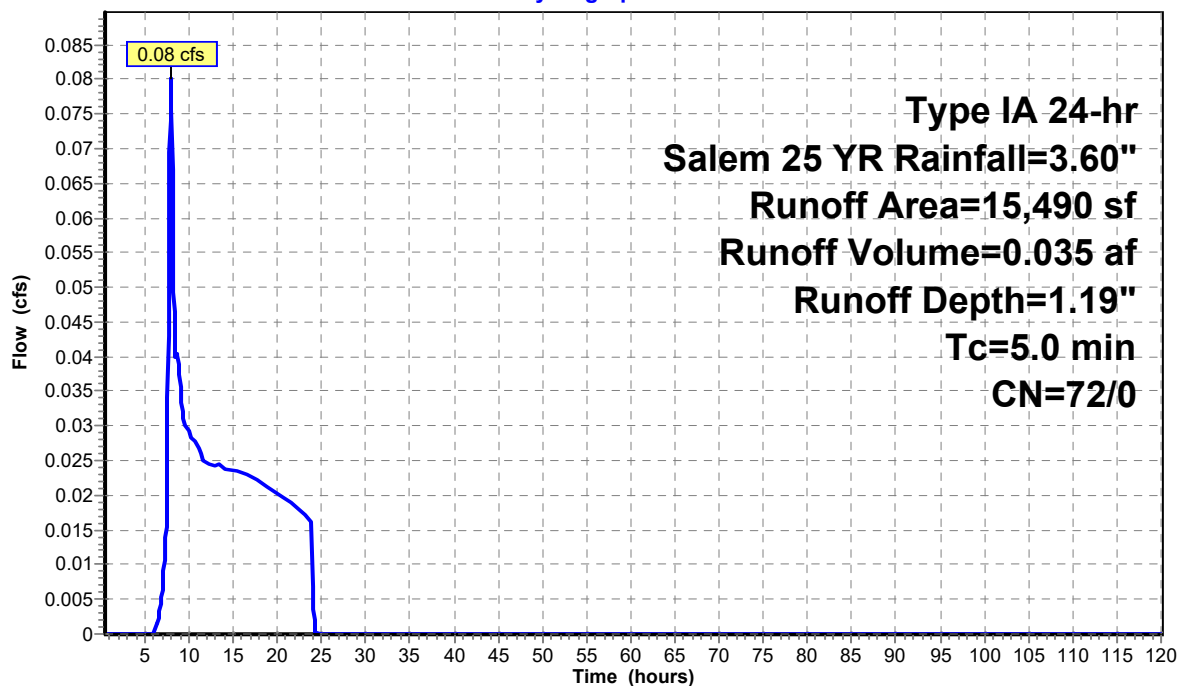
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
15,490	72	Woods/grass comb., Good, HSG C
15,490		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 2 YR Rainfall=2.20"

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.01 cfs @ 8.06 hrs, Volume= 0.008 af, Depth= 0.38"

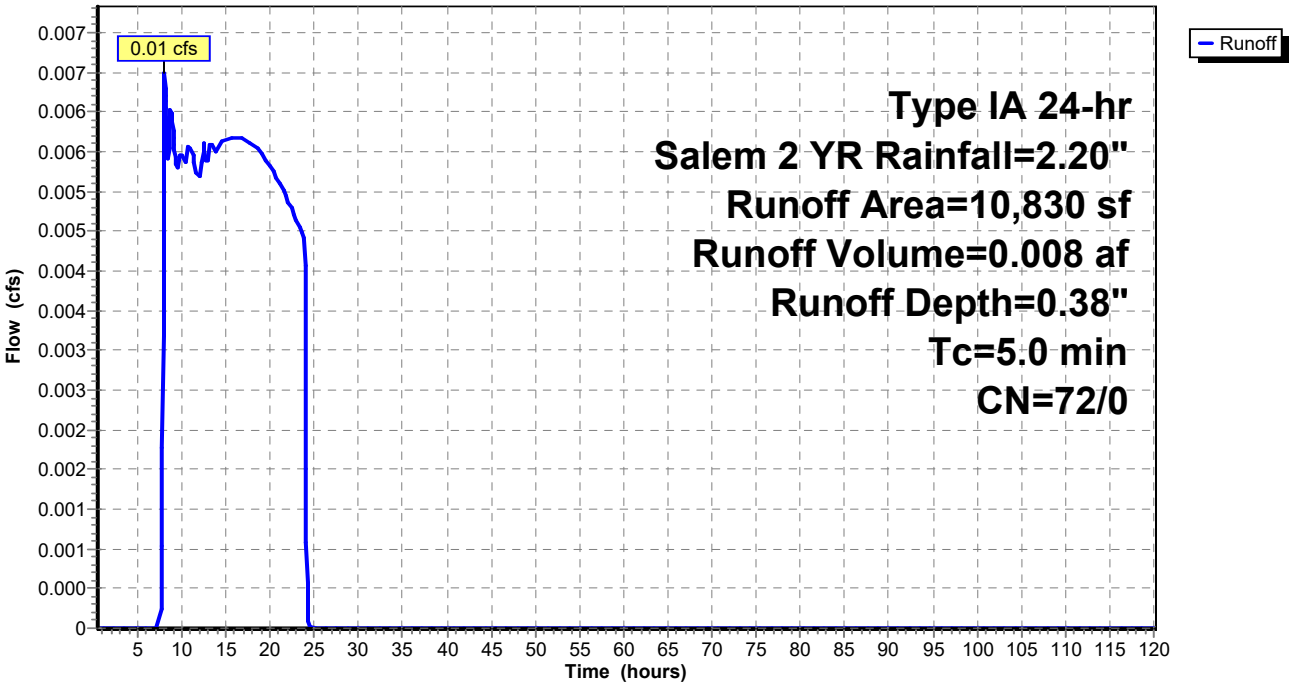
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

Area (sf)	CN	Description
10,830	72	Woods/grass comb., Good, HSG C
10,830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 10 YR Rainfall=3.20"

Page 1

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.04 cfs @ 8.00 hrs, Volume= 0.019 af, Depth= 0.93"

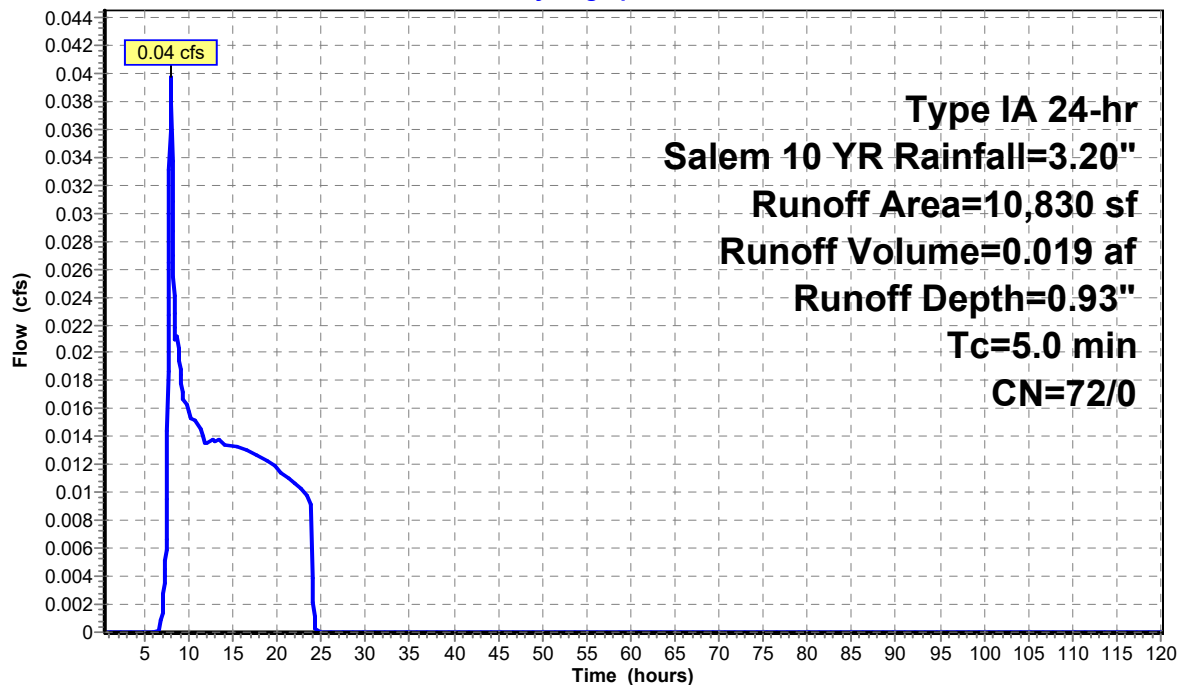
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
10,830	72	Woods/grass comb., Good, HSG C
10,830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 25 YR Rainfall=3.60"

Page 4

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.06 cfs @ 7.99 hrs, Volume= 0.025 af, Depth= 1.19"

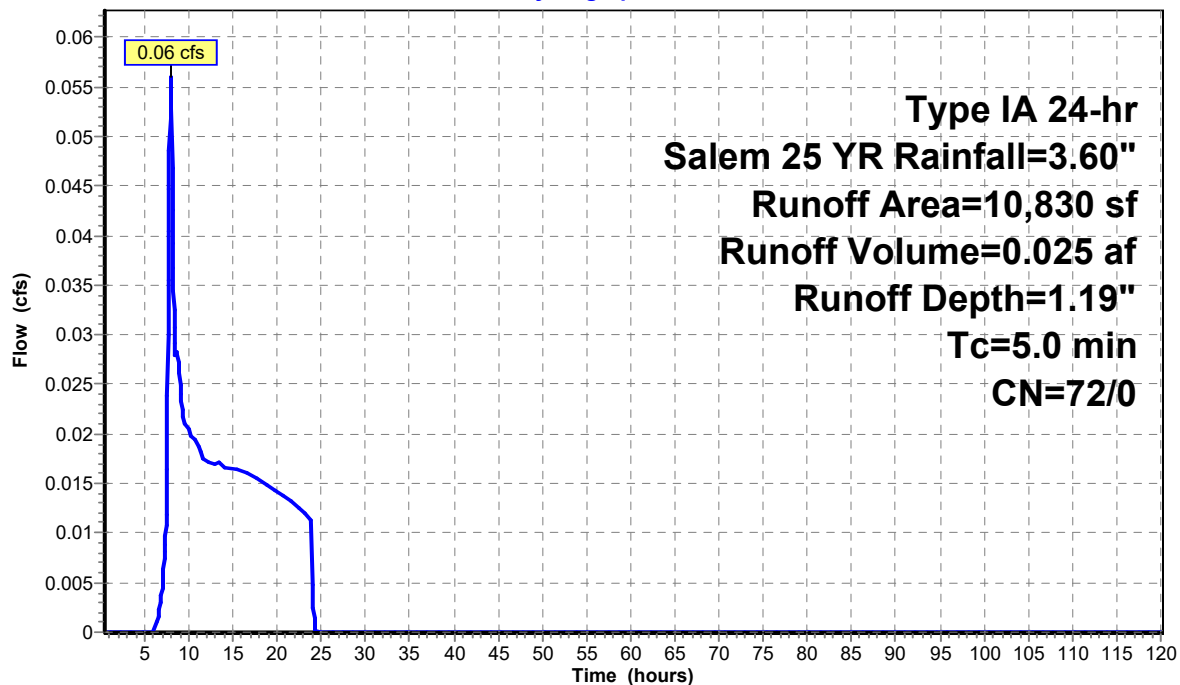
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
10,830	72	Woods/grass comb., Good, HSG C
10,830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 100 YR Rainfall=4.40"

Page 2

Summary for Subcatchment 11S: Macleay Rd Pre-Dev

Runoff = 0.09 cfs @ 7.99 hrs, Volume= 0.036 af, Depth= 1.75"

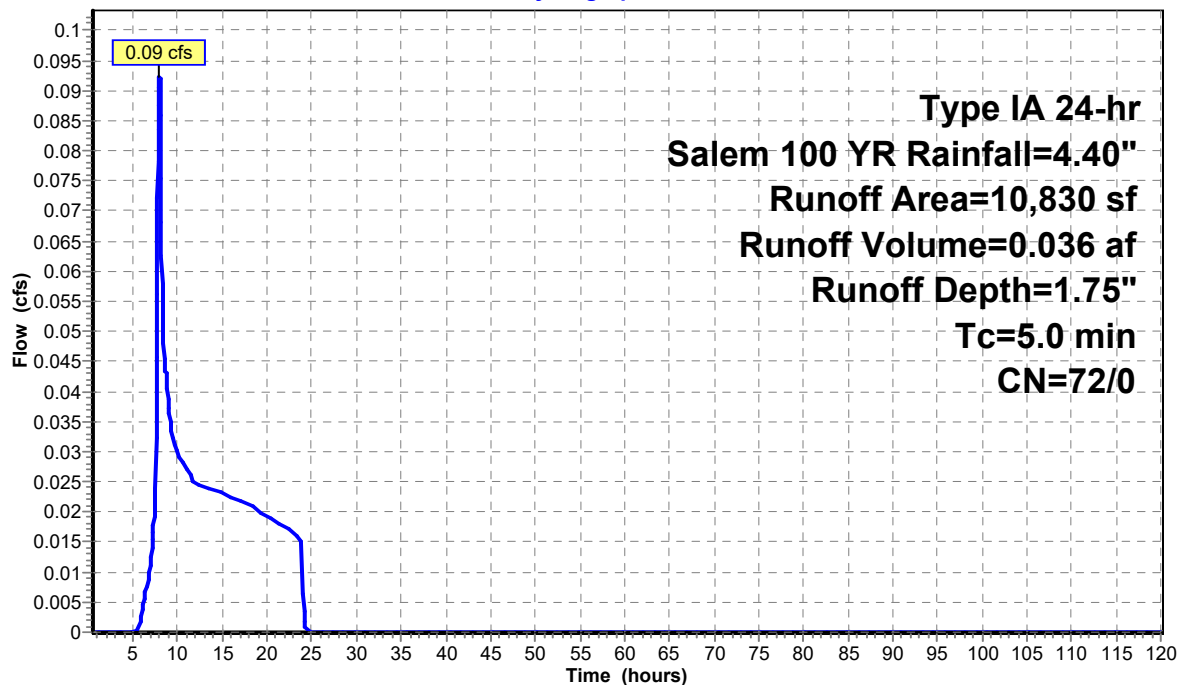
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 100 YR Rainfall=4.40"

Area (sf)	CN	Description
10,830	72	Woods/grass comb., Good, HSG C
10,830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11S: Macleay Rd Pre-Dev

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 10 YR Rainfall=3.20"

Page 1

Summary for Subcatchment 1S: Developed Basin

Runoff = 0.51 cfs @ 7.90 hrs, Volume= 0.169 af, Depth= 2.88"
Routed to Pond 1P : Rain Garden

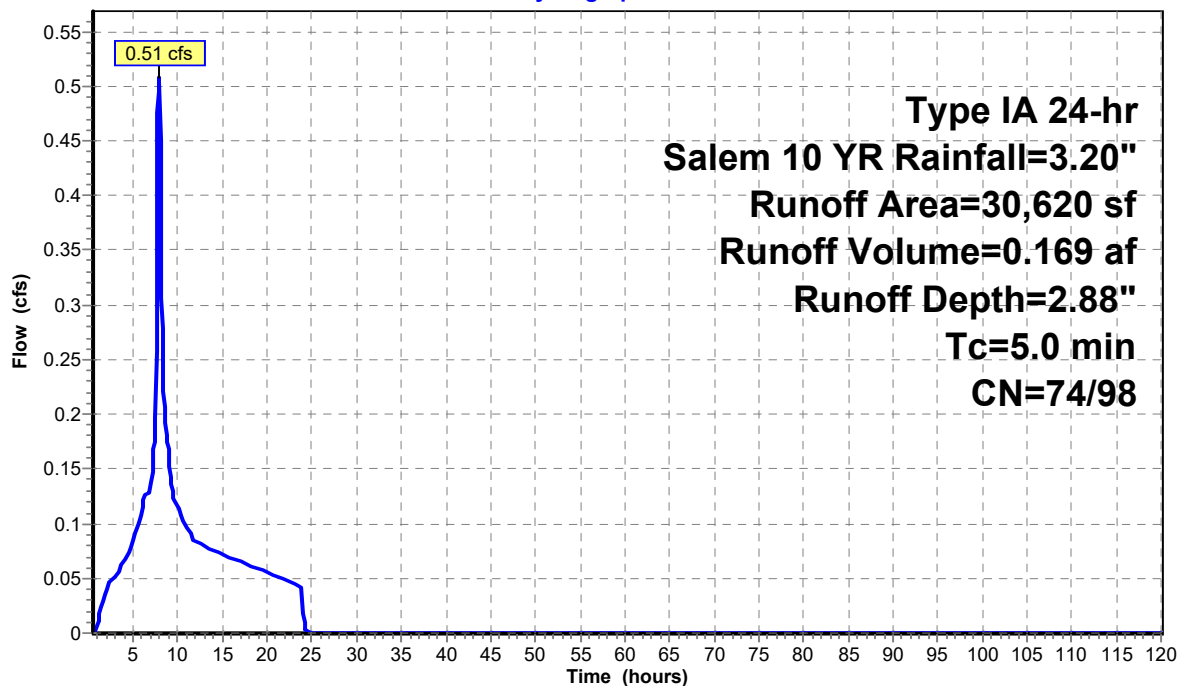
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
29,300	98	Paved parking, HSG C
1,320	74	>75% Grass cover, Good, HSG C
30,620	97	Weighted Average
1,320		4.31% Pervious Area
29,300		95.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: Developed Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 100 YR Rainfall=4.40"

Page 3

Summary for Subcatchment 1S: Developed Basin

Runoff = 0.71 cfs @ 7.90 hrs, Volume= 0.238 af, Depth> 4.07"
Routed to Pond 1P : Rain Garden

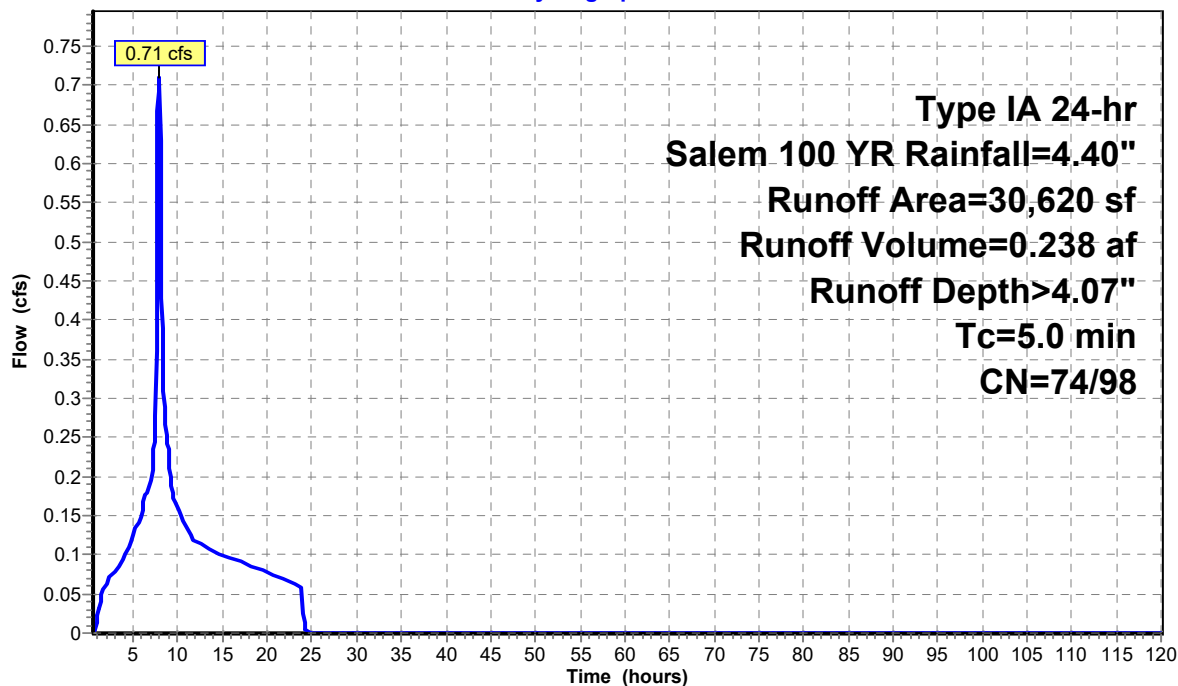
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 100 YR Rainfall=4.40"

Area (sf)	CN	Description
29,300	98	Paved parking, HSG C
1,320	74	>75% Grass cover, Good, HSG C
30,620	97	Weighted Average
1,320		4.31% Pervious Area
29,300		95.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: Developed Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 25 YR Rainfall=3.60"

Page 5

Summary for Subcatchment 1S: Developed Basin

Runoff = 0.58 cfs @ 7.90 hrs, Volume= 0.192 af, Depth= 3.28"
Routed to Pond 1P : Rain Garden

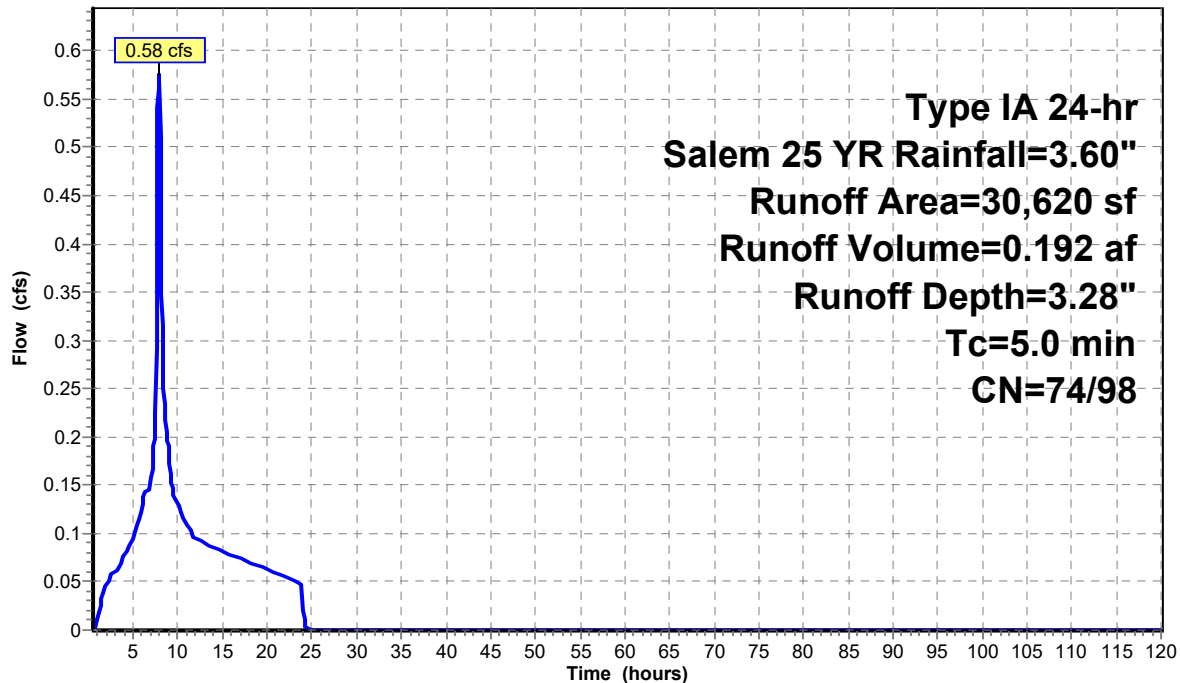
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
29,300	98	Paved parking, HSG C
1,320	74	>75% Grass cover, Good, HSG C
30,620	97	Weighted Average
1,320		4.31% Pervious Area
29,300		95.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: Developed Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem Half 2 YR Rainfall=1.10"

Page 7

Summary for Subcatchment 1S: Developed Basin

Runoff = 0.15 cfs @ 7.92 hrs, Volume= 0.050 af, Depth= 0.85"
Routed to Pond 1P : Rain Garden

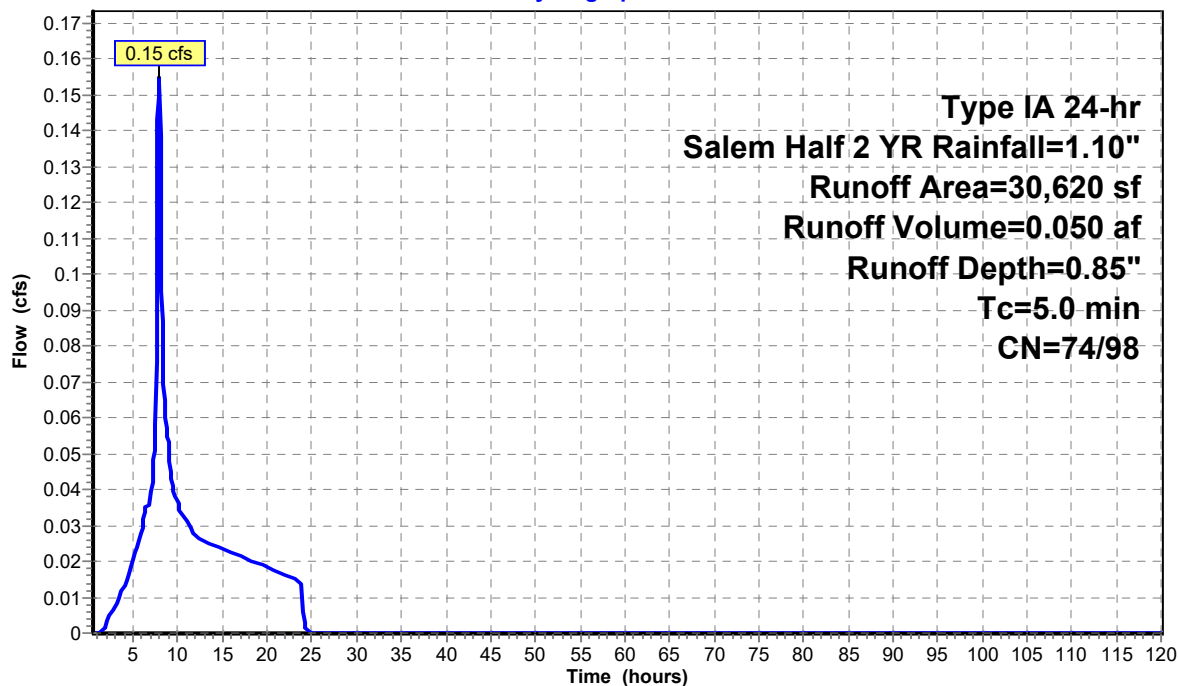
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem Half 2 YR Rainfall=1.10"

Area (sf)	CN	Description
29,300	98	Paved parking, HSG C
1,320	74	>75% Grass cover, Good, HSG C
30,620	97	Weighted Average
1,320		4.31% Pervious Area
29,300		95.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: Developed Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem WQ Rainfall=1.38"

Page 9

Summary for Subcatchment 1S: Developed Basin

Runoff = 0.20 cfs @ 7.91 hrs, Volume= 0.065 af, Depth= 1.12"
Routed to Pond 1P : Rain Garden

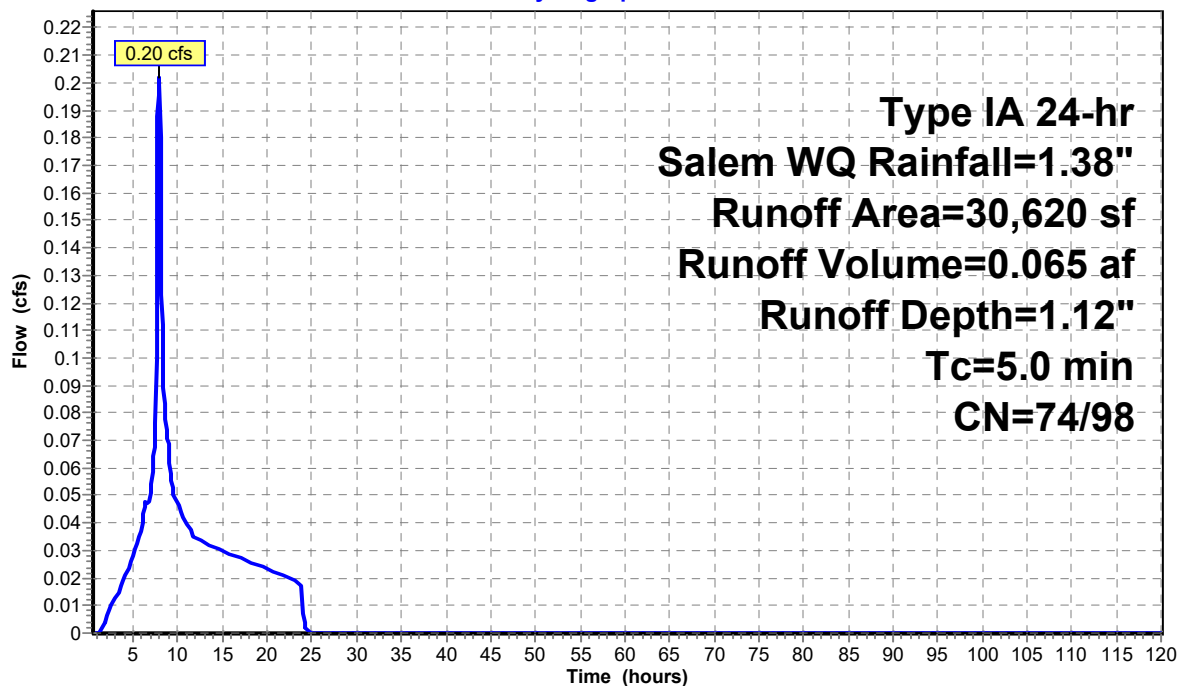
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

Area (sf)	CN	Description
29,300	98	Paved parking, HSG C
1,320	74	>75% Grass cover, Good, HSG C
30,620	97	Weighted Average
1,320		4.31% Pervious Area
29,300		95.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: Developed Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem Half 2 YR Rainfall=1.10"

Page 4

Summary for Subcatchment 2S: Macleay Rd Basin

Runoff = 0.05 cfs @ 7.98 hrs, Volume= 0.017 af, Depth= 0.83"

Routed to Pond 2P : Macleay Planter

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

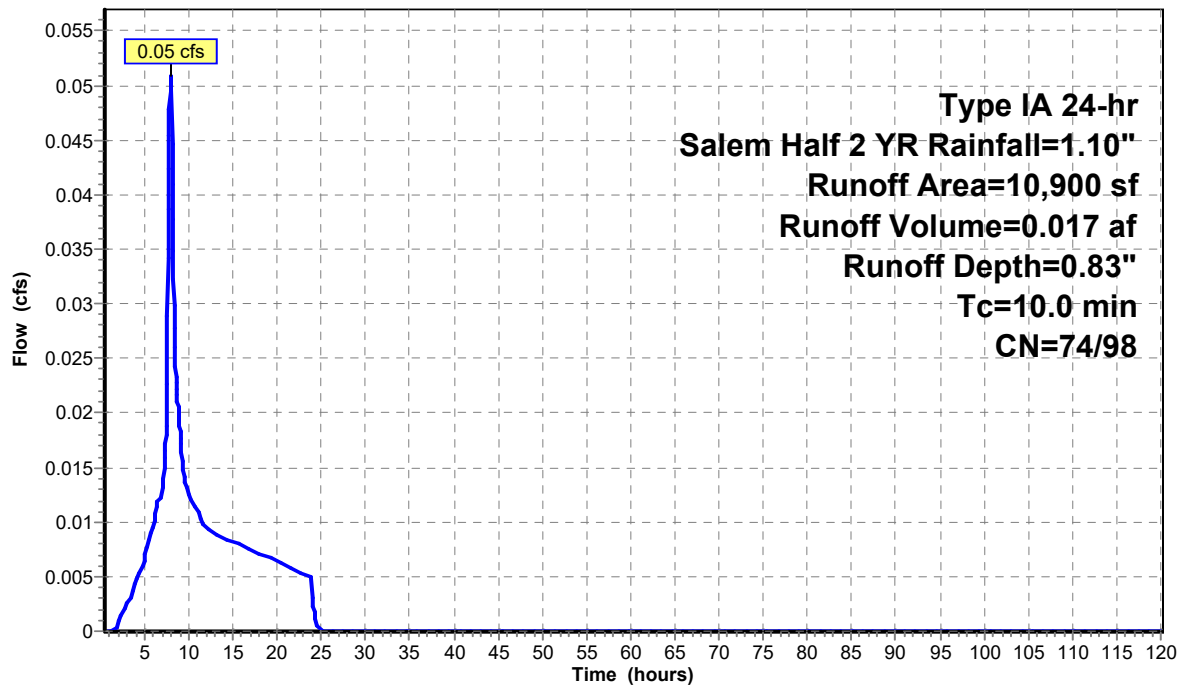
Type IA 24-hr Salem Half 2 YR Rainfall=1.10"

Area (sf)	CN	Description
10,130	98	Paved parking, HSG C
770	74	>75% Grass cover, Good, HSG C
10,900	96	Weighted Average
770		7.06% Pervious Area
10,130		92.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 2S: Macleay Rd Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 10 YR Rainfall=3.20"

Page 1

Summary for Subcatchment 2S: Macleay Rd Basin

Runoff = 0.17 cfs @ 7.98 hrs, Volume= 0.059 af, Depth= 2.83"

Routed to Pond 2P : Macleay Planter

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

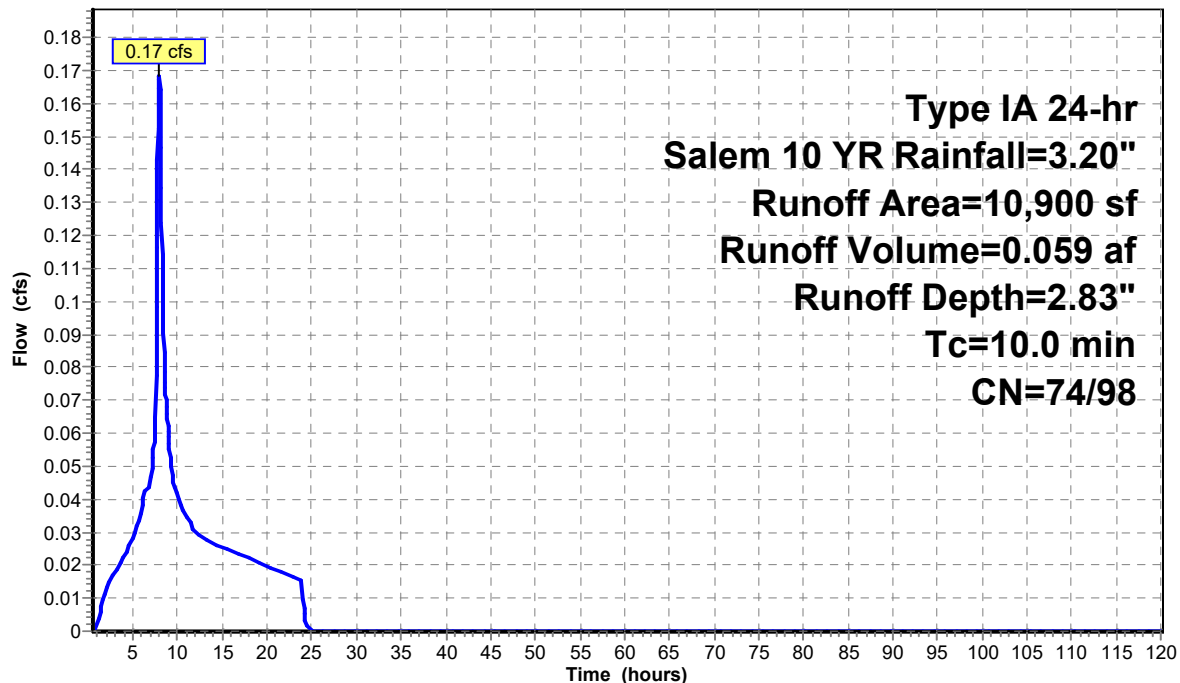
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
10,130	98	Paved parking, HSG C
770	74	>75% Grass cover, Good, HSG C
10,900	96	Weighted Average
770		7.06% Pervious Area
10,130		92.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 2S: Macleay Rd Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 25 YR Rainfall=3.60"

Page 3

Summary for Subcatchment 2S: Macleay Rd Basin

Runoff = 0.19 cfs @ 7.98 hrs, Volume= 0.067 af, Depth= 3.22"

Routed to Pond 2P : Macleay Planter

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

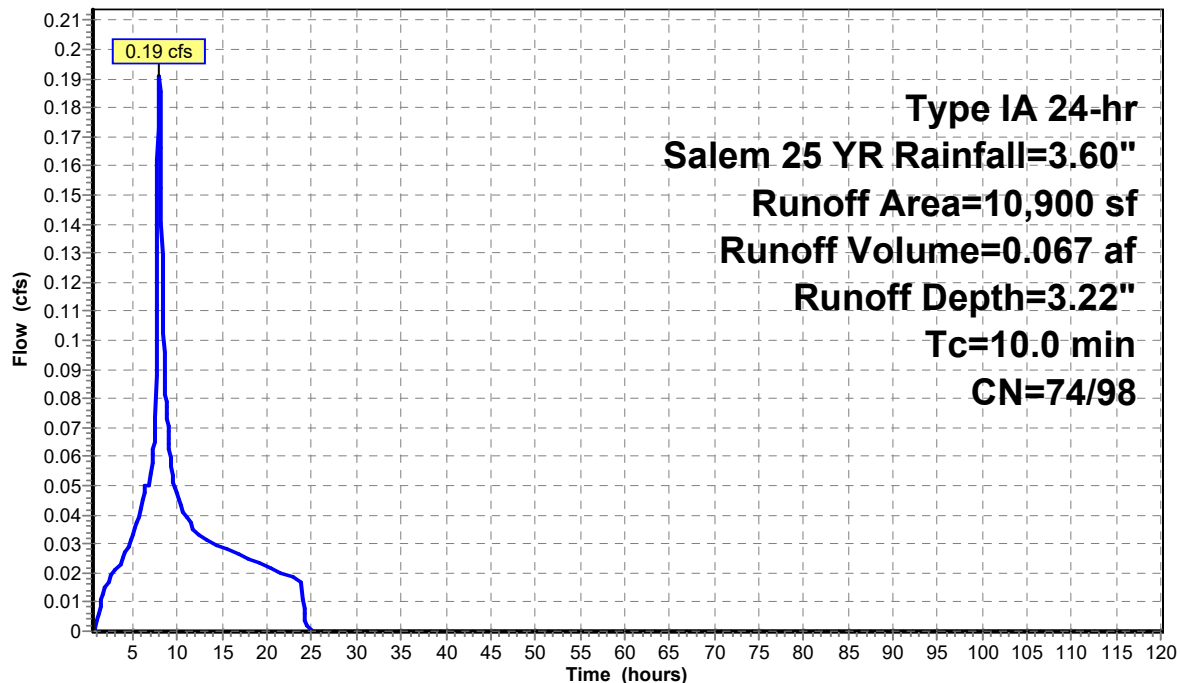
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
10,130	98	Paved parking, HSG C
770	74	>75% Grass cover, Good, HSG C
10,900	96	Weighted Average
770		7.06% Pervious Area
10,130		92.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 2S: Macleay Rd Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem 100 YR Rainfall=4.40"

Page 2

Summary for Subcatchment 2S: Macleay Rd Basin

Runoff = 0.24 cfs @ 7.98 hrs, Volume= 0.083 af, Depth> 4.00"

Routed to Pond 2P : Macleay Planter

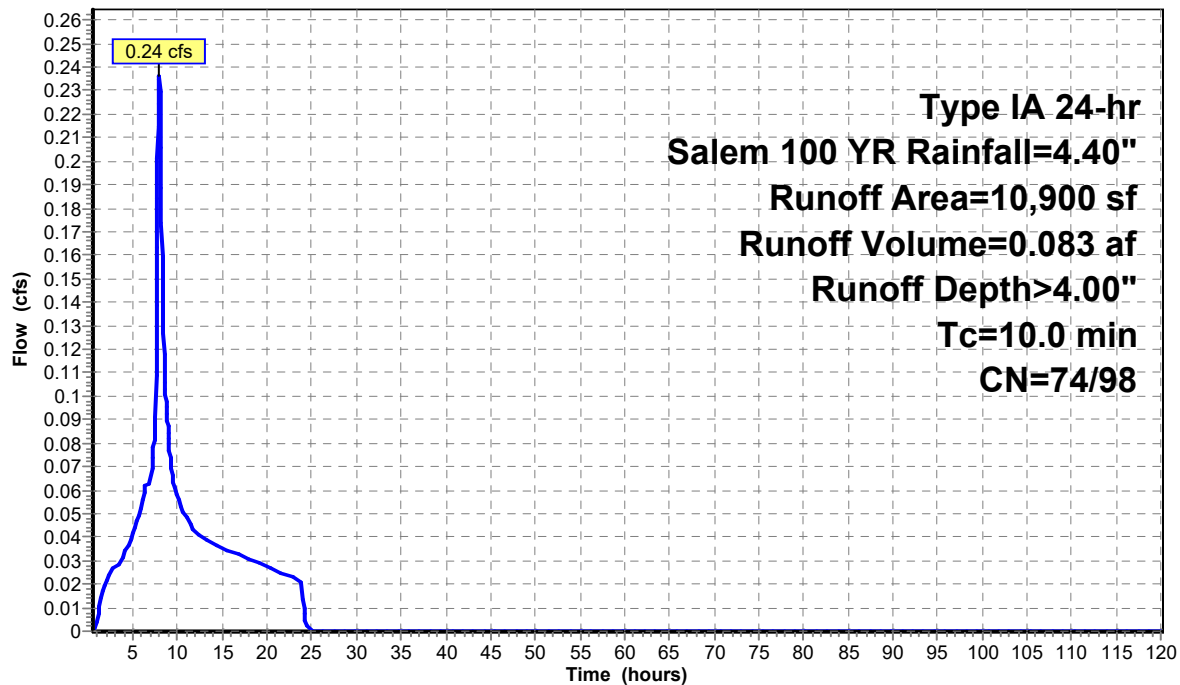
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 100 YR Rainfall=4.40"

Area (sf)	CN	Description
10,130	98	Paved parking, HSG C
770	74	>75% Grass cover, Good, HSG C
10,900	96	Weighted Average
770		7.06% Pervious Area
10,130		92.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 2S: Macleay Rd Basin

Hydrograph



Summary for Pond 1P: Rain Garden

Inflow Area = 0.703 ac, 95.69% Impervious, Inflow Depth = 2.88" for Salem 10 YR event
 Inflow = 0.51 cfs @ 7.90 hrs, Volume= 0.169 af
 Outflow = 0.07 cfs @ 14.80 hrs, Volume= 0.153 af, Atten= 86%, Lag= 413.7 min
 Discarded = 0.00 cfs @ 1.60 hrs, Volume= 0.014 af
 Primary = 0.07 cfs @ 14.80 hrs, Volume= 0.139 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 218.13' @ 14.80 hrs Surf.Area= 1,270 sf Storage= 3,672 cf

Plug-Flow detention time= 986.0 min calculated for 0.153 af (91% of inflow)
 Center-of-Mass det. time= 919.3 min (1,588.8 - 669.5)

Volume	Invert	Avail.Storage	Storage Description
#1	211.50'	4,774 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.50	1,270	0.0	0	0
215.50	1,270	40.0	2,032	2,032
216.99	1,270	10.0	189	2,221
217.00	1,270	100.0	13	2,234
217.50	1,270	100.0	635	2,869
219.00	1,270	100.0	1,905	4,774

Device	Routing	Invert	Outlet Devices
#1	Discarded	211.50'	0.050 in/hr Exfiltration over Horizontal area
#2	Primary	213.36'	0.6" Vert. 1st Orifice C= 0.600 Limited to weir flow at low heads
#3	Primary	217.10'	1.4" Vert. 2nd Orifice C= 0.600 Limited to weir flow at low heads
#4	Primary	218.70'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 1.60 hrs HW=211.58' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.07 cfs @ 14.80 hrs HW=218.13' (Free Discharge)

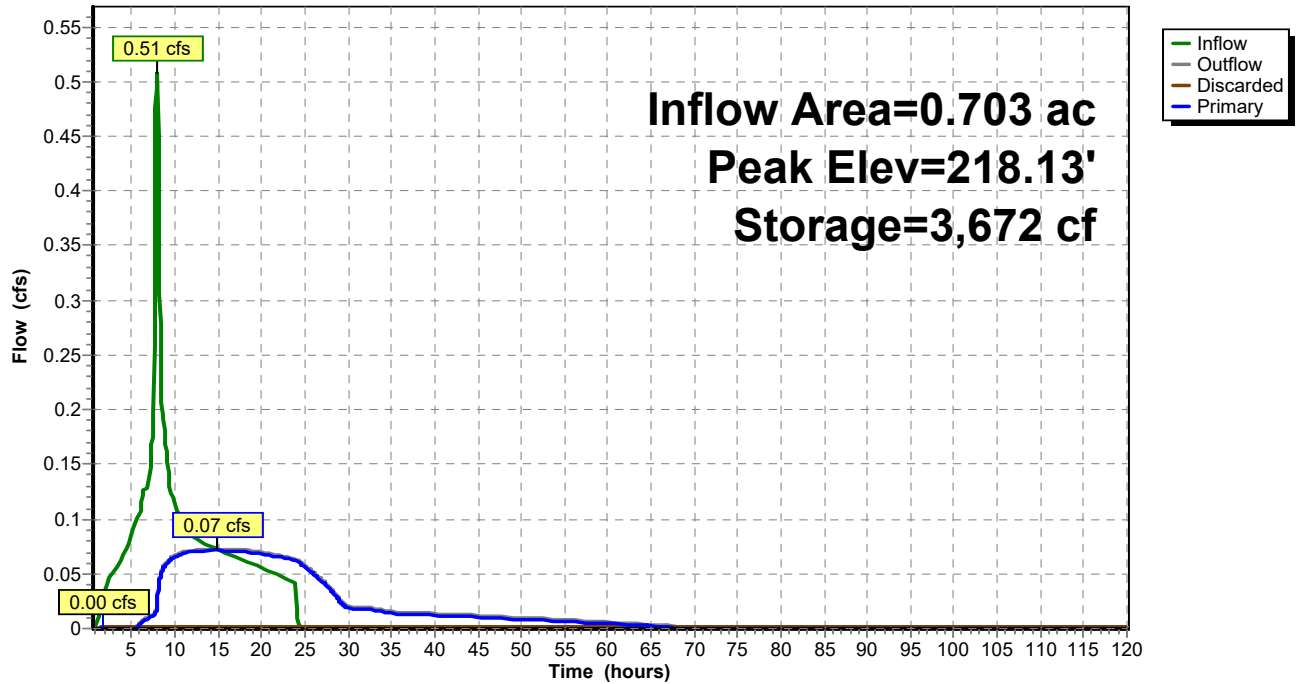
↑ **2=1st Orifice** (Orifice Controls 0.02 cfs @ 10.49 fps)

↑ **3=2nd Orifice** (Orifice Controls 0.05 cfs @ 4.75 fps)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden

Hydrograph



Summary for Pond 1P: Rain Garden

Inflow Area = 0.703 ac, 95.69% Impervious, Inflow Depth > 4.07" for Salem 100 YR event
 Inflow = 0.71 cfs @ 7.90 hrs, Volume= 0.238 af
 Outflow = 0.18 cfs @ 9.32 hrs, Volume= 0.222 af, Atten= 74%, Lag= 85.2 min
 Discarded = 0.00 cfs @ 1.30 hrs, Volume= 0.014 af
 Primary = 0.18 cfs @ 9.32 hrs, Volume= 0.208 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 218.76' @ 9.32 hrs Surf.Area= 1,270 sf Storage= 4,472 cf

Plug-Flow detention time= 832.7 min calculated for 0.222 af (93% of inflow)
 Center-of-Mass det. time= 782.9 min (1,444.8 - 661.9)

Volume	Invert	Avail.Storage	Storage Description
#1	211.50'	4,774 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.50	1,270	0.0	0	0
215.50	1,270	40.0	2,032	2,032
216.99	1,270	10.0	189	2,221
217.00	1,270	100.0	13	2,234
217.50	1,270	100.0	635	2,869
219.00	1,270	100.0	1,905	4,774

Device	Routing	Invert	Outlet Devices
#1	Discarded	211.50'	0.050 in/hr Exfiltration over Horizontal area
#2	Primary	213.36'	0.6" Vert. 1st Orifice C= 0.600 Limited to weir flow at low heads
#3	Primary	217.10'	1.4" Vert. 2nd Orifice C= 0.600 Limited to weir flow at low heads
#4	Primary	218.70'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 1.30 hrs HW=211.59' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.17 cfs @ 9.32 hrs HW=218.76' (Free Discharge)

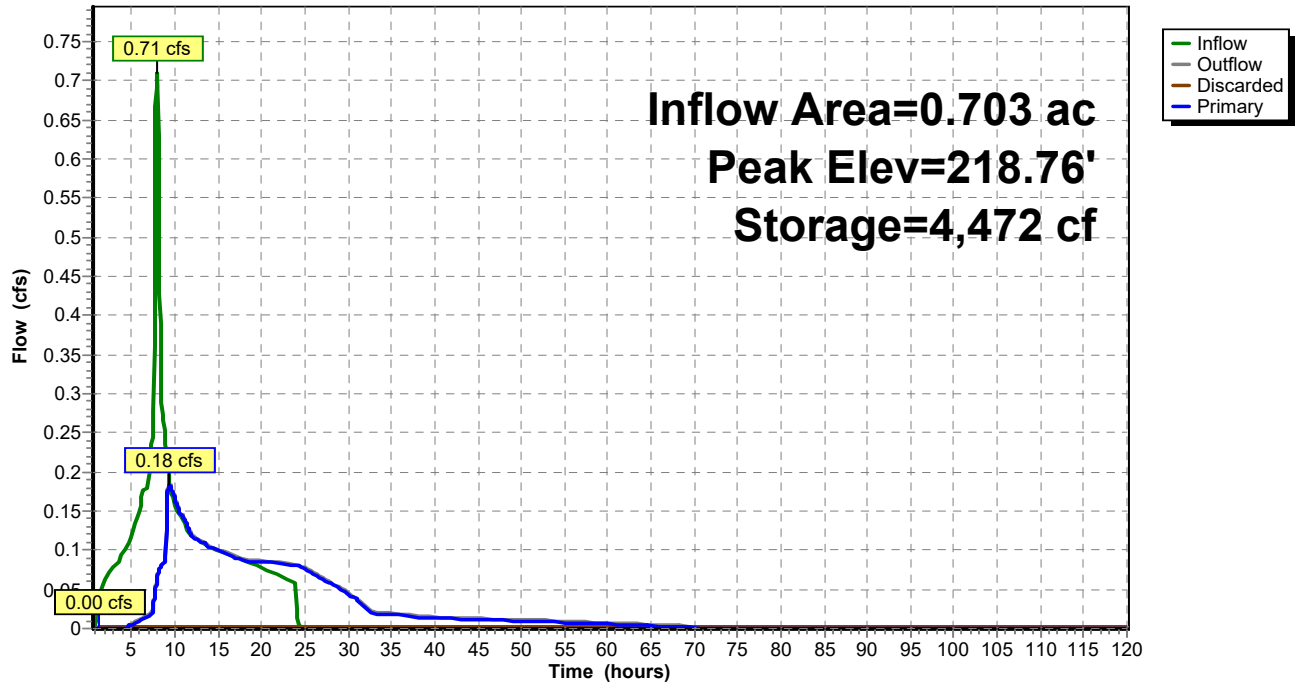
↑ **2=1st Orifice** (Orifice Controls 0.02 cfs @ 11.17 fps)

↑ **3=2nd Orifice** (Orifice Controls 0.07 cfs @ 6.10 fps)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.70 fps)

Pond 1P: Rain Garden

Hydrograph



Summary for Pond 1P: Rain Garden

Inflow Area = 0.703 ac, 95.69% Impervious, Inflow Depth = 3.28" for Salem 25 YR event
 Inflow = 0.58 cfs @ 7.90 hrs, Volume= 0.192 af
 Outflow = 0.08 cfs @ 14.73 hrs, Volume= 0.176 af, Atten= 86%, Lag= 409.6 min
 Discarded = 0.00 cfs @ 1.45 hrs, Volume= 0.014 af
 Primary = 0.08 cfs @ 14.73 hrs, Volume= 0.162 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 218.50' @ 14.73 hrs Surf.Area= 1,270 sf Storage= 4,140 cf

Plug-Flow detention time= 950.5 min calculated for 0.176 af (92% of inflow)
 Center-of-Mass det. time= 890.4 min (1,556.9 - 666.5)

Volume	Invert	Avail.Storage	Storage Description
#1	211.50'	4,774 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.50	1,270	0.0	0	0
215.50	1,270	40.0	2,032	2,032
216.99	1,270	10.0	189	2,221
217.00	1,270	100.0	13	2,234
217.50	1,270	100.0	635	2,869
219.00	1,270	100.0	1,905	4,774

Device	Routing	Invert	Outlet Devices
#1	Discarded	211.50'	0.050 in/hr Exfiltration over Horizontal area
#2	Primary	213.36'	0.6" Vert. 1st Orifice C= 0.600 Limited to weir flow at low heads
#3	Primary	217.10'	1.4" Vert. 2nd Orifice C= 0.600 Limited to weir flow at low heads
#4	Primary	218.70'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 1.45 hrs HW=211.58' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.08 cfs @ 14.73 hrs HW=218.50' (Free Discharge)

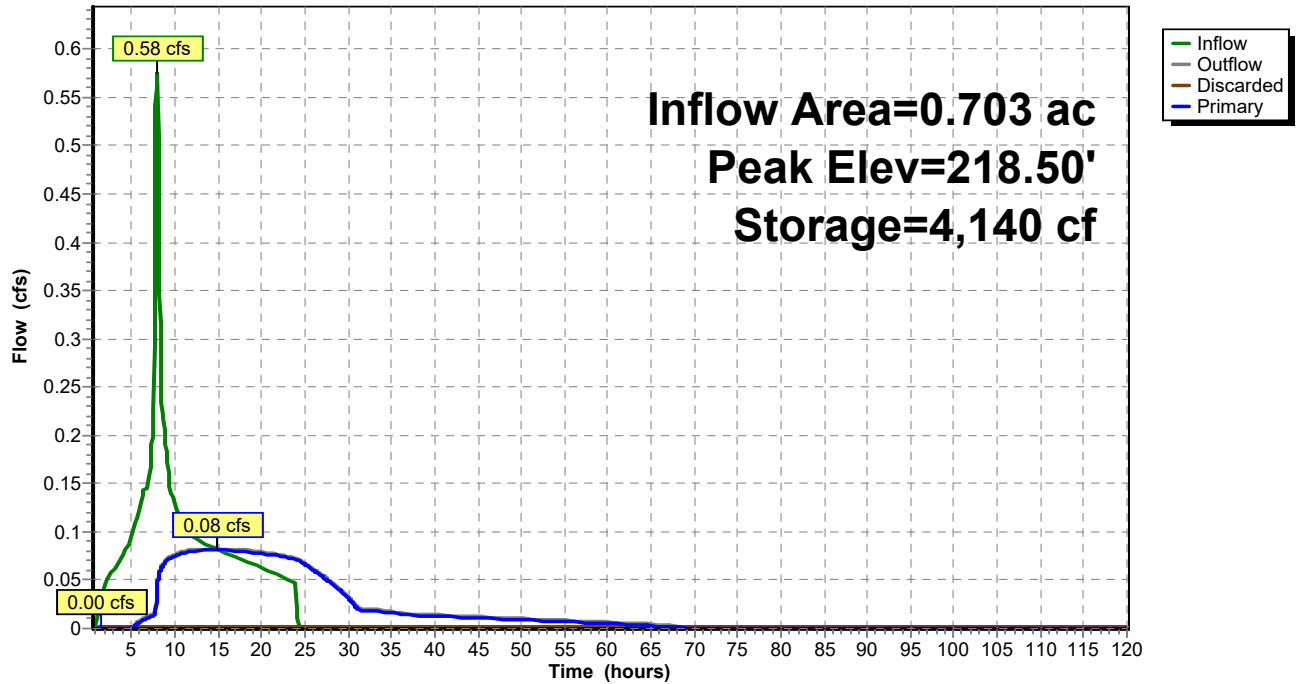
↑ **2=1st Orifice** (Orifice Controls 0.02 cfs @ 10.89 fps)

↑ **3=2nd Orifice** (Orifice Controls 0.06 cfs @ 5.58 fps)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden

Hydrograph



Summary for Pond 1P: Rain Garden

Inflow Area = 0.703 ac, 95.69% Impervious, Inflow Depth = 0.85" for Salem Half 2 YR event
 Inflow = 0.15 cfs @ 7.92 hrs, Volume= 0.050 af
 Outflow = 0.01 cfs @ 24.03 hrs, Volume= 0.037 af, Atten= 92%, Lag= 966.6 min
 Discarded = 0.00 cfs @ 3.65 hrs, Volume= 0.014 af
 Primary = 0.01 cfs @ 24.03 hrs, Volume= 0.022 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 214.67' @ 24.03 hrs Surf.Area= 1,270 sf Storage= 1,609 cf

Plug-Flow detention time= 1,836.5 min calculated for 0.037 af (73% of inflow)
 Center-of-Mass det. time= 1,674.0 min (2,383.5 - 709.5)

Volume	Invert	Avail.Storage	Storage Description
#1	211.50'	4,774 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.50	1,270	0.0	0	0
215.50	1,270	40.0	2,032	2,032
216.99	1,270	10.0	189	2,221
217.00	1,270	100.0	13	2,234
217.50	1,270	100.0	635	2,869
219.00	1,270	100.0	1,905	4,774

Device	Routing	Invert	Outlet Devices
#1	Discarded	211.50'	0.050 in/hr Exfiltration over Horizontal area
#2	Primary	213.36'	0.6" Vert. 1st Orifice C= 0.600 Limited to weir flow at low heads
#3	Primary	217.10'	1.4" Vert. 2nd Orifice C= 0.600 Limited to weir flow at low heads
#4	Primary	218.70'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 3.65 hrs HW=211.58' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.01 cfs @ 24.03 hrs HW=214.67' (Free Discharge)

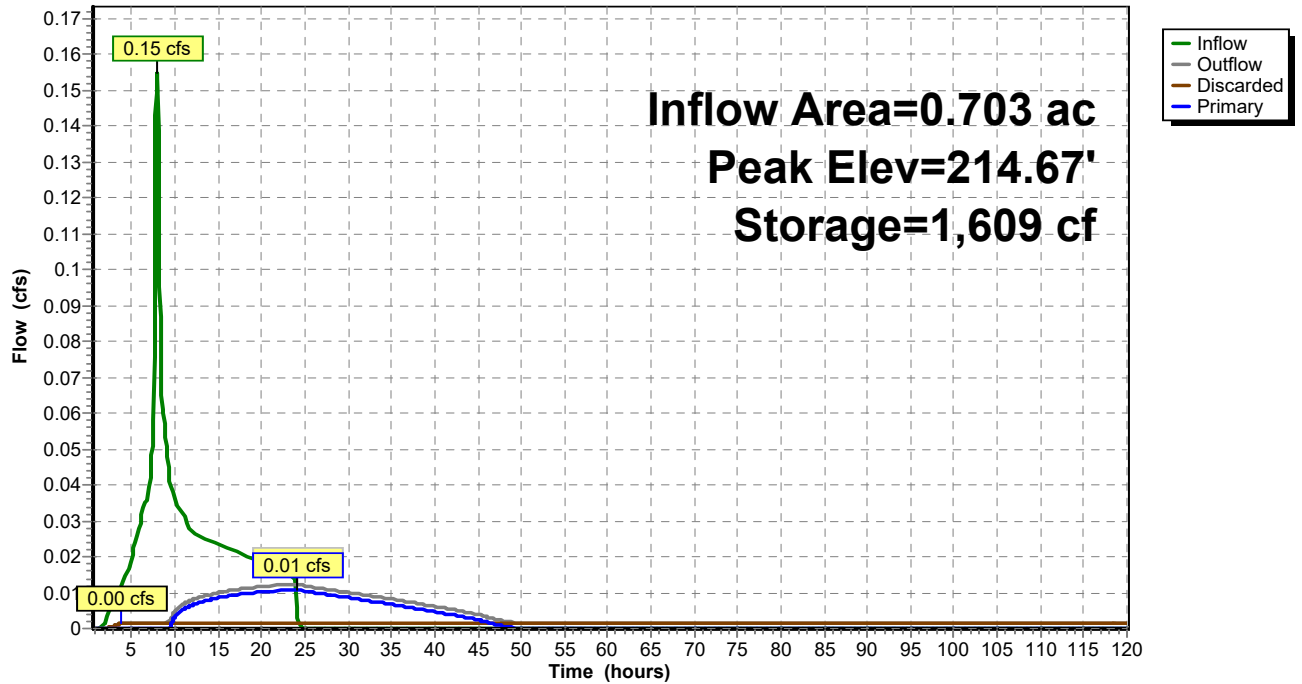
↑ **2=1st Orifice** (Orifice Controls 0.01 cfs @ 5.45 fps)

↑ **3=2nd Orifice** (Controls 0.00 cfs)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden

Hydrograph



Summary for Pond 1P: Rain Garden

Inflow Area = 0.703 ac, 95.69% Impervious, Inflow Depth = 1.12" for Salem WQ event
 Inflow = 0.20 cfs @ 7.91 hrs, Volume= 0.065 af
 Outflow = 0.02 cfs @ 24.01 hrs, Volume= 0.051 af, Atten= 92%, Lag= 966.3 min
 Discarded = 0.00 cfs @ 3.00 hrs, Volume= 0.014 af
 Primary = 0.01 cfs @ 24.01 hrs, Volume= 0.037 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 215.76' @ 24.01 hrs Surf.Area= 1,270 sf Storage= 2,065 cf

Plug-Flow detention time= 1,685.6 min calculated for 0.051 af (78% of inflow)
 Center-of-Mass det. time= 1,546.5 min (2,245.2 - 698.7)

Volume	Invert	Avail.Storage	Storage Description
#1	211.50'	4,774 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.50	1,270	0.0	0	0
215.50	1,270	40.0	2,032	2,032
216.99	1,270	10.0	189	2,221
217.00	1,270	100.0	13	2,234
217.50	1,270	100.0	635	2,869
219.00	1,270	100.0	1,905	4,774

Device	Routing	Invert	Outlet Devices
#1	Discarded	211.50'	0.050 in/hr Exfiltration over Horizontal area
#2	Primary	213.36'	0.6" Vert. 1st Orifice C= 0.600 Limited to weir flow at low heads
#3	Primary	217.10'	1.4" Vert. 2nd Orifice C= 0.600 Limited to weir flow at low heads
#4	Primary	218.70'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 3.00 hrs HW=211.58' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.01 cfs @ 24.01 hrs HW=215.76' (Free Discharge)

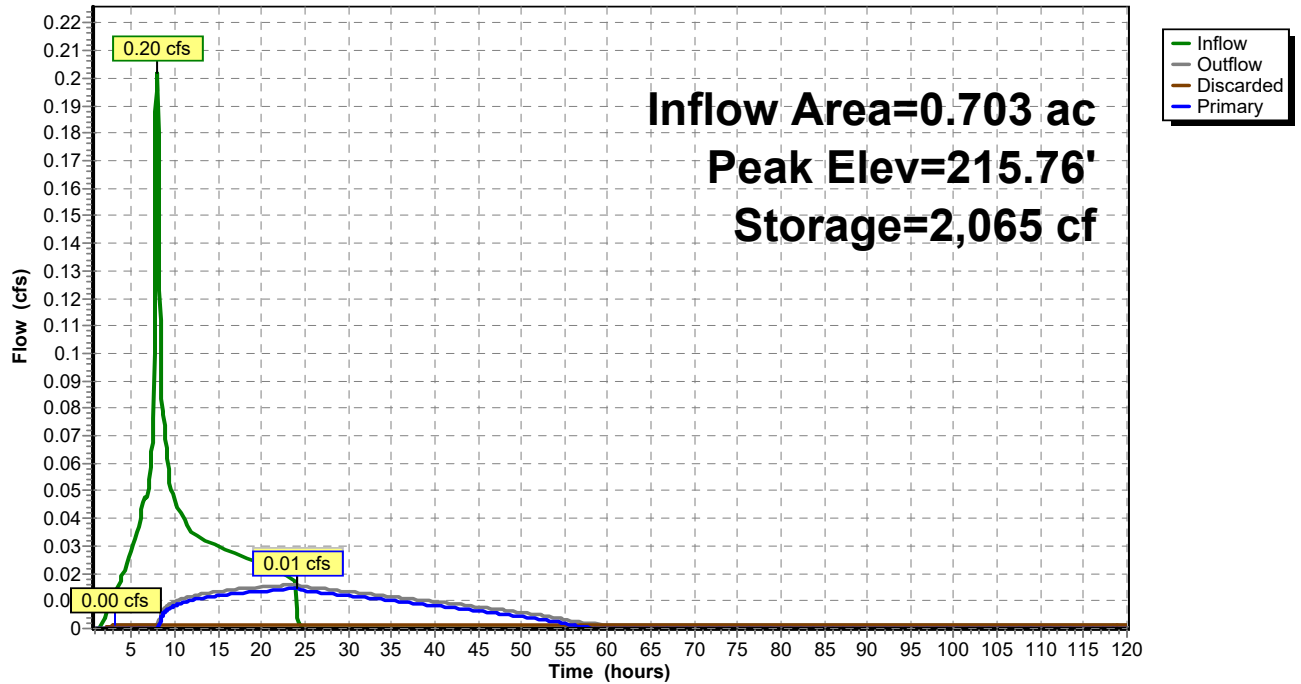
↑ **2=1st Orifice** (Orifice Controls 0.01 cfs @ 7.43 fps)

↑ **3=2nd Orifice** (Controls 0.00 cfs)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden

Hydrograph



Macleay Gas

Type IA 24-hr Salem Half 2 YR Rainfall=1.10"

Prepared by Westech Engineering Inc

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Page 7

Summary for Pond 2P: Macleay Planter

Inflow Area = 0.250 ac, 92.94% Impervious, Inflow Depth = 0.83" for Salem Half 2 YR event
 Inflow = 0.05 cfs @ 7.98 hrs, Volume= 0.017 af
 Outflow = 0.01 cfs @ 18.28 hrs, Volume= 0.017 af, Atten= 86%, Lag= 618.1 min
 Discarded = 0.00 cfs @ 4.05 hrs, Volume= 0.005 af
 Primary = 0.01 cfs @ 18.28 hrs, Volume= 0.012 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 213.92' @ 18.28 hrs Surf.Area= 650 sf Storage= 370 cf

Plug-Flow detention time= 993.8 min calculated for 0.017 af (100% of inflow)
 Center-of-Mass det. time= 995.5 min (1,710.6 - 715.1)

Volume	Invert	Avail.Storage	Storage Description	
#1	212.50'	1,922 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
212.50	650	0.0	0	0
215.50	650	40.0	780	780
216.99	650	0.1	1	781
217.00	0	100.0	3	784
217.50	650	100.0	163	947
219.00	650	100.0	975	1,922

Device	Routing	Invert	Outlet Devices	
#1	Discarded	212.50'	0.050 in/hr Exfiltration over Horizontal area	
#2	Primary	213.00'	0.5" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#3	Primary	216.00'	0.9" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#4	Primary	218.05'	24.0" Horiz. Orifice/Grate	C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 4.05 hrs HW=212.57' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.01 cfs @ 18.28 hrs HW=213.92' (Free Discharge)

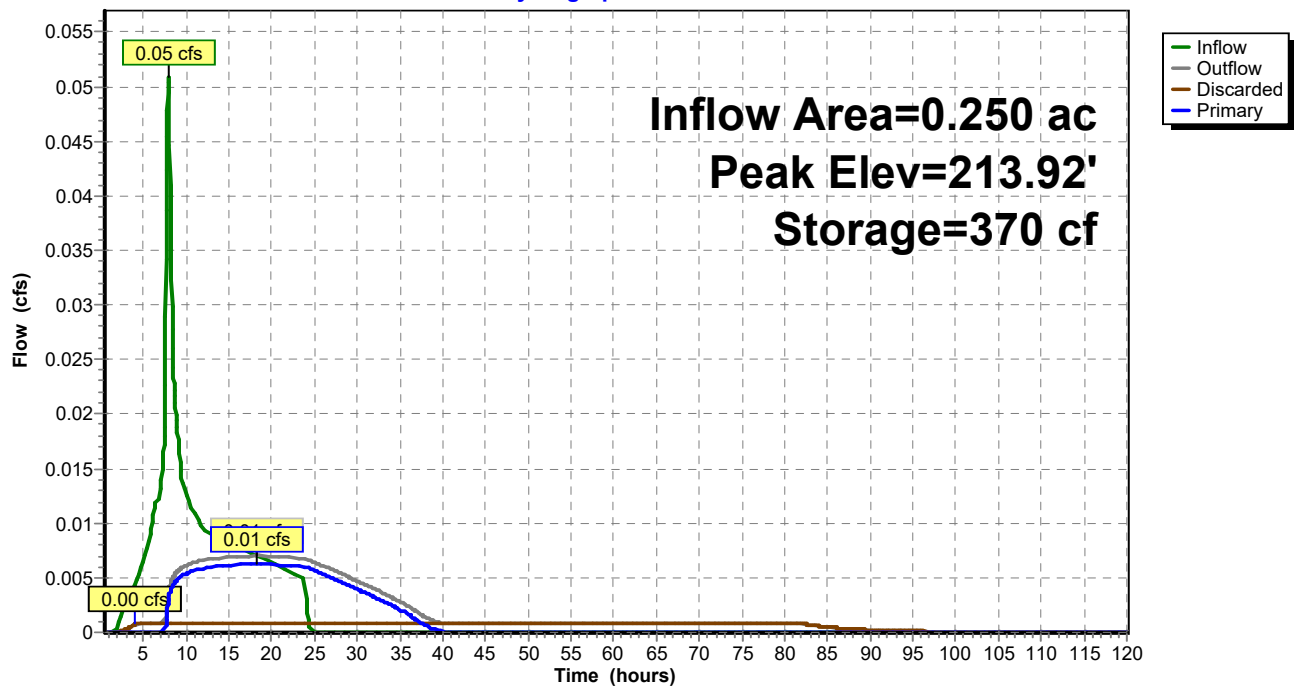
↑ **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 4.58 fps)

↑ **3=Orifice/Grate** (Controls 0.00 cfs)

↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: Macleay Planter

Hydrograph



Macleay Gas

Type IA 24-hr Salem 10 YR Rainfall=3.20"

Prepared by Westech Engineering Inc

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Page 1

Summary for Pond 2P: Macleay Planter

Inflow Area = 0.250 ac, 92.94% Impervious, Inflow Depth = 2.83" for Salem 10 YR event
 Inflow = 0.17 cfs @ 7.98 hrs, Volume= 0.059 af
 Outflow = 0.04 cfs @ 10.00 hrs, Volume= 0.059 af, Atten= 76%, Lag= 121.2 min
 Discarded = 0.00 cfs @ 1.75 hrs, Volume= 0.006 af
 Primary = 0.04 cfs @ 10.00 hrs, Volume= 0.053 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 217.54' @ 10.00 hrs Surf.Area= 650 sf Storage= 975 cf

Plug-Flow detention time= 678.8 min calculated for 0.059 af (100% of inflow)
 Center-of-Mass det. time= 678.7 min (1,355.2 - 676.5)

Volume	Invert	Avail.Storage	Storage Description	
#1	212.50'	1,922 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
212.50	650	0.0	0	0
215.50	650	40.0	780	780
216.99	650	0.1	1	781
217.00	0	100.0	3	784
217.50	650	100.0	163	947
219.00	650	100.0	975	1,922

Device	Routing	Invert	Outlet Devices	
#1	Discarded	212.50'	0.050 in/hr Exfiltration over Horizontal area	
#2	Primary	213.00'	0.5" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#3	Primary	216.00'	0.9" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#4	Primary	218.05'	24.0" Horiz. Orifice/Grate	C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 1.75 hrs HW=212.57' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.04 cfs @ 10.00 hrs HW=217.54' (Free Discharge)

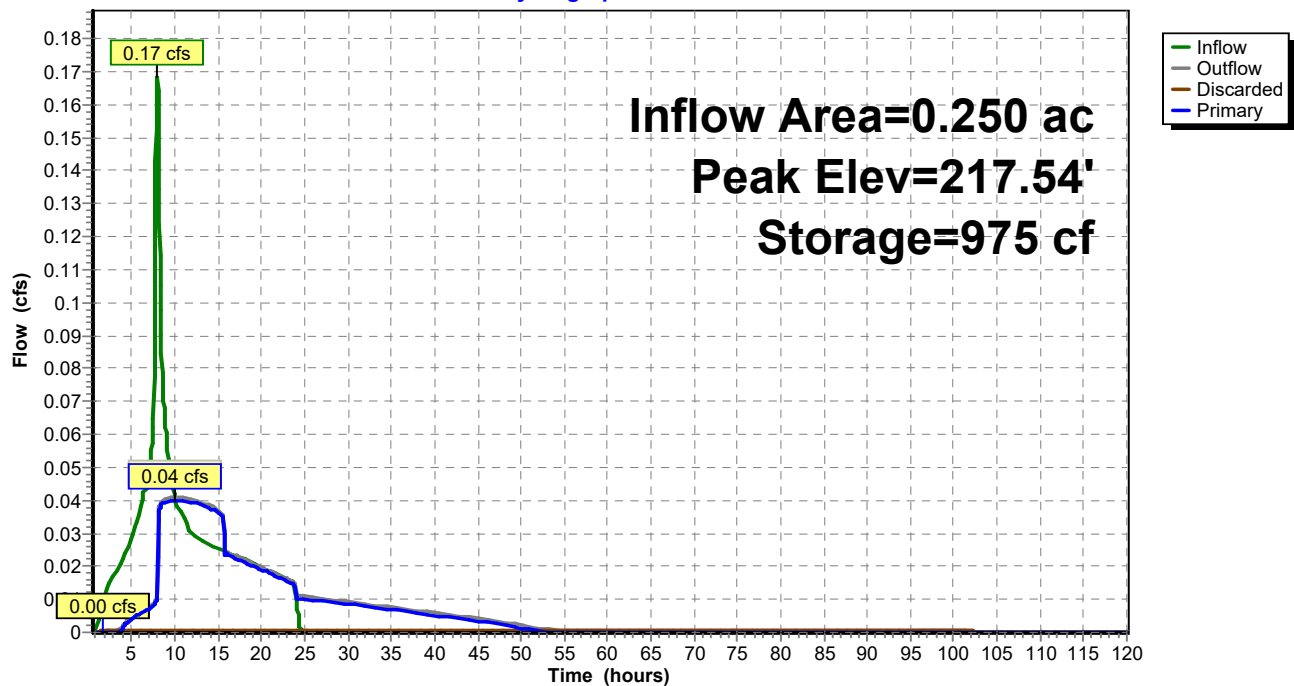
↑ **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 10.24 fps)

↑ **3=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.91 fps)

↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: Macleay Planter

Hydrograph



Macleay Gas

Type IA 24-hr Salem 25 YR Rainfall=3.60"

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Summary for Pond 2P: Macleay Planter

Inflow Area = 0.250 ac, 92.94% Impervious, Inflow Depth = 3.22" for Salem 25 YR event
 Inflow = 0.19 cfs @ 7.98 hrs, Volume= 0.067 af
 Outflow = 0.04 cfs @ 10.27 hrs, Volume= 0.067 af, Atten= 77%, Lag= 137.7 min
 Discarded = 0.00 cfs @ 1.65 hrs, Volume= 0.006 af
 Primary = 0.04 cfs @ 10.27 hrs, Volume= 0.061 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 217.78' @ 10.27 hrs Surf.Area= 650 sf Storage= 1,128 cf

Plug-Flow detention time= 634.0 min calculated for 0.067 af (100% of inflow)
 Center-of-Mass det. time= 633.8 min (1,307.5 - 673.6)

Volume	Invert	Avail.Storage	Storage Description	
#1	212.50'	1,922 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
212.50	650	0.0	0	0
215.50	650	40.0	780	780
216.99	650	0.1	1	781
217.00	0	100.0	3	784
217.50	650	100.0	163	947
219.00	650	100.0	975	1,922

Device	Routing	Invert	Outlet Devices	
#1	Discarded	212.50'	0.050 in/hr Exfiltration over Horizontal area	
#2	Primary	213.00'	0.5" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#3	Primary	216.00'	0.9" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#4	Primary	218.05'	24.0" Horiz. Orifice/Grate	C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 1.65 hrs HW=212.57' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.04 cfs @ 10.27 hrs HW=217.78' (Free Discharge)

↑ **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 10.50 fps)

↑ **3=Orifice/Grate** (Orifice Controls 0.03 cfs @ 6.35 fps)

↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Macleay Gas

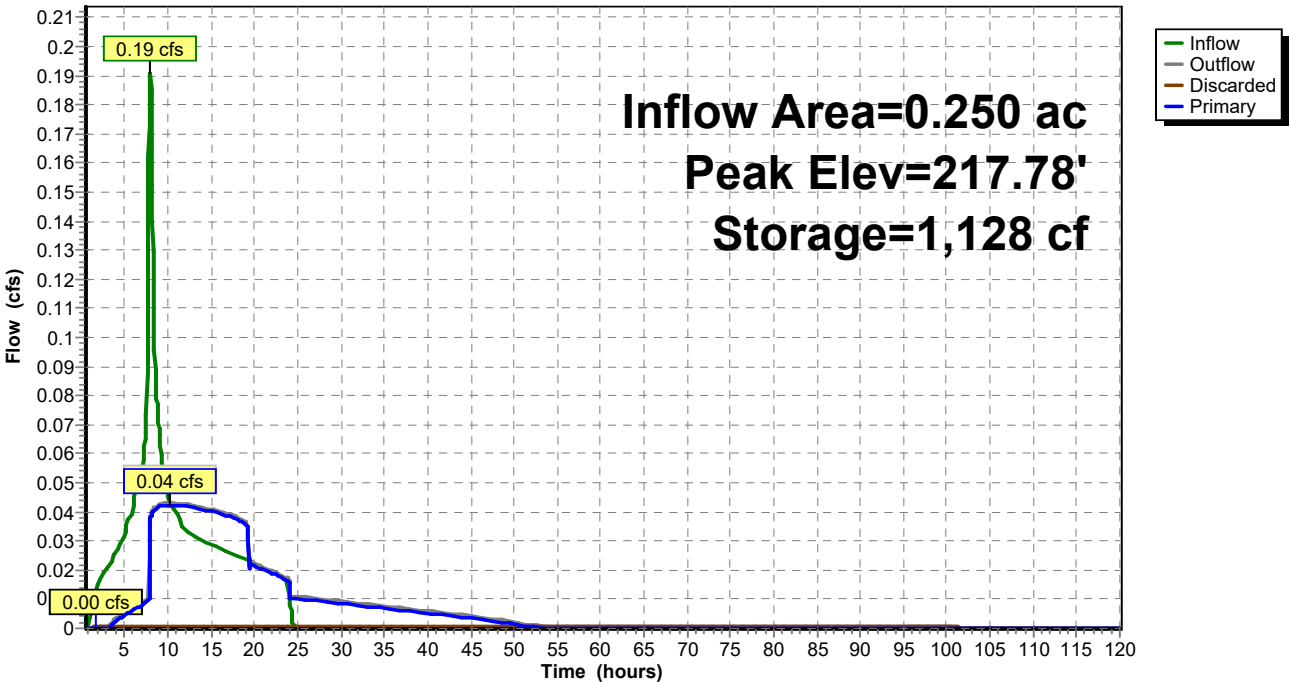
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Type IA 24-hr Salem 25 YR Rainfall=3.60"

Pond 2P: Macleay Planter

Hydrograph



Macleay Gas

Type IA 24-hr Salem 100 YR Rainfall=4.40"

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Page 3

Summary for Pond 2P: Macleay Planter

Inflow Area = 0.250 ac, 92.94% Impervious, Inflow Depth > 4.00" for Salem 100 YR event
 Inflow = 0.24 cfs @ 7.98 hrs, Volume= 0.083 af
 Outflow = 0.09 cfs @ 8.78 hrs, Volume= 0.083 af, Atten= 60%, Lag= 48.2 min
 Discarded = 0.00 cfs @ 1.45 hrs, Volume= 0.006 af
 Primary = 0.09 cfs @ 8.78 hrs, Volume= 0.077 af
 Routed to Link 11L : Dev Rel

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 218.06' @ 8.78 hrs Surf.Area= 650 sf Storage= 1,312 cf

Plug-Flow detention time= 572.8 min calculated for 0.083 af (100% of inflow)
 Center-of-Mass det. time= 572.7 min (1,241.8 - 669.1)

Volume	Invert	Avail.Storage	Storage Description	
#1	212.50'	1,922 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
212.50	650	0.0	0	0
215.50	650	40.0	780	780
216.99	650	0.1	1	781
217.00	0	100.0	3	784
217.50	650	100.0	163	947
219.00	650	100.0	975	1,922

Device	Routing	Invert	Outlet Devices	
#1	Discarded	212.50'	0.050 in/hr Exfiltration over Horizontal area	
#2	Primary	213.00'	0.5" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#3	Primary	216.00'	0.9" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
#4	Primary	218.05'	24.0" Horiz. Orifice/Grate	C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 1.45 hrs HW=212.57' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.07 cfs @ 8.78 hrs HW=218.06' (Free Discharge)

↑ **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 10.81 fps)

↑ **3=Orifice/Grate** (Orifice Controls 0.03 cfs @ 6.85 fps)

↑ **4=Orifice/Grate** (Weir Controls 0.03 cfs @ 0.35 fps)

Macleay Gas

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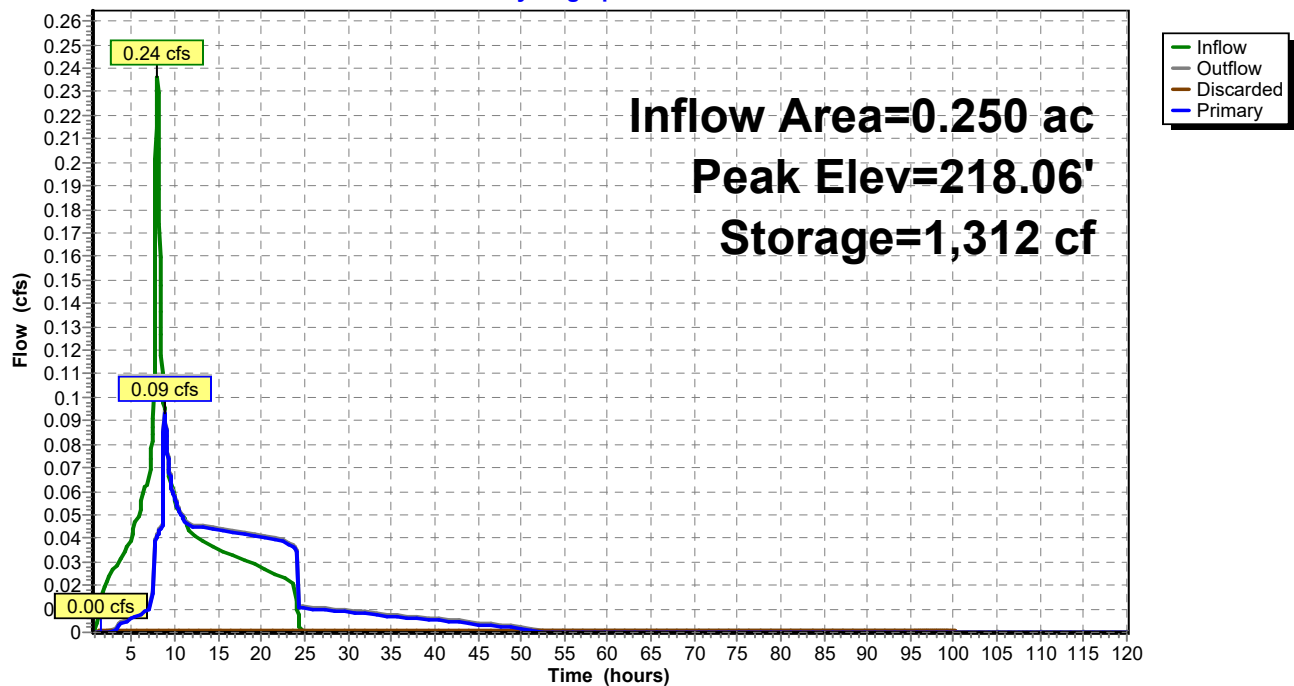
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Type IA 24-hr Salem 100 YR Rainfall=4.40"

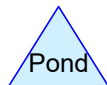
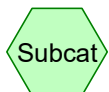
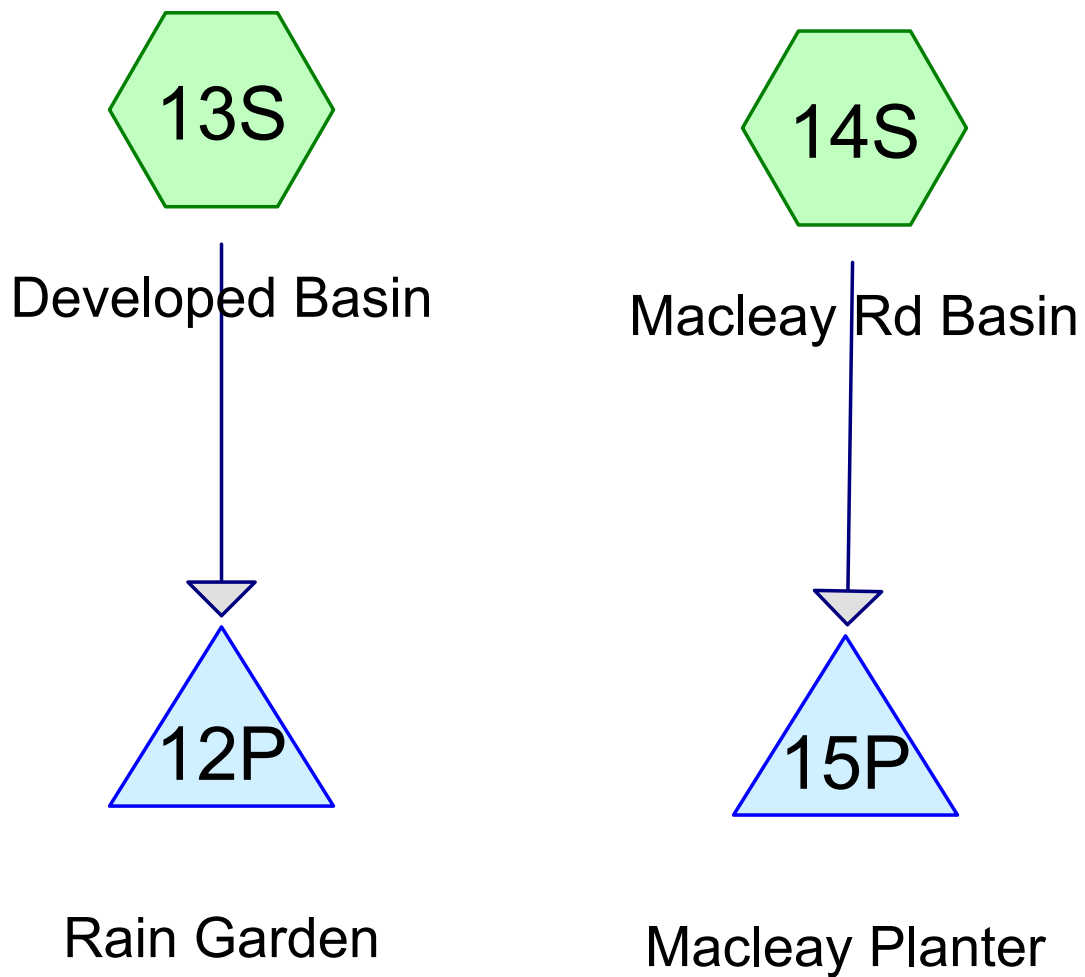
Page 4

Pond 2P: Macleay Planter

Hydrograph



Surface Test



Macleay Gas

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Type IA 24-hr Salem WQ Rainfall=1.38"

Page 2

Summary for Subcatchment 13S: Developed Basin

Runoff = 0.20 cfs @ 7.91 hrs, Volume= 0.065 af, Depth= 1.12"
Routed to Pond 12P : Rain Garden

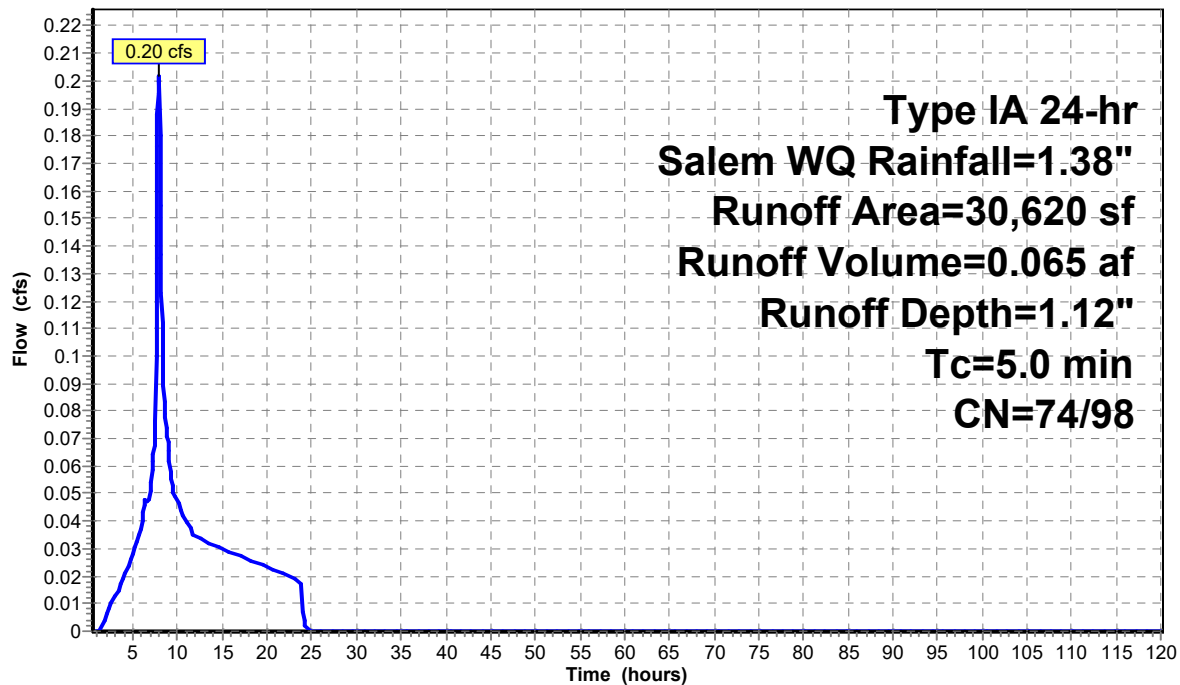
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

Area (sf)	CN	Description
29,300	98	Paved parking, HSG C
1,320	74	>75% Grass cover, Good, HSG C
30,620	97	Weighted Average
1,320		4.31% Pervious Area
29,300		95.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 13S: Developed Basin

Hydrograph



Macleay Gas

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Type IA 24-hr Salem WQ Rainfall=1.38"

Page 3

Summary for Subcatchment 14S: Macleay Rd Basin

Runoff = 0.07 cfs @ 7.91 hrs, Volume= 0.023 af, Depth= 1.09"
Routed to Pond 15P : Macleay Planter

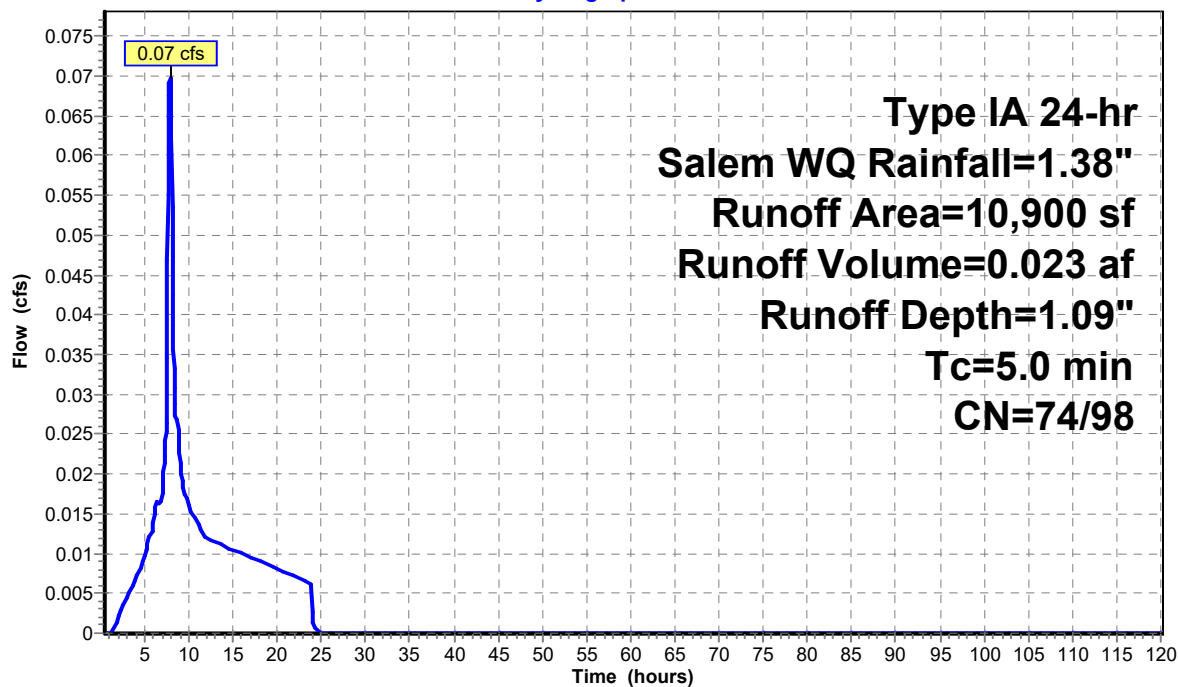
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

Area (sf)	CN	Description
10,130	98	Paved parking, HSG C
770	74	>75% Grass cover, Good, HSG C
10,900	96	Weighted Average
770		7.06% Pervious Area
10,130		92.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 14S: Macleay Rd Basin

Hydrograph



Macleay Gas

Type IA 24-hr Salem WQ Rainfall=1.38"

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Page 4

Summary for Pond 12P: Rain Garden

Inflow Area = 0.703 ac, 95.69% Impervious, Inflow Depth = 1.12" for Salem WQ event
 Inflow = 0.20 cfs @ 7.91 hrs, Volume= 0.065 af
 Outflow = 0.08 cfs @ 8.52 hrs, Volume= 0.065 af, Atten= 61%, Lag= 36.4 min
 Discarded = 0.08 cfs @ 8.52 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 217.51' @ 8.52 hrs Surf.Area= 1,440 sf Storage= 429 cf

Plug-Flow detention time= 52.7 min calculated for 0.065 af (100% of inflow)
 Center-of-Mass det. time= 52.7 min (751.4 - 698.7)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,130 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	200	0.0	0	0
217.50	1,440	100.0	410	410
218.00	1,440	100.0	720	1,130

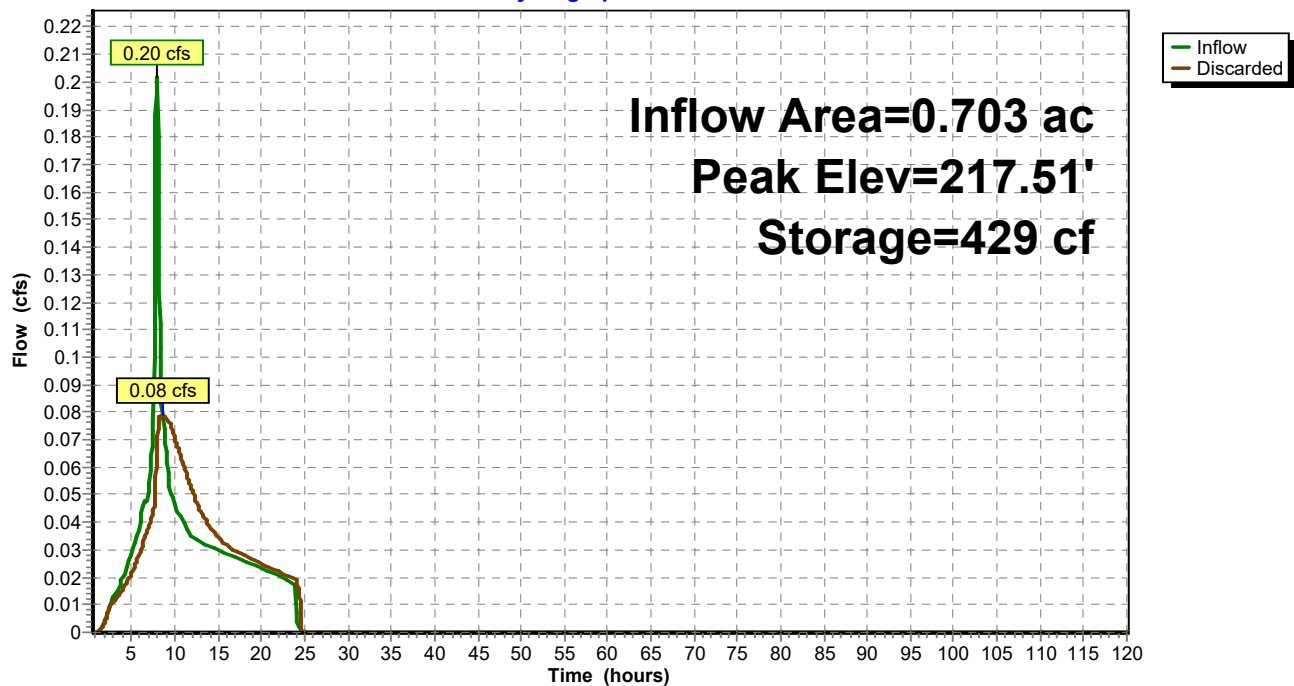
Device	Routing	Invert	Outlet Devices
#1	Discarded	217.00'	2.000 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 215.50'

Discarded OutFlow Max=0.08 cfs @ 8.52 hrs HW=217.51' (Free Discharge)

↑**1=Exfiltration** (Controls 0.08 cfs)

Pond 12P: Rain Garden

Hydrograph



Macleay Gas

Type IA 24-hr Salem WQ Rainfall=1.38"

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Summary for Pond 15P: Macleay Planter

Inflow Area = 0.250 ac, 92.94% Impervious, Inflow Depth = 1.09" for Salem WQ event
 Inflow = 0.07 cfs @ 7.91 hrs, Volume= 0.023 af
 Outflow = 0.05 cfs @ 8.16 hrs, Volume= 0.023 af, Atten= 33%, Lag= 14.9 min
 Discarded = 0.05 cfs @ 8.16 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
 Peak Elev= 217.05' @ 8.16 hrs Surf.Area= 975 sf Storage= 49 cf

Plug-Flow detention time= 8.1 min calculated for 0.023 af (100% of inflow)
 Center-of-Mass det. time= 8.1 min (707.9 - 699.7)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	975	0.0	0	0
217.50	975	100.0	488	488
219.00	975	100.0	1,463	1,950

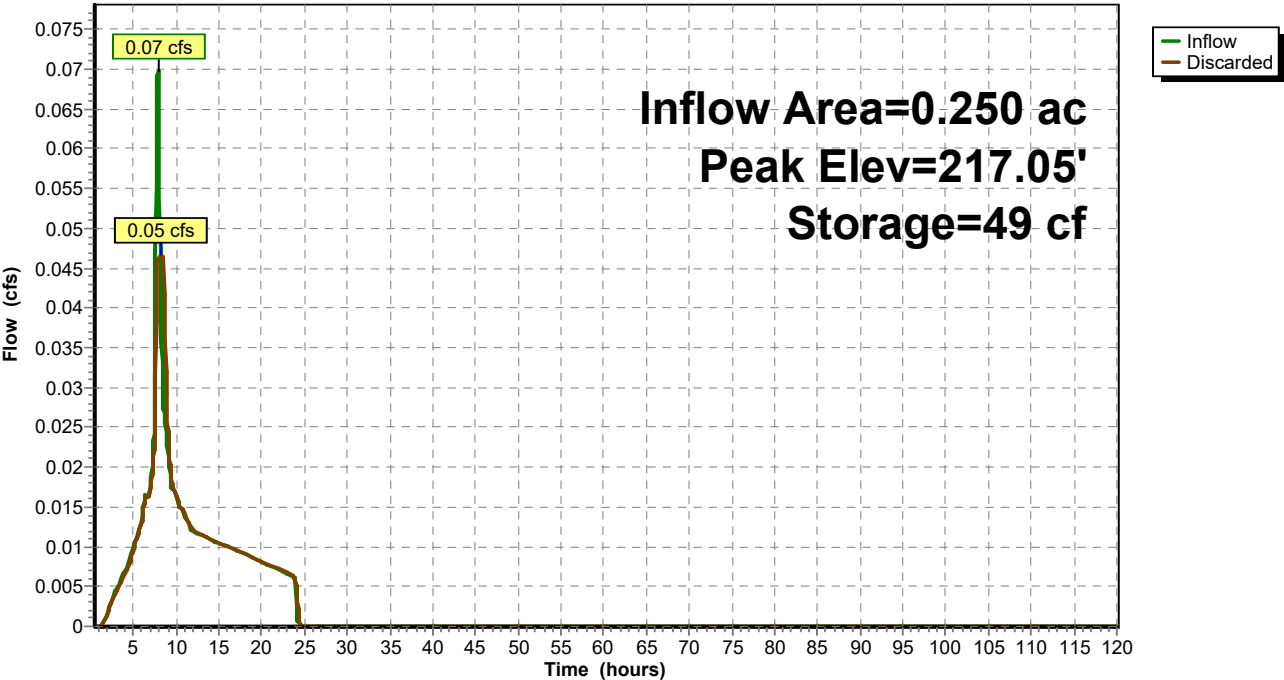
Device	Routing	Invert	Outlet Devices
#1	Discarded	217.00'	2.000 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 215.50'

Discarded OutFlow Max=0.05 cfs @ 8.16 hrs HW=217.05' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.05 cfs)

Pond 15P: Macleay Planter

Hydrograph



TECHNICAL MEMORANDUM:
ANALYSIS OF SALEM RAINFALL

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 Design Storm and Design Intensities
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 To: Steve Downs, P.E., Public Works Chief Utilities Planning Engineer, City of Salem
 From: Krista Reininga, P.E., Brown and Caldwell

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1.0 Introduction

As requested by the City of Salem (City), Brown and Caldwell evaluated existing rainfall data from 23 local gauges and one National Weather Service (NWS) gauge located at the Salem Airport. The objective of the analysis was to identify the most appropriate design storm depth and design storm intensities for the design of stormwater quality facilities in Salem. The analysis was based on water quality design storm requirements specified in the August, 2009 draft Municipal Separate Storm Sewer System (MS4) Phase I National Pollutant Discharge Elimination System (NPDES) permit language provided by the Oregon Department of Environmental Quality (DEQ) as follows:

Require controls designed to capture and treat a minimum of 80 percent of the average annual runoff volume from new or replaced impervious surfaces. Calculations must be based on site runoff estimates and rain event characteristics appropriate for the region or locality.

This Technical Memorandum provides a summary of the local rain gauges and associated data that were reviewed and analyzed for this study. A review of the rain gauges is summarized in Section 2.0. The data from selected rain gauges were then evaluated statistically with respect to both rainfall depths as described in Section 3.0, and rainfall intensities as described in Section 4.0. A summary of results is provided in Section 5.0.

2.0 Review of Rain Gauge Data

Rainfall data from the City and the NWS were evaluated for potential use in this rainfall analysis. This included a review of 15-minute data from the Salem gauges and hourly data from the NWS gauge. Table 1 provides the location, extent of the rainfall data, and average statistics for all the gauges that were analyzed. It is assumed that the data were reviewed by City Staff for quality purposes prior to our review. However, a cursory review of the data resulted in some anomalies that were removed from the record. If data were removed, it is noted in the comments column in Table 1. A map showing the location of the Salem gauges and the NWS gauge is provided in Figure 1.

After an initial review of the data, rain gauges RG21, RG22, RG23, and RG24 were excluded from further analysis because they included only 1 year or less of data. As presented in Table 1, and excluding gauges RG21-RG24, the average annual rainfall ranged from 31.1 inches at gauge RG16 (Marion County Fire Station) to approximately 43.4 inches at gauge RG15 (Geren Island, Stayton). This spread in the data of 12.3 inches may be considered fairly significant given the proximity of the gauges. It should be noted that RG 15 is located just east of Stayton approximately 18 miles east of Salem; and is in the lower foothills of the Cascades. To evaluate whether this difference in the results could be related to gauge locations, the location of the five gauges with the highest average annual rainfall depths were compared to the location of the five gauges with the lowest average annual rainfall depths. These are highlighted on Figure 2 which also includes topography. In general, it appears that the higher rainfall totals are occurring in the southwest portion of the city. The southwest area where rainfall totals are highest corresponds to higher elevations (see Figure 2). The higher rainfall amounts in this area are likely to be at least partially due to the orographic effect of the hills.

Table 1. Rain Gauge Summary

Site ID	Site location	Period of record for complete years ¹	Complete years of records	Average annual rainfall, inches	Comments
RG03	41 st Avenue, NE and Indigo Court, NE	1997-2008	12	33.6	Removed three data points from 2004.
RG04	North River Road Park	1997-2006	10	36.3	Removed one data point from 2006, 2007 data set removed due to questionable data. 2007 and 2008 data not provided.
RG05	Kaiser Permanente, Lancaster Avenue NE	1997-2008	12	36.2	
RG06	Mountain View Reservoir, West Salem	1997-2008	12	35.6	
RG07	Salem City Hall, 555 Liberty Street SE	1997-2008	12	37.2	Removed one data point from 2001 and 2007.
RG08	Battle Creek Pump Station	1997-2008	9	42.5	Missing data from 1999 and 2000, 2001 data set removed due to questionable data.
RG09	Cordon Road Pump Station	1997-2008	12	36.1	
RG10	Fire Station No. 7, 4730 Liberty Road, S	1998-2008	11	41.9	
RG11	Skyline Road Reservoir, 2365 Davis Road S	1997-2006	9	39.5	Removed one data point from 2002, removed two data points from 2003 and 2004, 1999 data set removed due to not a full data set. 2007 and 2008 data not provided.
RG12	2575 Commercial Street, SE	2001-2008	8	39.1	
RG13	1690 Edgewater NW, West Salem	2001-2008	8	37.5	
RG14	Turner Fire Station, 7605 Third Street	2002-2008	7	43.2	
RG15	Geren Island, Stayton	2002-2008	6	43.4	
RG16	Marion County Fire Station, Keizer	2005-2008	4	31.1	
RG17	Sprague High School, 2373 Kuebler Road S	2002-2008	6	43.0	
RG18	North Salem High School, 765 14th Street, NE	2003-2008	6	34.8	
RG19	Halton Cat Rental, 3850 Turner Road, NE	2006-2008	3	31.5	
RG2	City Shops, 1410 20 th Street SE	1997-2008	12	36.8	
RG20	City of Keizer WPS, 641 Chemawa Road, N	2006-2008	3	37.5	
RG21	North Keizer Elementary School, 5600 McClure Street, N	2008	1	25.04	
RG22	Illahee Country Club Maintenance Shed	2008	1	28.3	
RG23	Labish Sewer Pump Station	--	--	No full year of data	
RG24	Deer Park Water Pump Station	--	--	No full year of data	
SLE	Salem Airport, NWS	1949-2008	60	40.0	

¹Only complete years were used to estimate total rainfall and average annual rainfall. Partial years were removed from the record.

Table 2. Comparison of Rain Gauge Data for Common Period of Record

Site ID	Site name/location	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average for period from 2003 to 2008 ¹
RG2	City Shops, 1410 20 th SE	45.52	54.12	48.64	32.29	35.32	40.23	43.43	25	40.98	48.59	33.3	30.68	37.00
RG3	Jan-Ree 41 st and Indigo, NE	32.83	43.96	38.2	28.53	24.36	35.58	41.59	25.12	35.95	41.74	29.34	26.12	33.31
RG4	North River Road Park	39.21	48.49	40.95	28.19	26.99	33.41	38.31	25.21	37.01	44.92			
RG5	Kaiser Permanente, Lancaster Avenue NE	42.12	45	42.14	30.26	31.12	35.77	40.34	27.45	38.66	44.75	29.93	26.85	34.66
RG6	Mountain View Reservoir, West Salem	37.39	47.09	43.47	28.15	30.31	36.57	39.65	25.17	37.44	44.02	30.91	27.17	34.06
RG7	City Hall, 555 Liberty Street SE	34.75	50.48	45.03	30.76	32.09	37.09	40.81	26.54	41.76	46.54	31.83	29.12	36.10
RG8	Battle Creek Pump Station	48.79	34.5				43.84	49.63	32.44	43.28	52.22	36.4	41.05	42.50
RG9	Cordon Road Pump Station	33.33	51.97	44.37	32.77	31.84	39.04	43.04	28.37	22.29	45.59	30.96	29.63	33.31
RG10	Fire Station No. 7, 4730 Liberty Road, S		59.36	52.26	35.33	35.07	41.49	43.39	30.39	41.85	50.09	35.68	36.23	39.61
RG11	Skyline Road Reservoir, 2365 Davis Road S	39.48	34.8		35.48	37.76	42.93	51.43	32.57	47.4	33.73			
RG12	2575 Commercial Street, SE					36.39	39.89	43.01	29.45	43.02	55.67	33.56	31.74	39.41
RG13	1690 Edgewater NW, West Salem					29.43	37.54	43.02	26.61	41.69	49.34	31.95	29.65	37.04
RG14	Turner Fire Station, 7605 Third Street						42.33	44.69	29.78	35.96	52.37	35.6	40.02	39.74
RG15	Geren Island, Stayton							51.5	31.42	49.18	48.43	39.77	40.24	43.42
RG16	Marion County Fire Station, Keizer									28.4	40.01	28.94	26.92	
RG17	Sprague High School, 2373 Kuebler Road S							53.02	33.27	45.77	52.81	37.4	35.95	43.04
RG18	North Salem High School, 765 14 th Street, NE							41.73	26.01	39.58	44.99	29.42	27.09	34.80
RG19	Halton Cat Rental, 3850 Turner Road, NE										34.03	29.22	31.25	Max = 43.42
RG20	City of Keizer WPS, 641 Chemawa Road, N										50.31	32.29	29.98	Min = 33.31
RG21	North Keizer Elementary School, 5600 McClure St. N												25.04	Spread = 10.11
RG22	Illahee Country Club Maintenance Shed												28.34	Average = 37.71
RG23	Labish Sewer Pump Station													
RG24	Deer Park Water Pump Station													
SLE	Salem Airport, NWS	44.69	50.62	46.57	29.15	33.47	37.78	41.14	31.51	38.49	49.61	36	29.29	37.67

¹ Only shaded cells in the table were used to compute the maximum, minimum, spread, and average for the average annual rainfall depths.

Figure 2. Rainfall Totals by Elevation

Given the consistency in rain gauge equipment and maintenance procedures, it is likely that there is a real difference in rainfall totals over the Salem area and that these differences are partially due to orographic affects. However, a detailed investigation regarding equipment used, placement of the gauges, gauge calibration, gauge maintenance, and quality assurance/quality control of the data would be needed to more fully understand the reasons for the differences in the gauge data and to ensure that the gauges are measuring rainfall accurately.

Given the variation in total annual rainfall estimates, six (6) gauges were selected as representative of Salem's rainfall and were used for conducting the analyses. These include RG2, RG3, RG6, RG8, RG9, and the NWS Salem Airport gauge. These gauges were selected to represent both the low end and the high end of rainfall totals in Salem. To start out, each selected gauge was analyzed with respect to statistics regarding individual storm events and their associated rainfall depths. The results of these analyses are provided in the following section.

Another analysis was conducted to evaluate whether the difference in results could be due to the rain gauges having different periods of record, and to compare rainfall results for a consistent period of record. For a large portion of the gauges (i.e., 15 gauges), a common 6-year period of record was available for the period from 2003 through 2008. Table 2 lists the results of comparing 15 gauges for this common time period with respect to average annual rainfall depths. When comparing gauges for this consistent period of record, the results for average annual rainfall ranged from 33.31 inches to 43.42 inches, a spread of 10.11 inches. Comparing data for a consistent period of record only reduced the spread in the data by just over 2 inches.

3.0 Analysis of Storm Event Rainfall Depths

Design rainfall depths are important when it comes to sizing flood control and/or water quality facilities in terms of runoff volumes required for storage and/or treatment. To conduct an analysis of design event depths, the six selected representative rain gauges with long-term rainfall data were analyzed using a MATLAB script developed by Brown and Caldwell. The MATLAB script was developed to process continuous rainfall data and provide results for individual storm event rainfall depths and durations.

The long-term rainfall data were analyzed using the Brown and Caldwell MATLAB script for three different calendar periods: summer, winter, and the entire calendar year (summer was selected by Salem to be the time period between May 1 and October 31 and winter was selected to be the time between November 1 and April 30). Results from the MATLAB script include a discrete list of rainfall events and their associated rainfall event depths for the entire record. An analysis of the results from the MATLAB script was conducted to estimate the design storm depth that would represent 80 percent capture of runoff. The following steps were performed for the six selected gauges in order to conduct the analysis:

1. Using a Microsoft Excel® spreadsheet, each rainfall event (from the MATLAB script results) was listed in a column and only complete years in the record were included.
2. To produce a curve that would show design storm depth (x-axis) plotted against percentage of runoff treated (y-axis), design depths in increments of 0.2 inch were analyzed up to 2.6 inches. (see example spreadsheet format in Table 3)
3. For each potential design depth, each runoff event in the list was compared to the design depth to determine the amount of runoff that would be treated. For example, in evaluating the design depth of 0.2 inch, if a rainfall event in the list was 0.1 inch, then 0.1 inch would be treated. If a rainfall event in the list was 0.4 inch, then only 0.2 inch of that event would be treated. The spreadsheet format shown in Table 3 was used for evaluating runoff events with respect to design depths.

4. The total amount of runoff treated for each potential design storm depth was calculated (see individual columns under each potential design storm depth in Table 3).
5. The total amount of runoff in the record was calculated (for the example above, this was 507.06 inches).
6. The values calculated in step 4 were each divided by the value calculated in step 5 to obtain an estimate of the percent of runoff treated for each of the potential design storm depths (last row in Table 3).
7. A curve of the results was plotted to show the estimate of the percent of runoff treated for each design event.

Table 3. Spreadsheet Format Used for Evaluation of Runoff Events

DATE	HOUR	Duration (hours)	Runoff (inches)	0.2	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.2	2.4
1/7/1991	12	19	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
1/11/1991	9	24	0.87	0.20	0.40	0.60	0.80	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
1/14/1991	5	8	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
1/14/1991	21	17	0.6	0.20	0.40	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
1/31/1991	1	19	0.43	0.20	0.40	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
11/12/2007	4	10	0.44	0.20	0.40	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
11/15/2007	13	28	0.57	0.20	0.40	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
11/17/2007	2	10	0.44	0.20	0.40	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
11/18/2007	6	15	0.65	0.20	0.40	0.60	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
11/19/2007	5	16	0.33	0.20	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
		20.38	507.06	Total:	176.91	282.02	345.6	387.1	415.45	436.94	453.42	466.39	476.07	482.18	486.7
					34.89%	55.62%	68.16%	76.34%	81.93%	86.17%	89.42%	91.98%	93.89%	95.09%	95.98%
															96.64%

When running the MATLAB script to evaluate storm event rainfall depths, two input parameters are required: 1) the depth of rainfall that should be removed from the beginning of each event, given that a portion of the initial rainfall is unlikely to produce measurable runoff; and 2) a minimum inter-event time (i.e., dry period) must be specified for the MATLAB script to divide the rainfall data into discrete events. Prior to selecting these input parameters, a sensitivity analysis was conducted for three of the gauges (RG 3, RG 8, Airport). The sensitivity analysis included looking at the use of both a 6-hour and 12-hour inter-event time and it included looking at both 0.05- and 0.10-inch minimum rainfall depths to produce runoff. The selection of these numbers was somewhat subjective, based on best professional judgment, and what has been most commonly used for similar rainfall analyses in this region. The results of the sensitivity analysis are provided in Table 4, and summarized as follows:

- *Inter-event time.* Using a 12-hour inter-event time as opposed to a 6-hour inter-event time resulted in a larger design storm by approximately 0.45 inches regardless of the minimum amount of rainfall removed from the beginning of each event.
- *Amount of rainfall removed from the beginning of each event.* Results were only minimally sensitive to this input parameter. Removing 0.10 inch of rainfall from the beginning of each storm as opposed to removing 0.05 inch resulted in a larger design storm by approximately 0.04 inch regardless of the inter-event time used.

Table 4. Summary of Initial Sensitivity Analysis for Rainfall Event Representing 80 percent of Average Annual Runoff

Rain gauge	6-hour inter-event		12-hour inter-event	
	0.05 in removed, inches	0.10 in removed, inches	0.05 in removed, inches	0.10 in removed, inches
RG 3	0.82	0.86	1.25	1.28
RG 8	1.14	1.17	1.62	1.66
Airport	0.99	1.04	1.42	1.47
Average	0.98	1.02	1.43	1.47

A summary of the design storm event average durations from each of the sensitivity runs is provided in Table 5.

Table 5. Summary of Average Event Durations

Rain gauge	6-hour inter-event, hours	12-hour inter-event, hours
RG3	9.7	19.3
RG8	10.7	20.3
Airport	10.5	19.3

Based on the results of the sensitivity analysis, a decision was made by City and consultant staff to proceed with the selection of a design storm using a 12-hour inter-event time and 0.05 inch of rainfall removed from the beginning of each event. The basis for the selection of these input parameters was as follows:

- Given the back-to-back nature of rainfall events in the Willamette Valley, the ground is often saturated at the beginning of a new event, and based on staff observations, runoff under these conditions may begin to occur at rainfall amounts less than 0.10 inch.
- Developers are used to design events that are based on 24-hour durations. As listed in Table 5, use of a 12-hour inter-event time more closely represents a 24-hour duration design event.
- Given the back-to-back nature of rainfall events in the Willamette Valley, a 6-hour dry period could likely represent a lull in a single event. In addition, use of a 12-hour inter-event time results in a more conservative event when designing facilities to address water quality, and hence may provide for some factor of safety.

Once the input parameters were selected, the MATLAB scripts were run and the data were analyzed to identify the design depths representing capture of 80 percent of the average annual runoff for the six selected gauges, as listed in Table 6. Figures showing the design events representing percent capture of runoff for the selected gauges are provided in Appendix A.

Table 6. Estimated Total Rainfall Event Depth Representing 80 percent Capture of the Runoff¹

Rain gauge	Full year, inches	Summer, inches	Winter, inches
	January 1 to December 31	May 1 to October 31	November 1 to April 30
15-minute intervals, 12-hour inter-event period, 0.05 inch removed from the beginning of each event			
RG 2	1.46	0.77	1.62
RG 3	1.23	0.69	1.36
RG 6	1.26	0.67	1.42
RG 8	1.60	0.99	1.77
RG 9	1.33	0.66	1.49
Airport ²	1.42	0.85	1.58
Average	1.38	0.77	1.58

¹ MATLAB script rainfall event depth results are associated with events of varying durations.

² Only 60-minute interval data were available for the airport gauge.

In terms of how these results compare to other design storms regionally, two cities were found to express their water quality design storm in terms of 80 percent capture of rainfall-runoff (Eugene and Gresham). Most cities either reference another local manual such as Portland's or Clean Water Services or specify a water quality design storm that is a percentage of the 2-year recurrence interval storm. Examples of water quality design storms are as follows:

- Water Quality Design Storms Based on 80 percent Capture of Rainfall-Runoff
 - Eugene = 1.4 inches over 24 hours (the analysis was based on a 6-hour inter-event time)
 - Gresham = 1.2 inches over 24 hours (the analysis was based on a 12-hour inter-event time)
- Other Water Quality Design Storms
 - Portland = 0.83 inch over 24 hours (given a design ratio of 2 for the volume of the basin divided by the volume of runoff generated by the design storm – V_b/V_r ratio). This storm is intended to represent 90 percent capture.

4.0 Summary of Intensity Analysis

This section includes a summary of rainfall intensities based on capture of 80 percent of the average annual runoff. In addition, an analysis of the difference between 15-minute and hourly intensities is discussed.

4.1 Estimated Design Intensities Based on 80 Percent Capture of Runoff

Sizing of swales and other flow-through type stormwater treatment and/or conveyance facilities is generally based on the use of rainfall intensities. Hourly design intensities for the long-term rainfall data from the six selected representative gauges were analyzed and evaluated with respect to the capture of 80 percent of the average annual runoff.

This analysis was conducted for both online and offline type facilities. Online facilities do not bypass flows in exceedance of the water quality design flow rate; therefore, no treatment is assumed to occur when rainfall intensities exceed the design storm. For offline facilities, flows that exceed the water quality design flow rate are bypassed around the facility and the portion of runoff from all storm events that is less than or equal to the water quality design intensity is treated. Hourly intensities were analyzed in spreadsheets and compared to potential design intensities for both online and offline type facilities. Table 7 provides the results of the analysis. Appendix B includes figures for each of the six selected gauges showing percent capture based on

intensity for both online and offline type facilities. Table 7 demonstrates that higher design intensity would be required for online rather than for offline facilities to treat 80 percent of the average annual runoff volume. The average calendar year design intensity that would be consistent with an 80 percent capture of the annual precipitation is estimated to be 0.17 inch per hour for online facilities and 0.10 inch per hour for offline facilities.

Table 7. Design Intensity Based on Capture of 80 percent of the Runoff for Online and Offline Facilities

Rain gauge	Full year, inches per hour		Summer, inches per hour		Winter, inches per hour	
	January 1 to December 31		May 1 to October 31		November 1 to April 30	
	Online	Offline	Online	Offline	Online	Offline
15-Minute intervals, 12-hour inter-event period, 0.05 inches removed from the beginning of each event						
RG 2 ¹	0.18	0.10	0.23	0.12	0.17	0.10
RG 3 ¹	0.16	0.10	0.25	0.13	0.15	0.09
RG 6 ¹	0.16	0.10	0.20	0.11	0.16	0.09
RG 8 ¹	0.20	0.11	0.25	0.14	0.18	0.10
RG 9 ¹	0.17	0.10	0.22	0.12	0.16	0.10
Airport	0.13	0.07	0.14	0.08	0.13	0.07
Average	0.17	0.10	0.22	0.12	0.16	0.09

¹ Values are based on an analysis of 15-minute intensities. Results were multiplied by 4 to represent hourly intensities.

In terms of how these results compare to other design intensities regionally, two cities were found to express their water quality design intensities in terms of 80 percent capture of rainfall-runoff (Eugene and Gresham). Examples of water quality design intensities are as follows:

- Water Quality Design Intensities Based on 80 percent Capture of Rainfall-Runoff:
 - Eugene = Online facilities – 0.22 inches per hour
Offline facilities – 0.13 inches per hour (the analysis was based on a 6-hour inter-event time)
 - Gresham = Online facilities – 0.20 inches per hour
Offline facilities – 0.11 inches per hour (the analysis was based on a 12-hour inter-event time)
- Other Water Quality Design Intensities:
 - Portland = Design intensities are based on time of concentration as follows:
 - 5 min = 0.19 inch per hour
 - 10 min = 0.16 inch per hour
 - 20 min = 0.13 inch per hour

The Portland manual states that these design intensities represent capture of 90 percent of average annual runoff.

- Clean Water Services = 0.09 inch per hour

Note: in a recent rainfall analysis for Clean Water Services, the calendar year design intensities representing 80 percent capture of average annual runoff were 0.14 inch per hour for online facilities and 0.08 inch per hour for offline facilities.

4.2 Comparison of 15-Minute to Hourly Rainfall Intensities

There has been some debate in recent years as to whether hourly rainfall data may have an impact on peak design intensities given that hourly data are averaging, and hence dampening the effects of some of the more intense rainfall that may be occurring within smaller time increments. In the midwest and eastern portions of the Country, this is considered to be an issue given the short and very intense bursts of rain that can occur in a 15-minute or 30-minute period. In the pacific-northwest, rainfall patterns are considered to be more drawn out and have fairly consistent incremental intensities. However, a published study could not be located that assesses rainfall intensities in Oregon to evaluate and document the difference between 15-minute and hourly intensity rainfall data. Given that 15-minute rainfall intensities are recorded in Salem, an analysis was conducted for one example gauge (Rain Gauge 2) to compare results. A summary of the comparison is provided in Table 8.

Table 8. Comparison of 15-minute and 60-minute Rainfall Intensities

Rain gauge	Hourly Intensity Representing 80% Capture of Rainfall		Percent increase using 15 minute data	15-minute maximum, inches per hour	60-minute maximum, inches per hour	Percent increase using 15 minute data
	(based on 15 minute data)	(based on 1-hour data)				
RG 2 Online	0.17	0.14	21%	1.88	0.64	194%
RG 2 Offline	0.10	0.07	43%			

As presented in Table 8, the design intensity representing 80% capture of rainfall is greater based on 15-minute data over 1-hour data. We recommend the City use the hourly intensities based on this 15-minute data to provide a more conservative approach to intensity based design. .

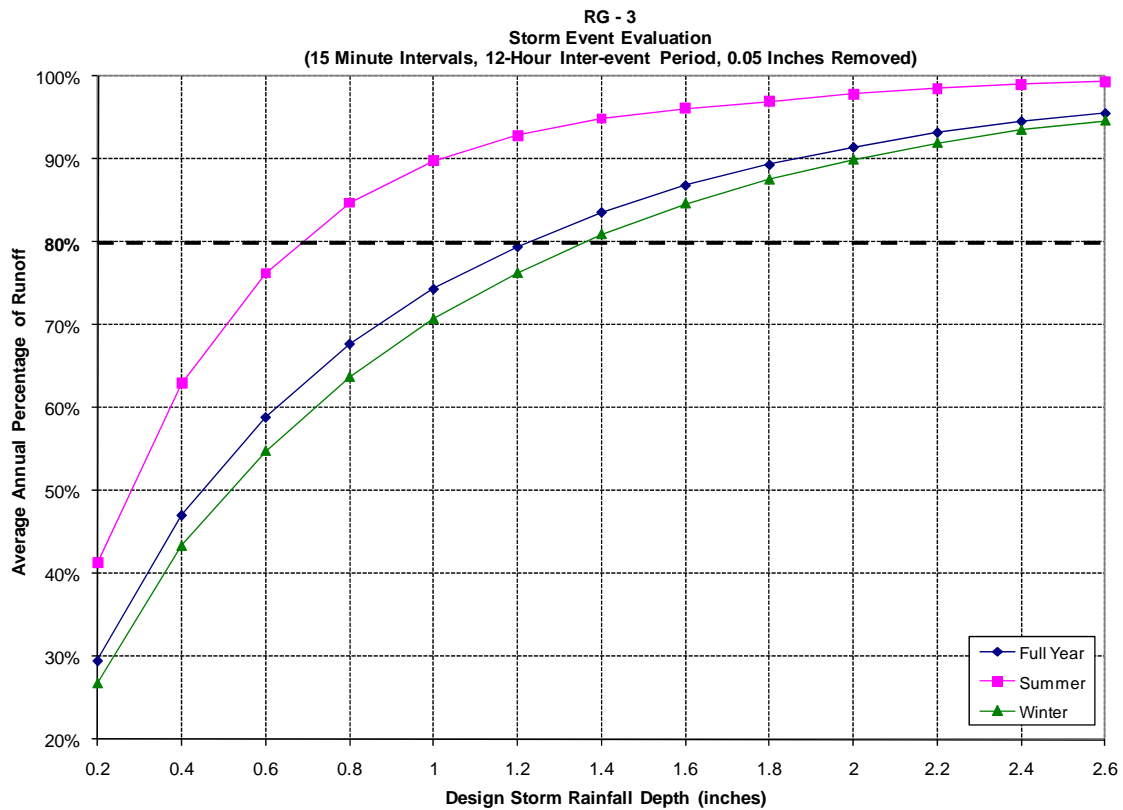
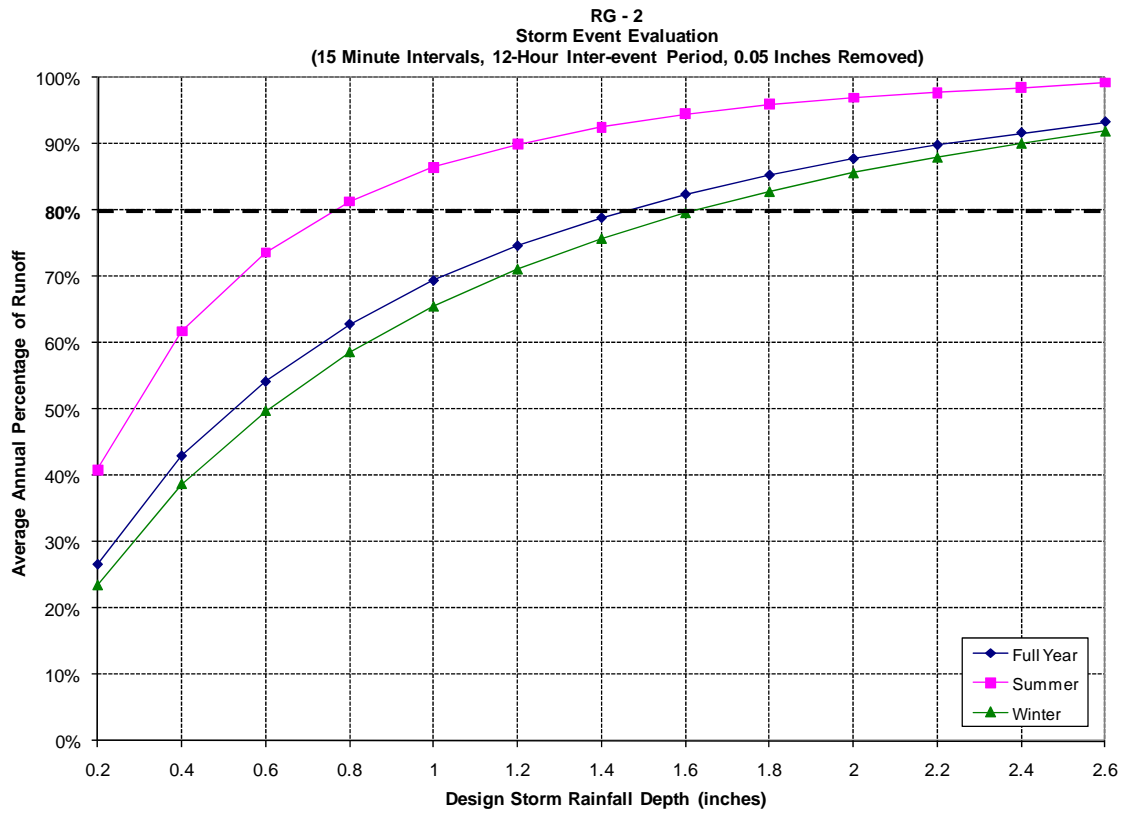
5.0 Summary and Conclusions

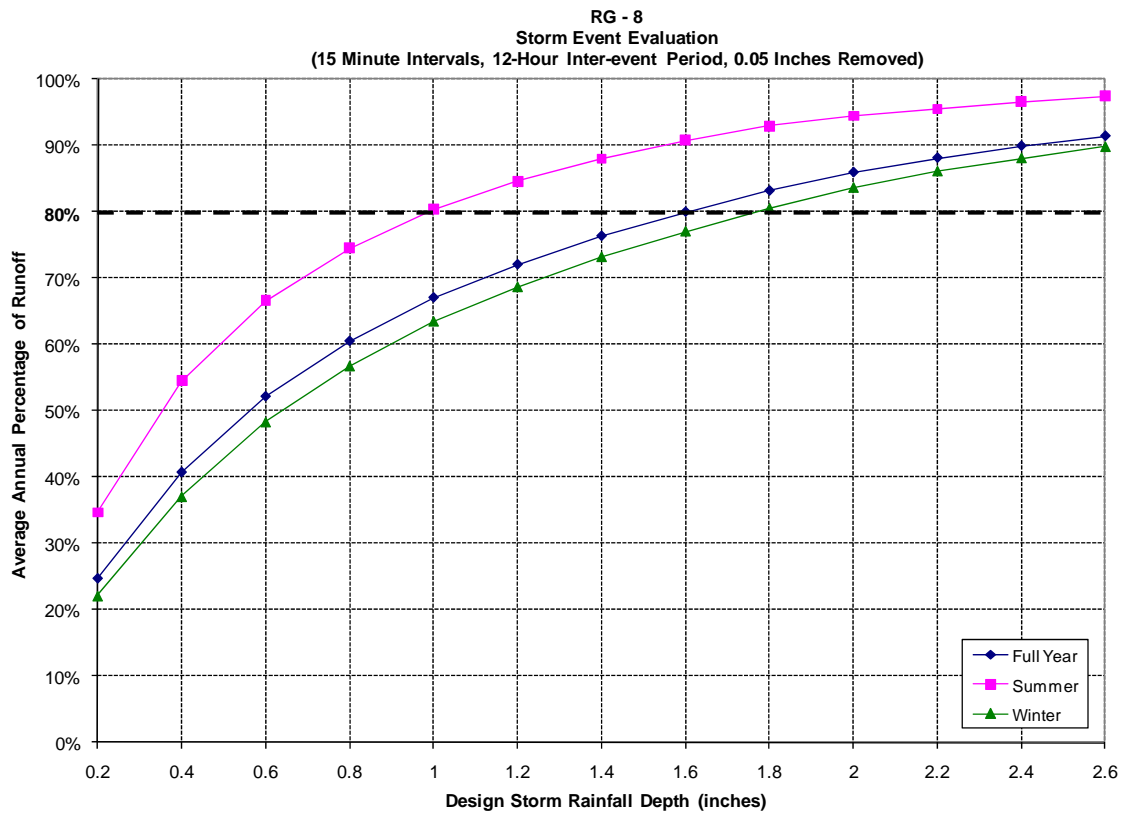
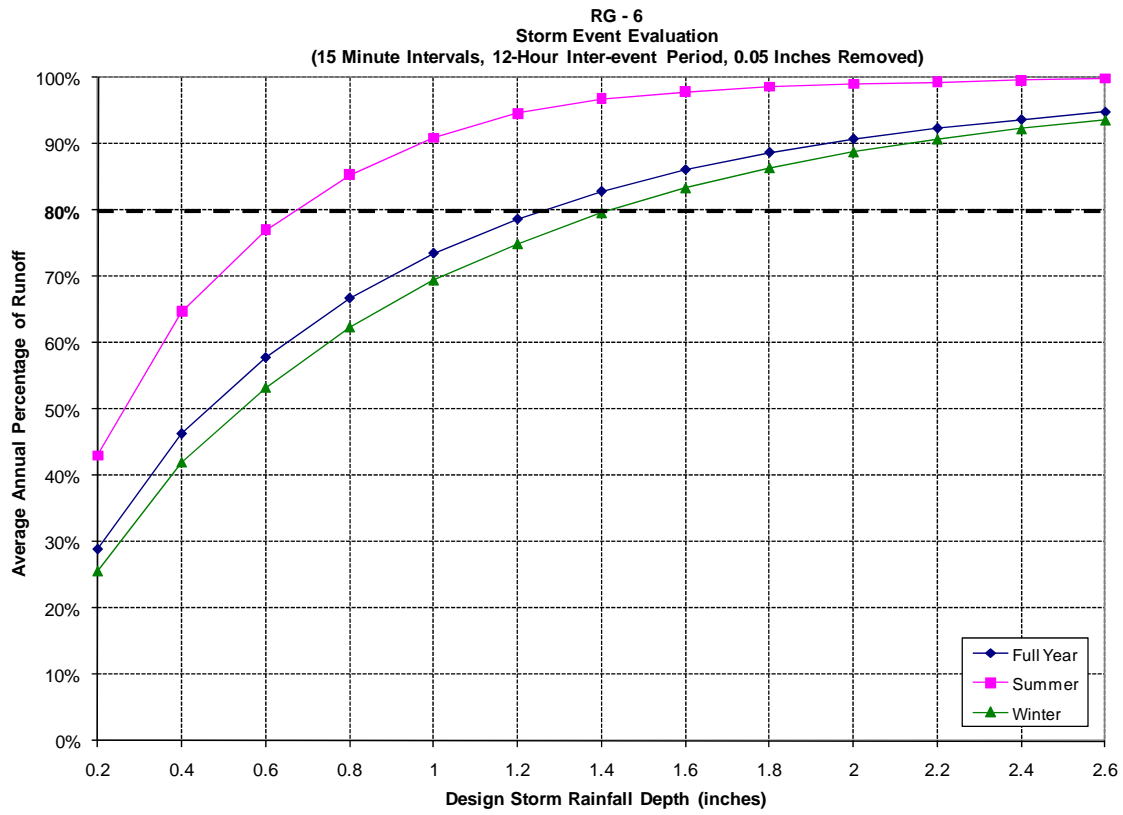
- *Rainfall Data.* In summary, data for total annual rainfall from Salem gauges are fairly wide ranging (approximately 10 inches). Data investigations show that the magnitude of these differences may be expected given the topography and the geographic distribution of the gauges.
- *Design Depths.* When analyzing the six selected representative rain gauges with respect to individual storm events, the estimated average design depth for the calendar year representing 80 percent of the average annual runoff was 1.38 inches, as listed in Table 9. Given some differences in analytical methods, this is comparable to regional design events that were selected by other municipalities (ranging from 1.20 inches to 1.66 inches).
- *Design Intensities.* When analyzing the six selected representative rain gauges with respect to rainfall intensities, the design intensities for the calendar year representing 80 percent of the average annual runoff were 0.17 inch per hour for online facilities and 0.10 inch per hour for offline facilities (Table 9). These design intensities were also comparable to regional design intensities selected by other municipalities ranging from 0.09 inch per hour to 0.22 inch per hour.

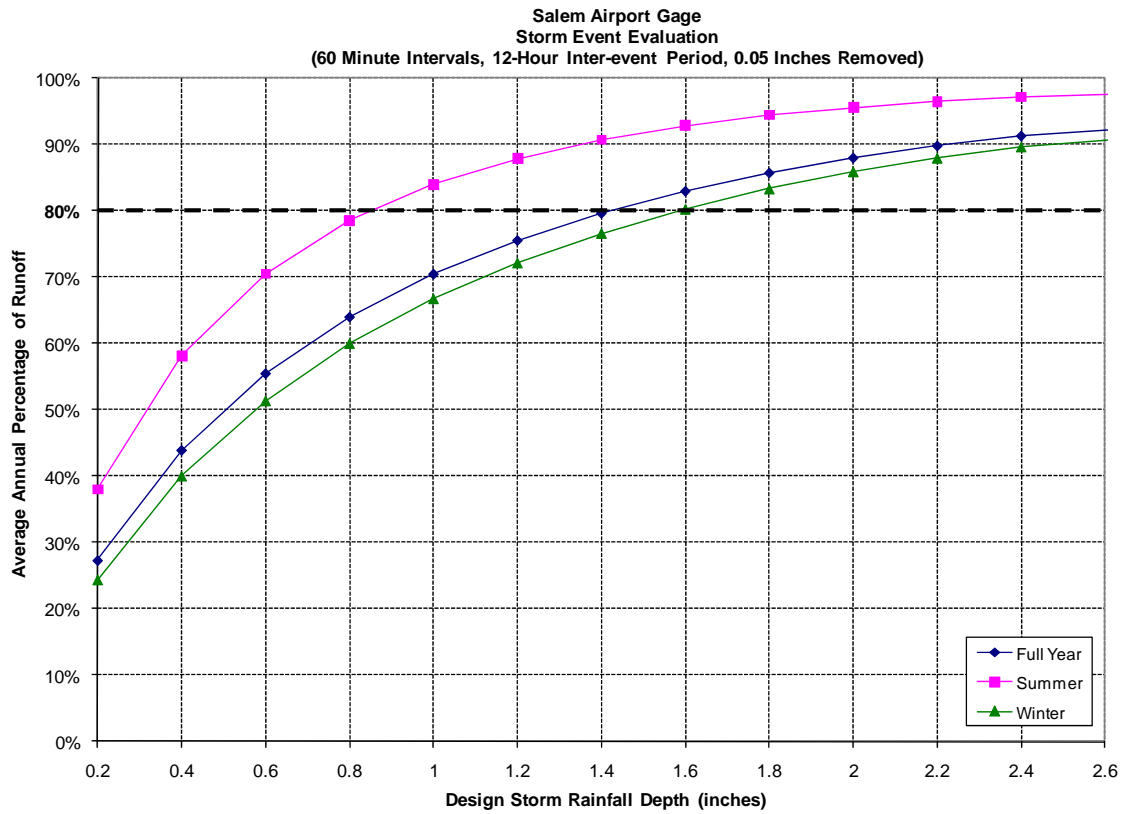
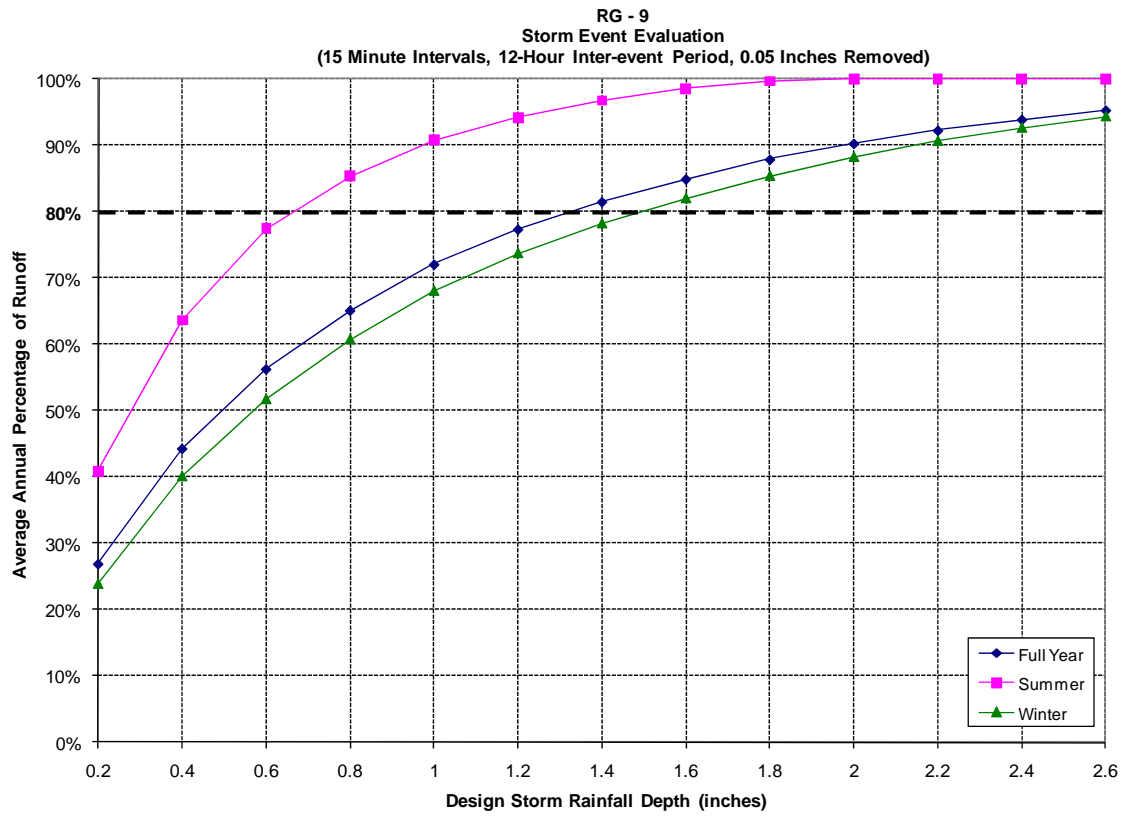
Table 9. Summary of Recommended Design Events and Intensities			
Period	Design event/intensities representing 80 percent average annual runoff		
	Storage type facility, inches	Online flow through type facility, inch per hour	Offline flow through type facility, inch per hour
Summer	0.77	0.22	0.12
Winter	1.58	0.16	0.09
Calendar	1.38	0.17	0.10

APPENDIX A

Graphs Showing Design Depths Based on Percent Capture of Runoff



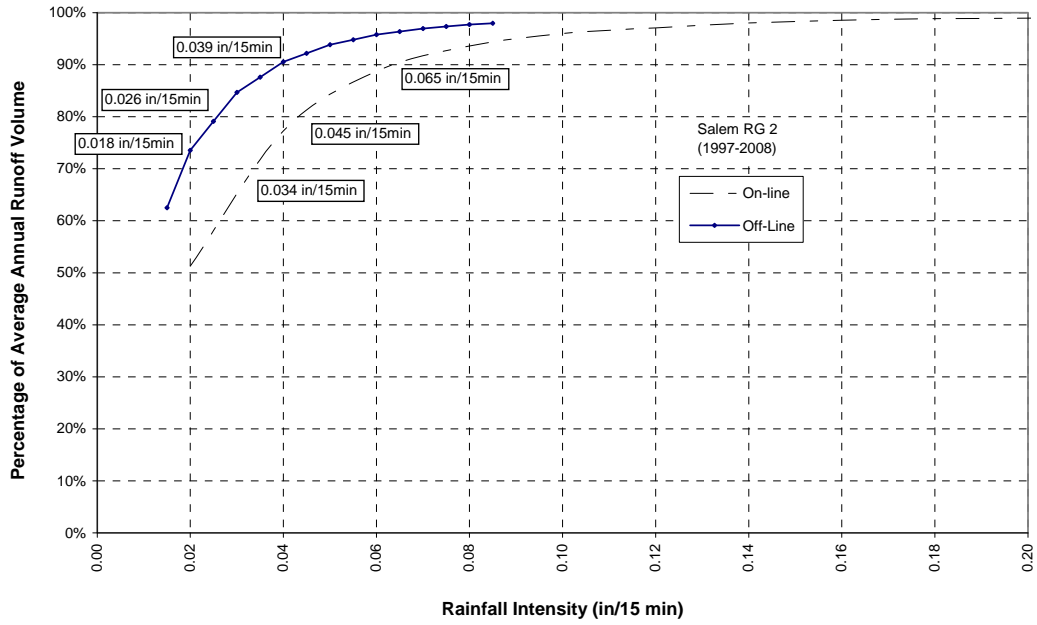




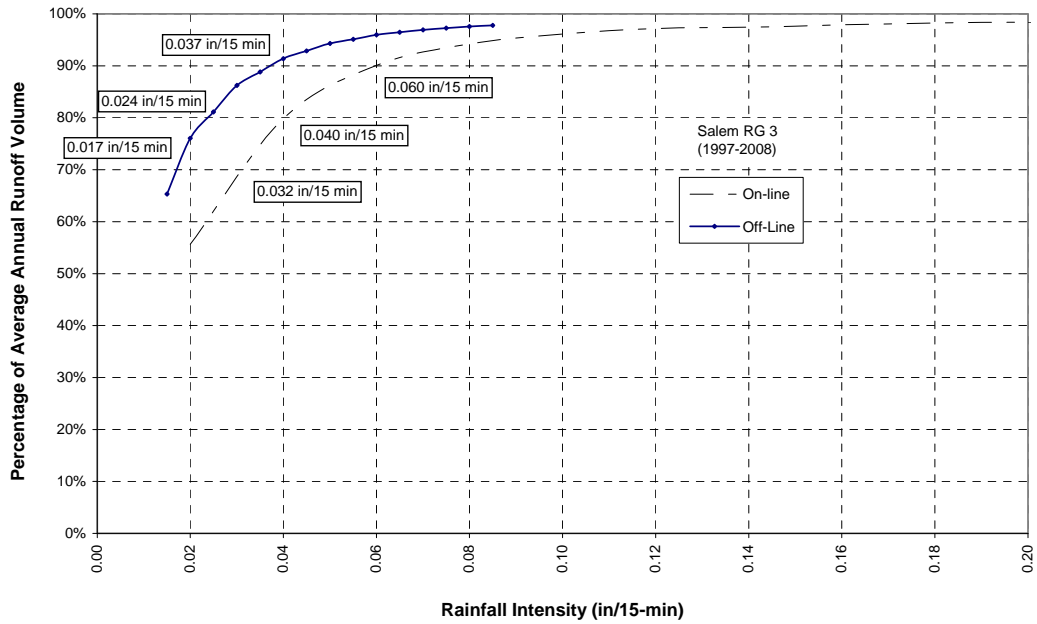
APPENDIX B

Graphs Showing Design Intensities Based on 80 Percent Capture of
Runoff for both Online and Offline Facilities

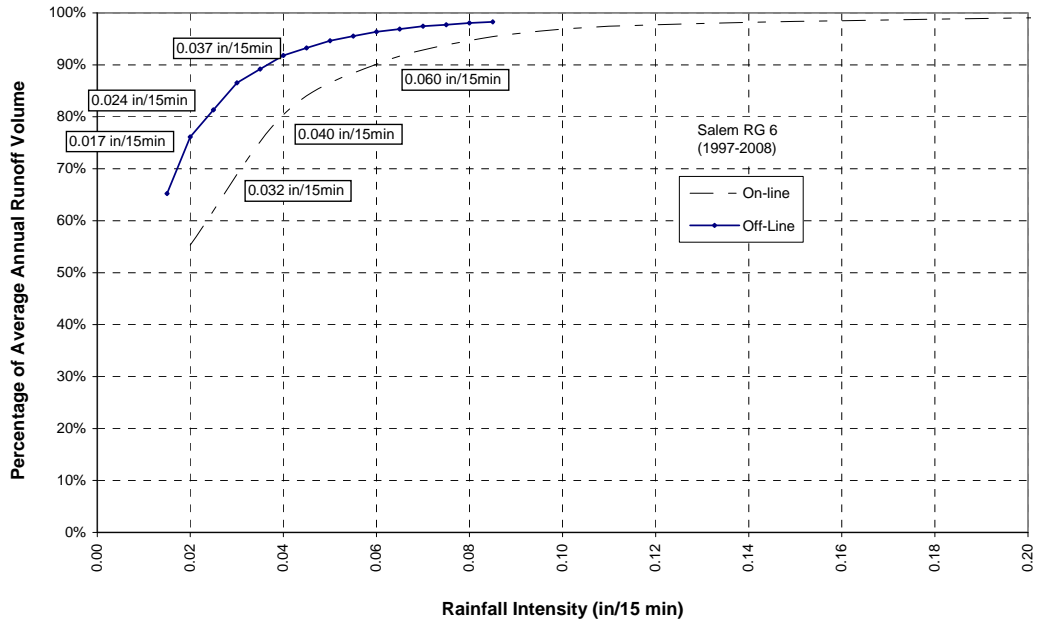
RG 2
Intensity Analysis - Calendar Year



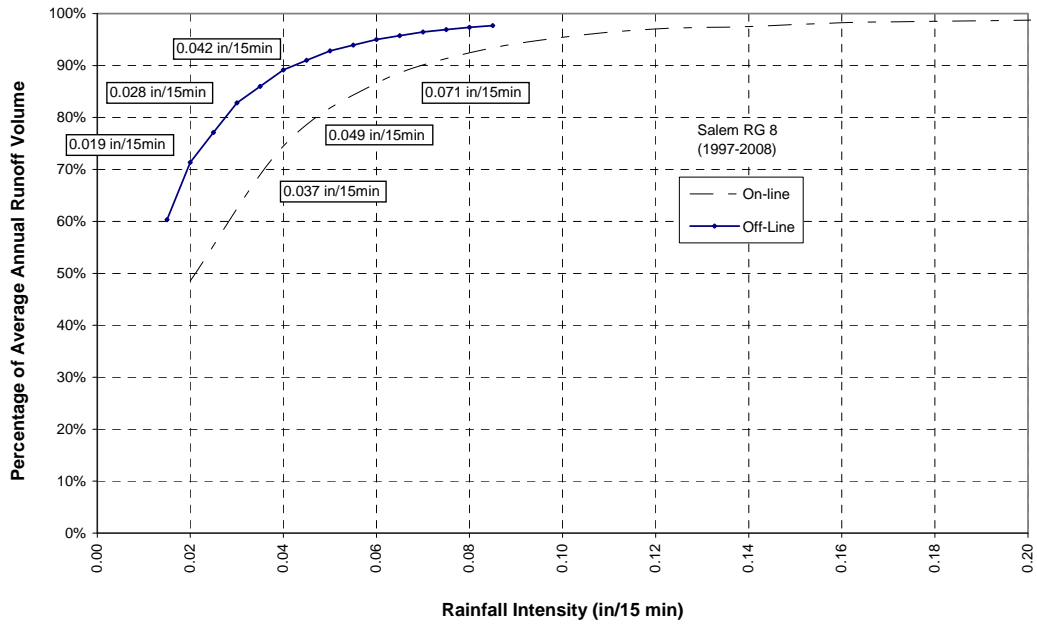
RG - 3
Intensity Analysis - Calendar Year



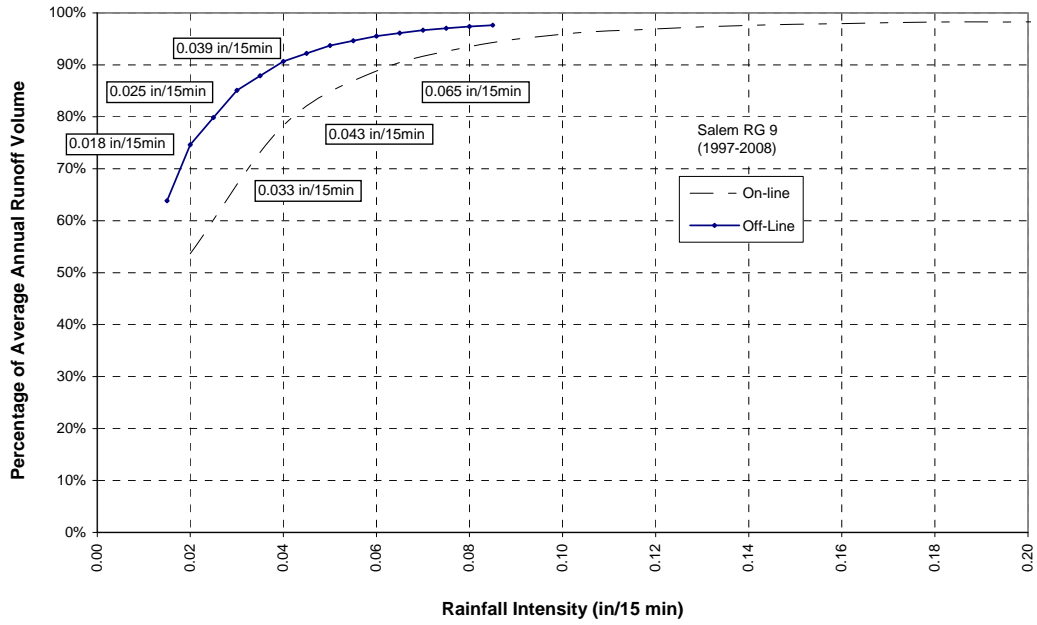
RG - 6
Intensity Analysis - Calendar Year



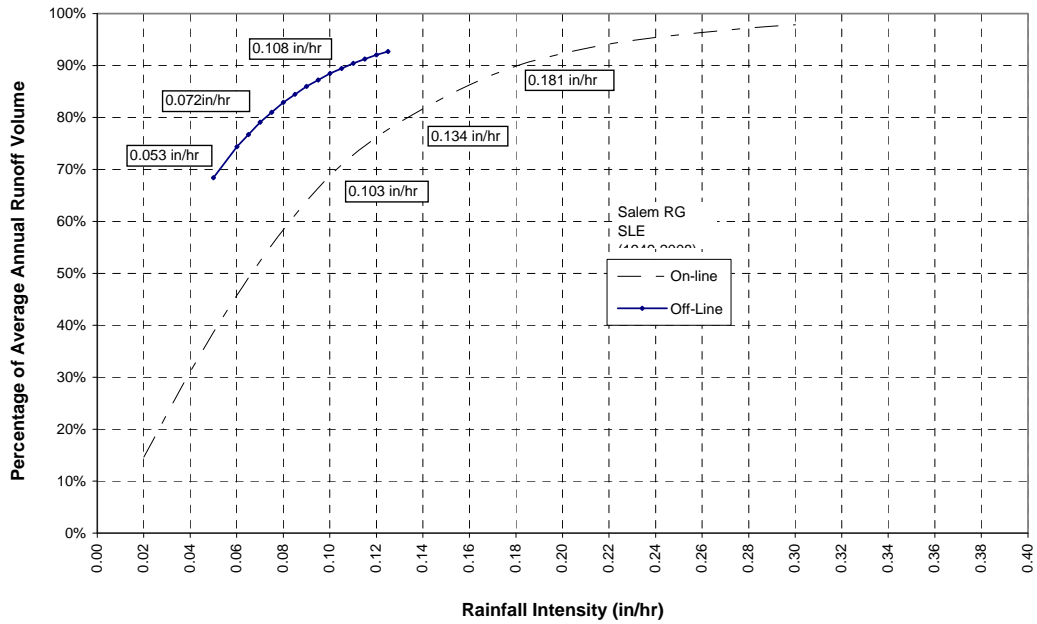
RG - 8
Intensity Analysis - Calendar Year



RG - 9
Intensity Analysis - Calendar Year



RG - Salem Airport
Intensity Analysis - Calendar Year



GEOTECHNICAL REPORT

Macleay Gas Station
Salem, Oregon
Stormwater Management Report

APPENDIX IV

Operation & Maintenance Plans

POLLUTION/FLOW CONTROL STRUCTURES

CONTROL STRUCTURES/FLOW RESTRICTORS			
Maintenance component	Defect or problem	Condition when maintenance is needed	Results expected when maintenance is performed
Structure	Trash and debris	Trash or debris of more than ½ ft³ which is located immediately in front of structure opening or is blocking capacity of the structure by more than 10%.	No trash or debris blocking or potentially blocking entrance to structure.
		Trash or debris in the structure that exceeds one-third of the depth from the bottom of basin to invert of the lowest pipe into or out of the structure.	No trash or debris in the structure.
		Deposits of garbage exceeding 1 ft³ in volume.	No condition present which would attract or support the breeding of insects or rodents.
	Sediment	Sediment exceeds 60% of the depth from the bottom of the structure to the invert of the lowest pipe into or out of the structure or the bottom of the FROP-T section or is within 6" of the invert of the lowest pipe into or out of the structure or the bottom of the FROP-T section.	Sump of structure contains no sediment.
	Damage to frame and/or top slab	Corner of frame extends more than ¾" past curb face into the street (if applicable).	Frame is even with curb.
		Top slab has holes larger than 2 in² or cracks wider than ¼".	Top slab is free of holes and cracks.
		Frame not sitting flush on top slab (i.e., separation of more than ¾" of the frame from the top slab).	Frame is sitting flush on top slab.
	Cracks in walls or bottom	Cracks wider than ½" and longer than 3 feet, any evidence of soil particles entering structure through cracks, or maintenance person judges that structure is unsound.	Structure is sealed and structurally sound.
		Cracks wider than ½" and longer than 1' at the joint of any inlet/outlet pipe or any evidence of soil particles entering structure through cracks.	No cracks more than ¼" wide at the joint of inlet/outlet pipe.
	Settlement/misalignment	Structure has settled more than 1" or has rotated more than 2" out of alignment.	Structure replaced or repaired to design standards.
	Damaged pipe joints	Cracks wider than ½" at the joint of the inlet/outlet pipes or any evidence of soil entering the structure at the joint of the inlet/outlet pipes.	No cracks more than ¼" wide at the joint of inlet/outlet pipes.
FROP-T section	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries, or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Ladder rungs missing or unsafe	Ladder is unsafe due to missing rungs misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
	Damage	T section is not securely attached to structure wall and outlet pipe structure should support at least 1,000 lbs. of up or down pressure.	T section securely attached to wall and outlet pipe.
		Structure is not in upright position (allow up to 10% from plumb).	Structure in correct position.
		Connections to outlet pipe are not watertight or show signs of deteriorated grout.	Connections to outlet pipe are water tight; structure repaired or replaced and works as designed.
		Any holes-other than designed holes-in the structure.	Structure has no holes other than designed holes.

CONTROL STRUCTURES/FLOW RESTRICTORS			
Maintenance component	Defect or problem	Condition when maintenance is needed	Results expected when maintenance is performed
Cleanout gate	Damaged or missing	Cleanout gate is missing.	Replace cleanout gate.
		Cleanout gate is not watertight.	Gate is watertight and works as designed.
		Gate cannot be moved up and down by one maintenance person.	Gate moves up and down easily and is watertight.
		Chain/rod leading to gate is missing or damaged.	Chain is in place and works as designed.
Orifice plate	Damaged or missing	Control device is not working properly due to missing, out of place, or bent orifice plate.	Plate is in place and works as designed.
	Obstructions	Any trash, debris, sediment, or vegetation blocking the plate.	Plate is free of all obstructions and works as designed.
Overflow pipe	Obstructions	Any trash or debris blocking (or having the potential of blocking) the overflow pipe.	Pipe is free of all obstructions and works as designed.
	Deformed or damaged lip	Lip of overflow pipe is bent or deformed.	Overflow pipe does not allow overflow at an elevation lower than design
Inlet/outlet pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
	Damaged	Cracks wider than ½" at the joint of the inlet/outlet pipes or any evidence of soil entering at the joints of the inlet/outlet pipes.	No cracks more than ¼" wide at the joint of the inlet/outlet pipe.
Metal grates (if applicable)	Unsafe grate opening	Grate with opening wider than ⅞".	Grate opening meets design standards.
	Trash and debris	Trash and debris that is blocking more than 20% of grate surface.	Grate free of trash and debris.
	Damaged or missing	Grate missing or broken member(s) of the grate.	Grate is in place and meets design standards.
Manhole cover/lid	Cover/lid not in place	Cover/lid is missing or only partially in place. Any open structure requires urgent maintenance.	Cover/lid protects opening to structure.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to remove	One maintenance person cannot remove cover/lid after applying 80 lbs. of lift.	Cover/lid can be removed and reinstalled by one maintenance person.

RAIN GARDENS

Chapter 109
Division 011 - Operations and Maintenance of Stormwater Facilities
Appendix B to 109-011 – Facility Maintenance Forms

1. Stormwater Planter

Stormwater Planters are designed to allow runoff to filter through layers of topsoil (thus capturing pollutants) and then either infiltrate into the native soils (infiltration planter) or be collected in a pipe to be discharged off-site (filtration planter). The planter is sized to accept runoff and temporarily store the water in a reservoir on top of the soil. The filtration planter is designed with an impervious bottom or is placed on an impervious surface. Water should drain through the planter within 24 hours after a storm event.

Inspections

All facility components and vegetation shall be inspected for proper operations and structural stability. *These inspections shall occur, at a minimum, quarterly for the first two years from the date of installation, and two times per year thereafter.* It is recommended that a visual inspection be made within 48 hours after each major storm event to ensure proper function. The facility owner must keep a log, recording all inspection dates, observations, and maintenance activities. The following items shall be inspected and maintained as stated:

Date: ____/____/____ Inspector's Name: _____

Downspout from rooftop or sheet flow from paving allows unimpeded stormwater flow to the planter.

- ☐ Debris shall be removed routinely and upon discovery.
- ☐ Damaged pipe shall be repaired upon discovery.

Inspection Comments: _____

Splash blocks prevent splashing against adjacent structures and convey water without disrupting media.

- ☐ Any deficiencies in structure such as cracking, rotting, and failure shall be repaired.

Inspection Comments: _____

Planter reservoir receives and detains stormwater prior to infiltration. Water should drain from planter within 24 hours of storm event.

- ☐ Sources of clogging shall be identified and corrected.
- ☐ Topsoil may need to be amended with sand or compost, or replaced.

Inspection Comments: _____

Amended soils consisting of sand, compost, drain rock, and topsoil shall allow stormwater to percolate uniformly through the planter.

- ☐ The planter shall be excavated and cleaned, and gravel or soil shall be replaced to correct low infiltration rates.
- ☐ Holes that are not consistent with the design and allow water to flow directly through the planter to the ground shall be plugged.
- ☐ Sediment accumulation shall be hand-removed with minimum damage to vegetation using proper erosion control measures. Sediment shall be removed if it is more than 4 inches thick or so thick as to damage or kill vegetation.
- ☐ Litter and debris shall be removed.

Inspection Comments: _____

Chapter 109
Division 011 - Operations and Maintenance of Stormwater Facilities
Appendix B to 109-011 – Facility Maintenance Forms

1. Stormwater Planter (continued)
<p>Planter shall contain filter media and vegetation.</p> <ul style="list-style-type: none"><input type="checkbox"/> Structural deficiencies in the planter including rot, cracks, and failure shall be repaired. <p>Inspection Comments: _____</p> <p>_____</p>
<p>Overflow pipe safely conveys flow exceeding reservoir capacity to an approved stormwater receiving system.</p> <ul style="list-style-type: none"><input type="checkbox"/> Overflow pipe shall be kept clear at all times.<input type="checkbox"/> Damaged pipe shall be repaired or replaced upon discovery. <p>Inspection Comments: _____</p> <p>_____</p>
<p>Vegetation shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion. Proper horticultural practices shall be employed to ensure plants are vigorous and healthy.</p> <ul style="list-style-type: none"><input type="checkbox"/> Mulch shall be replenished as needed, but not inhibiting water flow.<input type="checkbox"/> Vegetation, large shrubs, or trees that limit access or interfere with planter operation shall be pruned or removed.<input type="checkbox"/> Fallen leaves and debris from deciduous plant foliage shall be raked and removed.<input type="checkbox"/> Nuisance or prohibited vegetation from the City of Salem Non-Native Invasive Plant list shall be removed when discovered. Invasive vegetation shall be removed upon discovery.<input type="checkbox"/> Dead vegetation shall be removed upon discovery.<input type="checkbox"/> Vegetation shall be replaced as soon as possible to maintain cover density and control erosion where soils are exposed. <p>Inspection Comments: _____</p> <p>_____</p>
<p>Debris and litter shall be removed to ensure stormwater infiltration and to prevent clogging of overflow drains and interference with plant growth.</p> <p>Inspection Comments: _____</p> <p>_____</p>
<p>Spill prevention measures shall be exercised when handling substances that contaminate stormwater.</p> <ul style="list-style-type: none"><input type="checkbox"/> Releases of pollutants shall be corrected and reported to the City as soon as identified. <p>Inspection Comments: _____</p> <p>_____</p>
<p>Training and/or written guidance information for O&M of stormwater planters shall be provided to all property owners and tenants. This Facility Maintenance Form can be used to meet this requirement.</p> <p>Inspection Comments: _____</p> <p>_____</p>
<p>Access to the stormwater planter shall be safe and efficient. Egress and ingress routes shall be maintained to design standards. Roadways shall be maintained to accommodate size and weight of vehicles, if applicable.</p> <ul style="list-style-type: none"><input type="checkbox"/> Obstacles preventing maintenance personnel and/or equipment access to the stormwater planter shall be removed.<input type="checkbox"/> Gravel or ground cover shall be added if erosion has occurred. <p>Inspection Comments: _____</p> <p>_____</p>

Chapter 109
Division 011 - Operations and Maintenance of Stormwater Facilities

Appendix B to 109-011 – Facility Maintenance Forms

1. Stormwater Planter (continued)

Nuisance insects and rodents shall not be harbored in the stormwater planter.

Pest control measures shall be taken when nuisance insects/rodents are found to be present.

- ☐ Holes in the ground located in and around the stormwater planter shall be filled and compacted.

Inspection Comments: _____

Chapter 109
Division 011 - Operations and Maintenance of Stormwater Facilities
Appendix B to 109-011 – Facility Maintenance Forms

2. Rain Garden

A rain garden is a **vegetated infiltration basin** or depression created by excavation, berms, or small dams to provide for short-term ponding of surface water until it percolates into the soil. The basin should infiltrate stormwater within 24 hours.

Inspections

All facility components and vegetation shall be inspected for proper operations and structural stability. *These inspections shall occur, at a minimum, quarterly for the first two years from the date of installation, and two times per year thereafter.* It is recommended that a visual inspection be made within 48 hours after each major storm event to ensure proper function. The facility owner must keep a log, recording all inspection dates, observations, and maintenance activities. The following items shall be inspected and maintained as stated:

Date: ____/____/____

Inspector's Name: _____

Basin inlet shall ensure unrestricted stormwater flow to the vegetated basin.

- ☐ Sources of erosion shall be identified and controlled when native soil is exposed or erosion channels are present.
- ☐ Inlet shall be kept clear at all times.
- ☐ Rock splash pads shall be replenished to prevent erosion.

Inspection Comments: _____

Embankment, dikes, berms, and side slopes retain water in the infiltration basin.

- ☐ Structural deficiencies shall be corrected upon discovery.
- ☐ Slopes shall be stabilized using appropriate erosion control measures when soil is exposed/flow channels are forming.
- ☐ Sources of erosion damage shall be identified and controlled.

Inspection Comments: _____

Overflow or emergency spillway conveys flow exceeding reservoir capacity to an approved stormwater receiving system.

- ☐ Overflow shall be kept clear at all times.
- ☐ Sources of erosion damage shall be identified and controlled when soil is exposed.
- ☐ Rocks or other armament shall be replaced when only one layer of rock exists.

Inspection Comments: _____

Amended soils shall allow stormwater to percolate uniformly through the infiltration basin. If water remains 36 hours after a storm, sources of possible clogging shall be identified and corrected.

- ☐ Basin shall be raked and, if necessary, soil shall be excavated and cleaned or replaced.

Inspection Comments: _____

Chapter 109
Division 011 - Operations and Maintenance of Stormwater Facilities
Appendix B to 109-011 – Facility Maintenance Forms

2. Rain Garden (continued)

Sediment/Basin debris management shall prevent loss of infiltration basin volume caused by sedimentation.

- ☐ Sediment exceeding 3 inches in depth, or so thick as to damage or kill vegetation, shall be removed.
- ☐ Sediment accumulation shall be hand-removed with minimum damage to vegetation using proper erosion control measures.

Inspection Comments: _____

Debris and litter shall be removed to ensure stormwater infiltration and to prevent clogging of overflow drains and interference with plant growth.

- ☐ Restricted sources of sediment and debris, such as discarded lawn clippings, shall be identified and prevented.

Inspection Comments: _____

Vegetation shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion. Proper horticultural practices shall be employed to ensure that plants are vigorous and healthy.

- ☐ Mulch shall be replenished as needed, but not inhibiting water flow.
- ☐ Vegetation, large shrubs, or trees that interfere with rain garden operation shall be pruned.
- ☐ Fallen leaves and debris from deciduous plant foliage shall be raked and removed.
- ☐ Nuisance or prohibited vegetation from the City of Salem Non-Native Invasive Plant list shall be removed when discovered. Invasive vegetation shall be removed immediately upon discovery.
- ☐ Dead vegetation shall be removed upon discovery.
- ☐ Vegetation shall be replaced as soon as possible to maintain cover density and control erosion where soils are exposed.

Inspection Comments: _____

Spill prevention measures shall be exercised when handling substances that contaminate stormwater.

- ☐ Releases of pollutants shall be corrected as soon as identified.

Inspection Comments: _____

Training and/or written guidance information for operating and maintaining vegetated infiltration basins shall be provided to all property owners and tenants. This Facility Maintenance Form can be used to meet this requirement.

Inspection Comments: _____

Access to the infiltration basin shall be safe and efficient. Egress and ingress routes shall be maintained to design standards. Roadways shall be maintained to accommodate size and weight of vehicles, if applicable.

- ☐ Obstacles preventing maintenance personnel and/or equipment access to the infiltration basin shall be removed.
- ☐ Gravel or ground cover shall be added if erosion has occurred.

Inspection Comments: _____

Chapter 109
Division 011 - Operations and Maintenance of Stormwater Facilities
Appendix B to 109-011 – Facility Maintenance Forms

2. Rain Garden (continued)

Nuisance insects and rodents shall not be harbored in the infiltration basin. Pest control measures shall be taken when nuisance insects/rodents are found to be present.

- ☐ Holes in the ground located in and around the infiltration basin shall be filled.

Inspection Comments: _____

If used at this site, the following will be applicable:

Fences shall be maintained to preserve their functionality and appearance.

- ☐ Collapsed fences shall be restored to an upright position.
- ☐ Jagged edges and damaged fences shall be repaired or replaced.

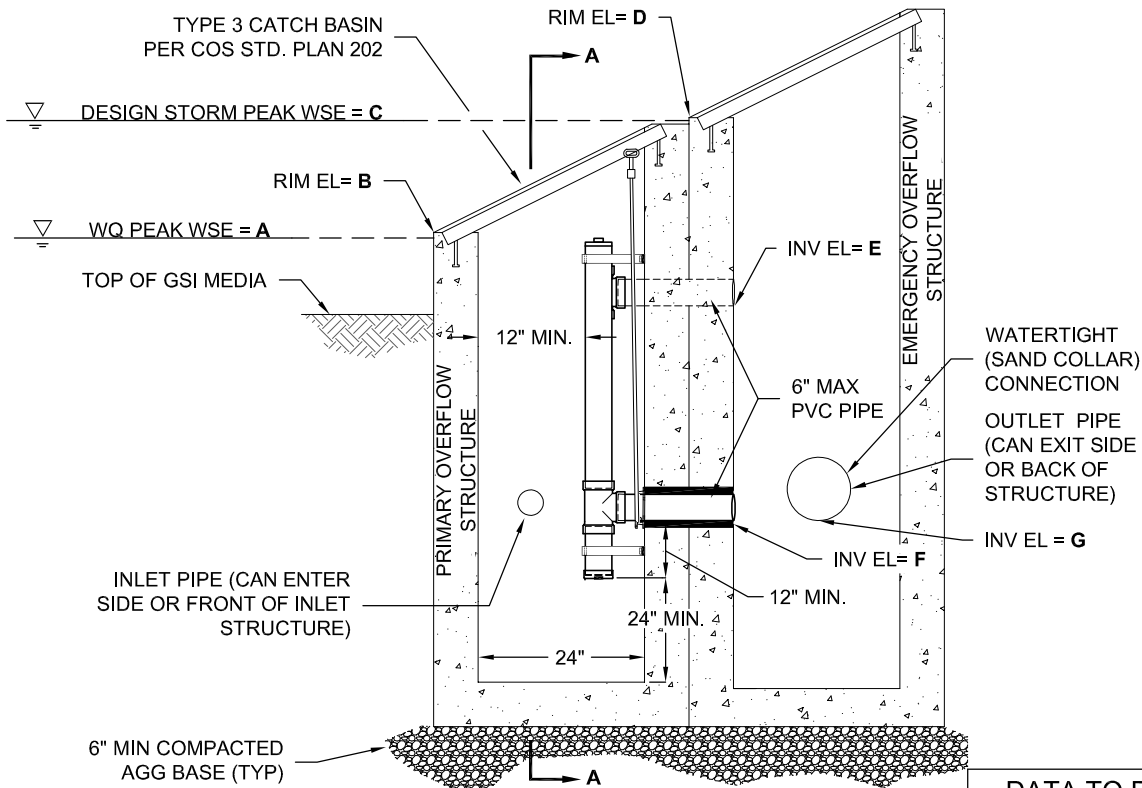
Inspection Comments: _____

Macleay Gas Station
Salem, Oregon
Stormwater Management Report

APPENDIX V

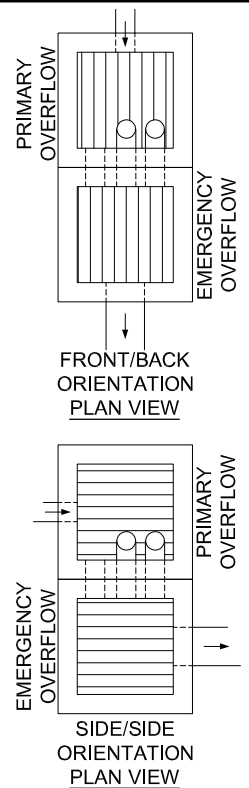
Detail Drawings/Specifications

POLLUTION/FLOW CONTROL STRUCTURES



PROFILE VIEW

(Front/Back Orientation Shown)



DATA TO BE COMPUTED BY DESIGN ENGINEER

A= 217.51'

B= 217.51'

C= 218.13'

D= 218.70'

E= 217.10'

F= 213.36'

G= 213.36'

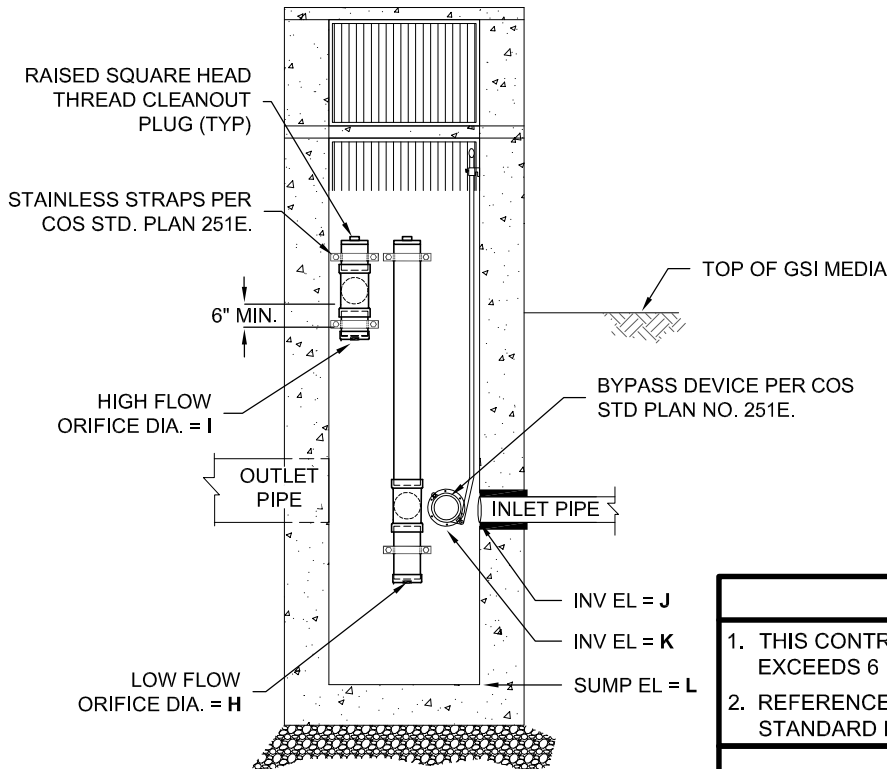
H= 0.60"

I= 1.40"

J= 211.50'

K= 213.36'

L= 210.36'



SECTION A-A

NTS

***FLOW CONTROL CB 1**

GENERAL NOTES

1. THIS CONTROL STRUCTURE NOT FOR USE WHEN ORIFICE SIZE EXCEEDS 6 INCHES.
2. REFERENCE ORIFICE MEASUREMENT TABLE ON COS STANDARD PLAN 251E FOR ORIFICE SIZE REQUIREMENTS.

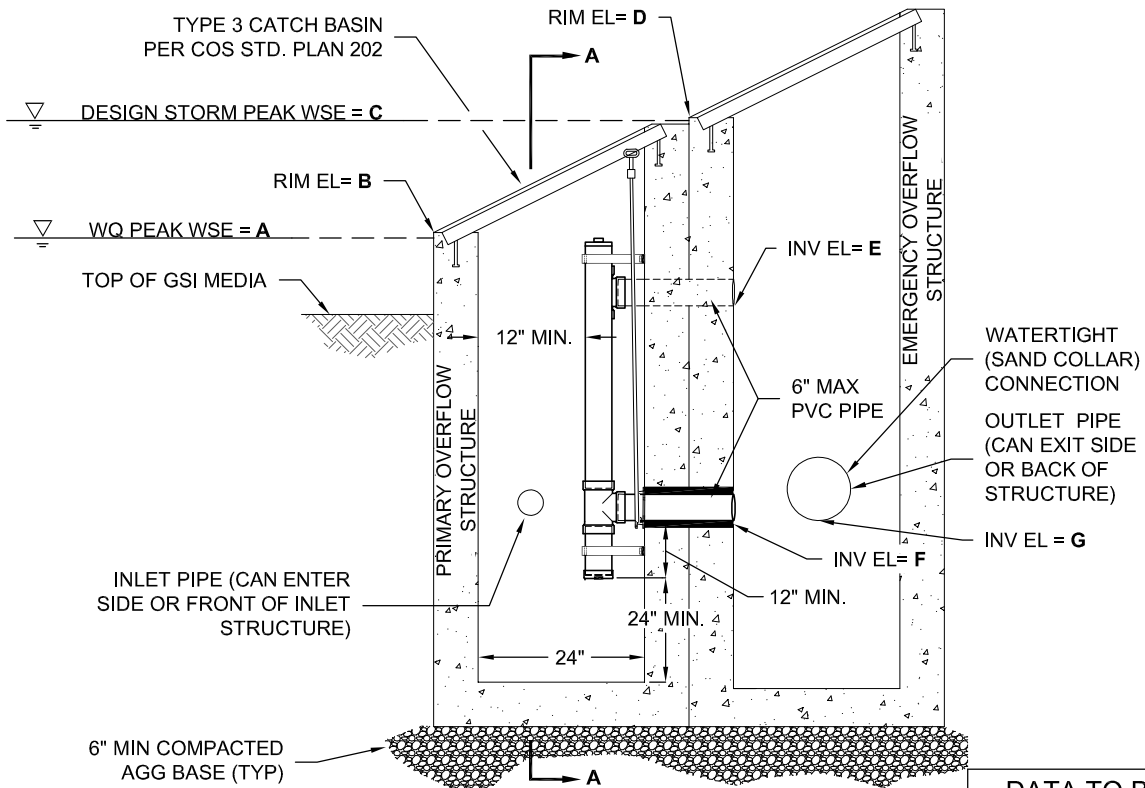
CITY OF SALEM DEPARTMENT OF PUBLIC WORKS

STANDARD PLAN FLOW CONTROL STRUCTURE-TYPE 3

CHANGES				
APPROVED	<i>[Signature]</i>	6/8/2021	DATE	
	CITY ENGINEER			

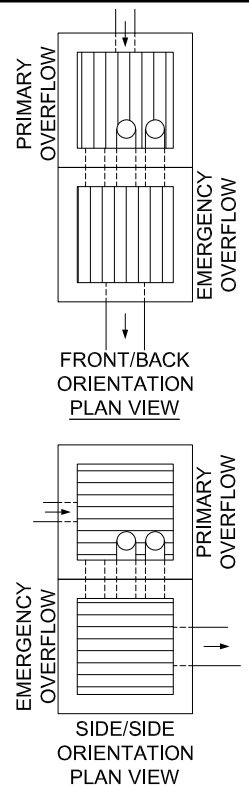
DRAWN BY	KLA	4/2021
CHECKED BY	JDL	4/2021

NO.251C



PROFILE VIEW

(Front/Back Orientation Shown)



DATA TO BE COMPUTED BY DESIGN ENGINEER

A= 217.05'

B= 217.10'

C= 217.54'

D= 218.05'

E= 216.00'

F= 213.00'

G= 213.00'

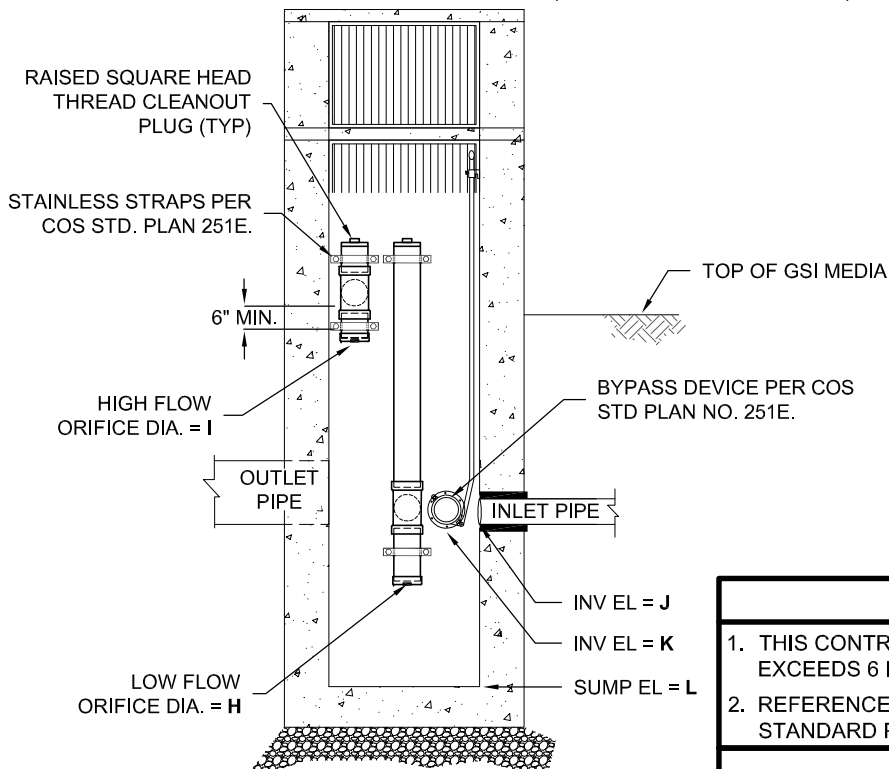
H= 0.50"

I= 0.90"

J= 212.50'

K= 214.00'

L= 211.00'



SECTION A-A

NTS

***FLOW CONTROL CB 2**

GENERAL NOTES

1. THIS CONTROL STRUCTURE NOT FOR USE WHEN ORIFICE SIZE EXCEEDS 6 INCHES.
2. REFERENCE ORIFICE MEASUREMENT TABLE ON COS STANDARD PLAN 251E FOR ORIFICE SIZE REQUIREMENTS.

CITY OF SALEM DEPARTMENT OF PUBLIC WORKS

STANDARD PLAN FLOW CONTROL STRUCTURE-TYPE 3

CHANGES			

APPROVED

CITY ENGINEER

6/8/2021

DATE

DRAWN BY

KLA

4/2021

CHECKED BY

JDL

4/2021

NO.251C

RAIN GARDEN

PLANTING REQUIREMENTS

**CITY OF SALEM
DEPARTMENT OF PUBLIC WORKS
ADMINISTRATIVE RULES
CHAPTER 109
DIVISION 004 APPENDIX B
LANDSCAPE REQUIREMENTS AND PLANT LISTS
FOR STORMWATER FACILITIES**

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4B.1—General

The City encourages the use of native plants in stormwater drainage facilities, since they are best suited to long-term survival in the local climate. Because all landscaping needs may not be met by native plants, some ornamental non-native plants may be acceptable for use. This appendix provides a list of native plants for use in stormwater facilities constructed in the City.

Vegetation on the City’s Non-Native, Nuisance, and Noxious weed list is strictly prohibited in drainage control facilities.

Contact the City of Salem Parks Department Urban Forester for approved stormwater trees for planting in ROW stormwater facilities.

4B.2—Planting Zones

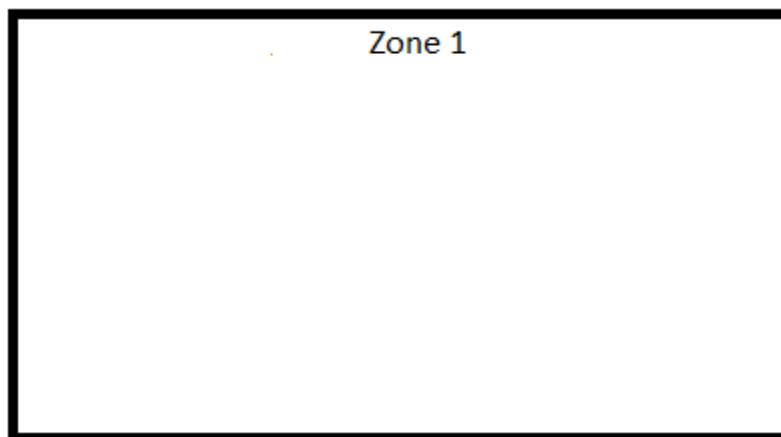
Zone 1: The area of the stormwater facility from the bottom of the facility to the designed high water mark. This area has moist to wet soils and plants located in this zone must be moisture tolerant. [USACE National Wetland Plant List (NWPL), OBL/FACW]

Zone 2: The area of the stormwater facility from the designed high water line to a point three feet up slope from the base. This area typically has dry to moist soils, with the moist soils being located further down the side slopes. Plants in this zone shall be drought tolerant and help stabilize the slopes. [USACE NWPL, FAC]

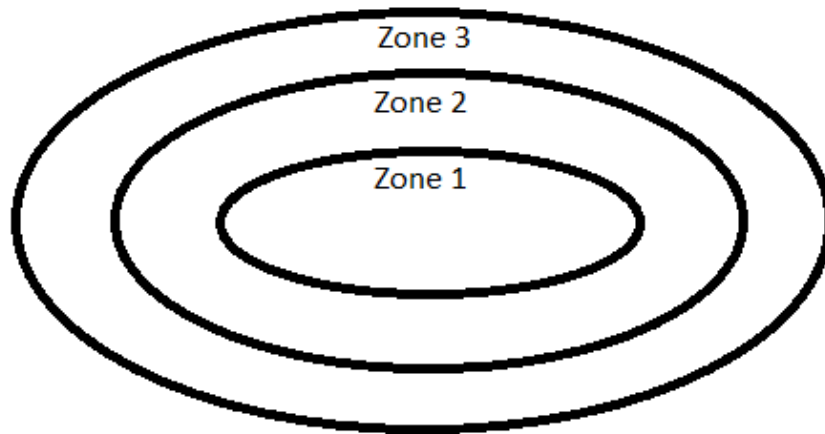
Zone 3: The area of the stormwater facility from a point three feet from the base of the slope to the top of the slope including the upland area. This zone is typified by dry soils. Plants in this zone shall be drought tolerant. [USACE NWPL, FACU/ UPL/ NI]

4B.3—Planting Zone Diagrams

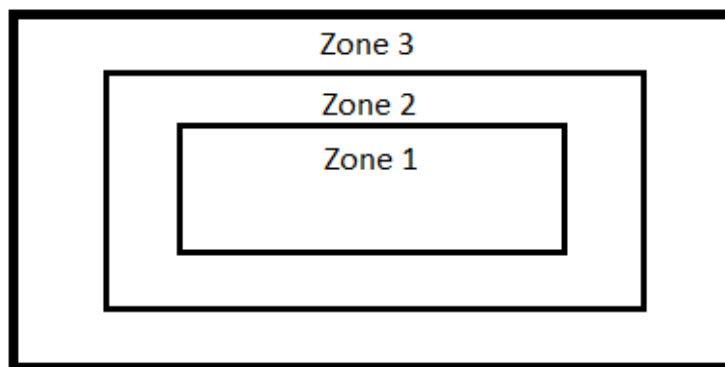
Planter Planting Zone



Rain Garden Planting Zones



Swale Planting Zones



4B.4—Planting, Landscape, and Irrigation Requirements

The vegetation used in GSI facilities may also be used to meet other landscape requirements of the project. Stormwater facilities with vegetative plantings must meet the following requirements:

(a) For all facilities located in riparian corridors and Public Stormwater Facilities, all plants shall be appropriate native species from the plant list contained in this appendix. For private stormwater facilities, non-native plant varieties may be used which are suitable for the planting zone where located in the facility.

(b) Plants will be inspected and accepted or rejected at the end of construction when the project is substantially complete.

(c) Establishment maintenance procedures, such as control of invasive weeds, animal and vandal damage, mulching, re-staking, watering, and mesh or tube protection replacement, shall be noted on the plans as needed to ensure plant survival.

(d) Stormwater facilities located in the ROW are not permitted to use evergreen trees to meet landscaping requirements. Street trees in the ROW shall be located outside of planters whenever possible. If street trees are placed in planters, the minimum width of the facility is four feet.

(e) Selected plant materials should be appropriate for soil, hydrologic, and other facility and site conditions. The density of plantings shall be consistent with the requirements listed in this appendix. The intent is for the plants to be dense enough when mature to minimize the growth of weeds and invasive species and reduce the amount of needed maintenance.

(f) The planting design shall minimize the need for herbicides, fertilizers, or pesticides at any time before, during, after construction, and on a long-term basis.

(g) Plants shall be selected and planted to minimize the need for mowing, pruning, and irrigation.

(h) Certified weed-free native grass or native wildflower seed shall be applied at the rates specified by the supplier. If plant establishment cannot be achieved with seeding by the time construction of the stormwater facility has been completed, the design shall provide for planting the area with wildflower sod, plugs, container plants, or other methods to establish the vegetation and protect the facility against erosion before water is allowed to enter the facility.

(i) A temporary irrigation system must be included in the design of each facility to be used until the plants are fully established, generally two to three years. Public stormwater facilities shall be designed so permanent, long-term irrigation systems are not needed.

(j) All plantings in and adjacent to the ROW shall be appropriate for the area and not interfere with vision and sight clearance requirements. Plants that will not become a nuisance by growing over the public sidewalks shall be selected.

(k) Growing medium shall be placed at a minimum depth of 12 inches over native soil, unless otherwise noted in the Standard Plans. See Appendix 4G—Key Material Specifications for details on topsoil, organic soil amendment, and growing medium requirements.

(l) A two-inch layer of pea gravel (not bark dust or bark chips) shall be specified over the growing medium between the plantings in Planting Zone 1. Organic mulch such as straw, bark, sawdust, or compost shall be placed at a depth of two to three inches above the high water mark, in Planting Zones 2 or 3. Organic mulch shall not be placed such that it may enter waterways or clog inlets/outlets.

4B.5—Stormwater Planters

(a) Planting Zones

Stormwater Planters have only one plant zone. Native plants for planters are listed in Table 4B-1.

(b) Planting Requirements

(1). Plants shall be spaced evenly. Use the spacing identified in Table 4B-1 for the plants selected.

(2). Perennial plants and bulbs may be planted throughout planters to add seasonal color and variability.

(3). The following plant quantities and sizes shall be installed per 100 square feet of surface area:

A. Woody Plants

(i). Four large shrubs/small trees: 3-gallon container or equivalent.

(ii). Six shrubs: 1-gallon container or equivalent.

B. Grasses, Herbs and Ground Cover

Container Size	Spacing
Plug (9 cubic inch) 50 cell tray, deep	9-inch on center, tri-space
4-inch pot	9-inch on center, tri-space
1-gallon container	12-inch on center, tri-space

Table 4B-1. Plant Spacing

C. At least 75 percent of the facility shall be planted with grasses, sedges, or rushes. Herbs and forbs may cover the balance of the facility.

4B.6—Rain Gardens, Vegetated Filter Strip, and Vegetated Swales

(a) Planting Zones

These facilities have three planting zones (1- 3). Native plants approved for use in these facilities are included in Table 4B-1.

(b) Planting Requirements

(1). Minimum plant material quantities per 100 square feet of facility area are as follows:

A. Woody Plants

One evergreen or deciduous tree planted on the perimeter

(i). Evergreen trees: Minimum height: six feet.

(ii). Deciduous trees: Minimum caliper: 1½-inches at six inches above base.

(iii). Four large shrubs/small trees: three-gallon container or equivalent.

(iv). Six shrubs: one gallon container or equivalent.

B. Grasses, Herbs and Ground Cover

See Table 4B-1.

At least 75 percent of the facility shall be planted with grasses, sedges, or rushes. Herbs and forbs may cover the balance of the facility.

4B.7—Dry Detention Basins

(a) Planting zones

These facilities have three planting zones (1- 3). Native plants approved for use in these facilities are included in Table 4B-1.

(b) Planting Requirements

For soils with slow infiltration rates (less than two inches per hour) moist to wet plants are preferable; for soils with higher infiltration rates moist to dry plants are preferable. At least 50 percent of the facility shall be planted with grasses or grass-like plants. If a vegetated swale is utilized in conjunction with the detention basin, the swale portion of the facility shall be planted in accordance with Section 4B.5—Stormwater Planters.

(1). Minimum plant material quantities per 250 square feet of basin area shall be as follows:

A. Woody Plants

One evergreen or deciduous tree planted on the perimeter:

(i). Evergreen trees: Minimum height: Six feet.

(ii). Deciduous trees: Minimum caliper: 1½ inches at 6 inches above base.

(iii). Four large shrubs/small trees: three-gallon container or equivalent.

(iv). Six shrubs: one gallon container or equivalent.

B. Grasses, Herbs and Ground Cover

See Table 4B-1.

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At least 75 percent of the facility shall be planted with grasses, sedges, or rushes. Herbs and forbs may cover the balance of the facility.

Plant Name		Proposed Facility Type					Characteristics	
Botanic Name, Common Name	Zone	Planters	Rain Garden	Filter Strip	Swale	Dry Detention Basin	Potential Height	O.C. Spacing
Grasses and Groundcover ⁽¹⁾								
<i>Agrostis exarata</i> Spike Bentgrass	1, 2	•	•	•	•	•	3'	1'
<i>Arctostaphylos uva-ursi</i> Kinnick-kinnick	3		•	•	•	•	1'+	1'
<i>Beckmannia syzigachne</i> American Slough Grass	1	•	•	•	•		3'	1'
<i>Bromus carinatus</i> California Brome Grass	3		•	•	•	•	2'	1'
<i>Bromus sitchensis</i> Alaska Brome	3		•	•	•	•	5'	1'
<i>Bromus vulgaris</i> Columbia Brome Grass	3		•	•	•	•	2'	1'
<i>Carex densa</i> Dense Sedge	1	•	•	•	•		2'	1'
<i>Carex deweyana</i> Dewey Sedge	2		•	•	•	•	2'	1'
<i>Carex hendersonii</i> Henderson Sedge	2				•	•	3'	1'
<i>Carex obnupta</i> Slough Sedge	1	•	•	•	•		4'	2'
<i>Carex stipata</i> Sawbeak Sedge	1	•	•	•	•		3'	1'
<i>Carex tumulicola</i> Foothill Sedge	2, 3				•	•	2'	1'
<i>Danthonia californica</i> California Oatgrass	2		•	•	•		3'	1'
<i>Deschampsia caespitosa</i> Tufted Hairgrass	1, 2	•	•	•	•	•	4'	2'
<i>Deschampsia elongata</i> Slender Hairgrass	1, 2	•	•	•	•	•	1'	1'
<i>Eleocharis acicularis</i> Needle Spike-Rush	1	•	•	•	•		1'	1'
<i>Eleocharis ovata</i> Ovate Spike-Rush	1	•	•	•	•		1.5'	1'
<i>Eleocharis palustris</i> Creeping Spike-Rush	1	•	•	•	•		3'	1'
<i>Elymus glaucus</i> Blue Wildrye	2, 3		•	•	•	•	3'	1'
<i>Elymus trachycaulus</i> Slender Wheatgrass	2, 3						3'	1'
<i>Festuca occidentalis</i> Western Fescue Grass	3		•	•	•	•	3'	1'
<i>Festuca roemerii</i> var. <i>roemerii</i> Roemer's Fescue	3		•	•	•		2'	1'
<i>Festuca rubra</i> var. <i>commutata</i> Western Red Fescue	2, 3						3'	1'

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Plant Name		Proposed Facility Type					Characteristics	
Botanic Name, Common Name	Zone	Planters	Rain Garden	Filter Strip	Swale	Dry Detention Basin	Potential Height	O.C. Spacing
<i>Fragaria vesca</i> Woodland strawberry	2, 3		•	•	•	•	1'+	1'
<i>Fragaria virginiana</i> Wild strawberry	2, 3		•	•	•	•	1'+	1'
<i>Glyceria occidentalis</i> Western Mannagrass	1	•	•	•	•		5'	1'
<i>Hordeum brachyantherum</i> Meadow Barley	1, 2		•	•	•	•	3'	1'
<i>Juncus acuminatus</i> Tapertip Rush	1	•	•	•	•		3'	1'
<i>Juncus effusus</i> var. <i>gracilis</i> Common or Lamp Rush	1	•	•	•	•		3'	1'
<i>Juncus effusus</i> var. <i>pacificus</i> Common or Pacific Rush	1	•	•	•	•		3'	1'
<i>Juncus ensifolius</i> Dagger-leaf Rush	1	•	•	•	•	•	2'	1'
<i>Juncus oxymeris</i> Pointed Rush	1	•	•	•	•		3'	1'
<i>Juncus patens</i> Grooved Rush, Spreading Rush	1	•	•	•	•	•	2'	1'
<i>Juncus tenuis</i> , Slender Rush	1, 2	•	•	•	•	•	2'	1'
<i>Juncus unilateralis</i> One-sided Rush	1	•	•	•	•		2'	1'
<i>Koeleria (Aira) macrantha</i> Junegrass	2, 3		•	•	•	•	2'	1'
<i>Scirpus acutus</i> , Hardstem Bulrush	1	•	•	•	•		5'	4'
<i>Scirpus americanus</i> Three-square or American Bulrush	1	•	•	•	•		3'	1'
<i>Scirpus microcarpus</i> Small Fruited Bulrush	1	•	•	•	•		3'	1'
Forbs (Herbaceous Plants) ⁽¹⁾								
<i>Achillea millefolium</i> Western Yarrow	2, 3				•	•	3'	1'
<i>Alisma plantago-aquatica</i> Water Plantain	1	•	•	•	•		1'	1'
<i>Allium acuminatum</i> Hooker's Onion	2, 3		•			•	1'	1'
<i>Allium amplexans</i> Slim Leaf Onion	2, 3		•			•	1'	1'
<i>Aquilegia formosa</i> Western Columbine	2, 3		•		•	•	3'	1'
<i>Aster subspicatus</i> Douglas' Aster	1, 2	•	•	•	•	•	3'	1'
<i>Bidens cernua</i> Nodding Beggartick	1	•	•	•	•	•	3'+	1'
<i>Brodiaea coronaria</i> Harvest Brodiaea	1, 2	•	•			•	1'	1'

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Plant Name		Proposed Facility Type					Characteristics	
Botanic Name, Common Name	Zone	Planters	Rain Garden	Filter Strip	Swale	Dry Detention Basin	Potential Height	O.C. Spacing
<i>Camassia leichtlinii</i> Great Camas	1, 2	•	•	•	•	•	3'	1'
<i>Camassia quamash</i> Common Camas	1, 2	•	•	•	•	•	3'	1'
<i>Clarkia amoena</i> Farewell to Spring ^A	2, 3					•	3'	1'
<i>Clarkia purpurea</i> Four Spot Godetia ^A	2, 3					•	2'	1'
<i>Collinsia rattanii</i> Blue-eyed Mary ^A	2, 3					•	2'	1'
<i>Collomia grandiflora</i> Large-flowered Collomia ^A	2, 3					•	2'	1'
<i>Dichelostemma congestum</i> Ookow	2, 3					•	2'	1'
<i>Downingia elegans</i> Calico Flower ^A	1	•	•	•	•	•	1'	1'
<i>Epilobium densiflorum</i> Denseflower Willow-herb	1	•				•	2'	1'
<i>Eriophyllum lanatum</i> Woolly Sunflower	3					•	2'	1'
<i>Geum macrophyllum</i> Large-leaf Avens	2		•	•	•		2'	1'
<i>Gilia capitata</i> Bluefield Gilia	3		•	•	•	•	2'	1'
<i>Grindelia integrifolia</i> Gumweed	1, 2	•				•	3'	1'
<i>Iris tenax</i> Oregon Iris	2, 3		•	•	•	•	2'	1'
<i>Lotus purshiana</i> Spanish Clover	1	•					2'	1'
<i>Lupinus albicaulis</i> Sickie-keeled Lupine	2, 3					•	5'	3'
<i>Lupinus micranthus</i> Small-flowered Lupine ^A	2, 3					•	1'	1'
<i>Lupinus polyphyllus</i> Large Leaf Lupine	2		•	•	•		3'	1'
<i>Lupinus rivularis</i> Stream Lupine	2						3'	1'
<i>Madia elegans</i> Common Madia ^A	2, 3					•	3'	1'
<i>Plagiobothrys figuratus</i> Fragrant Popcorn-flower ^A	1	•	•	•	•	•	1'	1'
<i>Plagiobothrys scouleri</i> Scouler's Popcorn flower ^A	1	•	•	•	•	•	1'	1'
<i>Potentilla gracilis</i> Slender Cinquefoil	2		•		•	•	2'	1'
<i>Prunella vulgaris</i> var. <i>lanceolata</i> Lance Selfheal	3					•	1'	1'
<i>Ranaunculus occidentalis</i> Western Buttercup	1	•					2'	1'
<i>Ranunculus orthorhyncus</i> Straightbeak Buttercup	1	•					3'	1'
<i>Sanguisorba annua (occidentalis)</i> Prairie Burnet ^A	3					•	2'	1'

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Plant Name		Proposed Facility Type					Characteristics	
Botanic Name, Common Name	Zone	Planters	Rain Garden	Filter Strip	Swale	Dry Detention Basin	Potential Height	O.C. Spacing
<i>Saxifraga occidentalis</i> Western Rockbreaker	3					•	1'	1'
<i>Sidalcea campestris</i> Meadow Checker-mallow	3					•	4'	1'
<i>Sisyrinchium douglasii</i> Purple-Eyed Grass	2, 3		•	•	•	•	1'	1'
<i>Sisyrinchium californicum</i> Golden-eyed Grass	1	•	•	•	•		1'	1'
<i>Sisyrinchium idahoense</i> Idaho Blue-eyed Grass	1	•	•	•	•		1'	1'
<i>Solidago canadensis</i> Canadian Goldenrod	3					•	5'	1'
<i>Symphotrichum (Aster) hallii</i> Hall's Aster	2, 3		•	•	•	•	2'	1'
Ferns								
<i>Athyrium filix-femina</i> Lady Fern	2	•				•	3'	2'
<i>Blechnum spicant</i> Deer Fern	2	•	•	•	•	•	3'	4'
<i>Polypodium glycyrrhiza</i> Licorice Fern	2	•	•	•	•	•	1'	1'
<i>Polystichum munitum</i> Sword Fern	2, 3	•	•	•	•	•	5'	4'
<i>Pteridium aquilinum</i> Bracken Fern	2, 3	•					3'	2'
Shrubs								
<i>Ceanothus cuneatus</i> Buckbrush	3		•	•	•	•	9'	12'
<i>Ceanothus integerrimus</i> Deerbrush	2, 3		•	•	•	•	12'	12'
<i>Ceanothus sanguineus</i> Oregon Redstem Ceanothus	3		•	•	•	•	12'	10'
<i>Ceanothus velutinus</i> Snowbrush	2, 3		•	•	•	•	10'	10'
<i>Cornus sericea</i> Red-osier or Redtwig Dogwood	1, 2	•	•	•	•	•	14'	12'
<i>Gaultheria shallon</i> Salal	2, 3		•	•	•	•	5'	2'
<i>Mahonia aquifolium</i> Tall Oregon Grape	2, 3		•	•	•	•	6'	4'
<i>Mahonia nervosa</i> Dull Oregon Grape	2, 3		•	•	•	•	2'	2'
<i>Philadelphus lewisii</i> Mock Orange	1, 2	•	•	•	•	•	10'	4'
<i>Physocarpus capitatus</i> Pacific Ninebark	1	•	•	•	•	•	12'	6'
<i>Ribes sanguineum</i> Red-flowering Currant	2, 3		•	•	•	•	10'	4'
<i>Rosa gymnocarpa</i> Baldhip Rose	2, 3		•	•	•	•	5'	3'

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Plant Name		Proposed Facility Type					Characteristics	
Botanic Name, Common Name	Zone	Planters	Rain Garden	Filter Strip	Swale	Dry Detention Basin	Potential Height	O.C. Spacing
<i>Rosa nutkana</i> Nootka Rose	2		•	•	•	•	8'	4'
<i>Rosa pisocarpa</i> Swamp Rose	2		•	•	•	•	8'	4'
<i>Rubus parviflorus</i> Thimbleberry	2, 3		•	•	•	•	7'	4'
<i>Rubus spectabilis</i> Salmonberry	1, 2	•	•	•	•	•	10'	6'
<i>Spiraea douglasii</i> Douglas Spiraea	1, 2		•	•	•	•	6'	4'
<i>Symphoricarpos albus</i> Common Snowberry	2, 3	•	•	•	•	•	5'	2'
<i>Viburnum edule</i> Highbush Cranberry, Squashberry	1, 2	•	•	•	•	•	9'	6'
Large Shrubs/ Small Trees								
<i>Acer circinatum</i> Vine Maple	2	•	•	•	•		20'	12'
<i>Amelanchier alnifolia</i> Western Saskatoon Serviceberry	2, 3		•	•	•		9'	12'
<i>Corylus cornuta</i> Western Beaked Hazelnut	3		•	•	•		13'	12'
<i>Crataegus douglasii</i> (or <i>C. suksdorfii</i>) Douglas Black Hawthorn	2		•	•	•		30'	20'
<i>Holodiscus discolor</i> Oceanspray	3		•	•	•		15'	6'
<i>Malus fusca</i> Pacific Crab Apple	1, 2	•	•	•	•		40'	12'
<i>Oemleria cerasiformis</i> Indian Plum; Osoberry	1, 2	•	•	•	•		15'	6'
<i>Prunus emarginata</i> or <i>P. Virginiana</i> , Bitter or Choke Cherry	1	•	•	•	•		50'	12'
<i>Rhamnus purshiana</i> Cascara	1, 2	•	•	•	•		30'	12'
<i>Salix fluviatilis</i> Columbia Willow	1		•	•	•		18'	12'
<i>Salix hookeriana</i> Piper's Willow	1	•	•	•	•		18'	12'
<i>Salix lucida</i> (or <i>S. lasiandra</i>) Pacific Willow	1		•	•	•		60'	12'
<i>Salix scouleriana</i> Scouler's Willow	1	•	•	•	•		30'	12'
<i>Salix sessilifolia</i> Soft leafed Willow	1	•	•	•	•		24'	12'
<i>Salix sitchensis</i> Sitka Willow	1	•	•	•	•		25'	12'
<i>Sambucus cerulea</i> Blue Elderberry	2, 3		•	•	•		13'	12'
<i>Sambucus racemosa</i> Red Elderberry	2, 3		•	•	•		15'	12'

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Plant Name		Proposed Facility Type					Characteristics	
Botanic Name, Common Name	Zone	Planters	Rain Garden	Filter Strip	Swale	Dry Detention Basin	Potential Height	O.C. Spacing
Conifer and Evergreen Trees								
<i>Abies grandis</i> Grand Fir	3		•	•	•	•	100'+	12'
<i>Arbutus menziesii</i> Madrone	3		•	•	•	•	100'+	12'
<i>Calocedrus decurrens</i> Incense cedar	3		•	•	•	•	100'+	12'
<i>Castanopsis chrysophylla</i> Chinquapin	3					•	100'+	12'
<i>Pinus monticola</i> Western White Pine	3		•	•	•	•	100'+	12'
<i>Pinus ponderosa</i> Ponderosa Pine	3		•	•	•	•	100'+	12'
<i>Pseudotsuga menziesii</i> Douglas Fir	2,3		•	•	•	•	100'+	12'
<i>Thuja plicata</i> Western Red Cedar	2, 3		•	•	•	•	200'+	12'
<i>Tsuga heterophylla</i> Western hemlock	2, 3		•	•	•	•	100'+	12'
Deciduous Trees								
<i>Acer macrophyllum</i> Big leaf Maple	2, 3		•	•	•	•	100'	12'
<i>Alnus rhombifolia</i> White Alder	1		•	•	•	•	80'	12'
<i>Alnus rubra</i> Red Alder	1, 2		•	•	•	•	120'	12'
<i>Cornus nuttallii</i> Western Flowering Dogwood	2		•	•	•	•	60'	12'
<i>Fraxinus latifolia</i> Oregon Ash	1		•	•	•	•	80'	12'
<i>Populus balsamifera</i> Black Cottonwood	2		•	•	•	•	100'+	12'
<i>Quercus garryana</i> Oregon White Oak	3		•	•	•	•	80'	12'
<i>Quercus kelloggii</i> California Black Oak	3		•	•	•	•	80'	12'
^A Annual Plant. Limit use in Planting Zone 1 and 2, due to minimal soil retention capabilities.								
⁽¹⁾ On Center Spacing assumes the use of mature plants in one-gallon containers. If less mature plants are used, spacing between plants will be reduced in accordance with Table 4B-1.								

4B.8—Constructed Treatment and Subsurface Gravel Wetlands

(a) Planting Requirements

- (1).** Shrubs and wetland plantings shall be designed to minimize solar exposure of open water areas. Trees or other appropriate vegetation shall be located around the east, south, and west sides of a facility to maximize shading.
- (2).** Facility area is equivalent to the area of the wetland, including bottom and side slopes, plus a ten-foot buffer around the wetland.
- (3).** City maintained facilities shall be designed not to require mowing. Where mowing cannot be avoided, facilities shall be designed to require mowing no more than once or twice annually. Turf and lawn areas are not allowed for City maintained facilities.
- (4).** Minimum plant material quantities per 200 square feet of the facility area are as follows:

A. Woody Plants

One evergreen or deciduous tree:

- (i).** Evergreen trees: Minimum height: Six feet.
- (ii).** Deciduous trees: Minimum caliper: 1½ inches at Six inches above base.
- (iii).** Four large shrubs/small trees: Three-gallon container or equivalent.
- (iv).** Six shrubs: One-gallon container or equivalent.

B. Grasses, Herbs and Ground covers

- (i).** One plant per 12 inches on center, triangular spacing.
- (ii).** Minimum container size: four-inch pot.

At least 75 percent of the facility shall be planted with grasses or grass-like plants. Herbs and forbs may cover the balance of the facility.

C. Aquatic and Emergent Wetland Plants

One plant per two square feet of a pond emergent plant zone. The emergent plant zone is closest to the shore, where grasses, sedges and rushes provide shelter for frogs, birds, mammals, algae, protozoan, worms, insects, snails and small fish.

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The emergent plant zone shall be at least 25 percent of the total pond water surface area.

Wetlands Plant List	
Herbaceous Plants (Aquatic and Emergent): Zone 1- Emergent Wet to Saturated	
<i>Alisma plantago-aquatica</i> Water Plantain	* <i>Potamogeton natans</i> Floating-leaf Pondweed
<i>Carex obnupta</i> Slough Sedge	* <i>Sagittaria latifolia</i> Broadleaf Arrowhead, Wapato
<i>Eleocharis ovata</i> Ovate Spike rush	<i>Scirpus acutus</i> Hardstem Bulrush
<i>Eleocharis palustris</i> Creeping Spike rush	<i>Sparganium emersum</i> Narrowleaf Bur-reed
* <i>Lemna minor</i> Common Lesser Duckweed*	<i>Veronica americana</i> American Speedwell
<i>Myosotis laxa</i> Small-flowered Forget-me-not	
Zone 1- Moist to Wet Zone	
<i>Alopecurus geniculatus</i> Water foxtail	<i>Juncus effusus</i> var. <i>pacificus</i> Common Rush or Pacific Rush
<i>Beckmannia syzigachne</i> American Slough Grass	<i>Juncus ensifolius</i> Dagger-leaf Rush
<i>Carex densa</i> Dense Sedge	<i>Juncus oxymers</i> Pointed Rush
<i>Carex deweyana</i> Dewey Sedge	<i>Juncus tenuis</i> Slender Rush
<i>Carex hendersonii</i> Henderson Sedge	<i>Juncus patens</i> Grooved Rush; Spreading Rush
<i>Carex obnupta</i> Slough Sedge	<i>Juncus unilateralis</i> One-sided Rush
<i>Carex stipata</i> Sawbeak Sedge	<i>Lupinus polyphyllus</i> Large-leaved Lupine
<i>Juncus acuminatus</i> Tapertip Rush	<i>Scirpus microcarpus</i> Small flowered (or fruited) Bulrush
<i>Juncus effusus</i> var. <i>gracilis</i> Common Rush or Lamp Rush	
Grasses and Groundcovers: Varying Zones. See Seed and Sowing Rates for Stormwater Facilities (Section 4B.10—Forbs and Section 4B.11—Grasses) or use plant spacing in Table 4B-1.	
<i>Arctostaphylos uva-ursi</i> Kinnick-Kinnick; dry	<i>Festuca roemerii</i> var. <i>roemerii</i> Roemer's Fescue; dry
<i>Aster hallii</i> Hall's Aster; moist-dry	<i>Glyceria occidentalis</i> Western Mannagrass; moist-wet
<i>Aster subspicatus</i> Douglas' Aster; moist-dry	<i>Iris tenax</i> Oregon Iris; moist-dry
<i>Bidens cernua</i> , Nodding Beggartick; moist-wet	<i>Koeleria macrantha</i> Junegrass; moist-dry
<i>Bromus carinatus</i> California Brome Grass; moist-dry	<i>Lupinus micranthus</i> Small Flowered Lupine; moist-dry
<i>Bromus sitchensis</i> Alaska Brome; moist-dry	<i>Lupinus polyphyllus</i> Large Leaf Lupine;

Wetlands Plant List	
	moist-dry
<i>Bromus vulgaris</i> Columbia Brome Grass; moist-dry	<i>Lupinus rivularis</i> Riverbank Lupine; moist-dry
<i>Danthonia californica</i> California Oatgrass; moist-dry	<i>Potentilla gracilis</i> var. <i>gracilis</i> Graceful Cinquefoil; moist-dry
	<i>Sisyrinchium idahoense</i> Blue-eyed Grass; moist-dry
Shrubs: Moist to Saturated Zones 1, 2	
<i>Acer circinatum</i> Vine Maple	<i>Rosa pisocarpa</i> Swamp Rose
<i>Blechnum spicant</i> Deer Fern	<i>Rubus spectabilis</i> Salmonberry
<i>Cornus sericea</i> Red-stemmed dogwood	<i>Salix fluviatilis</i> Columbia Willow
<i>Physocarpus capitatus</i> Pacific Ninebark	<i>Salix hookeriana</i> Hookers Willow
<i>Polystichum munitum</i> Sword fern	<i>Salix sitchensis</i> Sitka Willow
<i>Rhamnus purshiana</i> Cascara	<i>Viburnum edule</i> Highbush Cranberry; Squashberry
<i>Spiraea douglasii</i> Douglas Spiraea	
Shrubs: Moist to Dry Zones 2, 3	
<i>Crateagus douglasii</i> Black Hawthorn	<i>Rosa gymnocarpa</i> Baldhip Rose
<i>Lonicera involucrata</i> Black twinberry	<i>Rosa nutkana</i> Nootka Rose
<i>Mahonia aquifolium</i> Tall Oregon Grape	<i>Rubus parviflorus</i> Thimbleberry
<i>Mahonia nervosa</i> Dull Oregon Grape	<i>Sambucus racemosa</i> Red Elderberry
<i>Oemlaria cerasiformis</i> Indian Plum	<i>Spiraea betulifolia</i> Shiny-leaf Spiraea
<i>Prunus emarginata</i> Bitter Cherry	<i>Symphoricarpus albus</i> , Snowberry
Shrubs: Dry Zone 3	
<i>Ceanothus cuneatus</i> Buckbrush	<i>Philadelphus lewisii</i> Mock Orange
<i>Ceanothus integerrimus</i> Deerbrush	<i>Ribes sanguineum</i> Red Flowering Currant
<i>Corylus cornuta</i> Western Beaked Hazelnut	<i>Salix scouleriana</i> Scouler's Willow
<i>Holodiscus discolor</i> Oceanspray	
Trees: Conifer and Evergreen Trees: Varying Zones	
<i>Abies grandis</i> Grand Fir; moist-dry	<i>Pinus ponderosa</i> Ponderosa Pine; dry
<i>Arbutus menziesii</i> Madrone; dry	<i>Pseudotsuga menziesii</i> Douglas Fir; moist-dry
<i>Calocedrus decurrens</i> Incense Cedar; dry	<i>Sequoia sempervirens</i> Coast Redwood; moist
<i>Pinus monticola</i> Western White Pine; dry-moist	<i>Thuja plicata</i> Western Red Cedar; moist-wet

Deciduous Trees: Varying Zones	
<i>Acer macrophyllum</i> , Big leaf Maple; moist-dry	<i>Malus fusca</i> Pacific Crabapple; moist-wet
<i>Alnus rhombifolia</i> White Alder; moist-wet	<i>Oemleria cerasiformis</i> Indian Plum; moist-dry
<i>Alnus rubra</i> Red Alder; moist-wet	<i>Populus balsamifera</i> Black Cottonwood-; moist-wet
<i>Amelanchier alnifolia</i> Serviceberry; dry	<i>Quercus garryana</i> Oregon White Oak; moist-dry
<i>Cornus nuttallii</i> Western Flowering Dogwood; moist-dry	<i>Quercus kelloggii</i> California Black Oak; dry
<i>Fraxinus latifolia</i> Oregon Ash; moist-wet	<i>Salix lucida</i> var. <i>lasiandra</i> Pacific Willow; moist-wet

4B.9—Green Roofs Plants List

Plant Name	Characteristics					
Botanic name, Common Dam	NW Native	Evergreen	Potential Height	O.C. Spacing	Full Sun	Partial Shade
Sedums and Succulents						
<i>Delosperma</i> ssp., Ice Plant	N	Y	4"		•	
<i>Malephora crocea</i> var. <i>purpureo crocea</i> 'Tequila Sunrise'	N	Y	10"		•	
<i>Sedum</i> 'Autumn Joy'	N	N	24"		•	
<i>Sedum acre</i> , Biting Stonecrop	N	Y	2"		•	
<i>Sedum album</i> , White Stonecrop	N	Y	3"		•	
<i>Sedum divergens</i> , Pacific Stonecrop	N	Y	3"		•	
<i>Sedum hispanicum</i> , Spanish Stonecrop	N	Y	3"		•	
<i>Sedum kamtschaticum</i> , Kirinso	N	N	6"		•	
<i>Sedum oreganum</i> , Oregon Stonecrop	Y	Y	4"		•	•
<i>Sedum sexangulare</i> , Tasteless Stonecrop	N	Y	4"		•	
<i>Sedum spathulifolium</i> , Stonecrop	Y	Y	4"		•	
<i>Sedum spurium</i> , Two-row Stonecrop	N	Y	6"		•	•
<i>Sempervivum tectorum</i> , Hens and Chicks	N	Y	6"		•	
Herbaceous Plants						
<i>Achillea millefolium</i> , Common Yarrow	N	N	36"		•	

Division 004, Appendix B—Planting List for Stormwater Facilities

Plant Name	Characteristics					
Botanic name, Common Dam	NW Native	Evergreen	Potential Height	O.C. Spacing	Full Sun	Partial Shade
<i>Achillea tomentosa</i> , Woolly Yarrow	N	N	8"		•	
<i>Arenaria Montana</i> , Sandwort	N	N	4"		•	
<i>Artemesia</i> ‘Silver Mound’, Artemesia	N	N	12"		•	
<i>Aurinia saxatilis</i> , Compacta	N	N	6"		•	
<i>Castilleja foliosa</i> , Indian Paintbrush	Y	N	10"		•	
<i>Dianthus ssp.</i>	N	N	12"		•	•
<i>Erigeron discoideus</i> , Fleabane	N	N	12"		•	•
<i>Festuca glauca</i> , Blue Fescue	N	Y	12"		•	•
<i>Fragaria chiloensis</i> , Coastal Strawberry	Y	Y	10"		•	•
<i>Fragaria virginiana</i> , Wild Strawberry	Y	Y	10"		•	•
<i>Gaillardia aristata</i> , Birds-eye gilia	N	N	20"		•	•
<i>Gazania linearis</i> ‘CO Gold’, Gazania	N	N	6"		•	
<i>Gilia capitata</i> , Blue Thimble Flower	Y	N	12"		•	
<i>Koeleria macrantha</i> , June Grass	N	N	24"		•	•
<i>Linaria reticulate</i> , Purplenet Toadflax	N	N	20"		•	
<i>Lobularia maritime</i> , Sweet Alyssum	N	N	12"		•	
<i>Polypodium glycyrrhiza</i> , Licorice Fern	Y	Y	12"		•	•
<i>Polystichum munitum</i> , Sword Fern	Y	Y	24"		•	•
<i>Potentilla napalensis</i> , Nepal Cinquefoil	N	N	14"		•	•
<i>Potentilla neumanniana</i> , Cinquefoil	N	N	14"		•	
<i>Thymus serpyllum</i> , Creeping Thyme	N	N	3"		•	
<i>Veronica liwanensis</i> , Speedwell	N	N	2"		•	•

4B.10—Seed and Sowing Rates for Stormwater Facilities: Forbs

Scientific Name	Common Name	Sowing Season	Sow Rate (hand)	Zone
<i>Achillea millefolium</i>	Western yarrow	Fall	0.25 lbs/ac	1, 2
<i>Alisma media</i>	Water plantain	Fall/Spring	1.0 lb/ac	1
<i>Aquilegia formosa</i>	Western columbine	Fall	1.0 lb/ac	1, 2
<i>Camassia leichtlinii</i>	Great camas	Fall	1 lb/ac	1, 2

Division 004, Appendix B—Planting List for Stormwater Facilities

<i>Scientific Name</i>	Common Name	Sowing Season	Sow Rate (hand)	Zone
<i>Camassia quamash</i>	Common camas	Fall	1 lb/ac	1, 2
<i>Clarkia amoena</i>	Farewell to Spring	Fall-early Spring	0.25-1 lb/ac	2, 3
<i>Clarkia purpurea</i>	Four Spot godetia	Fall-early Spring	0.25-1 lb/ac	2, 3
<i>Collinsia rattanii</i>	Blue-eyed mary	Fall/Spring	0.25 lbs/ac	2, 3
<i>Collomia grandiflora</i>	Large-flowered collomia	Fall/Spring	0.5 lbs/ac	2, 3
<i>Epilobium densiflorum</i>	Denseflower willow-herb	Fall	1.0 lb/ac	1, 2
<i>Eriophyllum lanatum</i>	Woolly sunflower	Fall	1.0 lb/ac	1, 2
<i>Geum macrophyllum</i>	Large-leaf avens	Fall-early Spring	0.25-1 lb/ac	1, 2
<i>Gilia capitata</i>	Bluefield gilia	Fall-early Spring	2 lbs/ac	2, 3
<i>Grindelia integrifolia</i>	Gumweed	Fall-early Spring	0.25-1 lb/ac	2, 3
<i>Iris tenax</i>	Oregon iris	Fall	2 lbs/ac	2, 3
<i>Lotus purshiana</i>	Spanish clover	Fall	2 lbs/ac	2, 3
<i>Lupinus albicaulis</i>	Sickle-keeled lupine	Fall	1 lb/ac	2, 3
<i>Lupinus micranthus</i>	Small-flowered lupine	Fall	1 lb/ac	2, 3
<i>Lupinus rivularis</i>	Stream lupine	Fall	1 lb/ac	2, 3
<i>Madia elegans</i>	Common madia	Fall-early Spring	0.25-1 lb/ac	2, 3
<i>Plagiobothrys figuratus</i>	Fragrant popcorn-flower	Fall-early Spring	1 lb/ac	1
<i>Plagiobothrys scouleri</i>	Scouler's popcorn flower	Fall-early Spring	0.25-1 lb/ac	1
<i>Potentilla gracilis</i>	Slender cinquefoil	Fall-early Spring	0.25-1 lb/ac	1, 2
<i>Prunella vulgaris var. lanceolata</i>	Lance selfheal	Fall-early Spring	2 lbs/ac	1, 2
<i>Ranaunculus occidentalis</i>	Western buttercup	Fall	1 lb/ac	2, 3
<i>Ranunculus orthorhyncus</i>	Straightbeak buttercup	Fall-early Spring	0.25-1 lb/ac	1, 2
<i>Sanguisorba annua (occidentalis)</i>	Prairie burnet	Fall-early Spring	0.25-1 lb/ac	1, 2
<i>Saxifraga occidentalis</i>	Western Rockbreaker	Fall-early Spring	0.25-1 lb/ac	1, 2

Division 004, Appendix B—Planting List for Stormwater Facilities

<i>Scientific Name</i>	Common Name	Sowing Season	Sow Rate (hand)	Zone
<i>Sidalcea campestris</i>	Meadow checker-mallow	Fall	1 lb/ac	2, 3
<i>Sisyrinchium californicum</i>	Golden-eyed grass	Fall	0.25-1 lb/ac	2, 3
<i>Sisyrinchium idahoense</i>	Blue-eyed grass	Fall	0.25-1 lb/ac	2, 3
<i>Solidago canadensis</i>	Canada goldenrod	Fall	0.50 lbs/ac	2, 3
<i>Symphotrichum (Aster) hallii</i>	Hall's aster	Fall-early Spring	1 lb/ac	2, 3

4B.11—Seed and Sowing Rates for Stormwater Facilities: Grasses

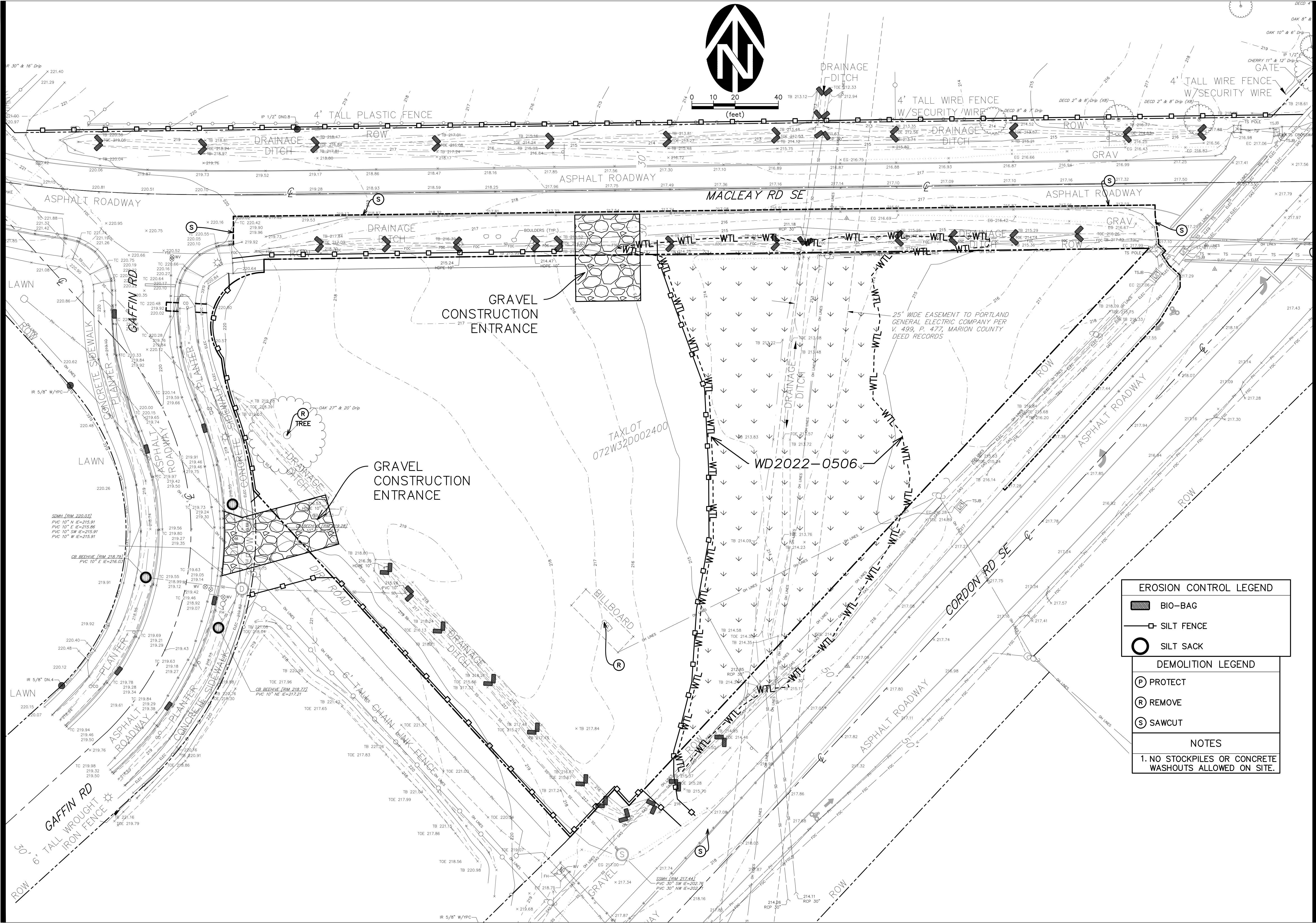
<i>Scientific Name</i>	Common Name	Sowing Season	Sow Rate (hand)
<i>Agrostis exarata</i>	Spike bentgrass	early fall/spring	5 lbs/ac
<i>Alopecurus geniculatus</i>	Water foxtail	fall/spring	25 lbs/ac
<i>Beckmannia syzigachne</i>	American sloughgrass	fall/spring	2 lbs/ac
<i>Bromus carinatus</i>	California brome	early fall/spring	25 lbs/ac
<i>Bromus sitchensis</i>	Alaska brome	early fall/spring	25 lbs/ac
<i>Bromus vulgaris</i>	Columbia brome	fall/spring	5 lbs/ac
<i>Danthonia californica</i>	California oatgrass	fall/spring	30 lbs/ac
<i>Deschampsia cespitosa</i>	Tufted hairgrass	fall/spring	2 lbs/ac
<i>Deschampsia elongata</i>	Slender hairgrass	early fall/spring	20 lbs/ac
<i>Elymus glaucus</i>	Blue Wildrye	early fall/spring	25 lbs/ac
<i>Elymus trachycaulus</i>	Slender wheatgrass	early fall/spring	25 lbs/ac
<i>Festuca occidentalis</i>	Western fescue	fall/spring	20 lbs/ac
<i>Festuca roemerii</i>	Roemer's fescue	fall/spring	2 lbs/ac
<i>Glyceria elata</i>	Tall mannagrass	fall/spring	2 lbs/ac
<i>Glyceria occidentalis</i>	Western mannagrass	fall/spring	25 lbs/ac
<i>Hordeum brachyantherum</i>	Meadow barley	early fall/spring	25 lbs/ac
<i>Koeleria macrantha</i>	Prairie Junegrass	fall/spring	20 lbs/ac
<i>Leersia oryzoides</i>	Rice cutgrass	fall/spring	5 lbs/ac
<i>Poa secunda</i>	Pine Bluegrass	fall/spring	2lbs/ac

Macleay Gas Station
Salem, Oregon
Stormwater Management Report

APPENDIX VI

Supplemental Civil Drawings

EROSION CONTROL PLAN, NOTES, & DETAILS



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3

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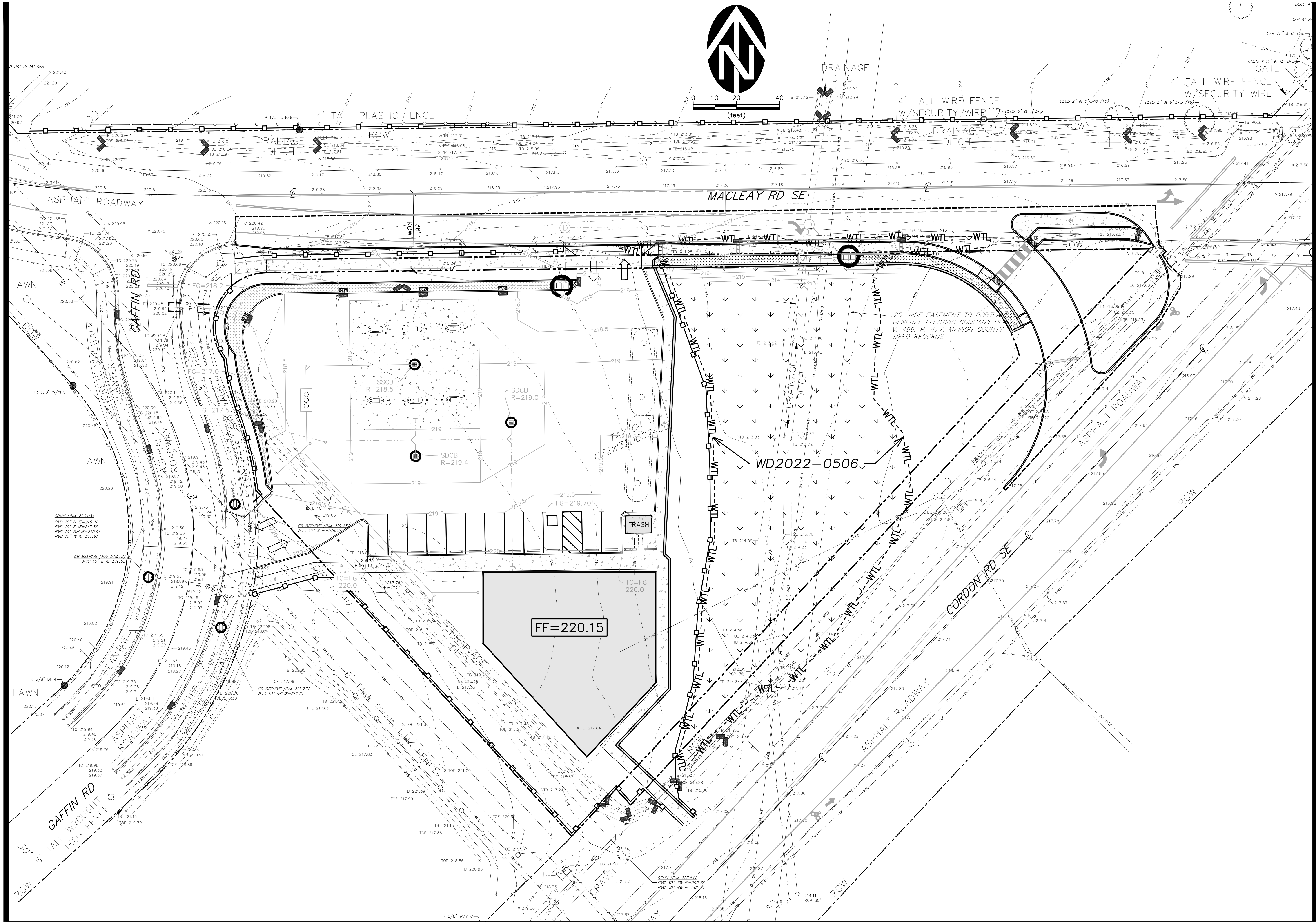
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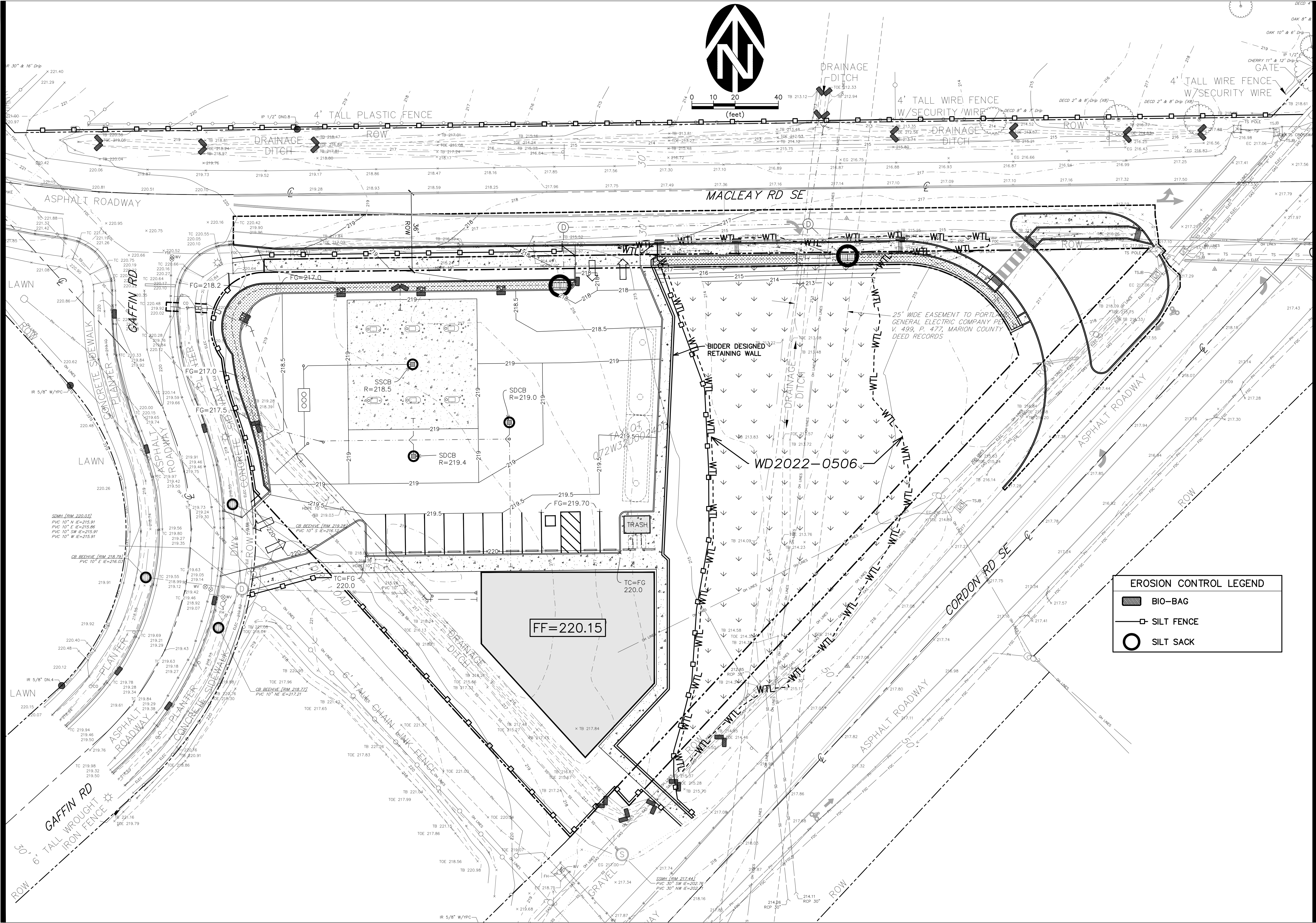
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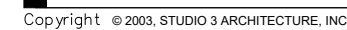
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VERTICAL CONSTRUCTION



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DEQ EROSION CONTROL STANDARD NOTES:

1. Include a list of all personnel (by name and position) that are responsible for the design, installation and maintenance of stormwater control measures (e.g. ESCP developer, BMP installer (see Section 4.10), as well as their individual responsibilities. (Section 4.4.c.ii)
2. Visual monitoring inspection reports must be made in accordance with DEQ 1200-C permit requirements. (Section 6.5)
3. Inspection logs must be kept in accordance with DEQ's 1200-C permit requirements. (Section 6.5.g)
4. Retain a copy of the ESCP and all revisions on site and make it available on request to DEQ, Agent, or the local municipality. (Section 4.7)
5. The permit registrant must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit. (Sections 4 and 4.11)
6. The ESCP must be accurate and reflect site conditions. (Section 4.8)
7. Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions. Submit all necessary revision to DEQ or Agent within 10 days. (Section 4.9)
8. Sequence clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Section 2.2.2)
9. Create smooth surfaces between soil surface and erosion and sediment controls to prevent stormwater from bypassing controls and ponding. (section 2.2.3)
10. Identify, mark, and protect (by construction fencing or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas. (Section 2.2.1)
11. Preserve existing vegetation when practical and re-vegetate open areas. Re-vegetate open areas when practicable before and after grading or construction. Identify the type of vegetative seed mix used. (Section 2.2.5)
12. Maintain and delineate any existing natural buffer within the 50-feet of waters of the state. (Section 2.2.4)
13. Install perimeter sediment control, including storm drain inlet protection as well as all sediment basins, traps, and barriers prior to land disturbance. (Sections 2.1.3)
14. Control both peak flow rates and total stormwater volume, to minimize erosion at outlets and downstream channels and streambanks. (Sections 2.1.1. and 2.2.16)
15. Control sediment as needed along the site perimeter and at all operational internal storm drain inlets at all times during construction, both internally and at the site boundary. (Sections 2.2.6 and 2.2.13)
16. Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Section 2.2.14)
17. Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses. Temporary or permanent stabilizations measures are not required for areas that are intended to be left unvegetated, such as dirt access roads or utility pole pads. (Sections 2.2.20 and 2.2.21)
18. Establish material and waste storage areas, and other non-stormwater controls. (Section 2.3.7)
19. Keep waste container lids closed when not in use and close lids at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, provide either (1) cover (e.g., a tarp, plastic sheeting, temporary roof) to prevent exposure of wastes to precipitation, or (2) a similarly effective means designed to prevent the discharge of pollutants (e.g., secondary containment). (Section 2.3.7)
20. Prevent tracking of sediment onto public or private roads using BMPs such as: construction entrance, graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land-disturbing activities. (Section 2.2.7)
21. When trucking saturated soils from the site, either use water-tight trucks or drain loads on site. (Section 2.2.7.f)
22. Control prohibited discharges from leaving the construction site, i.e., concrete wash-out, wastewater from cleanout of stucco, paint and curing compounds. (Sections 1.5 and 2.3.9)
23. Ensure that steep slope areas where construction activities are not occurring are not disturbed. (Section 2.2.10)
24. Prevent soil compaction in areas where post-construction infiltration facilities are to be installed. (Section 2.2.12)
25. Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, fertilizer, pesticides and herbicides, paints, solvents, curing compounds and adhesives from construction operations.(Sections 2.2.15 and 2.3)
26. Provide plans for sedimentation basins that have been designed per Section 2.2.17 and stamped by an Oregon Professional Engineer. (See Section 2.2.17.a)
27. If engineered soils are used on site, a sedimentation basin/impoundment must be installed. (See Sections 2.2.17 and 2.2.18)
28. Provide a dewatering plan for accumulated water from precipitation and uncontaminated groundwater seepage due to shallow excavation activities. (See Section 2.4)
29. Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies. (Section 2.3)
30. Use water, soil-binding agent or other dust control technique as needed to avoid wind-blown soil. (Section 2.2.9)
31. The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time-release fertilizers within any waterway riparian zone. (Section 2.3.5)
32. If an active treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain Environmental Management Plan approval from DEQ before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications. (Section 1.2.9)
33. Temporarily stabilize soils at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year. (Section 2.2)
34. As needed based on weather conditions, at the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters. (Section 2.2.8)
35. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal. (Section 2.1.5.b)
36. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height and before BMP removal. (Section 2.1.5.c)
37. Catch basins: clean before retention capacity has been reduced by fifty percent. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project. (Section 2.1.5.d)
38. Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence of the discharge within the same 24 hours. Any in-stream clean-up of sediment shall be performed according to the Oregon Department of State Lands required timeframe. (Section 2.2.19.a)
39. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments. (Section 2.2.19)
40. Document any portion(s) of the site where land disturbing activities have permanently ceased or will be temporarily inactive for 14 or more calendar days. (Section 6.5.f.)
41. Provide temporary stabilization for that portion of the site where construction activities cease for 14 days or more with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Section 2.2.20)
42. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. Once construction is complete and the site is stabilized, all temporary erosion controls and retained soils must be removed and disposed of properly, unless needed for long term use following termination of permit coverage. (Section 2.2.21)

Rev. 12/15/20
By: Blair Edwards

YEAR: MONTH:	'24 09	'24 10	'24 11	'24 12	'25 01	'25 02	'25 03	'25 04	'25 05	'25 06	'25 07	'25 08
CLEARING	X	X	X	X	X	X						
EXCAVATION	X	X	X	X	X	X	X	X	X	X		
GRADING	X	X	X	X	X	X	X	X	X	X	X	
CONSTRUCTION	X	X	X	X	X	X	X	X	X	X	X	X
SEDIMENT CONTROLS:												
Silt Fencing	X	X	X	X	X	X	X	X	X	X	X	X
Sediment Traps	X	X	X	X	X	X	X	X	X	X	X	X
Sediment Basins	X	X	X	X	X	X	X	X	X	X	X	X
Storm Inlet Protection	X	X	X	X	X	X	X	X	X	X	X	X
Drainage Swales												
Check Dams												
Contour Furrows												
Terracing												
Pipe Slope Drains												
Rock Outlet Protection						X	X	X	X	X	X	X
Gravel Construction Entrance	X	X										
Grass-lined Channel (Turf Reinforcement Mats)												
Protection of trees with construction fences	X	X	X	X	X	X	X	X	X	X	X	X
Temporary Seeding and Planting												
Permanent Seeding and Planting									X	X	X	
Other:												

CONTROL MEASURE	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Silt Fencing	X	X	X	X	
Construction Entrance	X	X			
Sediment Traps			X	X	
Storm Inlet Protection	X	X	X	X	
Concrete Washout					
Rock Outlet Protection			X	X	X
Permanent Seeding and Planting					X
Phase 1: Prior to Ground Disturbance Phase 2: After Completion of Rough Grading Phase 3: After Installation of Storm Facilities Phase 4: After Paving & Construction Phase 5: After Project Completion and Cleanup					

BMP Rationale

A comprehensive list of available Best Management Practices (BMP) options based on DEQ's 1200-C Permit Application and ESCP Guidance Document has been reviewed to complete this Erosion and Sediment Control Plan. Some of the above listed BMPs were not chosen because they were determined to not effectively manage erosion prevention and sediment control for this project based on specific site conditions, including soil conditions, topographic constraints, accessibility to the site, and other related conditions. As the project progresses and there is a need to revise the ESCP, an Action Plan will be submitted.

SOIL TYPE(S): PER MARION CO. SOIL SURVEY THE SITE SOIL INCLUDES "SALEM GRAVELLY SILT LOAM."
EROSION HAZARD: PER MARION CO. SOIL SURVEY EROSION HAZARD IS "SLIGHT."
SITE AREA: 0.51 Ac
DISTURBANCE AREA: 0.30 Ac
LOCAL RAIN GAGE: MCNARY FIELD AIRPORT
LAT/LONG 44.905°; -123.0011°

INSPECTION FREQUENCY FOR BMP	
Site Condition	Minimum Frequency
1. Active period	On initial date that land disturbance activities commence. Within 24 hours of any storm event, including runoff from snow melt, that results in discharge from the site. At least once every 14 days, regardless of whether stormwater runoff is occurring.
2. Inactive periods greater than fourteen (14) consecutive calendar days	The Inspector may reduce the frequency of inspections in any area of the site where the stabilization steps in Section 2.2.20 have been completed to twice per month for the first month, no less than 14 calendar days apart, then once per month.
3. Periods during which the site is inaccessible due to inclement weather	If safe, accessible and practical, inspections must occur daily at a relevant discharge point or downstream location of the receiving waterbody.
4. Periods during which construction activities are suspended and runoff is unlikely due to frozen conditions.	Visual monitoring inspections may be temporarily suspended. Immediately resume monitoring upon thawing, or when weather conditions make discharges likely.
5. Periods during which construction activities are conducted and runoff is unlikely during frozen conditions.	Visual monitoring inspections may be reduced to once a month. Immediately resume monitoring upon thawing, or when weather conditions make discharges likely.

Spill Prevention Procedures and Response

- Spill prevention is an important factor in the successful operation of a storm water injection management system. All contractor employees will be trained on this plan so that they are certain of the location of materials, who to notify in case of a spill, and how to initially contain the spill of hazardous materials. Contractor employees shall never dispose waste materials into the storm water collection/treatment system. Contractor employees will be observant of other potential contamination occurrences. All contractor employees will review this plan especially with regards to the detailed spill response steps.
- This data will be posted in an accessible area at the site.

What to do in case of a spill

1. Spill kit to be located near the job trailer or another conspicuous location and clearly marked.
2. Get the spill kit.

a. If possible, determine visually what types of fluids have been spilled.

b. Put on gloves and glasses or any other necessary Personal Protective Equipment (PPE).

c. Get the absorbent material provided in the kit and the drain block cover.

d. Place the absorbent materials in the path of the spill.

e. Remove any debris from the vicinity of the inlet where the spill is draining.

f. Unroll the drain block cover and place it snugly over the inlet.

g. Verify that the cover has full contact with the rim of the inlet.

h. Use snakes, pillow or pigs to completely contain the area.
3. Notify the following personnel immediately:

a. Owner's Representative: Troy Croft, Phone: 503-375-7168.

b. When a spill includes any of the below, notify the Oregon Emergency Response System as soon as the Owner's Representative has knowledge of the release. Oregon Emergency Response System Phone: 1-800-452-0311

i. Any amount of oil to waters of the state;

ii. Oil spills on land in excess of 42 gallons;

iii. Hazardous materials that are equal to, or greater than, the quantity listed in the Code of Federal Regulations, 40 CFR Part 302 (List of Hazardous Substances and Reportable Quantities), and amendments adopted before July 1, 2002

NOTE: Only dry cleanup methods will be employed to clean up spills (i.e., no use of water to wash spilled materials from pavement will be conducted). All spill cleanups shall be conducted in accordance with applicable regulations.

Responsible Personnel

In case of spill contact the General Contractor and Owner's Representative immediately. The General Contractor will be responsible for either managing the spill clean up for minor spills or contacting/retaining a company for the cleanup of major spills.

Waste Management Procedures

Activities performed onsite shall implement the following to eliminate the discharge of waste:

1. Locate activities that include waste products away from waters of the state and stormwater inlets or conveyances so that stormwater coming into contact with these activities cannot reach waters of the state;
2. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of liquids, and provide secondary containment (e.g. spill berms, decks, spill containment pallets);
3. Have a spill kit available on site and ensure personnel are available to respond expeditiously in the event of a leak or spill;
4. Clean up spills or contaminated surfaces immediately using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge; and
5. Store materials in a covered area (e.g., plastic sheeting, temporary roofs), or in secondary containment to prevent the exposure of these containers to precipitation or stormwater runoff, or a similarly effective means designed to prevent the discharge of pollutants from these areas.
6. Building Materials & Building Products: Minimize material exposure in cases where the exposure to precipitation or to stormwater will result in a discharge of pollutants (e.g. elevate materials from soil to prevent leaching of pollutants).

Fertilizers, pesticides, herbicides, & insecticides

Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label. When applying fertilizers, registrants must:

1. Apply at a rate and in amounts consistent with manufacturer's specifications;
2. Apply at the appropriate time of year for the location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;
3. Avoid applying before heavy rains that could cause excess nutrients to be discharged;
4. Never apply to frozen ground;
5. Never apply to stormwater conveyance channels; and
6. Follow all other federal, state, and local requirements regarding fertilizer application.

<u>Authorized non-stormwater discharges anticipated for the proposed project:</u> <div>1. Landscape irrigation</div> <div>2. Dust control water</div> <div>3. Water line flushing (potable)</div>
<u>Potential pollutant-generating activities anticipated for the proposed project including an inventory of pollutants for each activity:</u> <div>1. Mass Grading, Street & Utility Construction<div>a.Sediment</div><div>b.Vehicle and machinery related pollutants (Fuels, hydraulic fluid, oils)</div></div> <div>2. Vertical Construction<div>a.Paints, caulks, sealants, solvents</div><div>b.Fluorescent light ballasts</div><div>c.Sediment</div><div>d.Vehicle and machinery related pollutants (Fuels, hydraulic fluid, oils)</div></div> <div>2. Landscaping & Irrigation<div>a.Fertilizers</div><div>b.Pesticides, Herbicides, Insecticides</div></div>

STUDIO

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REGISTERED PROFESSIONAL
ENGINEER
REVIEW
NOV 12 2025
WILLIAM J. WELLS
OREGON

RENEWS: 6/30/2026

IN THE EVENT CONFLICTS ARE
DISCOVERED BETWEEN THE ORIGINAL
SIGNED AND SEALED DOCUMENTS
PREPARED BY THE ARCHITECTS AND/OR
THEIR CONSULTANTS, AND ANY COPY OF
THE DOCUMENTS TRANSMITTED BY MAIL,
FAX, ELECTRONICALLY OR OTHERWISE,
THE ORIGINAL SIGNED AND SEALED
DOCUMENTS SHALL GOVERN.

PROJECT #3535.0000.0
DATE: 08/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS:

- 1
- 2
- 3
- 4

WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

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E-mail: westech@westech-eng.com



NEW GAS STATION:
MACLEAY RD SE
SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:
C1.4
EROSION CONTROL
NOTES

2/26/2025 2:54:58 PM
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SUPPLEMENTAL WESTECH NOTES:

- Erosion control measures shall be maintained in such a manner as to ensure that sediment and sediment-laden water does not enter the drainage system, roadways, or violate applicable water quality standards.
- The erosion control construction, maintenance, replacement and upgrading of the erosion control facilities is the responsibility of the Contractor until all construction is completed and approved, and permanent erosion control (i.e. vegetation/landscaping) is established on all disturbed areas.
- All recommended erosion control procedures are dependent on construction methods, staging, site conditions, weather and scheduling. During the construction period, erosion control facilities shall be upgraded as necessary due to unexpected storm events and to ensure that sediment and sediment laden water does not leave the site.
- The Contractor is responsible for control of sediment transport within project limits. If an installed erosion control system does not adequately contain sediment on site, then the erosion control measures shall be adjusted or supplemented by the Contractor as necessary to ensure that sediment laden water does not leave the site. Additional measures shall be provided as required to ensure that all paved areas are kept clean for the duration of the project. Additional interim measures will include, at a minimum, installation of silt fences in accordance with the details shown on the drawings. These measures shall be installed along all exposed embankments and cut slopes to prevent sediment transport.
- All existing and newly constructed storm inlets and drains shall be protected until pavement surfaces are completed and/or vegetation is established.
- Erosion control facilities and sediment fences on active sites shall be inspected by the Contractor at least daily during any period with measurable precipitation. Any required repairs or maintenance shall be completed immediately. The erosion control facilities on inactive sites shall be inspected and maintained by the Contractor a minimum of once a month or within 24 hours following the start of a storm event.
- All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system. The Contractor shall remove all accumulated sediment from all impacted catch basins and storm pipes prior to acceptance by the Owner.
- The Contractor is solely responsible for protection of all adjacent property and downstream facilities from erosion and siltation during project construction. Any damage resulting from such erosion and siltation shall be corrected at the sole expense of the Contractor.
- The Contractor shall provide site watering as necessary to prevent wind erosion of fine-grained soils.
- Unless otherwise indicated on the drawings, all temporary erosion control facilities, including sediment fences, silt sacks, bio-bags, etc. shall be removed by the Contractor within 30 days after permanent landscaping/vegetation is established.
- Sediment fences shall be constructed of continuous filter fabric to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and both ends securely fastened to a post.
- Sediment fence shall be installed per drawing details. Sediment fences shall have adequate support to contain all silt and sediment captured.
- The standard strength filter fabric shall be fastened securely to stitched loops installed on the upslope side of the posts, and 6 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
- Bio-filter bags shall be clean 100 percent wood product waste. Bags shall be 18-inch x 18-inch x 30-inch, weigh approximately 45 lbs., and be contained in a bag made of 1/2-inch plastic mesh.
- Sediment barriers shall be maintained until the up-slope area has been permanently stabilized. At no time shall more than 10-inches of sediment be allowed to accumulate behind sediment fences. No more than 2 inches of sediment shall be allowed to accumulate behind bio-filter bags. Sediment shall be removed prior to reaching the above stated depths. New sediment barriers shall be installed uphill as required to control sediment transport.
- Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to ensure that all paved areas are kept clean for the duration of the project.
- The Contractor shall verify that all trucks are well sealed when transporting saturated soils from the site. Water dripage from trucks transporting saturated soils must be reduced to less than 1 gallon per hour prior to leaving the site.
- The entrance shall be maintained in a condition that will prevent tracking or flow of mud onto the public right-of-way or approved access point. The entrance may require periodic top dressing as conditions demand, and repair and/or cleanout of any structures used to trap sediment.
- All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately, and the Contractor shall provide protection of downstream inlets and catch basins to ensure sediment laden water does not enter the storm drain system.
- Temporary grass cover measures must be fully established by October 15th, or other cover measures (i.e. erosion control blankets with anchors, 3-inches minimum of straw mulch, 6 mil HDPE plastic sheet, etc.) shall be in place over all disturbed soil areas until April 30th. To establish an adequate grass stand for controlling erosion by October 15th, it is recommended that seeding and mulching occur by September 1st. Straw mulch, if used, shall not leave any bare ground visible through the straw.
- Minimum wet weather slope protection. For slopes steeper than 3H:1V but less than 2H:1V, use Tensor/North American Green Type S150 erosion control blanket. For slopes 2H:1V or steeper, use Tensor/North American Green Type SC150 erosion control blanket. Use a minimum of 2-inches straw mulch or Tensor/North American Green Type S150 for slopes flatter than 3H:1V. Slope protection shall be placed on all disturbed areas immediately after completion of each section of construction activity, until the erosion control seeding has been established. As an option during temporary or seasonal work stoppages, a 6-mil HDPE plastic sheet may be placed on exposed slopes. The plastic sheet shall be provided with an anchor trench at the top and bottom of the slope, and shall be sandbagged on the slopes as required to prevent damage or displacement by wind.
- Permanent erosion control vegetation on all embankments and disturbed areas shall be re-established as soon as construction is completed.
- Soil preparation. Topsoil should be prepared according to landscape plans, if available, or recommendations of grass seed supplier. It is recommended that slopes be textured before seeding by rack walking (i.e. driving a crawling tractor up and down the slopes to leave a pattern of cleat imprints parallel to slope contours) or other method to provide stable areas for seeds to rest.
- When used, hydromulch shall be applied with grass seed at a rate of 2000 lbs. per acre between April 30 and June 10, or between September 1 and October 1. On slopes steeper than 10 percent, hydroseed and mulch shall be applied with a bonding agent (tackifier). Application rate and methodology to be in accordance with seed supplier recommendations.
- When used in lieu of hydromulch, dry, loose, weed free straw used as mulch shall be applied at a rate of 4000 lbs. per acre (double the hydromulch application requirement). Anchor straw by working in by hand or with equipment (rollers, cleat trackers, etc.). Mulch shall be spread uniformly immediately following seeding.
- When conditions are not favorable to germination and establishment of the grass seed, the Contractor shall irrigate the seeded and mulched areas as required to establish the grass cover.
- Seeding. Recommended erosion control grass seed mix is as follows. Dwarf grass mix (low height, low maintenance) consisting of dwarf perennial ryegrass (80 % by weight), creeping red fescue (20 % by weight). Application rate shall be 100 lbs. per acre minimum.
- Grass seed shall be fertilized at a rate of 10 lbs. per 1000 S.F with 16- 16-16 slow release type fertilizer. Development areas within 50 feet of water bodies and wetlands must use a non-phosphorous fertilizer.
- Prior to starting construction contractor shall acquire the services of a DEQ Certified Erosion and Sediment Control Inspector and shall submit an "Action Plan" to DEQ identifying their names, contact information, training and experience as required in Schedule A.6.b.i-ii of the 1200-C Permit
- Contractor shall submit "Notice of Termination" to DEQ to end the 1200-C permit coverage once all soil disturbance activities have been completed and final stabilization of exposed soils has occurred.

CITY OF SALEM PUBLIC WORKS DESIGN STANDARDS:

Division 007 Appendix A-EPSC Plan Standard Notes

(a) PRE-CONSTRUCTION

(1). Prior to any land disturbing activities, the boundaries of the clearing and grading limits, vegetated buffers, and any sensitive areas shown on this plan shall be clearly delineated in the field. Unless otherwise approved, no disturbance is permitted beyond the clearing limits. The Contractor must maintain the delineation for the duration of the project. Note: vegetated corridors to be delineated with orange construction fence or approved equal.

(2). BMPs that must be installed prior to land disturbing activities are construction entrance, perimeter sediment control, and inlet protection.

(3). Hold a preconstruction conference to review the EPSCP and with the City's Project Manager and Inspector.

(b) CONSTRUCTION

(1). All sediment is required to stay on site. Sediment amounts greater than 1/2-cubic foot which leave the site must be cleaned up within 24 hours and placed back on the site and stabilized or properly disposed. Vacuuming or dry sweeping must be used to clean up released sediment and it must not be swept or washed into storm sewers, drainage ways, or water bodies. The cause of the sediment release must be found and prevented from causing a recurrence of the discharge within the same 24 hours. Any in-stream clean up of sediment shall be performed according to the DSL required time frame.

(2). Construction, maintenance, replacement, and upgrading of erosion prevention and sediment control facilities is the sole responsibility of the Contractor until all construction is completed, approved, and permanent erosion control (i.e., vegetation/landscaping) is established on all disturbed areas.

(3). All recommended erosion prevention and sediment control procedures are dependent on construction methods, staging, site conditions, weather, and scheduling. During the construction period, erosion control facilities shall be revised, upgraded, replaced, or added, to comply with SRC and State and Federal regulatory requirements.

(4). The Contractor is solely responsible for protection of all adjacent property and downstream facilities from erosion and siltation during project construction. Any damage resulting from such erosion and siltation shall be corrected at the sole expense of the Contractor.

(5). When saturated soil is present, water-tight trucks must be used to transport saturated soils from the construction site. Soil may be drained on site at a designated location, using appropriate BMPs. Soil must be drained sufficiently to drip less than one gallon per hour prior to leaving the site.

(6). All materials spilled, dropped, or washed into storm drains must be removed immediately, and the Contractor shall provide protection of downstream inlets and catch basins to ensure sediment-laden water does not enter the storm drain system.

(7). All discharge of sediment-laden water must be treated with an appropriate BMP to remove sediment from discharge waters and to comply with SRC and State and Federal Regulatory Permits.

(8). In areas subject to wind erosion, appropriate BMPs must be used which may include the application of fine water spraying, plastic sheeting, mulching, or other approved measures.

(9). The EPSC measures and BMPs shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these measures shall be upgraded as needed to maintain compliance with all regulations.

(10). The contractor shall provide onsite water or other appropriate BMPs to prevent dust and wind erosion of fine grain soils.

(11). Disturbed areas must be stabilized after 14 days of inactivity, or immediately if rain is forecasted. See Subsection 7A.1(d)-Wet Weather Period.

(12). During the wet weather work period or when rain is forecasted, all active and inactive soil stock piles must be covered with appropriate plastic sheeting. Plastic sheeting must cover the entire stock pile and be sufficiently anchored.

(c) POLLUTANTS, SOLID WASTE AND HAZARDOUS MATERIALS MANAGEMENT

(1). Any use of toxic or other hazardous materials must include proper storage, application, and disposal.

(2). The contractor is solely responsible to properly manage pollutants, hazardous wastes, used oils, contaminated soils, concrete waste, sanitary waste, liquid waste, or other toxic substances discovered or generated during construction to prevent leakage, spills or release of pollutants to the environment and surface waters.

(3). Contractor shall develop a project specific written spill prevention and response procedures that includes employee training on spill prevention and proper disposal procedures; regular maintenance schedule for vehicles and machinery; and material delivery and storage controls, signage, material use, and use of covered storage areas for waste and supplies. The plan shall comply with SRC and Federal and State requirements, and shall be available on site at all times.

(d) WET WEATHER PERIOD (OCTOBER 15 THROUGH APRIL 30)

(1). Construction activities must avoid or minimize the duration of disturbed areas.

(2). Temporary stabilization of the site including covering of bare soils with approved BMPs, must be installed at the end of the shift before a holiday or weekend, or at the end of each workday if rainfall is forecast in the next 24 hours.

(3). Temporary stabilization or covering of soil stockpiles and protection of stockpiles located away from construction activity must occur at the end of each workday.

(e) MAINTENANCE

(1). Erosion control measures shall be maintained in such a manner as to ensure that erosion is prevented and sediment-laden water does not enter a drainage system, roadway, or violate applicable water quality standards.

(2). Sediment shall not be washed or swept into storm sewers, drainage ways, or water bodies.

(3). Sediment must be removed from behind all sediment control measures when it has reached a height of 1/3 the barrier height, and prior to the control measures removal.

(4). Removal of trapped sediment in a sediment basin or sediment trap or catch basins must occur when the sediment retention capacity has been reduced by 50 percent; is not functioning properly and/or at the completion of project.

(5). Cleaning of all structures, inlet protection BMPs, and sump pumps must be completed regularly and as required to ensure structures and inlets function properly and flow freely.

(6). Construction site exits shall be maintained in a condition that will prevent tracking or flow of mud onto the ROW or approved access point. The entrance may require periodic top dressing as conditions demand, and repair and/or cleanout of any structures used to trap sediment. Wheel washing shall be required to prevent sediment and material tracking on road surfaces if passive BMPs are not effective.

(f) INSPECTION

(1). The EPSCP must be kept onsite at all times. All measures shown on the plan must be installed properly to ensure compliance with SRC and State and Regulatory permits, and that sediment does not enter a surface water system, roadway, or other properties.

(2). Written EPSC inspection logs shall be maintained onsite and available to City inspectors upon request.

(3). All BMPs shall be inspected at least every week. When a rainfall event exceeds 1/2-inch in a 24-hour period, daily inspection of the erosion controls, sediment controls, and discharge outfalls must be conducted and documented. Inspections shall be done by a representative of the permit registrant who is knowledgeable and experienced in the principles, practices, installation, and maintenance of erosion and sediment controls.

(g) INACTIVE CONSTRUCTION PERIODS AND POST-CONSTRUCTION

(1). Should work cease in any area for 14 days, the inactive area must be stabilized with appropriate soil stabilization BMPs. If all construction activity ceases the entire site must be temporarily stabilized using vegetation, heavy mulch layer, temporary seeding, or other method.

(2). All temporary erosion prevention and sediment control facilities shall be removed by the contractor within 30 days after permanent landscaping/vegetation is established and the threat of erosion and sediment transport has been mitigated.

(3). Temporary grass cover measures must be fully established by October 15 or other cover measures (i.e., erosion control blankets with anchors, one-inch of straw mulch, six mil HDPE plastic sheet, etc.) shall be in place over all disturbed soil areas until April 30. To establish an adequate grass stand for controlling erosion by October 15, it is recommended that seeding and mulching occur by September 1.

(4). Permanent erosion control vegetation on all embankments and disturbed areas shall be re-established as soon as construction is completed.

(h) SPECIFICATIONS

(1). Soil preparation. Topsoil should be prepared according to the landscape plans, if available, or recommendations of the grass seed supplier. Slopes shall be textured before seeding by rack walking (i.e., driving a crawling tractor up and down the slopes to leave a pattern of cleat imprints parallel to slope contours) or other method to provide stable areas for seeds to rest.

(2). Seeding. Erosion control grass seed mix shall be as follows: Dwarf grass mix (low height, low maintenance) consisting of dwarf perennial ryegrass (80 percent by weight), creeping red fescue (20 percent by weight). Application rate shall be 100 pounds per acre minimum.

(3). Grass seed shall be fertilized at a rate of ten pounds per 1,000 square feet with 16-16-16 slow release type fertilizer. Disturbed areas within 50 feet of water bodies and wetlands must use a non-phosphorous fertilizer.

(4). The application rate of fertilizers used to reestablish vegetation shall follow manufacturer's recommendations. Nutrient releases from fertilizers to surface waters shall be minimized. Time release fertilizers shall be used. Care shall be made in the application of fertilizers within any waterway riparian zone to prevent leaching into the waterway.

(5). When used, hydromulch shall be applied with grass seed at a rate of 2,000 pounds per acre between April 30 and June 10, or between September 1 and October 1. On slopes steeper than ten percent, hydroseed and mulch shall be applied with a bonding agent (tackifier). Application rate and methodology shall be in accordance with seed supplier recommendations.

(6). When used in lieu of hydromulch, dry, loose, weed-free straw used as mulch shall be applied at a rate of 4,000 pounds per acre (double the hydromulch application requirement). Anchor straw by working in by hand or with equipment (rollers, cleat trackers, etc.). Mulch shall be spread uniformly immediately following seeding.

(7). When conditions are not favorable to germination and establishment of the grass seed, the Contractor shall irrigate the seeded and mulched areas as required to establish the grass cover.

(8). Sediment fences shall be constructed of continuous filter fabric to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum six-inch overlap, and both ends securely fastened to a post.

(9). The standard strength filter fabric shall be fastened securely to stitched loops installed on the upslope side of the posts, and six inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

(10). Bio-filter bags shall be clean 100 percent wood product waste. Bags shall be 18-inch x 18-inch x 30-inch, weigh approximately 45 pounds, and be contained in a bag made of 1/2-inch plastic mesh.

(11). Minimum wet weather slope protection. For 3H:1V or steeper slopes use Bon Terra Type C2 or North American Green Type C125 erosion control blankets. Use a minimum of two inches straw mulch or North American Green Type S150 for slopes flatter than 3H:1V and greater than 6H:1V. Slopes flatter than 6H:1V use one inch straw mulch, hydroseed with hydromulch and tackifier. Slope protection shall be placed on all disturbed areas immediately after completion of each section of construction activity, until the erosion control seeding has been established. As an option during temporary or seasonal work stoppages, a six-mil HDPE plastic sheet may be placed on exposed slopes. The plastic sheet shall be provided with an anchor trench at the top and bottom of the slope, and shall be sandbagged on the slopes as required to prevent damage or displacement by wind.

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INCORPORATED

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SALEM, OR 97301-3410
P: 503.390.6500
F: 503.390.6501
www.studio3architecture.com



REVISIONS: 6/30/2026
IN THE EVENT CONFLICTS ARE DISCOVERED BETWEEN THE ORIGINAL SIGNED AND SEALED DOCUMENTS PREPARED BY THE ARCHITECTS AND/OR THEIR CONSULTANTS, AND ANY COPY OF THE DOCUMENTS TRANSMITTED BY MAIL, FAX, ELECTRONICALLY OR OTHERWISE, THE ORIGINAL SIGNED AND SEALED DOCUMENTS SHALL GOVERN.

PROJECT #3535.0000.0
DATE: 08/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS:



WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-9474 Fax: (503) 585-5986
E-mail: westech@westech-eng.com



NEW GAS STATION:

MACLEAY RD SE
SALEM, OR

MACLEAY RD SE & CORDON RD SE

SHEET:
C1.5
EROSION CONTROL
NOTES

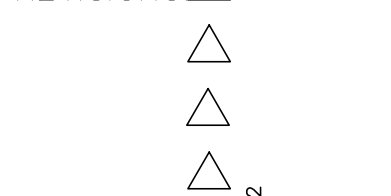
GRADING & DRAINAGE PLAN



RENEW: 6/30/2026
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NEW GAS STATION:

MACLEAY RD SE

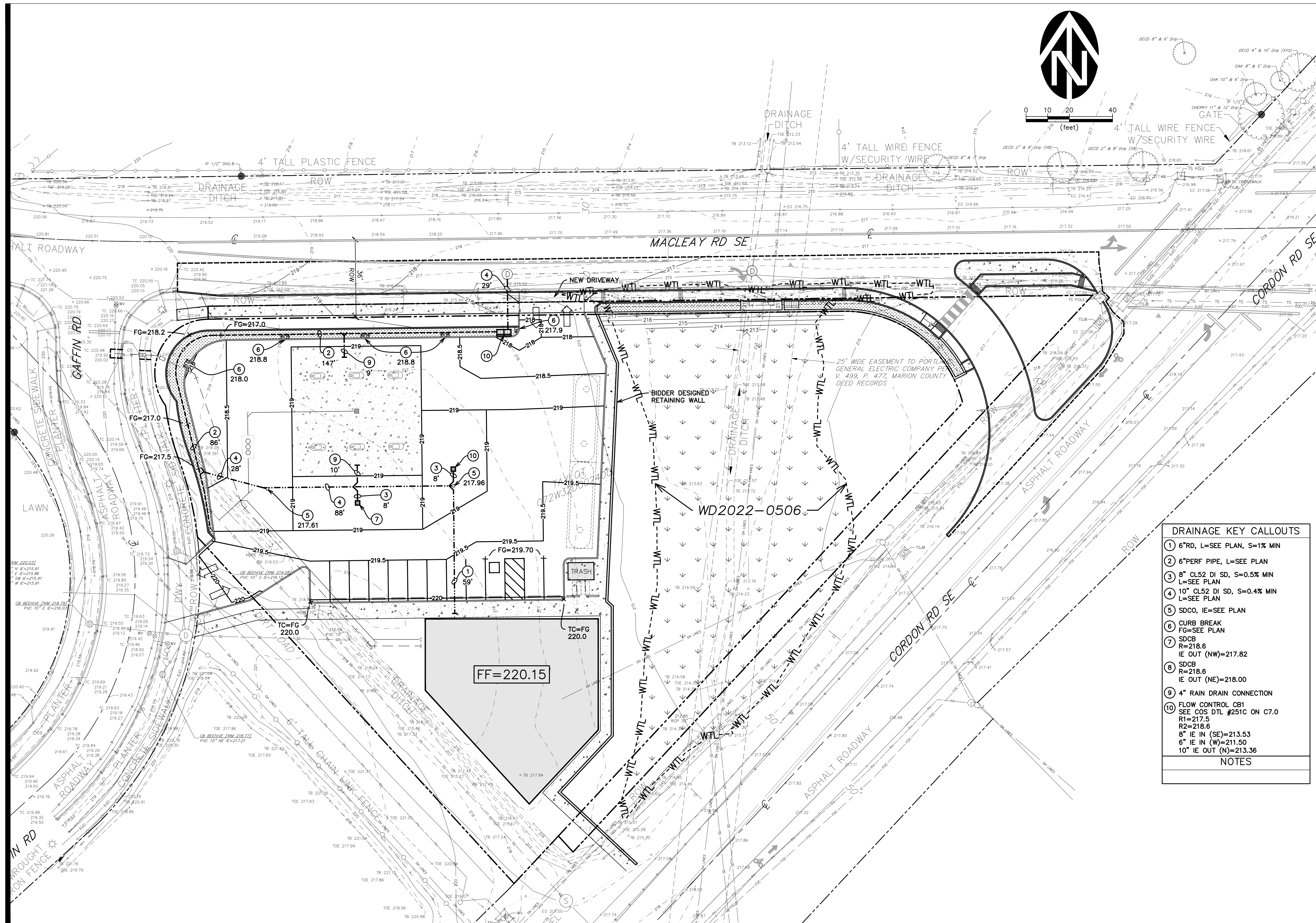
SALEM, OR

MACLEAY RD SE & CORDON RD SE

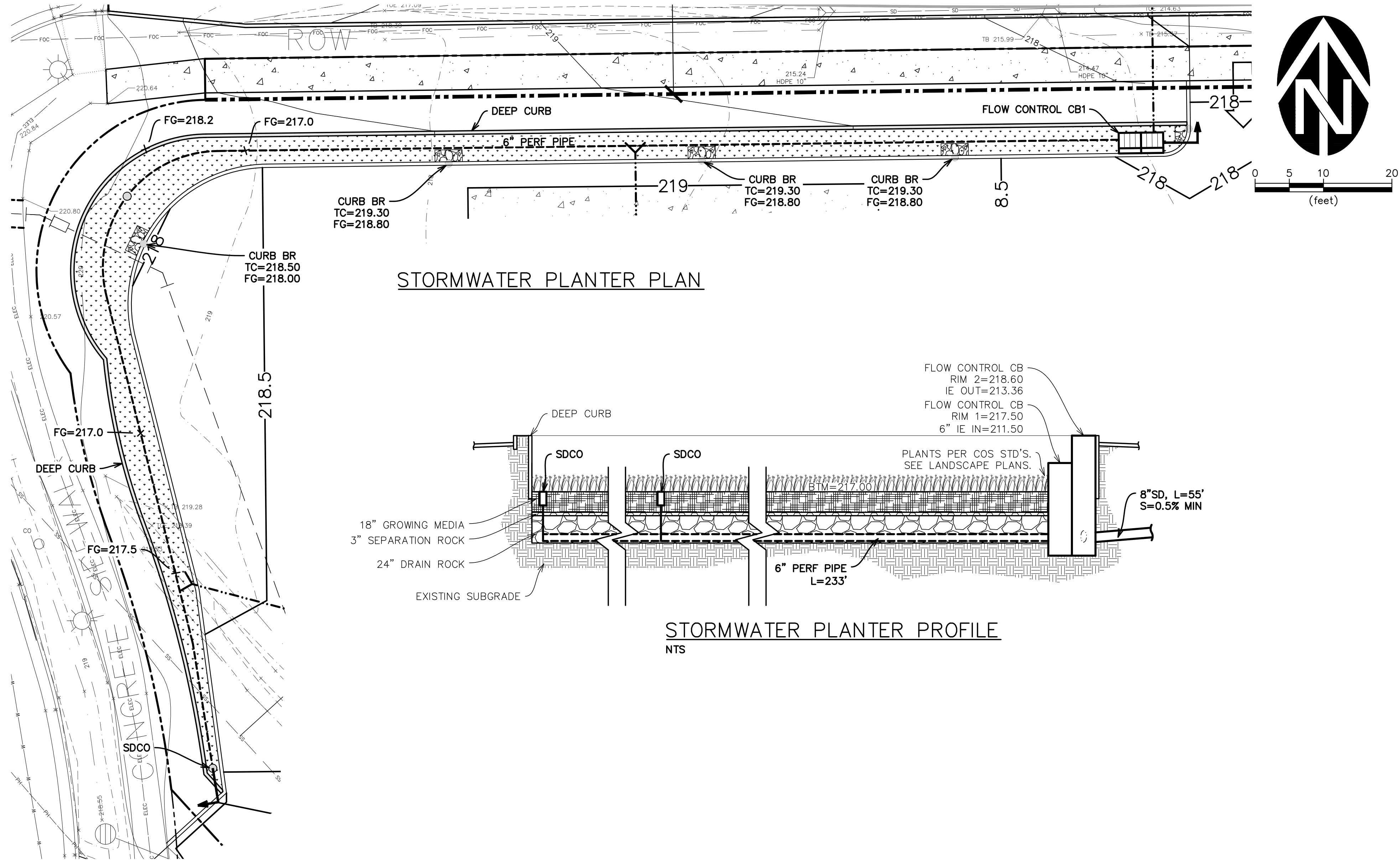
SHEET:

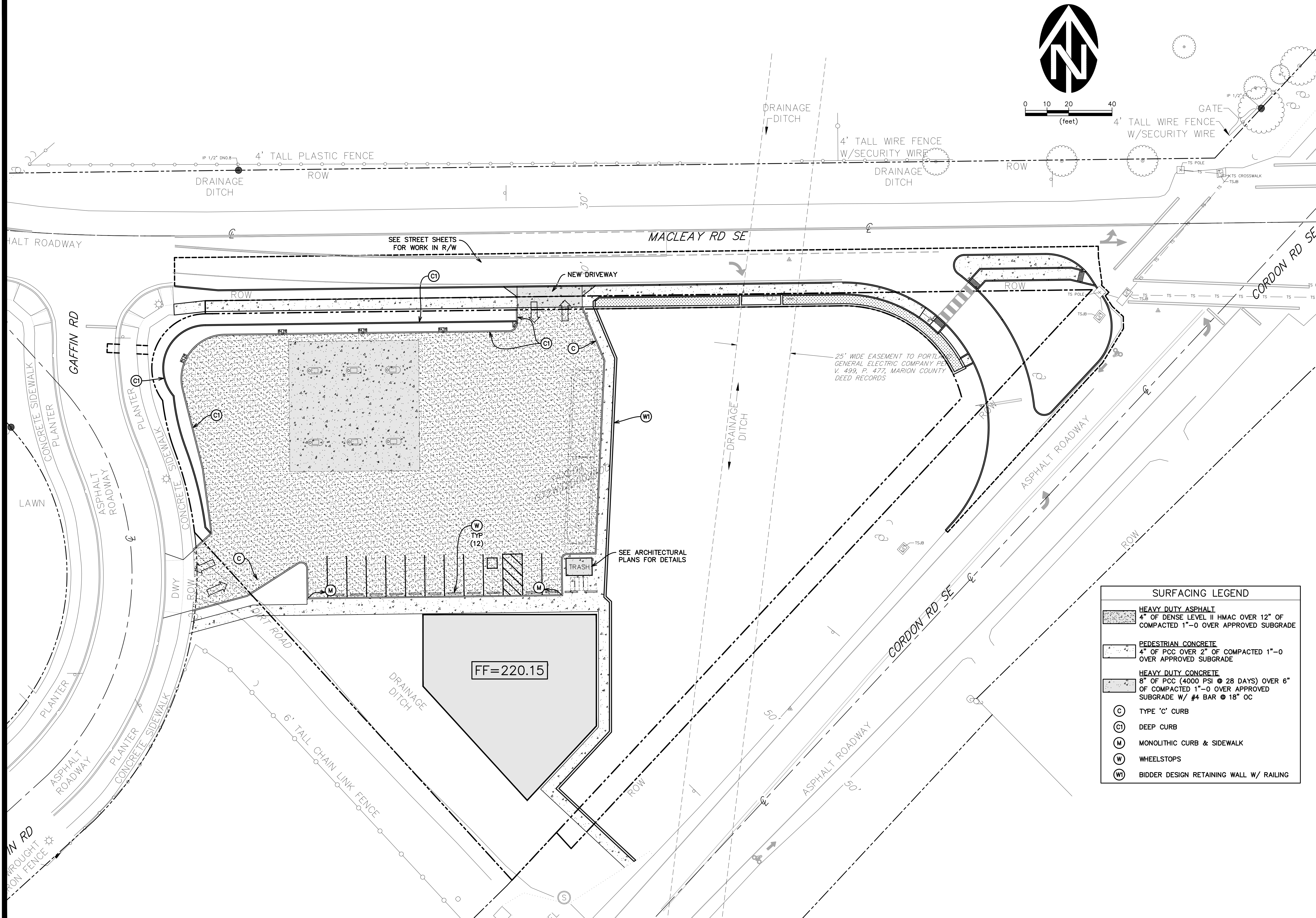
C2.0

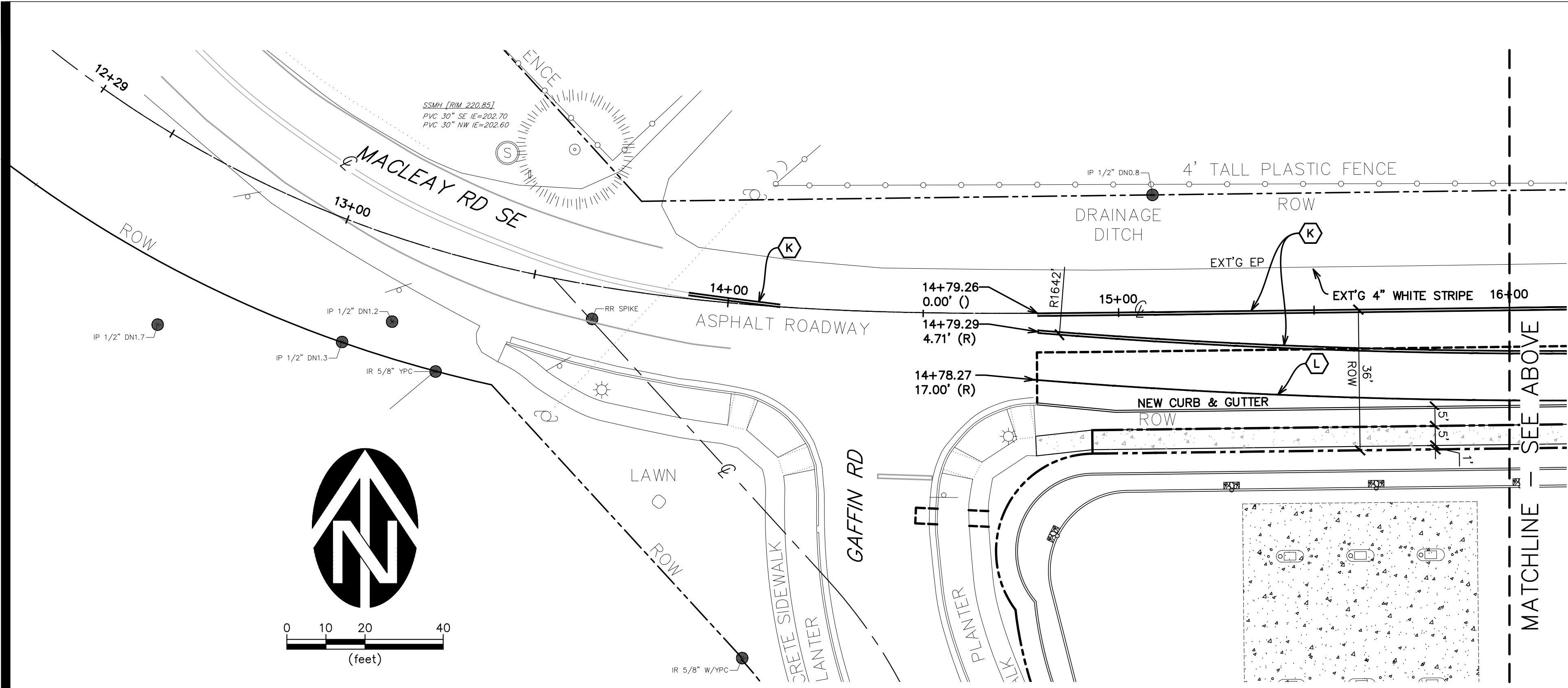
GRADING & DRAINAGE PLAN



DRAINAGE KEY CALLOUTS	
①	6" RD, L=SEE PLAN, S=1% MIN
②	6" PERF PIPE, L=SEE PLAN
③	8" CL52 DI SD, S=0.5% MIN L=SEE PLAN
④	10" CL52 DI SD, S=0.4% MIN L=SEE PLAN
⑤	SDCO, IE=SEE PLAN
⑥	CURB BREAK FG=SEE PLAN
⑦	SDCB R=218.6 IE OUT (NW)=217.82
⑧	SDCB R=218.6 IE OUT (NE)=218.00
⑨	4" RAIN DRAIN CONNECTION
⑩	FLOW CONTROL CB1 SEE COS DTL #251C ON C7.0 R1=217.5 R2=218.6 8" IE IN (SE)=213.53 6" IE IN (W)=211.50 10" IE OUT (N)=213.36
NOTES	







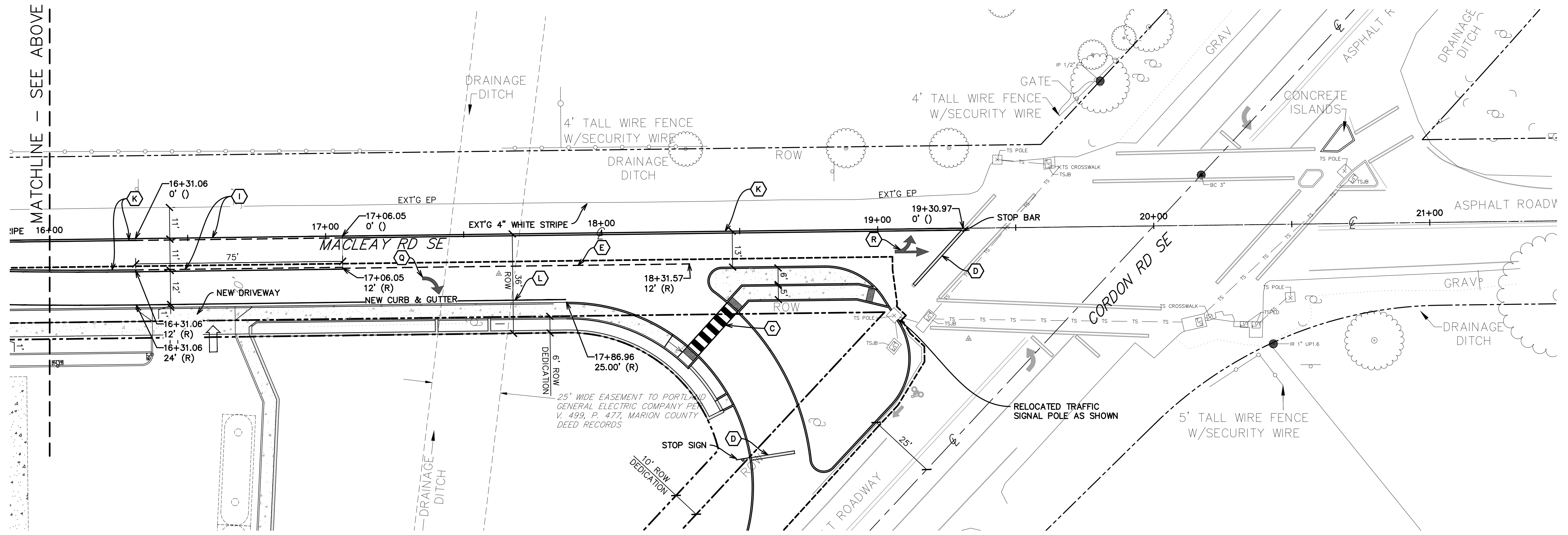
C UNCONTROLLED CROSSWALK - 24" WHITE, WITH 12" WHITE, TYPE B-HS, PAVEMENT BARS.	D STOP BAR - 12" WHITE, TYPE B-HS, PAVEMENT BAR.	E LANE LINE SKIP STRIPE - 4" WHITE, MMA PROFILE STRIPING LINE, WITH WHITE, TYPE I MONO-DIRECTIONAL, RAISED PAVEMENT MARKERS.
G CENTER LINES - TWO 4" YELLOW, MMA PROFILE STRIPING LINES, WITH YELLOW, TYPE I MONO-DIRECTIONAL, RAISED PAVEMENT MARKERS.	H TURN LANE LINE - 8" WHITE, MMA PROFILE STRIPING LINE, WITH WHITE, TYPE I MONO-DIRECTIONAL, RAISED PAVEMENT MARKERS.	I TWO-WAY LEFT TURN STRIPE - TWO 4" YELLOW, MMA PROFILE STRIPING LINES, WITH YELLOW, TYPE I BI-DIRECTIONAL, RAISED PAVEMENT MARKERS. OUTSIDE LINE IS SOLID. INSIDE AT 10'/30' PATTERN.
K DOUBLE YELLOW LINE - TWO 4" YELLOW, MMA PROFILE STRIPING LINES.	L CURB OR EDGE OF PAVEMENT - VARIES (18" MIN).	P RIGHT TURN LANE MARKINGS - WHITE, TYPE B-HS PAVEMENT LEGENDS. SEE CURRENT EDITION OF FHWA STANDARD HIGHWAY SIGNS FOR ARROW PROPORTION.
Q LEFT TURN LANE MARKINGS - WHITE, TYPE B-HS PAVEMENT LEGENDS. SEE CURRENT EDITION OF FHWA STANDARD HIGHWAY SIGNS FOR ARROW PROPORTION.	R THRU AND TURN LANE MARKINGS - WHITE, TYPE B-HS PAVEMENT LEGENDS. SEE CURRENT EDITION OF FHWA STANDARD HIGHWAY SIGNS FOR ARROW PROPORTION.	

LEGEND
TYPE B-HS PAVEMENT MARKINGS - PREFORMED, FUSED THERMOPLASTIC FILM THAT HAS INTERMIXED REFLECTIVE ELEMENTS WITH FACTORY INSTALLED CRUSHED GLASS OR AGGREGATE ON THE SURFACE.
MMA PAVEMENT MARKINGS - METHYL METHACRYLATE BY GRAVITY AND EXTRUSION METHOD, TO FULL WIDTH SHOWN, IN A SINGLE APPLICATION. PAVEMENT MARKINGS SHALL BE INTERMIXED REFLECTIVE ELEMENTS AND PLACED TO APPLICABLE THICKNESS SHOWN BELOW.

NOTE:
1. ALL PAVEMENT MARKING DESIGNS AND INSTALLATION SHALL MEET OR EXCEED THE SPECIFICATIONS CONTAINED IN THE LATEST EDITION OF THE OREGON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION INCLUDING ANY SUPPLEMENTAL GUIDES REFERENCED OR SPECIFIED AND ALL SPECIAL PROVISIONS AND ADDENDUMS TO THESE SPECIFICATIONS.

**CITY OF SALEM
DEPARTMENT OF PUBLIC WORKS
STANDARD PLAN
PAVEMENT MARKING DETAILS
NO.322A**

APPROVED	<i>[Signature]</i>	12/27/19	DRAWN BY	JAK	10/2019
	CITY ENGINEER	DATE	CHECKED BY	KDH	10/2019



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www.studio3architecture.com

REGISTERED PROFESSIONAL
ENGINEER
NOV. 12, 2008
WILLIAM J. WELLS

RENEW: 6/30/2026

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PROJECT #3535.0000.0
DATE: 09/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS

WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2472 Fax: (503) 585-3986
E-mail: westtech@westtech-eng.com

NEW GAS STATION:

MACLEAY RD SE

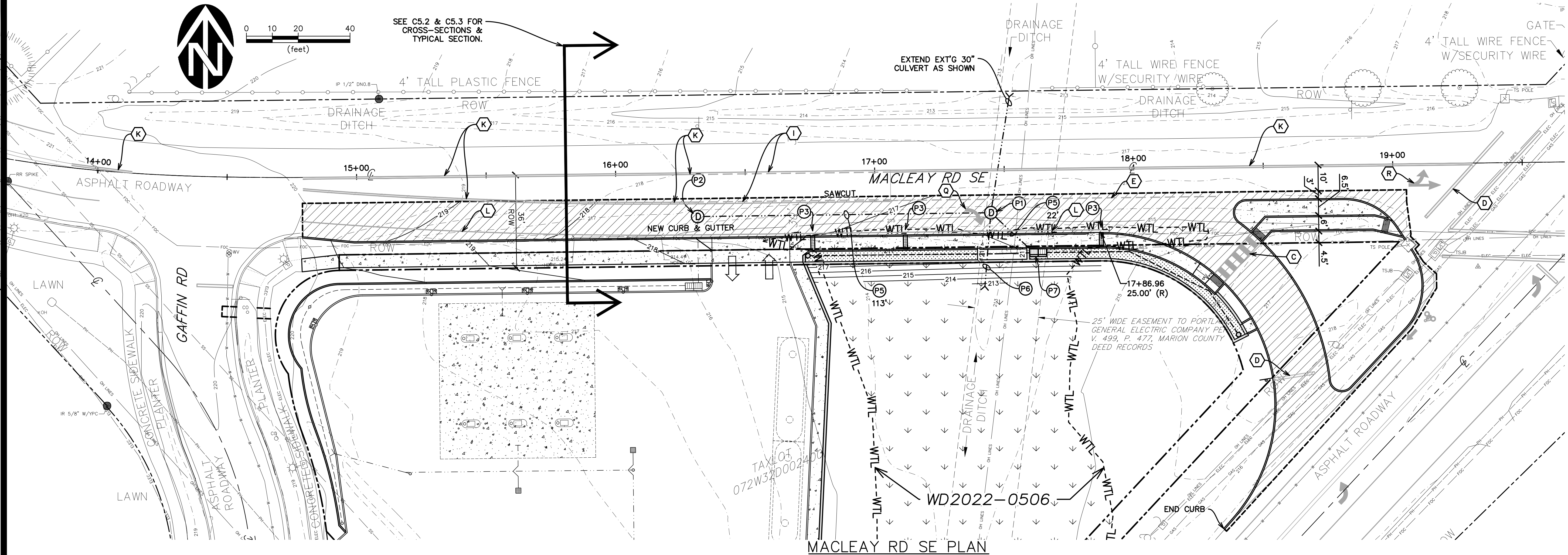
SALEM, OR

MACLEAY RD SE & CORDON RD SE

SHEET:

C5.0

MACLEAY RD SE STRIPING
PLAN



MACLEAY RD SE PLAN

ROAD SURFACING LEGEND

NEW AC

SEE TYPICAL SECTION FOR DETAILS

PUBLIC STORM KEY

CALLOUTS

P1

CONTRACTOR TO INSTALL NEW SDMH OVER EXT'G SD. CONTRACTOR TO PROVIDE TRAFFIC CONTROL, TRENCH EXCAVATION, SHORING, BACKFILL, & SURFACE RESTORATION.
R=216.69
NEW 12" IE IN (E,W)=212.75
EXT'G 30" IE (N,S)=211.25±

P2

SDMH
R=217.60
10" IE IN (N)=213.26
12" IE OUT (E)=213.09

P3

CHANNEL GRATE PER COS DTL 239

P4

TYPE-II CB
R=216.25
12" IE OUT (N)=213.00

P5

12" SD, S=0.3% MIN, L=SEE PLAN

P6

REPLACE EXT'G 30" SD
S=0.09% MIN, L=28'
SEE C5.6 FOR PLAN & PROFILE

P7

FLOW CONTROL CB2
SEE COS DTL #251C ON C7.0
R1=217.10
R2=218.46
6" IE IN (W)=212.50
6" IE OUT (N)=214.00

NOTES

MACLEAY RD SE (SOUTH) NEW GUTTER & STORM PROFILE

H SCALE: 1"=20' V SCALE: 1"=4'

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REGISTERED PROFESSIONAL
ENGINEER
REVIEW
NOV 12, 2023
WILLIAM J. WELLS
RENEWS: 6/30/2026
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PROJECT #3535.0000.0
DATE: 11/24
DRAWN BY: AK
CHECKED BY: JW

REVISIONS

△
△
△
△

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E-mail: westtech@westtech-eng.com

WE

NEW GAS STATION:
MACLEAY RD SE
SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:
C5.1
MACLEAY RD SE PLAN &
PROFILES

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RENEWALS: 6/30/2026

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DATE: 08/24
DRAWN BY: AK
CHECKED BY: JW

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NEW GAS STATION:

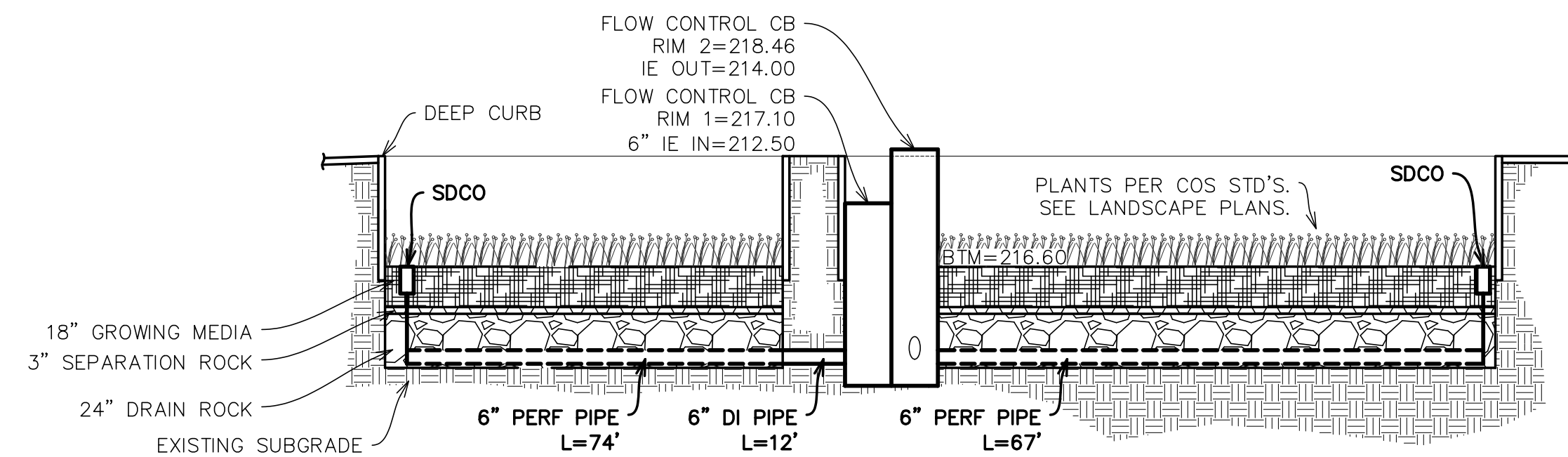
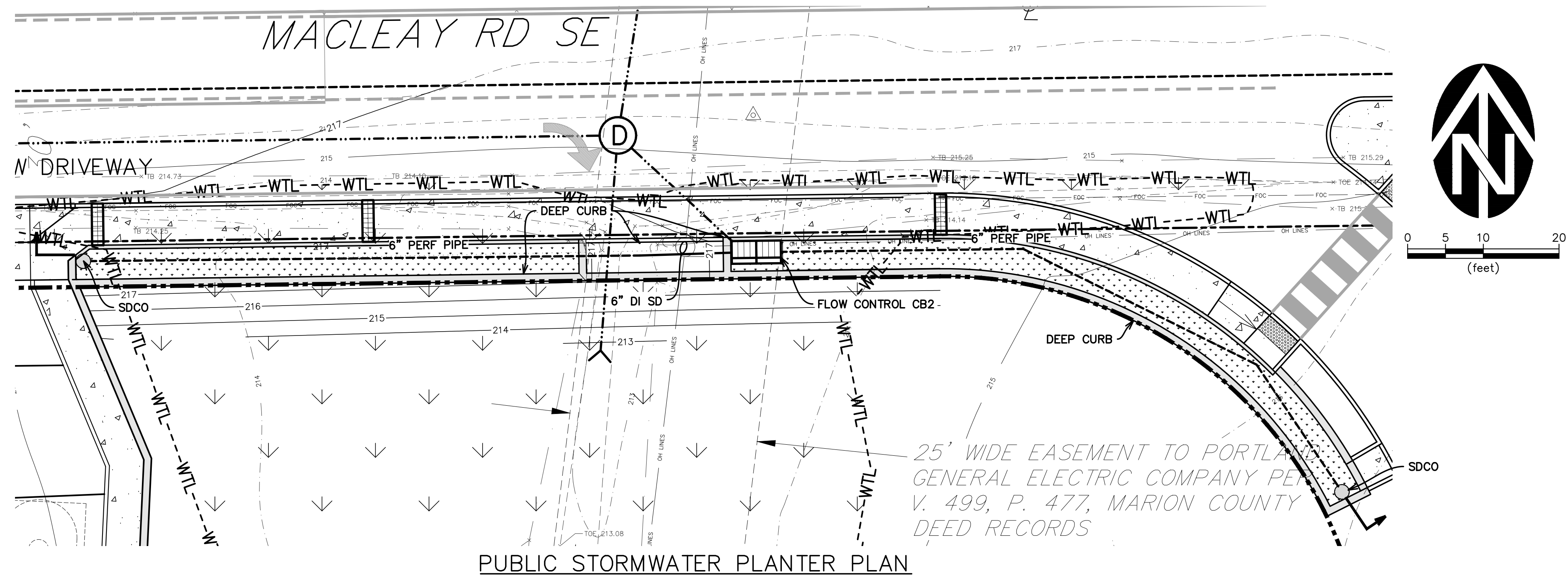
MACLEAY RD SE

SALEM, OR

MACLEAY RD SE & CORDON RD SE

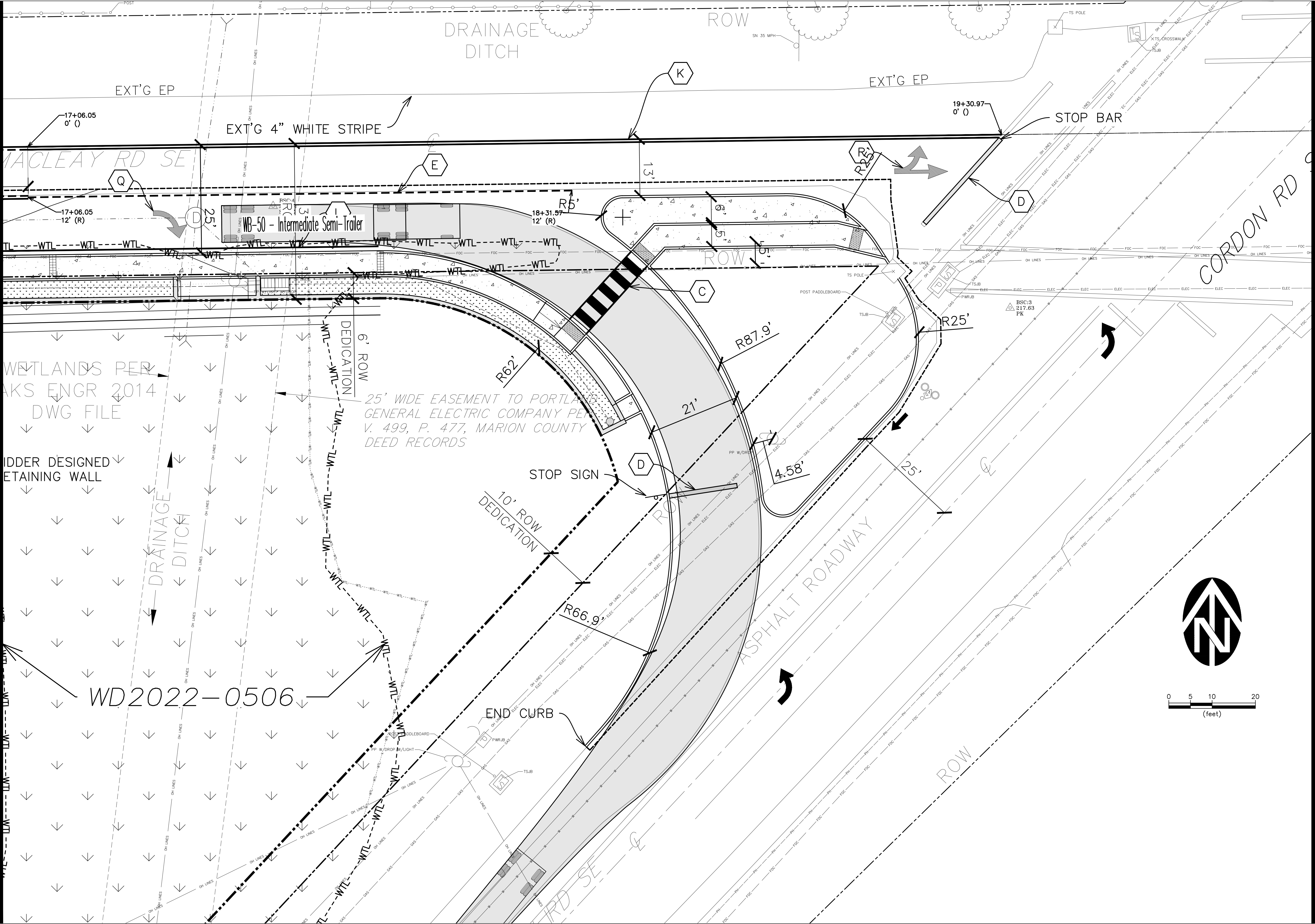
SHEET:

C5.4

PUBLIC STORMWATER
PLANTER PLAN & PROFILE

PUBLIC STORMWATER PLANTER PROFILE

NTS



STUDIO

3

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INCORPORATED

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SALEM, OR 97301-3410
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www.studio3architecture.com

REGISTERED PROFESSIONAL
ENGINEER
OR OREGON
NOV. 12, 2008
WILLIAM J. WELLS

REVIEW

REVISIONS: 6/30/2026

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PROJECT #

DATE:

DRAWN BY:

CHECKED BY:

REVISIONS: △
△
△
△

WESTTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

3541 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2472 Fax: (503) 585-5986
E-mail: westtech@westtech-eng.com

WE

NEW GAS STATION:
MACLEAY RD SE
SALEM, OR
MACLEAY RD SE & CORDON RD SE

SHEET:
C5.6
TRUCK TURNING DESIGN

Exhibit K – Approved Wetland Delineation Report



Oregon

Tina Kotek, Governor

Department of State Lands

775 Summer Street NE, Suite 100

Salem, OR 97301-1279

(503) 986-5200

FAX (503) 378-4844

www.oregon.gov/dsl

January 25, 2023

State Land Board

Attn: Gary Cameron & John Knebes
6442 Scism Road NE
Silverton, OR 97381

Tina Kotek
Governor

Re: WD # 2022-0506 **Approved**
Wetland Delineation Report for One Eighty Triangle
Marion County; T7S R2W S32D TL2400 and Portions of ROWs for
Old Macleay Road SE, Cordon Road, and Macleay Road SE
Salem/Keizer Local Wetlands Inventory, Wetland PU-Y

Shemia Fagan
Secretary of State

Tobias Read
State Treasurer

Dear Gary Cameron and John Knebes:

The Department of State Lands has reviewed the wetland delineation report prepared by AKS Engineering and Consulting for the site referenced above. Based upon the information presented in the report, we concur with the wetland boundaries as mapped in Figure 5 of the report. Please replace all copies of the preliminary wetland map with this final Department-approved map.

Within the study area, one wetland (Wetland A, totaling approximately 0.42 acres) and 3 ditches (Ditch 1, 2 and 3) were identified. The wetland is subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined). The 3 ditches, except where contiguous with Wetland A, are exempt per OAR 141-085-0515(10); therefore, they are not subject to these state permit requirements.

This concurrence is for purposes of the state Removal-Fill Law only. We recommend that you attach a copy of this concurrence letter to any subsequent state permit application to speed application review. Federal, other state agencies or local permit requirements may apply as well. The U.S. Army Corps of Engineers will determine jurisdiction under the Clean Water Act, which may require submittal of a complete Wetland Delineation Report.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. If you have any questions, please contact the Jurisdiction Coordinator for Marion County, Matt Unitis, at (503) 986-5262.

Sincerely,

A handwritten signature in black ink, appearing to read "P. Ryan", with a stylized flourish at the end.

Peter Ryan, SPWS
Aquatic Resource Specialist

Enclosures

ec: Julie Wirth-McGee, PWS, AKS Engineering & Forestry, LLC
City of Salem Planning Department (Maps enclosed for updating LWI)
Melanie O'Meara, Corps of Engineers
Carrie Landrum, DSL

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

A complete report and signed report cover form, along with applicable review fee, are required before a report review timeline can be initiated by the Department of State Lands. All applicants will receive an emailed confirmation that includes the report's unique file number and other information.

Ways to submit report:

- Under 50MB - A single unlocked PDF can be emailed to: wetland.delineation@dsl.oregon.gov.
- 50MB or larger - A single unlocked PDF can be uploaded to DSL's Box.com website. After upload notify DSL by email at: wetland.delineation@dsl.oregon.gov.
- OR a hard copy of the unbound report and signed cover form can be mailed to: Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.

Ways to pay review fee:

- By credit card on DSL's [epayment](#) portal after receiving the unique file number from DSL's emailed confirmation.
- By check payable to the Oregon Department of State Lands attached to the unbound mailed hardcopy OR attached to the complete signed cover form if report submitted electronically.

Contact and Authorization Information

☒ Applicant ☐ Owner Name, Firm and Address:

Gary Cameron & John Knebes
6442 Scism Road NE
Silverton, OR 97381

Business phone # (503) 873-4378

Mobile phone # (optional)

E-mail: knebes@aol.com

☐ Authorized Legal Agent, Name and Address (if different):

Business phone #

Mobile phone # (optional)

E-mail:

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: Gary Cameron

Signature: [Signature]

Date: 8/29

Special instructions regarding site access:

Project and Site Information

Project Name: One Eighty Triangle

Latitude: 44.913366

Longitude: -122.955236

decimal degree - centroid of site or start & end points of linear project

Proposed Use:

Commercial Development

Tax Map # 7S 2W 32D

Tax Lot(s) 2400 Macleay, Old Macleay, Cordon Rd. ROWs

Tax Map #

Tax Lot(s)

Project Street Address (or other descriptive location):

Intersection of Macleay Road and Cordon Road

Township 7S

Range 2W

Section 32

QQ

Use separate sheet for additional tax and location information

City: Salem

County: Marion

Waterway: NA

River Mile: NA

Wetland Delineation Information

Wetland Consultant Name, Firm and Address:

AKS Engineering & Forestry, LLC
Attn: Julie Wirth-McGee
12965 SW Herman Road, Suite 100
Tualatin, OR 97062

Phone # (503) 563-6151

Mobile phone # (if applicable)

E-mail: wirthmcgee@aks-eng.com

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.

Consultant Signature: [Signature]

Date: 8-30-2022

Primary Contact for report review and site access is ☐ Consultant ☒ Applicant/Owner ☐ Authorized Agent

Wetland/Waters Present? ☒ Yes ☐ No

Study Area size: 2.03

Total Wetland Acreage: 0.4200

Check Applicable Boxes Below

☐ R-F permit application submitted

☐ Fee payment submitted \$ _____

☐ Mitigation bank site

☐ Resubmittal of rejected report (\$100)

☐ EFSC/ODOE Proj. Mgr: _____

☐ Request for Reissuance. See eligibility criteria. (no fee)

☐ Wetland restoration/enhancement project (not mitigation)

DSL # _____ Expiration date _____

☒ Previous delineation/application on parcel

If known, previous DSL # WD2010-0226R

☒ LWI shows wetlands or waters on parcel

Wetland ID code PU-Y

For Office Use Only

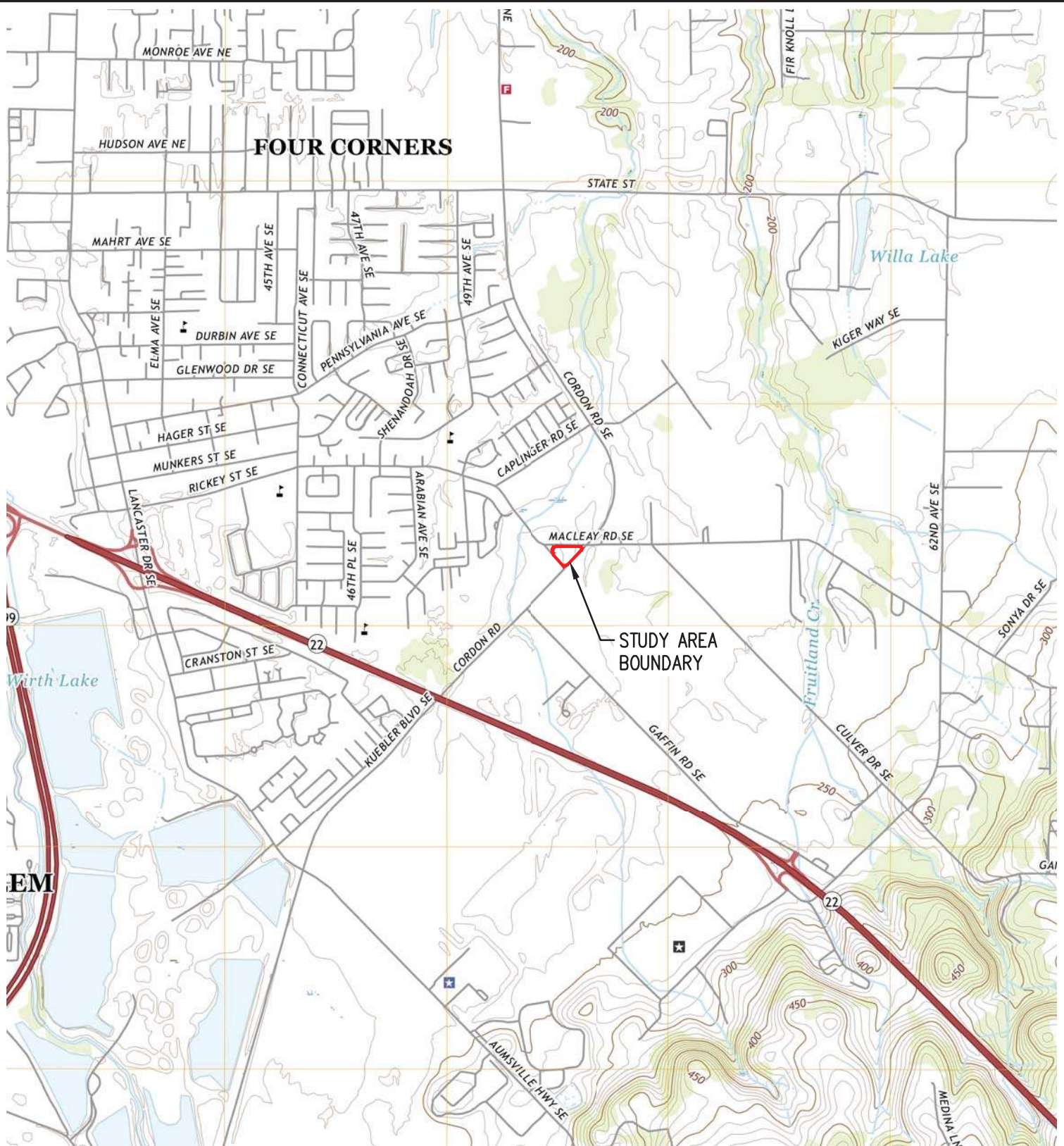
DSL Reviewer: DE

Fee Paid Date: ____ / ____ / ____

DSL WD # 2022-0506

Date Delineation Received: 09/13/22

DSL App.# _____



USGS 7.5' TOPOGRAPHIC SERIES
QUADRANGLE: SALEM EAST, OR (2020)

DATE: 08/03/2022

**USGS VICINITY MAP
ONE EIGHTY TRIANGLE WETLAND DELINEATION REPORT**

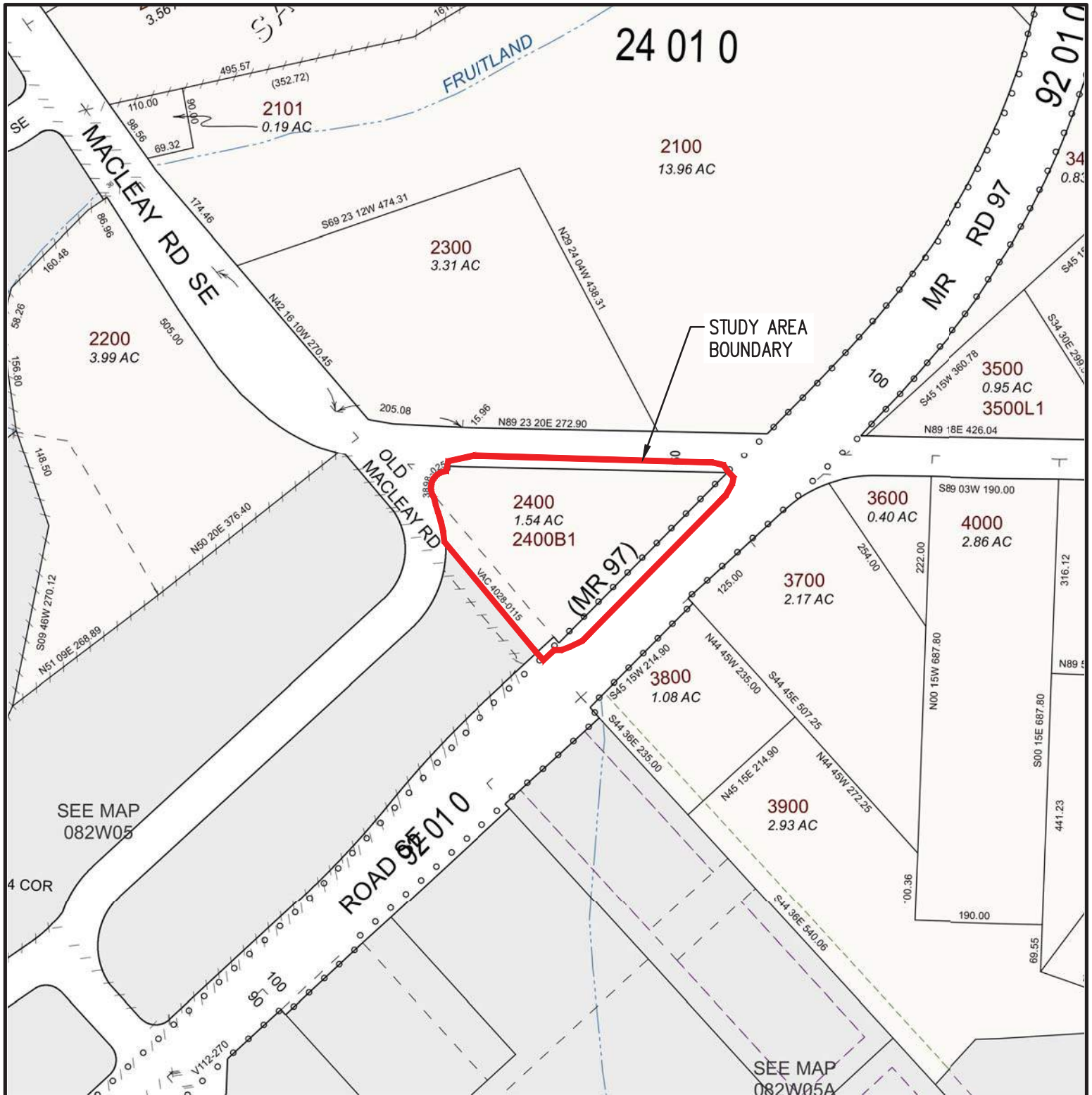
**FIGURE
1**

AKS ENGINEERING & FORESTRY, LLC
3700 RIVER RD N, STE 1
KEIZER, OR 97303
PHONE: 503.400.6028

www.aks-eng.com

AKS

DRWN: RAS
CHKD: SKT
AKS JOB:
3780



SCALE: 1" = 200 FEET



ORIGINAL PAGE SIZE: 8.5" x 11"

MARION COUNTY
TAX LOT 2400
AND PORTIONS OF ROW
TAX MAP 07 2W 32D

DATE: 08/03/2022

**TAX MAP (MAP 07 2W 32D)
ONE EIGHTY TRIANGLE WETLAND DELINEATION REPORT**

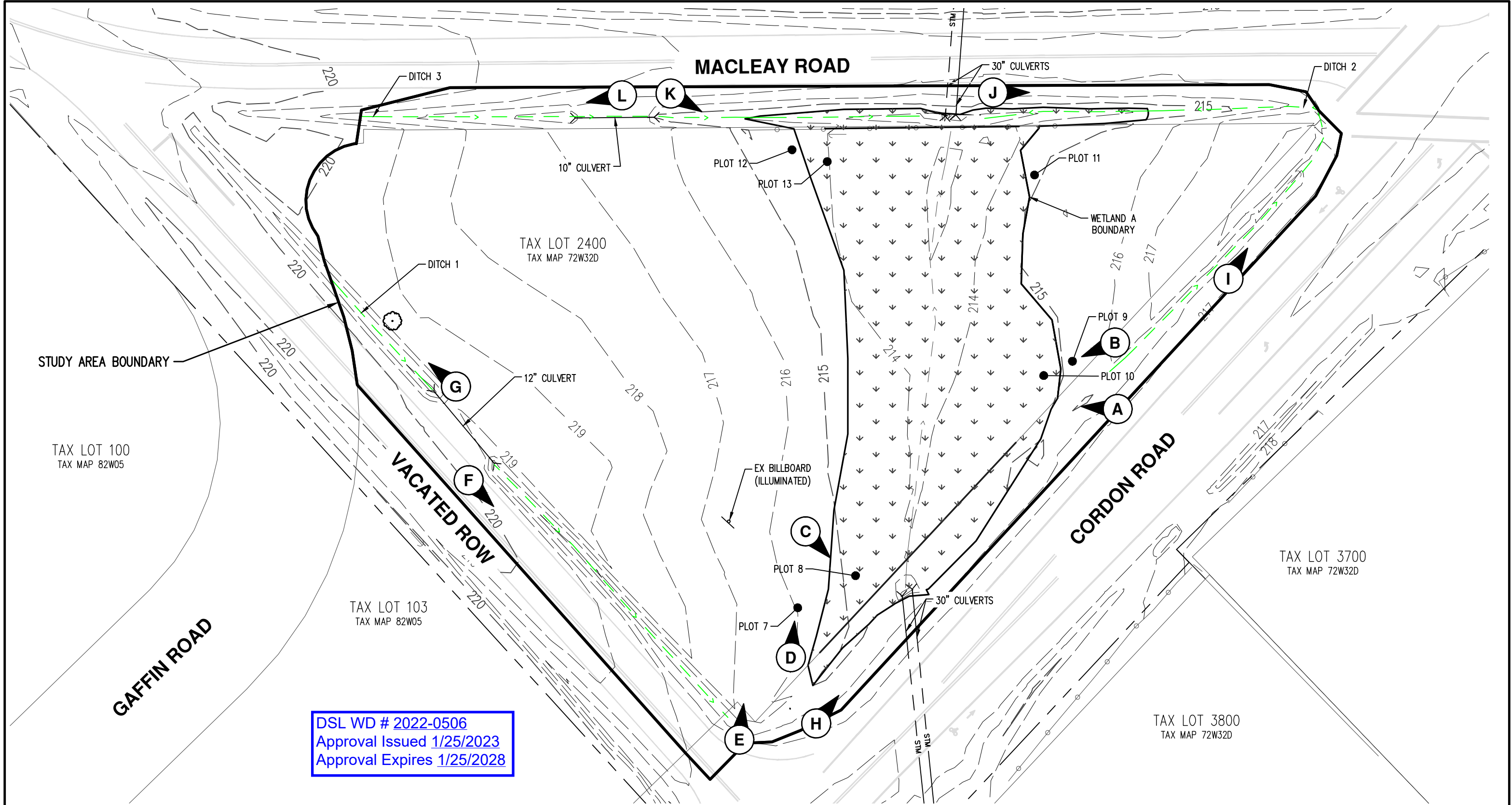
AKS ENGINEERING & FORESTRY, LLC
3700 RIVER RD N, STE 1
KEIZER, OR 97303
PHONE: 503.400.6028

www.aks-eng.com



FIGURE
2

DRWN: RAS
CHKD: SKT
AKS JOB:
3780



DSL WD # 2022-0506
Approval Issued 1/25/2023
Approval Expires 1/25/2028

LEGEND:

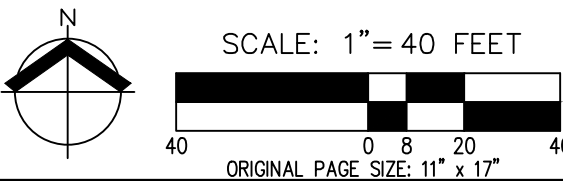
- TOTAL ON-SITE PEM/SLOPE WETLAND A BOUNDARY AREA: 18,132 SF± (0.42 ACRES)
- DITCH 1: 297 ±LF
DITCH 2: 294 ±LF
DITCH 3: 298 ±LF
- STORMWATER UTILITY LINE
- PHOTO POINT LOCATION AND ORIENTATION

WETLAND BOUNDARY AND DATA PLOT LOCATIONS SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC. (AKS) ON MAY 31, 2022 AND WERE GPS SURVEYED IN THE FIELD USING A HANDHELD TRIMBLE GEO7X GPS RECEIVER WITH SUBMETER ACCURACY.

A PREVIOUS DELINEATION WAS CONDUCTED BY AKS ON MARCH 24, 2016 AND RECEIVED A CONCURRENCE BY DEPARTMENT OF STATE LANDS (DSL) FILE NO. WD2010-00226

1-FOOT INTERVAL GROUND CONTOURS, EXISTING CONDITIONS AND TREES >6" DBH DERIVED FROM 2016 AKS PROFESSIONAL LAND SURVEY. STUDY AREA BOUNDARY DIGITIZED WITH SUBMETER ACCURACY.

REMOVAL OF OLD MACLEAY ROAD OCCURRED AFTER AKS 2016 SURVEY. THE SOUTHERN PORTION OF OLD MACLEAY ROAD HAS SINCE BEEN VACATED. THE VACATED ROW IS INCLUDED IN THE STUDY AREA BOUNDARY. A SURVEY OF CURRENT 1-FT INTERVAL GROUND CONTOURS AND EXISTING CONDITIONS IS REQUIRED BEFORE DEVELOPMENT.



DATE: 08/09/2022

WETLAND DELINEATION MAP		FIGURE
ONE EIGHTY TRIANGLE WETLAND DELINEATION REPORT		5
AKS ENGINEERING & FORESTRY, LLC 3700 RIVER RD N, STE 1 KEIZER, OR 97303 503.400.6028 WWW.AKS-ENG.COM		DRWN: RAS CHKD: SKT AKS JOB: 3780