Subdivision Application

July 9, 2019

PROPOSAL:

The subject property is about 52.80 acres in size and zoned RA (Residential Single Agriculture). The applicant is proposing to divide the subject property into 214 single family residential lots (within 11 Phases/Sections).

Section A: 24 lots
Section B: 17 lots
Section C: 16 lots
Section D: 25 lots
Section E: 16 lots
Section F: 15 lots
Section G: 22 lots
Section H: 25 lots
Section I: 20 lots
Section J: 17 lots
Section K: 15 lots

Due to topography and the location of the S1 Water Service, the applicant requests that the City of Salem condition the subdivision approval to allow Phases/Sections to be developed out of sequence. Below is the anticipated order of development for the proposed Phases/Sections. However, we would like the flexibility to develop in any logical order.

Section I: 20 lots
Section J: 17 lots
Section E: 16 lots
Section G: 22 lots
Section F: 15 lots
Section H: 25 lots
Section K: 15 lots
Section A: 24 lots
Section D: 25 lots
Section B: 17 lots
Section C: 16 lots

The applicant is also requesting alternative street standards as outlined in the narrative and on the site plans. Along with an adjustment and alternative street standard request to street grade and an adjustment to lot depth requirements. Both adjustments have been addressed in the narrative below.

SITE VICINITY and CHARACTERISTICS:

The subject property is located on the northeast intersection of Kuebler Boulevard SE and Battle Creek Road. The subject property is identified as 083W11D/Tax Lots 100, 200, 400, and 601; 083W12B/Tax Lot 1600. The subject property is located within the City limits and the Urban

Growth Boundary. UGA 17-03 was issued on August 31, 2017 for the subject property.

The surrounding properties are zoned and used as follows:

North: PH (Public Health); vacant land and existing single-family dwellings
East: RA (Residential Agriculture); vacant land and existing single-family dwellings
South: RA (Residential Agriculture); vacant land and existing single-family dwellings
West: Across Reed Road, FMU (Fairview Mixed-Use); vacant land and existing single-family dwellings

COMPLIANCE WITH THE SALEM AREA COMPREHENSIVE PLAN (SACP):

Citizen involvement is provided via the City of Salem notification process necessary for the subdivision application which allows public comment. The City's Plan is acknowledged to be in compliance with State Land Use Goals. The public notification process is implemented by the Planning Administrator with written notification to property owners. The published notice will identify the applicable criteria. Through the notification process all interested parties are afforded the opportunity to review the application, comment on the proposal and participate in the decision.

In addition, the SACP and its implementing ordinances are adopted by the City through the public hearing process of the City Council ordinance procedure. The subject property is within the city limits and is within the urbanized area. The proposal does not affect the size or location of the city limits or urban growth boundary.

The Statewide Planning Goals are implemented by the adopted goals and policies of the SACP and its implementing ordinances and facility plans. The proposal accommodates the Statewide Goals by being located within an adopted Urban Growth Boundary.

The SACP Residential Development Goal requires the promotion of …. "*. . . a variety of housing opportunities for all income levels and the adequate supply of developable land to support such housing."* The SACP is implemented by the zone and subdivision codes under the provisions of SRC Chapter 510 and 205. The proposal is for a single family development.

The proposal meets SACP General Development Polices 7, 10, 12 and 13 which encourage structures and their sitting in all residential developments to optimize the use of land. The proposed subdivision optimizes the land by providing 214 single family lots on 52.80 acres. The proposed subdivision is in compliance with the code.

The development is sited and designed to minimize the adverse alteration of the natural terrain, the potential for erosion and adverse effects upon the existing topography and soil conditions. The proposal encourages natural open living spaces by providing larger than average lots. The proposed lots range in size from 4,397 square feet to 92,734

square feet in size, with and average lot size of 6,565 square feet.

The property is within the Urban Growth Boundary and the Urban Services Area; however, UGA17-03 was issued on August 31, 2017. Thus, meeting the SACP Growth Management Goal.

All internal streets are shown on the site plan. The proposed internal streets will all be built to public street standards to be consistent with the existing surrounding street system. Therefore, meeting SACP Transportation Policy 19.

CRITERIA AND APPLICANT'S REASONS ADDRESSING UDC 205.010(d)(1):

The intent of the subdivision code is providing for orderly development through the application of appropriate rules and regulations. Pursuant to the application of the current enabling statutes, these regulations are those cited in UDC 205.010(d) and UDC 205.015(d). The decision criteria for subdivisions without a concurrent variance under UDC 205.010(d) and UDC 205.015(d) must be found to exist before an affirmative decision may be made for a subdivision application.

(1) The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

The Salem Revised Code (SRC), which includes the Salem Zoning Code, implements the Salem Area Comprehensive Plan land use goals, and governs development of property within the city limits. The subdivision process reviews development for compliance with city standards and requirements contained in the Subdivision Code, Zoning Code, Salem TSP and the Water, Sewer and Storm Drain System Master Plans, and adopted design documents applicable to residential development. The proposed meets all applicable provisions of the Salem Revised Code.

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage and designation of front and rear lot lines.

Proposed Lots 81 and 82 are located within the PH zone. These two lots will be developed in compliance with the requirements and permitted uses allowed within the PH zone.

Minimum Lot Area and Dimensions: As shown on the site plan, all 214 lots meet lot size (4,000 square feet) and lot dimension (40’ by 70’) standards as required under UDC Chapters 510 and 511. The proposed lots range in size from 4,397 square feet to 92,734 square feet in size, with and average lot size of 6,565 square feet.

Lot 1 on the revised site plans is odd in shape, however, it can be built with adequate setbacks and an adequate building envelope of about 1,700 square feet. This will allow the development of a smaller home, while maintaining adequate setbacks.

Lot 90 does not meet the lot depth requirements. Therefore, an adjustment to this standard has been required.

Additional reviews occur at the time of building permits to assure compliance with the zoning code. Compliance with conditions of approval to satisfy the subdivision ordinance is also checked prior to city staff signing the final subdivision plat.

The proposal can conform to applicable conditions imposed as necessary to ensure that development conforms to the standards of the subdivision code and with existing development and public facilities. Expect for those lots mentioned above, the proposed subdivision is in compliance with lot standard requirements and required access. Therefore, this criteria has been met.

(B) City infrastructure standards.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services. Therefore, this criteria has been met.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

There are no wetlands or floodplains located on the subject property.

A geological assessment dated July 20, 2018, has been provided as part of this application packet. The assessment outlines the nature, distribution of underlying geology, and the physical and chemical properties of existing soils; an opinion as to stability of the site, and conclusions regarding the effect of geologic conditions on the proposed development as required. See attached geological assessment.

This criteria has been met.

(2) The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

The proposal is for the entire subject property and will be developed into 214 lots. As shown on the site plan. Therefore, a shadow plan is not required.

Property located north of the site is not part of this subdivision proposal, nor is it under the same ownership. Therefore, property to the north will not be affected by this proposal.

All surrounding properties have direct access onto the existing street system. All 214 lots will have direct access onto the existing street system as well. The subdivision does not impede the future use of the property or adjacent land. Therefore, access to adjacent properties is not necessary.

(3) Development within the tentative subdivision plan can be adequately served by City infrastructure.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. Sewer/storm/water has been provided to all lots as required by UGA17-03.

In conclusion, the location and design of the proposed subdivision allows for public sanitary sewer, water service, and storm drainage to be conveniently provided. Therefore, this criterion has been satisfied.

Proposed StormWater Management System:

Stormwater quality and quantity are required for this development. An LID (low impact development) Stormwater technique will be used to mitigate the increase in pollutants contributed from development. This system may also be used to provide storage and water quantity control. The exact system will be determined at the time of design. Any proposed technique will meet City of Salem Stormwater Management standards in means and methods to provide all aspects of Stormwater management. A Preliminary Stormwater Drainage report dated May 17, 2019, has been provided as part of this

submittal.

(4) The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

The major street system is in place due to prior development. Reed Road located to the west and Battle Creek Road located to the south of the site will provide access into the development. Both Reed Road and Battle Creek Road are designated as a 'minor arterial' on the Salem Transportation System Plan.

The existing and proposed street systems conform to the City's Transportation Plan. All street design and improvements will be determined through the subdivision review process, and regulated through the Conditions of Approval. The proposed internal streets will be designed to street standards.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

A Traffic Impact Analysis (TIA) dated June 20, 2018 and a Traffic Memo dated July 27, 2018, have been provided as part of this application package.

The applicant is requesting alternative street standards for the proposed internal streets, to 50-feet in width where 60-feet is required. The site topography and shape create a physical constraint that makes it very difficult to comply with the standard right of way width of 60 feet.

The existing street system and proposed street improvements will be in compliance with the STSP. All lots are in compliance with the UDC/SRC.

The layout of the lots and internal streets take into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the site.

The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The applicant is also requesting an adjustment and alternative street standard to street grade. As shown on the street section provided, J Avenue, K Street, and M Street will have a street grade over 12%. Due to the topography of the site and the proposed street alignments with existing streets, along with required stub street connections,

these proposed streets within the subdivision exceed the street grade allowed.

The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the subdivision. As shown on the street sections provided, there is only curtain sections of each street that will exceed the allowed street grade. All streets within the proposed subdivision will be designed to provide safe and efficient conditions.

There are several access points provided throughout the proposed subdivision which provide alternative access options.

The intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

Therefore, the existing street system and proposed street improvements will be in compliance with the STSP.

The subdivision plan takes into consideration the topography and vegetation of the site. The alternative street standards allow lots of sufficient size and dimensions for future development. The lot dimensions are illustrated on the tentative site plan and are in conformance to the minimum standards in UDC 510 and 511.

Transportation Planning Rule Review:

The City of Salem's TPR encourages a reduction in automobile trips by capitalizing on transit opportunities and by creating an environment that encourages people to walk. The proposed subdivision is a "limited land use decision" pursuant to Oregon Revised Statute (ORS) 197.015, and has therefore been reviewed for consistency with the State's TPR multi-modal connectivity requirements.

In conclusion, the development will provide bicycle and pedestrian facilities on-site to encourage people to walk and reduce vehicle trips. The development on the property will allow residents to reduce vehicle usage, by the convenience of bicycle and pedestrian paths to and from the uses and existing sidewalk system. Therefore, the proposed subdivision is in compliance with the intent of the TPR to reduce vehicle usage and encourage other modes of transportation to and from the site.

(5) The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. There are more than enough street connections within the proposed development, therefore, block lengths are in compliance with the code.

The proposed subdivision provides vehicle and pedestrian connections throughout the development. By providing these connections, the intent of providing a maximum block length and connectivity have been met. Adding additional streets to break of block length would only create unsafe circulation. As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern throughout the development for vehicles and pedestrians. Therefore, additional streets are not necessary.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The Public Works Department will address the level of street improvements that are roughly proportional to assure conformance to the development to subdivision code and applicable transportation system plan requirements. Completion of conditions of approval prior to the signing of the final plat will satisfy this criterion for the subdivision application.

Street Grade: There are several local streets proposed within the subdivision that exceed the 12% maximum street grade. The applicant is requesting an adjustment and alternative street standards to allow these internal local streets to be developed with a street grade over 12%, up to 15%.

In conclusion, the proposed street plan provides the best economic, safe, and efficient circulation of traffic possible under the circumstances. The proposed subdivision demonstrates this review criterion can be met. Therefore, this criterion has been

satisfied.

(6) The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

The subdivision is served with adequate transportation infrastructure and the street system adjacent the property conforms to the Transportation System Plan and provides for safe, orderly, and efficient circulation of traffic into, through, and out of the subject property on to the public street system.

Therefore, via paved streets and sidewalks, safe and convenient bicycle and pedestrian access will be provided to the site and to adjacent neighborhoods. Therefore, this criteria has been met.

(7) The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

The proposal is for a 214-lot subdivision. A Traffic Impact Analysis (TIA) dated June 20, 2018 and a Traffic Memo dated July 27, 2018, have been provided as part of this application package. The proposed subdivision plan mitigates impacts to transportation system by providing adequate access and circulation for all 214 lots. Therefore, this criterion has been met.

(8) The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

All lots are in compliance with the UDC/SRC. Therefore, no variances have been requested.

(9) The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The subdivision plan takes into consideration the topography and vegetation of the site.

The proposed lots are of sufficient size and dimensions to permit future development. The lot dimensions are illustrated on the tentative site plan and are in conformance to the minimum standards in UDC 510 and 511. Final conformance to minimum lot size and buildable lot area will be confirmed when the final plat is submitted to the City for review and approval.

There are 159 trees located within the boundary of the site. One-hundred and thirty-two (132) trees are designated for removal. The applicant is preserving 17% of the tree on the site. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, which have the potential of being damaged during grading and construction. Therefore, the removal of these 132 trees is necessary for development of the site.

There are seven (7) Oregon White Oaks 24" in diameter or greater located throughout the site. The applicant is removing six (6) of these significant trees.

Lot 3-Oak 32"	Remove
A Avenue-Oak 28"	Remove
A Avenue-Oak 24"	Remove
A Avenue-Oak 60"	Remove
Lot 67-Oak 30"	Remove
J Avenue-Oak 24"	Remove
Lot 73-Oak 40"	Preserve

All Oregon White Oaks designated for removal are within the right-of-way, the building envelops or within an area close to the building envelope, which have the potential of being damaged during grading and construction.

The layout of the lots takes into consideration the topography and vegetation of the site. All lots are in compliance with the UDC. Therefore, no variances have been requested. Therefore, this criteria has been met.

10) When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

The property and development is located inside the Urban Service Area (USA). However, an Urban Growth Preliminary Declaration (UGA17-03) was issued on August 31, 2017. All conditions of UGA17-03 have been or will be met with the approval of this subdivision proposal. Condition 4(a) of UGA17-03 requires dedication of land for the future Coburn Reservoir. Proposed Lot 139 will be dedicated to the City of future land

for the Coburn Reservoir. Lot 139 will be deeded to the City at the time of recording the final plat. Therefore, this criterion has been met.

TREE CONSERVATION/REMOVAL PLAN

There are 159 trees located within the boundary of the site. One-hundred and thirty-two (132) trees are designated for removal. The applicant is preserving 17% of the tree on the site. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, which have the potential of being damaged during grading and construction. Therefore, the removal of these 132 trees is necessary for development of the site.

There are seven (7) Oregon White Oaks 24" in diameter or greater located throughout the site. The applicant is removing six (6) of these significant trees.

Lot 3-Oak 32"	Remove
A Avenue-Oak 28"	Remove
A Avenue-Oak 24"	Remove
A Avenue-Oak 60"	Remove
Lot 67-Oak 30"	Remove
J Avenue-Oak 24"	Remove
Lot 73-Oak 40"	Preserve

PHASED SUBDIVSION 205-015(D)

Criteria. A tentative phased subdivision plan shall be approved if all of the following criteria are met:

(1) The tentative phased subdivision plan meets all of the criteria for tentative subdivision plan approval set forth in SRC 205.010(d).

Applicant Findings: The subject property is about 52.80 acres in size and zoned RA (Residential Single Agriculture). The applicant is proposing to divide the subject property into 214 single family residential lots (within 11 Phases/Sections).

Section A: 24 lots
Section B: 17 lots
Section C: 16 lots
Section D: 25 lots
Section E: 16 lots
Section F: 15 lots
Section G: 22 lots
Section H: 25 lots
Section I: 20 lots
Section J: 17 lots
Section K: 15 lots

Due to topography and the location of the S1 Water Service, the applicant requests that the City of Salem condition the subdivision approval to allow Phases/Sections to be developed out of sequence. Below is the anticipated order of development for the proposed Phases/Sections. However, we would like the flexibility to develop in any logical order.

Section I: 20 lots
Section J: 17 lots
Section E: 16 lots
Section G: 22 lots
Section F: 15 lots
Section H: 25 lots
Section K: 15 lots
Section A: 24 lots
Section D: 25 lots
Section B: 17 lots
Section C: 16 lots

The proposed phased subdivision meets all the criteria for a tentative subdivision as outlined above under SRC 205.010(d).

(2) Connectivity for streets and City utilities between each phase ensures the orderly and efficient construction of required public improvements among all phases.

Applicant Findings: The major street system is in place due to prior and new development. Reed Road located to the west and Battle Creek Road located to the south of the site will provide access into the development. Both Reed Road and Battle Creek Road are designated as a 'minor arterial' on the Salem Transportation System Plan.

The existing and proposed street systems conform to the City's Transportation Plan. All street design and improvements will be determined through the subdivision review process, and regulated through the Conditions of Approval. The proposed internal streets will be designed to street standards.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

The proposed phased subdivision will not impede the future development of other phases as shown on the site plan. All phases will have access to the internal street system and the existing street system.

Each phase will ensure the orderly and efficient construction of the required

improvements as required by Conditions of Approval and Code compliance.

Therefore, this criteria has been met.

(3) Each phase is substantially and functionally self-contained and self-sustaining with regard to required public improvements.

Applicant Findings: Each phase is required to provide the needed improvements to accommodate that phase. Due to the required conditions of approval and City standards all eleven (11) Phases/Sections will be functionally self-contained and self-sustaining as shown on the site plans.

The subject property is about 52.80 acres in size and zoned RA (Residential Single Agriculture). The applicant is proposing to divide the subject property into 214 single family residential lots (within 11 Phases/Sections). Due to topography and the location of the S1 Water Service, the applicant requests that the City of Salem condition the subdivision approval to allow Phases to be developed out of sequence.

(4) Each phase is designed in such a manner that all phases support the infrastructure requirements for the phased subdivision as a whole.

Applicant Findings: The applicant will be required to comply with conditions of approval that will be designed to ensure that the phases are developed to support the infrastructure requirements for each phase and the subdivision as a whole. See attached site plans.

CLASS-2 ADJUSTMENT

The applicant is requesting an adjustment to SRC 803.035(c):

> ***(c) Alignment and Grade. All streets shall be designed with a vertical alignment that conforms to the Public Works Design Standards. No grade of parkway, major arterial, or minor arterial shall exceed 6 percent. No grade of a collector street shall exceed 8 percent. No grade of a local street shall exceed 12 percent.***

There are several local streets proposed within the subdivision that exceed the 12% maximum street grade. The applicant is requesting an adjustment to allow these internal local streets to be developed with a street grade over 12%, up to 15%.

Adjustment Criteria-SRC 250.005(d)(2) Criteria

(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.

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

(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 Findings:

(A) The applicant is requesting an adjustment to street grades. As shown on Sheet 1 of 1, Slope Exception Areas Plan, sections of A Avenue, C Avenue, I Avenue, H Street, M Street, J Avenue, N Street, O Street, and P Avenue within the subdivision will have sections of the roadway with up to a 15% street grade. Due to the topography of the site and the proposed street alignment with existing streets, several streets will exceed the 12% street grade allowed. The areas proposed for slopes in excess of 12% are denoted on the plans and will not exceed a single run length of 200 feet.

The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the project. The intent is to construct the streets to provide safe and efficient conditions.

The maximum length of any one section of the 15% grade is 200 feet or less, with sections of flatter slopes between the steep sections. This limits distances, limits the ability of any vehicle to have a speed "run-up" occur while traveling down the roadway.

The increased street grade facilitates access to the lots and property along its route such that quicker exits from the street into driveways can be achieved with reduced cuts and fills into the lots and driveways.

We believe that the intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

(B) Due to topography and existing streets in this area, the proposed streets are typical to that in any other development in configuration. The use of a steeper roadway will reduce the need for excessive cut or fill slope. This has a positive impact to the surrounding areas. The street will be designed to Public Works standards and will provide efficient access to the lots and property adjacent to its route, therefore, the greater street grade will not distract from the livability or appearance of the residential area.

(C) The applicant is requesting more than one adjustment. The cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone. Therefore, this criteria is not applicable.

CLASS-1 ADJUSTMENT

The applicant is requesting a Class-1 Adjustment to Section 511.010 (Development Standards) Table 511-2, Lot Standards.

The adjustment is to allow Lot 90 to have a lot depth of about 59 feet where 70 feet is required.

Adjustment Criteria-SRC 250.005(d)(1) 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 Findings:

(A) The purpose of lot depth is to provide adequate room for a single-family dwelling and required setbacks. This helps provide a buffer between buildings. The applicant is requesting a 16% adjustment to the lot depth requirement for Lot 90. As shown on the site plan, Lot 90 has a lot depth of 59' where 70' is required. Lot 90 has a greater than 70-foot lot depth, however, the lot is odd in shape, therefore, the average lot depth is about 59', has shown on the site plans.

Lot 90 is 10,756 square feet in size. There is an adequate building envelope for this lot. All setbacks will meet or exceed the requirements, providing buffering from adjacent structures.

Therefore, the intent of the lot depth is equally meet by the proposed reduced lot depth.

(B) Adequate setbacks can be provided on Lot 90. The additional length of the odd shaped lot will provide additional landscaped area for Lot 90. Therefore, the decrease in lot depth will have no effect on the surrounding uses.

Completeness Review Letter Dated June 12, 2019 responses:

· Please provide a tentative subdivision plan that is to a scale, indicating the dimensions of each lot, location of easements, setbacks for existing buildings, a scale, a north arrow and items attached.

o The standard for local streets is property line sidewalks within a 60-foot right-of-way, please amend the tentative plan.

-This is not a clear and objective standard. Therefore, this can not be applied to needed housing.

o Lot 211 appears to include public right-of-way.

-Lot 211 is now Lot 1. Lot 1 has been revised to eliminate the right-of-way from the lot.

· Several blocks do not meet SRC 803.030 (600-ft maximum). Please meet the standard.

- This is not a clear and objective standard. Therefore, this cannot be applied to needed housing. However, several pedestrian paths have been provided throughout the subdivision to provide connectivity and break of block lengths.

· Provide connections to undeveloped properties and adequate connectivity.

o To undeveloped property in the area of Lot 173-175

-Lots 173-175 are now Lots 51-53

o Stub "N Street" to the north property line

-The site plans have been revised to provide a street stub connection to adjacent properties

· Please show existing easements and/or access to reservoir property.

-The site plans have been revised to the extent that they possibly could be.

· It appears "K Street" will not feasibly make a connection to the east. Please provide evidence that a street connection can be made to the undeveloped property to the east.

-Per our engineer's research and street plans provided we believe this connection to the east is feasible.

· The tree conservation plan show maps do not indicate which trees are proposed for removal. The trees on Lot 137 cannot count toward the required 25% minimum, since the lot is not for single family or two family use. The total count should be 25% of the trees within the subdivision, excluding Lot 137, which cannot remove trees until Site Plan Review.

-Lot 137 is now Lot 82. The tree plan has been revised and does not include the trees on Lot 82.

There are 159 trees located within the boundary of the site. One-hundred and thirty-two (132) trees are designated for removal. The applicant is preserving 17% of the tree on the site. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, which have the potential of being damaged during grading and construction. Therefore, the removal of these 132 trees is necessary for development of the site. If a tree variance is needed for the removal of more then 75% of the trees, please make it a condition of approval. A tree variance will be submitted prior too final plat approval.

· Provide a phasing plan or a condition of approval will set the timing of each phase to meet Salem Revised Code and Fire Department requirements.

- Due to topography and the location of the S1 Water Service, the applicant requests that the City of Salem condition the subdivision approval to allow Phases/Sections to be developed out of sequence. Below is the anticipated order of development for the proposed Phases/Sections. However, we would like the flexibility to develop in any logical order.

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Section C: 16 lots

The applicant is working on a more official phasing plan, that will be submitted to the City when complete.

· The natural grade within the subject property exceeds 12 percent in many areas. The applicant shall provide preliminary vertical street alignments to demonstrate compliance with the minimum standard of 12 percent street grade for local streets.

-Plans have been revised and/or provided to the show the street alignments and compliance with street grade.

· Several lots will need to provide sprinklers, if the 12 percent street grade cannot be met. This includes K Street, and N Street. In addition, several Fire Department turnarounds need to be shown; the end of I Avenue, flag lot accessway, and Q Avenue.

-The site plans have been revised and a design exception to street grade has been requested.

· The proposed plan shows construction of a 50-foot wide right-of-way for M Street and a 40-foot wide right-of-way for K Street. The applicant shall modify the proposed plan to meet street standards, or submit findings indicating the necessity for the use of alternative street standards pursuant

to SRC 803.065, potentially with 52-foot right-of-way with property line sidewalks.

- This is not a clear and objective standard. Therefore, this cannot be applied to needed housing. However, a street design exception has been requested.

· Condition 4(a) of UGA 17-03 requires dedication of land for the future Coburn Reservoir. The application materials shall be modified to demonstrate how this condition is being met.

-Lot 139 will be deeded to the City of Salem at the time of final plat approval.

· The application does not provide sufficient details to identify how the site is compliant with SRC 71, specifically the requirements for Green Stormwater Infrastructure (GSI) pursuant to PWDS Appendix 4E. The applicant shall indicate the design and location of Green Stormwater Infrastructure (GSI) facilities for onsite stormwater treatment and the plan for offsite disposal. The applicant shall provide a description of the proposed stormwater management system pursuant to SRC 205.030(e).

-A Preliminary Drainage Report dated May 17, 2019 is being submitted as part of this submittal.

· The application materials shall be modified to demonstrate how all of Section C will be served by sewer and stormwater. See UGA 17-03 conditions 2 and 3. If a modification to UGA 17-03 is needed, please apply.

-Per the submitted utility plans, sewer and stormwater will be constructed to the boundaries of the site.

· The application materials shall be modified to demonstrate how the proposed subdivision will be served with S-1 water. See UGA 17-03 Condition 4(b). If a modification to UGA 17-03 is needed, please apply.

-A modification to UGA 17-03 is not needed. The utility plans have been revised per our conversations with Public Works.

· Please provide evidence that Lot 137 can be served by Public Utilities.

-Lot 137 is now Lot 82. See attached utility plans.

· Access to Kuebler Boulevard is restricted. Please remove access to Kuebler Boulevard and show Fire Department turnaround.

-Site Plans have been revised and access to Kuebler Boulevard has been removed.

Tree Variance

Proposal:

The subject property is about 52.80 acres in size and zoned RA (Residential Single Agriculture). The applicant is proposing to divide the subject property into 214 single family residential lots (within 11 Phases/Sections).

There are seven (7) Oregon White Oaks 24" in diameter or greater located throughout the site. The applicant is removing six (6) of these significant trees.

Lot 3-Oak 32"	Remove
A Avenue-Oak 28"	Remove
A Avenue-Oak 24"	Remove
A Avenue-Oak 60"	Remove
Lot 67-Oak 30"	Remove
J Avenue-Oak 24"	Remove
Lot 73-Oak 40"	Preserve

Criteria

Tree Variance 808.045(d)(1):

1) Hardship-

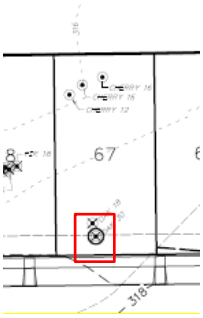
(A) The site being developed is 52.80 acres in size and zoned RA. All Oregon White Oaks designated for removal are within the right-of-way, the building envelops or within an area close to the building envelope, which have the potential of being damaged during grading and construction. The site has been designed to accommodate a safe and efficient circulation system, adequate parking, and meet the standards all while taking into consideration topography, stormwater detention, and street connections.

Due to the topography and required street connections on the site, these areas where the trees are located couldn't not be avoided and therefore, created a hardship by impacting how the site could be laid out. Therefore, the trees proposed for removal are located within the proposed accessways and the proposed building envelopes.

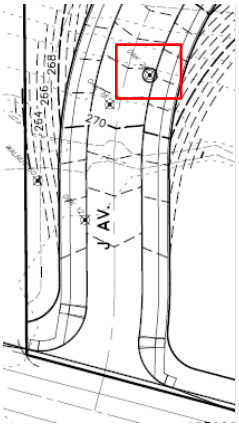
The 32" Oregon White Oak designated for removal is located within the area where a sidewalk is required. In order to preserve that tree, the need for the sidewalk along Strong Road would need to be eliminated. However, the removal of the sidewalk would impact safe and efficient circulation.

The 24”, 28”, and 60” Oregon White Oak designated for removal are located with A Avenue. A Avenue is necessary in order to provide street connections and circulations throughout the subdivision.

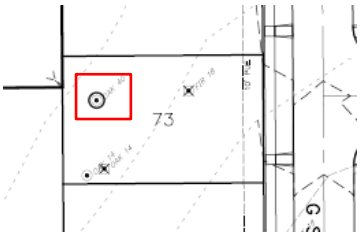
The 30” Oregon White Oaks designated for removal are located within Lot 67. This tree is located in the potential building area and will be affected by the construction on a driveway and/or a sidewalk. This tree must be removed to accommodate a driveway and sidewalk.



The 24” Oregon White Oak designated for removal is located within J Avenue. Avenue is necessary in order to provide street connections and circulations throughout the subdivision.



The 40” Oregon White Oaks designated for preservation is located on Lot 73. All preservation measures will be taken to ensure protection of this tree during grading and construction of the site.



(B) The proposed variance is the minimum necessary to allow the lawful development of the site. There are 7 significant trees (Oregon White Oaks) located throughout the subject property. The applicant is requesting to remove 6 of those significant trees in order to develop the site.

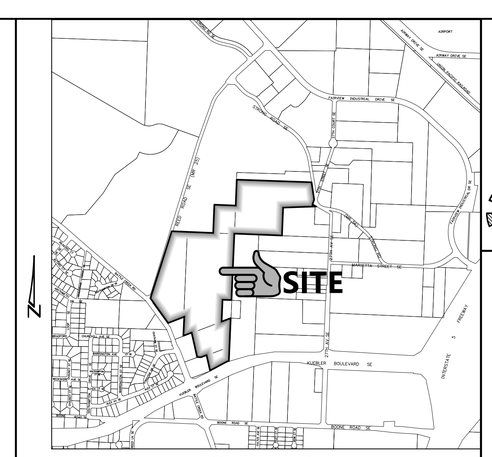
COBURN GRAND VIEW ESTATES

T. 8 S., R. 3 W., W.M.
SEC. 11D Tax Lots 100, 200, 400 & 601
SEC. 12b Tax Lot 1600
CITY OF SALEM,
MARION COUNTY, OREGON

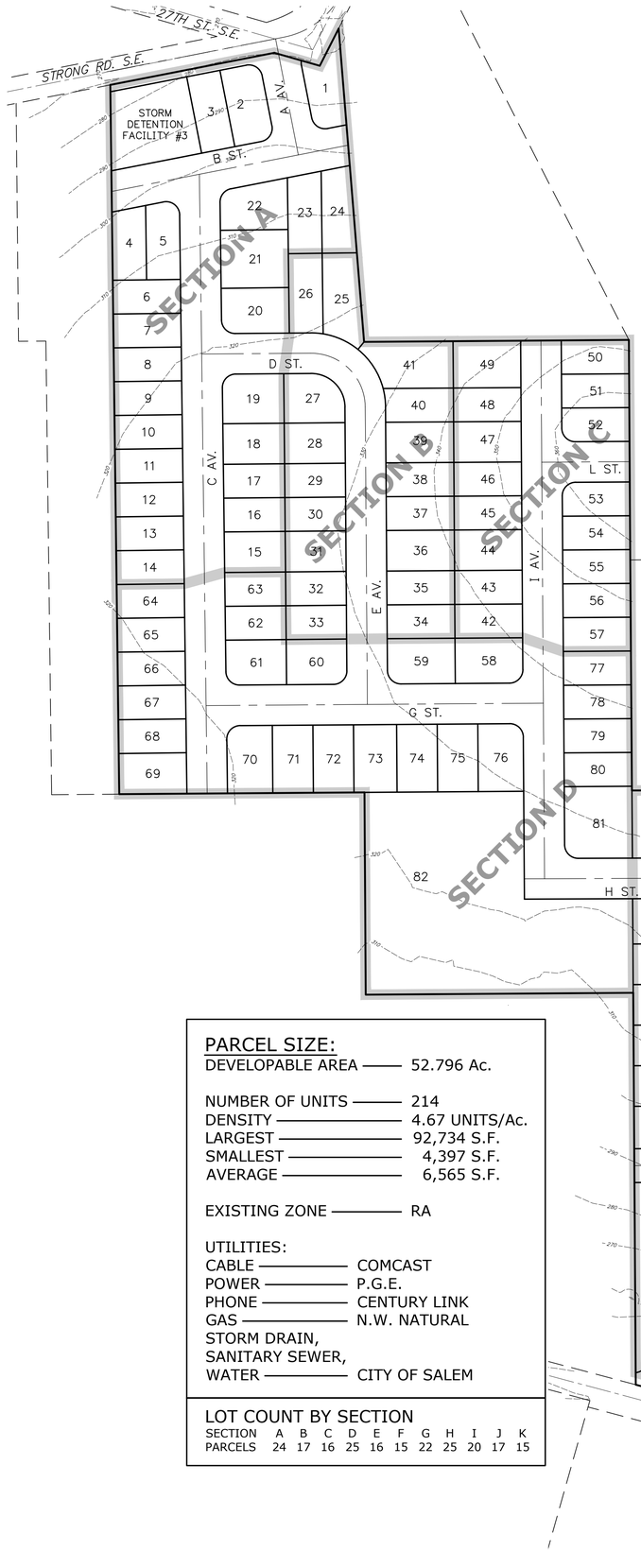
Owner / Developer:

WESTWOOD HOMES LLC

12700 NW CORNELL RD.
PORTLAND, OREGON 97229



VICINITY MAP



N W E S

0' 1INCH 100'

SCALE: 1" = 100'

PARCEL SIZE:

DEVELOPABLE AREA	52.796 Ac.
NUMBER OF UNITS	214
DENSITY	4.67 UNITS/Ac.
LARGEST	92,734 S.F.
SMALLEST	4,397 S.F.
AVERAGE	6,565 S.F.
EXISTING ZONE	RA

UTILITIES:

CABLE	COMCAST
POWER	P.G.E.
PHONE	CENTURY LINK
GAS	N.W. NATURAL
STORM DRAIN, SANITARY SEWER, WATER	CITY OF SALEM

LOT COUNT BY SECTION

SECTION	A	B	C	D	E	F	G	H	I	J	K
PARCELS	24	17	16	25	16	15	22	25	20	17	15

PRELIMINARY SHEET INDEX

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
2.	ADDED PRESSURE REDUCING STATION.	P.H.S. 04/05/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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COVER SHEET

COBURN GRAND VIEW ESTATES

6234p P101CO

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1995
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6234

P101

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ENGINEERING SERVICES, INC.
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SITE PLAN - NORTH -

COBURN GRAND VIEW ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS SHALL BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER SCALE. GRAPHICAL REPRESENTATION.

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

6234p P201SP

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 17, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P201

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SITE PLAN - CENTRAL -

COBURN GRAND VIEW ESTATES

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

6234p P202SP

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6234

P202

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
2.	ADDED PRESSURE REDUCING STATION.	P.H.S. 04/05/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

P203

JOB # 6234

EXPIRES: 06-30-2021

6234p P203SP

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

COBURN GRAND VIEW ESTATES

SITE PLAN - SOUTH -

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4. ADDED NEW STREETS & EX. EASEMENTS. P.H.S. 06/28/2019

P102

JOB # 6234

EXPIRES: 06-30-2021

REGISTERED PROFESSIONAL ENGINEER — OREGON — MARK D. GRENZ

6234p P102XC

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

COBURN GRAND VIEW ESTATES

EXISTING CONDITIONS PLAN

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PH. (503) 363 - 9227 FAX (503) 364-1260
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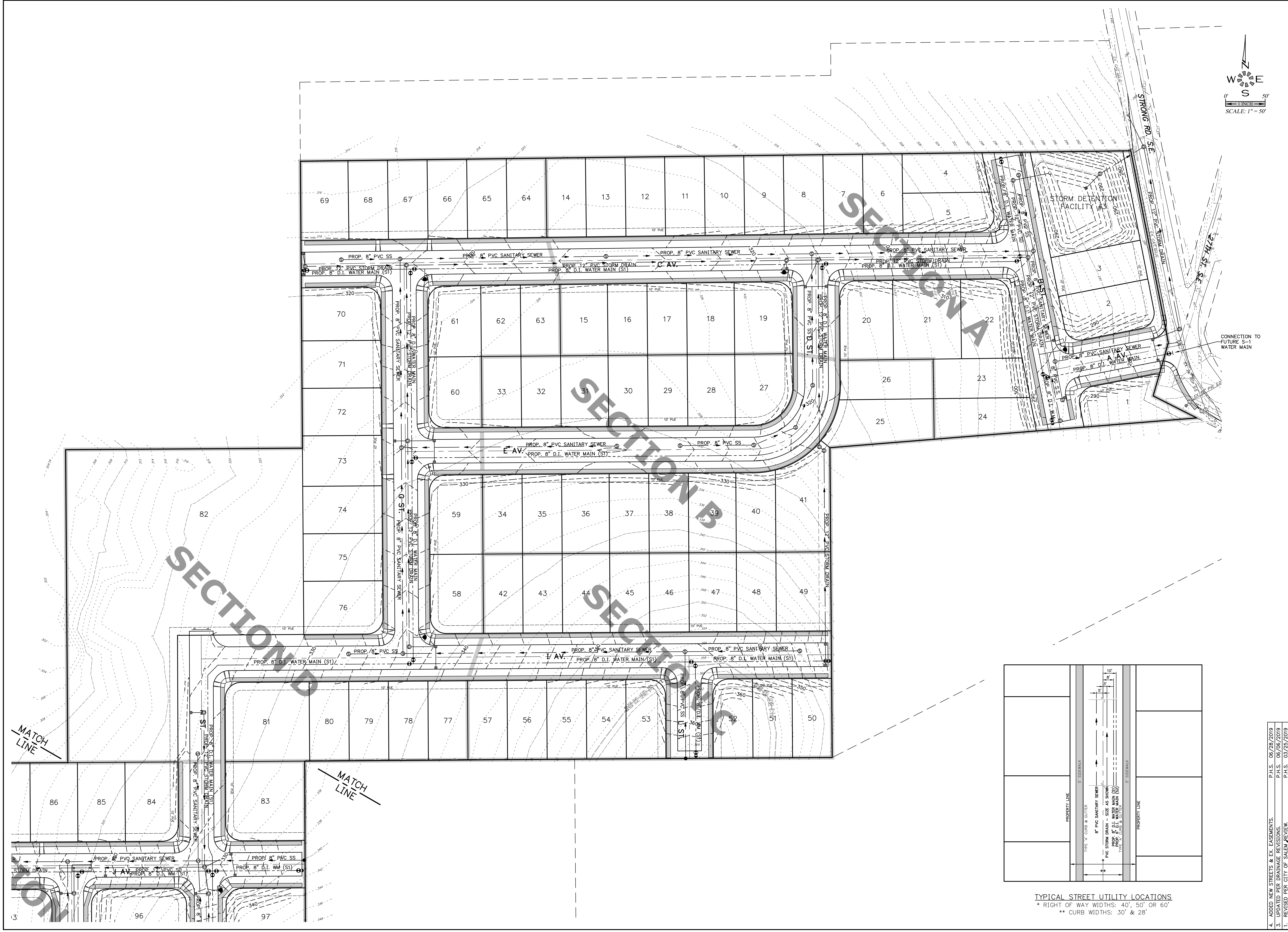

TYPICAL STREET UTILITY LOCATIONS
* RIGHT OF WAY WIDTHS: 40', 50' OR 60'
** CURB WIDTHS: 30' & 28'

MULTI/TECH
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UTILITY PLAN
- NORTH -

COBURN GRAND VIEW ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

4. ADDED NEW STREETS & EX. EASEMENTS. P.H.S. 06/28/2019
3. UPDATED PER DRAINAGE REVISIONS. P.H.S. 06/06/2019
1. REVISED PER CITY OF SALEM REVIEW. P.H.S. 03/25/2019

6234p P301UT

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
9654
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P301

J:\6200-6299\6234-ReedRoad\Dwg v18\6234p.dwg, P302UT, 7/1/2019 5:19:23 PM, PSounders

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

P302

JOB # 6234

EXPIRES: 06-30-2021

6234p P302UT

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

COBURN GRAND VIEW ESTATES

UTILITY PLAN - CENTRAL -

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363 - 9227 FAX (503) 364-1260
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TYPICAL STREET UTILITY LOCATIONS

* RIGHT OF WAY WIDTHS: 40', 50', OR 60'

** CURB WIDTHS: 30' & 28'

SCALE: 1" = 50'

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
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2.	ADDED PRESSURE REDUCING STATION.	P.H.S. 04/05/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

P303

JOB # 6234

EXPIRES: 06-30-2021

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 14, 2004 — PHILIP H. SCHMIDT — RENEWAL: 6-30-2021

6234p P303UT

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

COBURN GRAND VIEW ESTATES

UTILITY PLAN - SOUTH -

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363 - 9227 FAX (503) 364-1260
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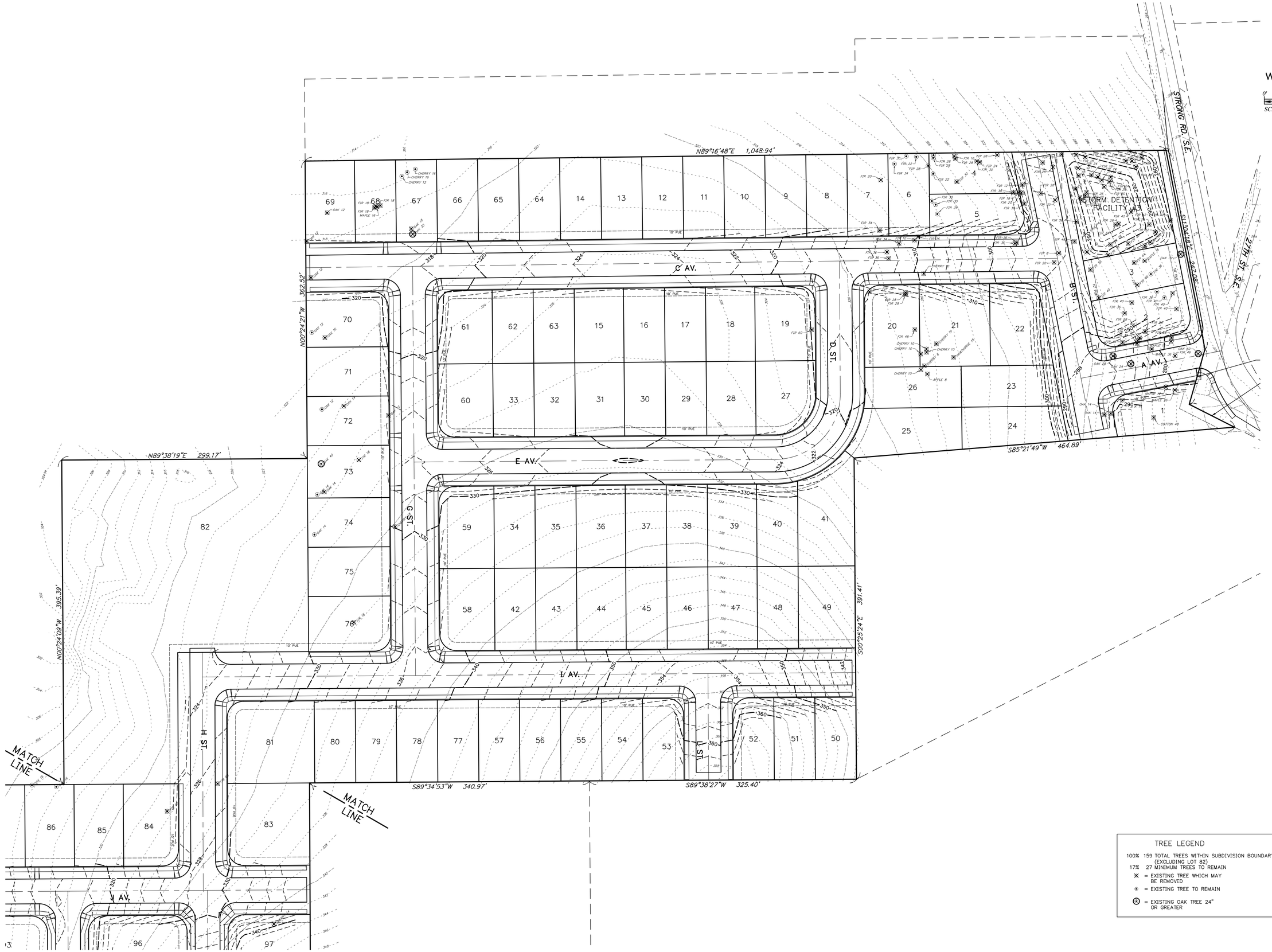

TREE LEGEND

100% 159 TOTAL TREES WITHIN SUBDIVISION BOUNDARY (EXCLUDING LOT 82)

17% 27 MINIMUM TREES TO REMAIN

⊗ = EXISTING TREE WHICH MAY BE REMOVED

⊙ = EXISTING TREE TO REMAIN

ⓞ = EXISTING OAK TREE 24" OR GREATER

4. ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3. UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1. REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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TREE CONSERVATION PLAN - NORTH

COBURN GRAND VIEW ESTATES

MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY. IF NOT STAMPED APPROVED

NOT FOR CONSTRUCTION UNLESS STAMPED APPROVED HERE

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

6234e P401TR

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 11, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P401

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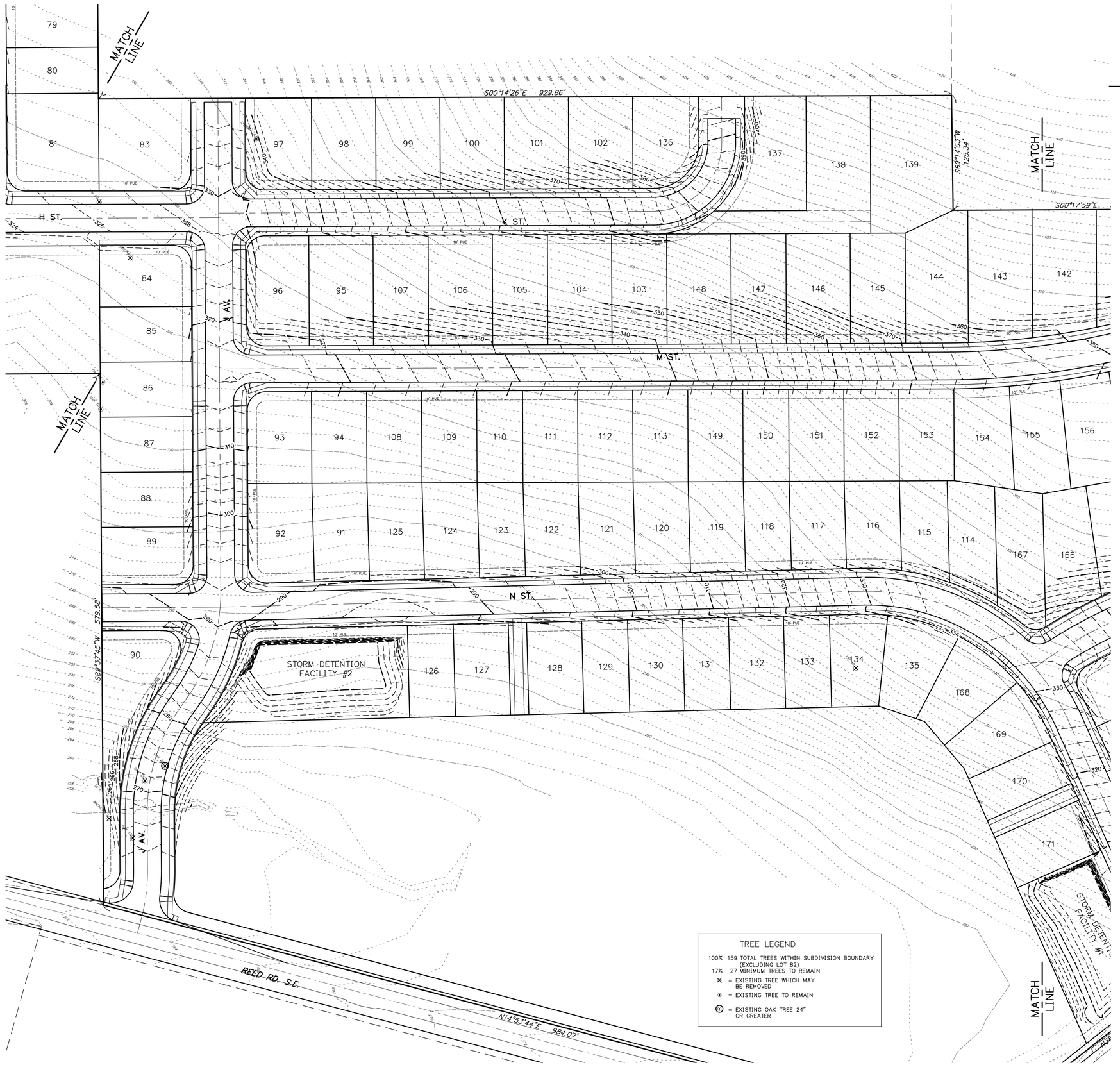

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TREE CONSERVATION PLAN - CENTRAL

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

6234p P402TR

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P402

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

J:\6200-6299\6234-ReedRoad\Dwg v18\6234p.dwg, P402TR, 7/1/2019 5:19:35 PM, PSounders

TREE LEGEND

100% 159 TOTAL TREES WITHIN SUBDIVISION BOUNDARY (EXCLUDING LOT 82)

17% 27 MINIMUM TREES TO REMAIN

⊗ = EXISTING TREE WHICH MAY BE REMOVED

⊙ = EXISTING TREE TO REMAIN

◉ = EXISTING OAK TREE 24" OR GREATER

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

MULTI/TECH
ENGINEERING SERVICES, INC.
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PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

TREE CONSERVATION PLAN - SOUTH

COBURN GRAND VIEW ESTATES

MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY IF NOT STAMPED APPROVED

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NO CHANGES, MODIFICATIONS OR RECONSTRUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6234e P403TR

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 24, 1976
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P403

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

SLOPE EXCEPTION AREAS

COBURN GRAND VIEW ESTATES

NO CHANGES, MODIFICATIONS OR CONSTRUCTION TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

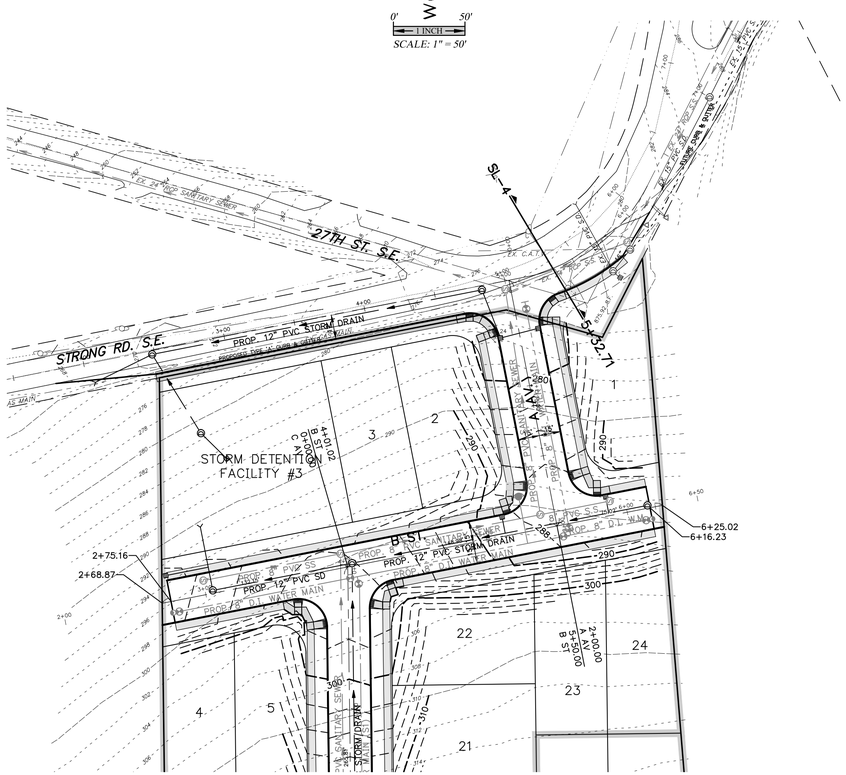
Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
6234p PSHEET

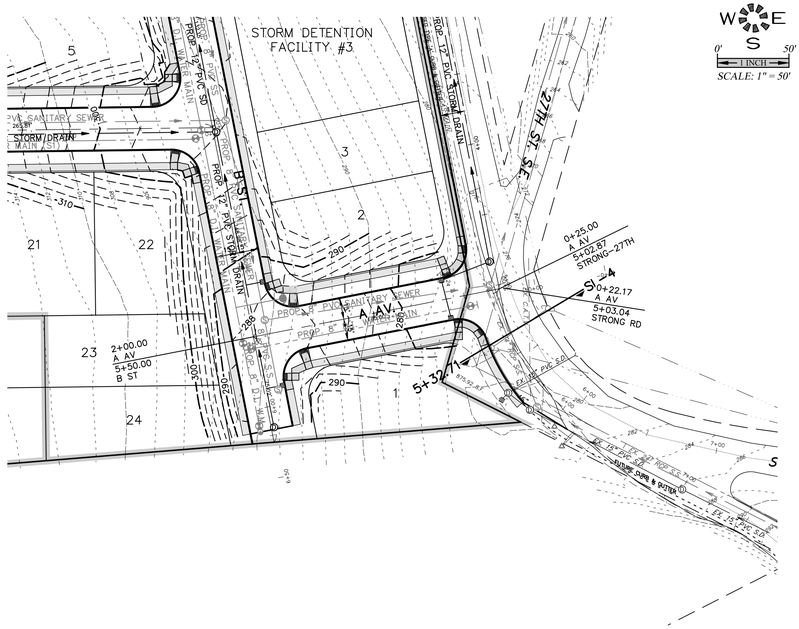
REGISTERED PROFESSIONAL ENGINEER
OREGON
JANUARY 14, 1977
MARVIN GRENZ
EXPIRES: 06-30-2021

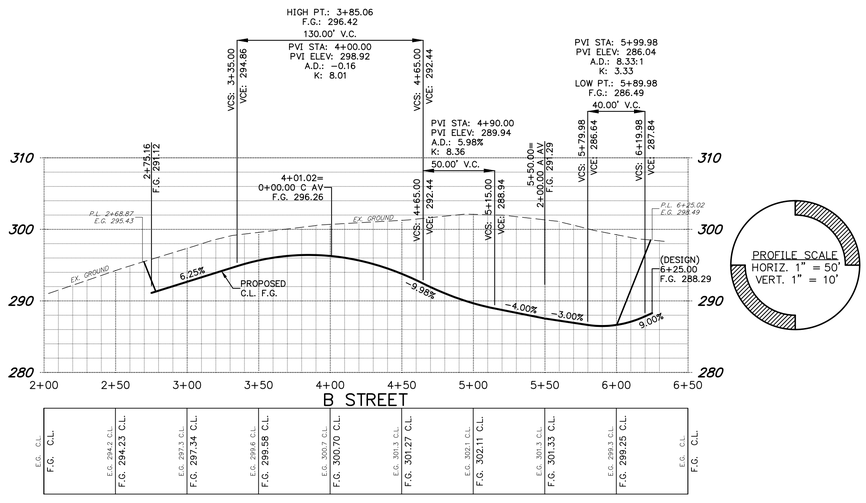
JOB # 6234

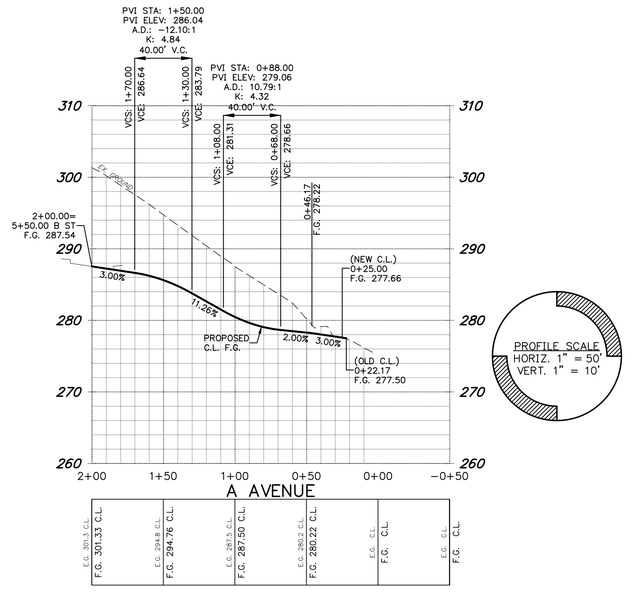
204

J:\6200-6299\6234-ReedRoad\Dwg FSE\6234p4sp.dwg, PSHEET, 7/1/2019 5:19:15 PM, PSanders









PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY IF NOT STAMPED APPROVED

NOT FOR CONSTRUCTION UNLESS STAMPED APPROVED HERE

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

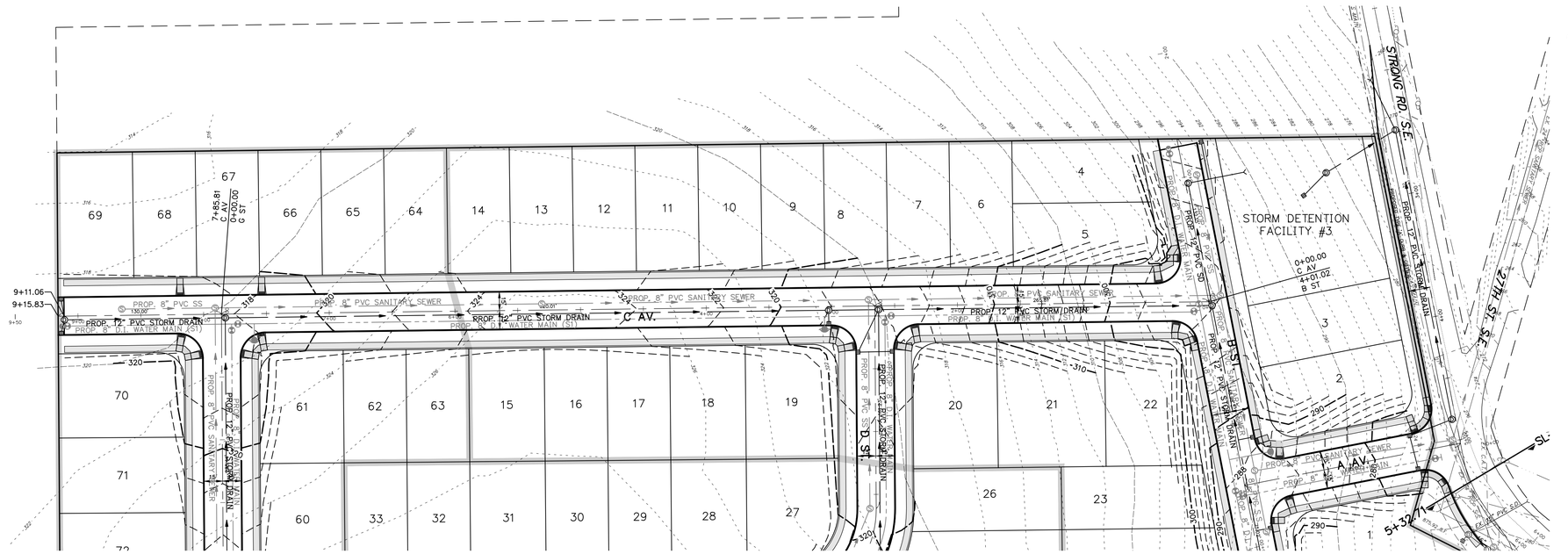
623dp P501ST

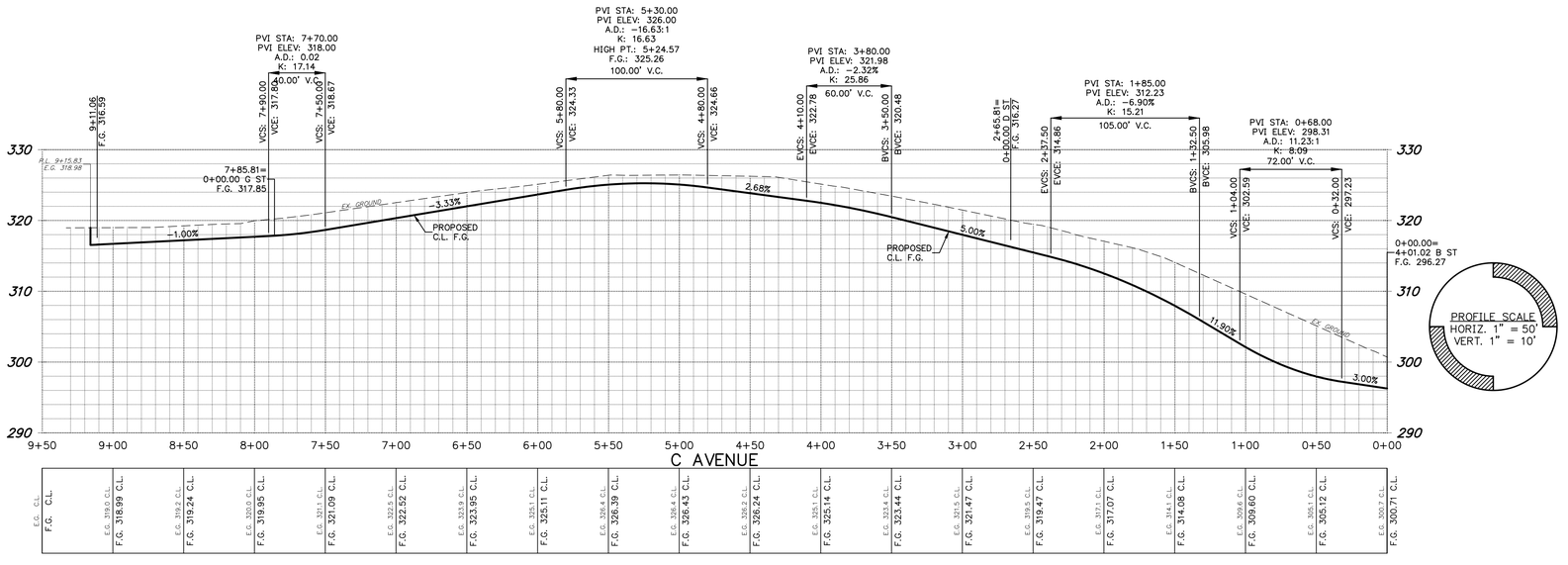
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 17, 1976
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6234

P501





4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net officemtengineering.net

STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

6234p P502ST

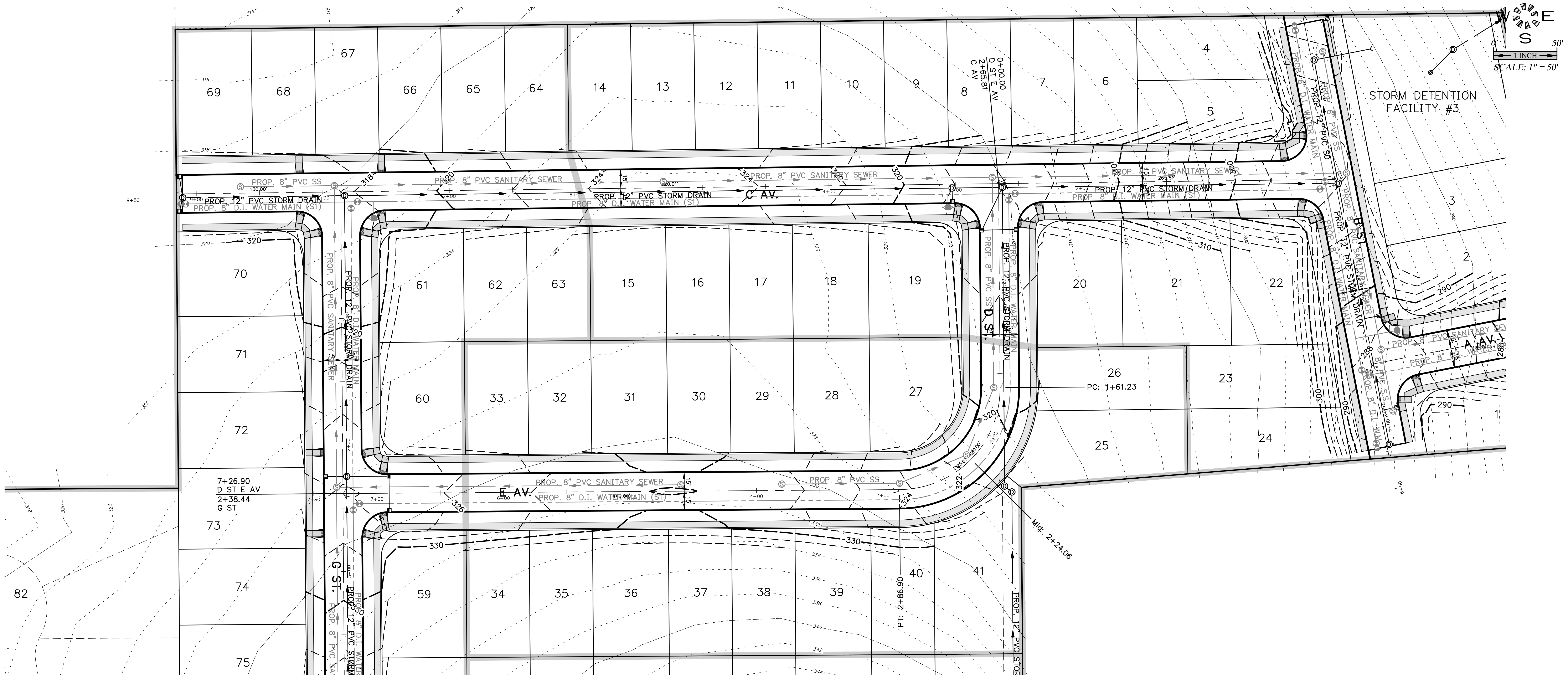
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 14, 1978 MARK D. GRENZ

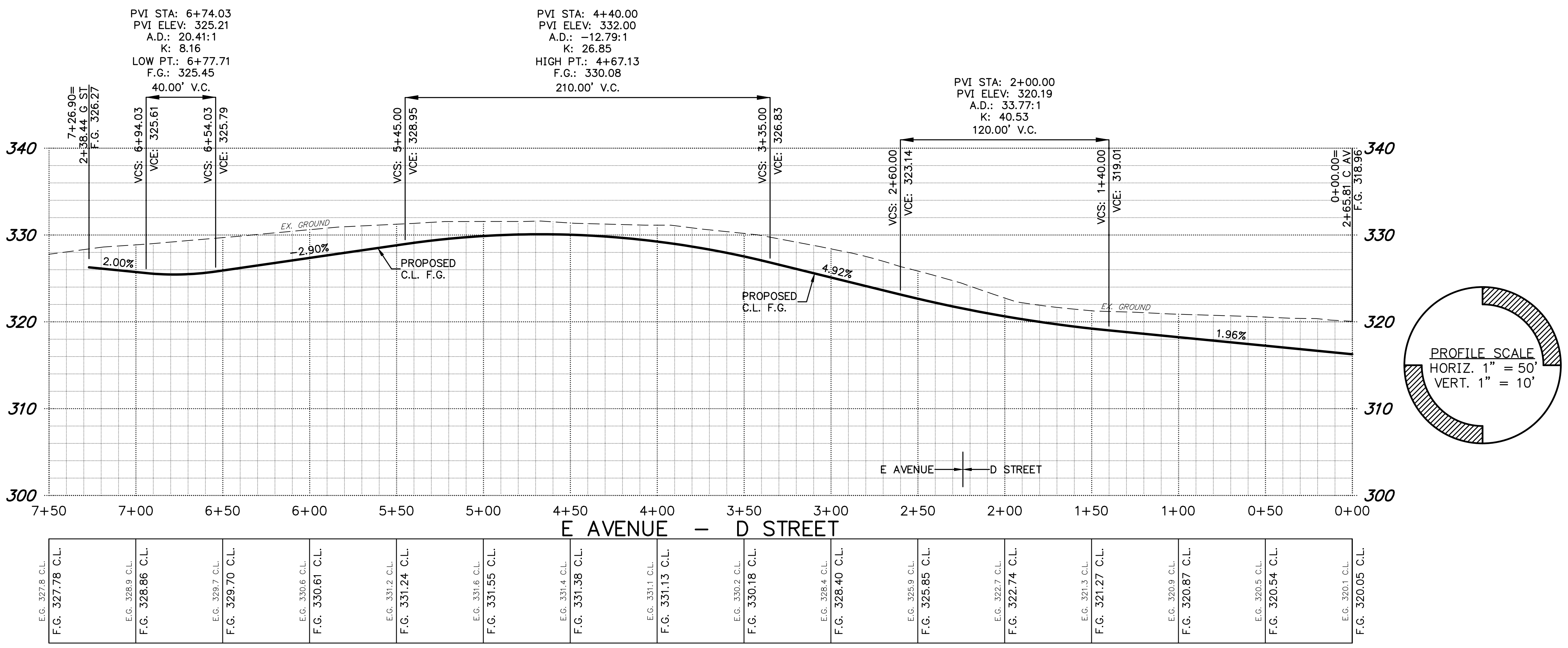
EXPIRES: 06-30-2021

JOB # 6234

P502

J:\6200-6299\6234-RealBook\Dwg v18\6234p.dwg, P502ST, 7/2/2019 1:03:53 PM, PSaunders





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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

4. ADDED NEW STREETS & EX. EASEMENTS.	P.H.S.	06/28/2019
3. UPDATED PER DRAINAGE REVISIONS.	P.H.S.	06/06/2019
1. REVISED PER CITY OF SALEM REVIEW.	P.H.S.	03/25/2019

6234p P503ST

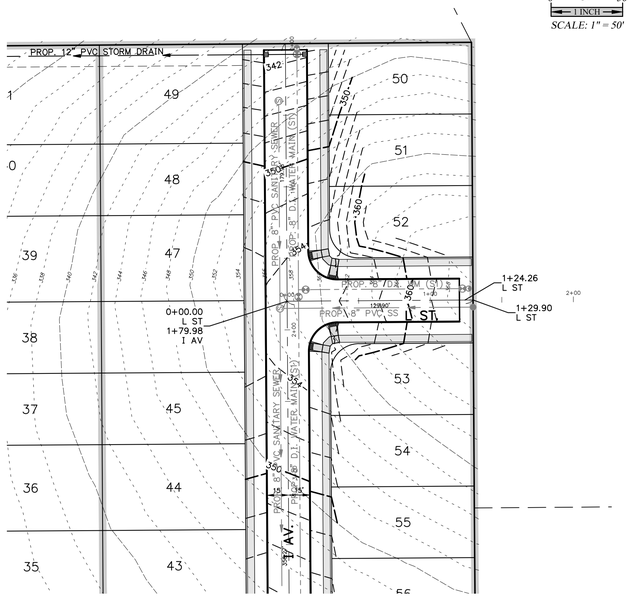
Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

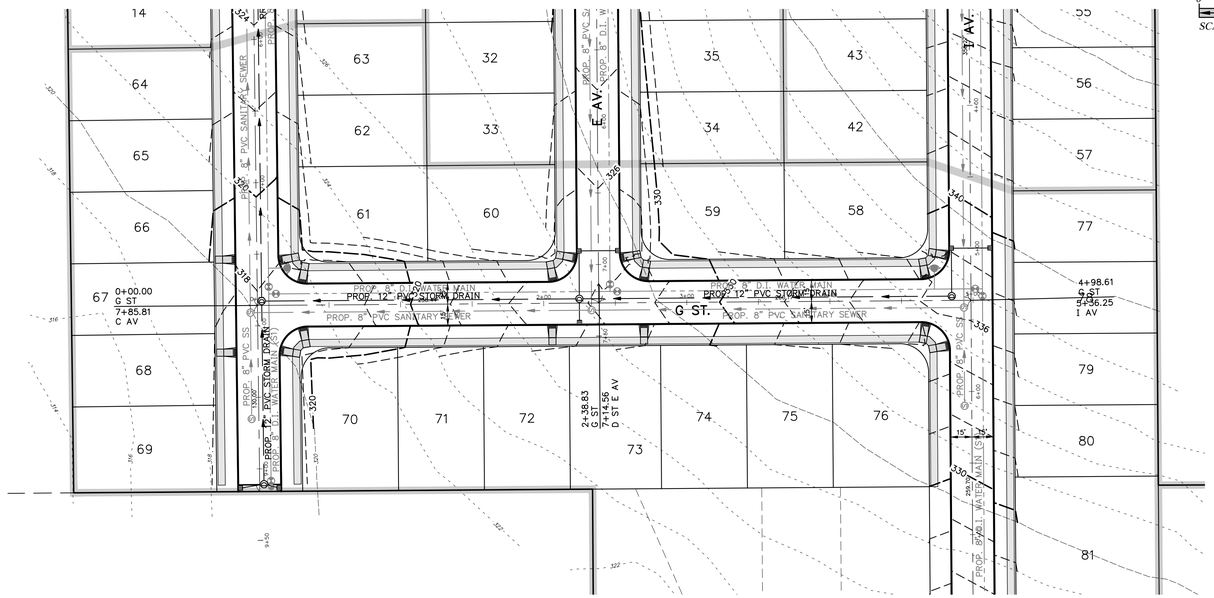
REGISTERED PROFESSIONAL ENGINEER
6554
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

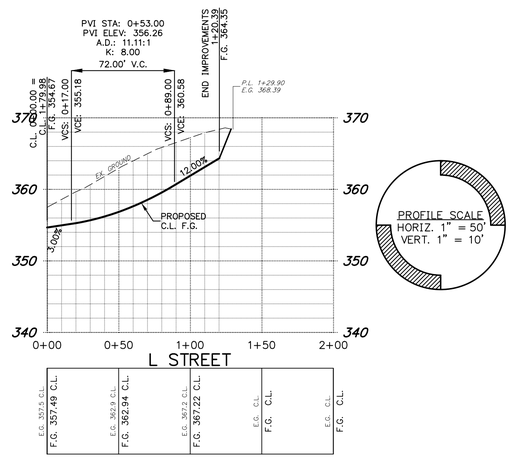
JOB # 6234

P503

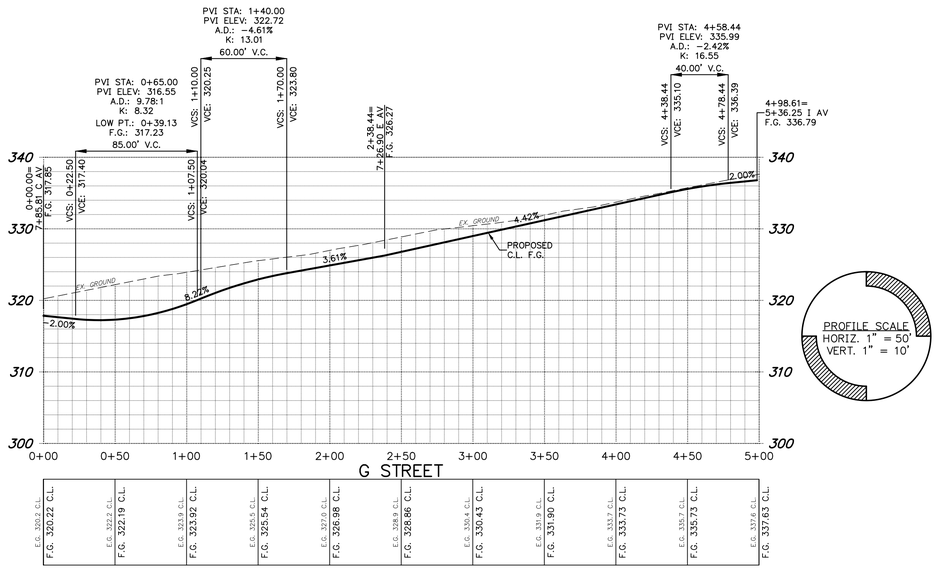
J:\6200-6299\6234-ReedRoad\Dwg v18\6234p.dwg, P503ST, 7/2/2019 1:03:59 PM, PSaunders







PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'



PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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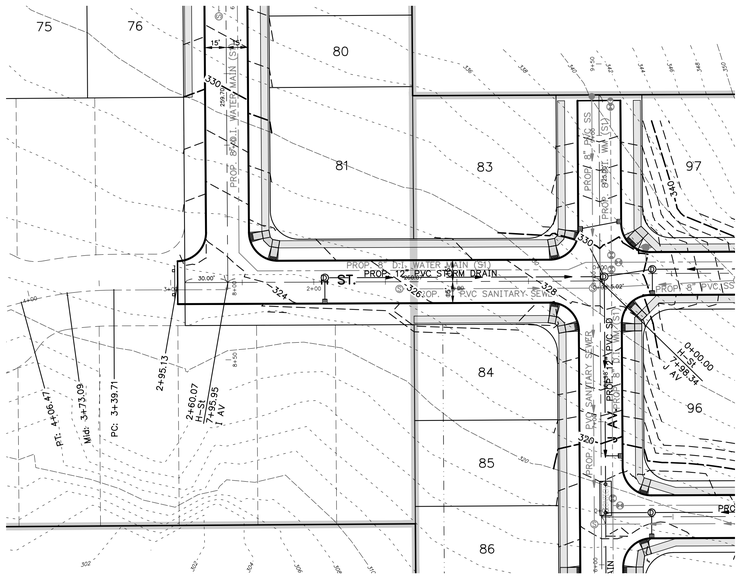
6234p P504ST

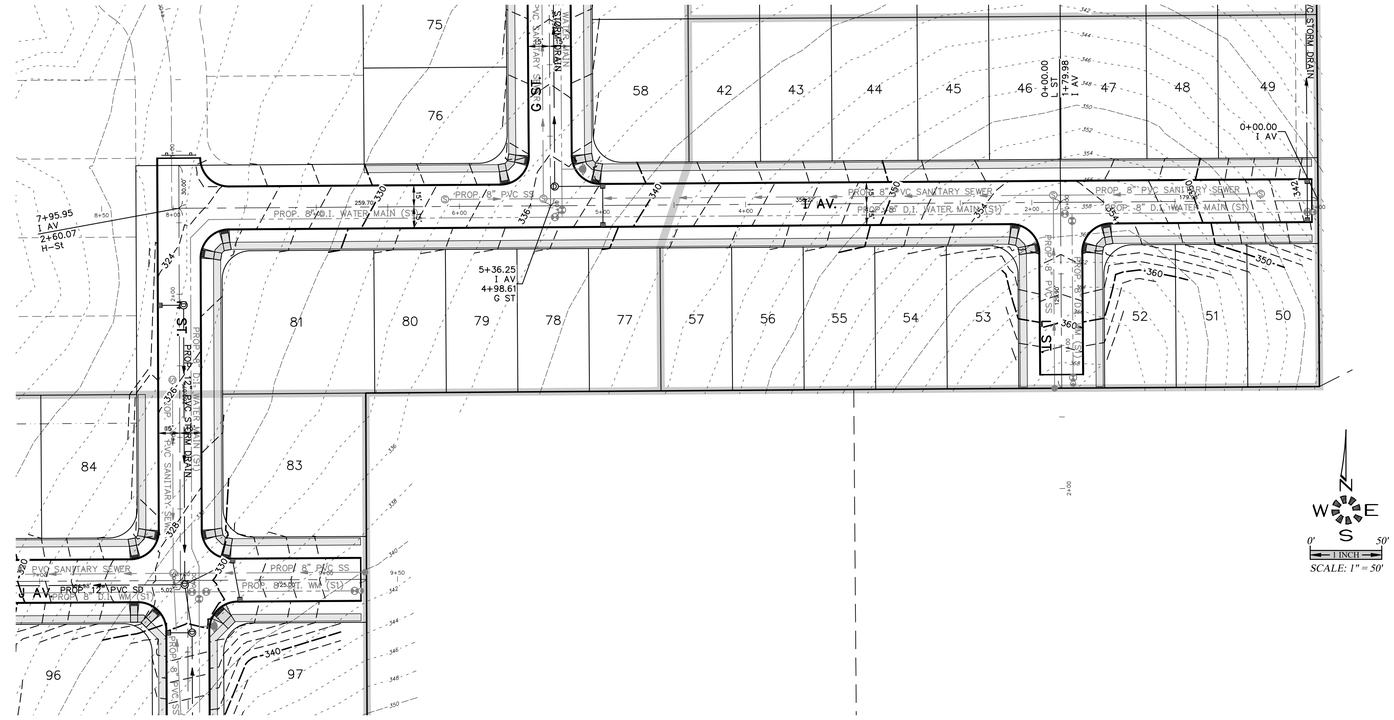
Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

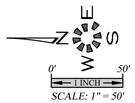
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 11, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

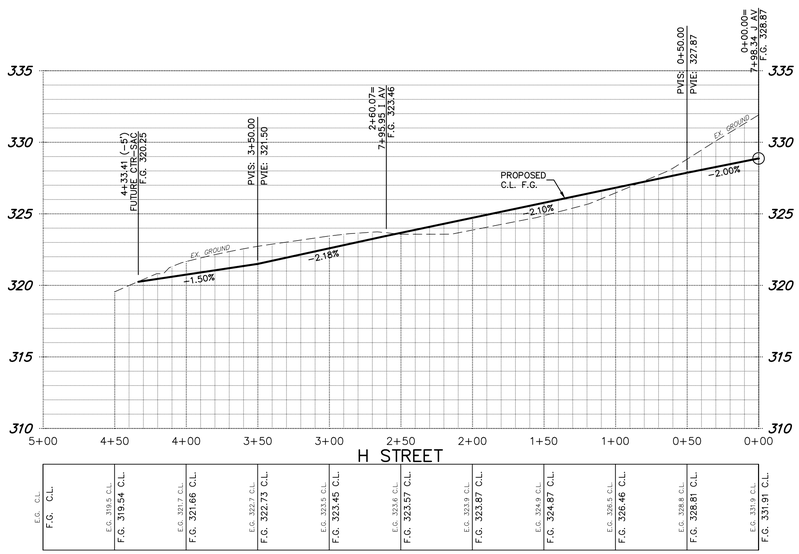
P504

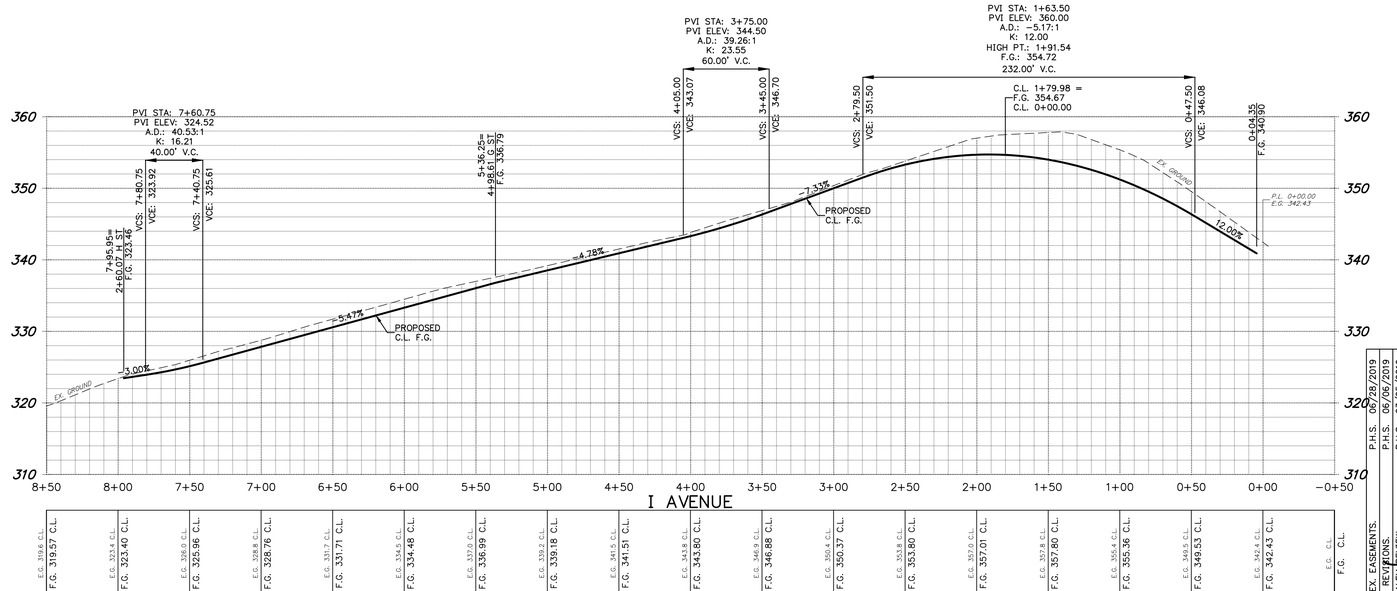






PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'





4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
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Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

6234e P505ST

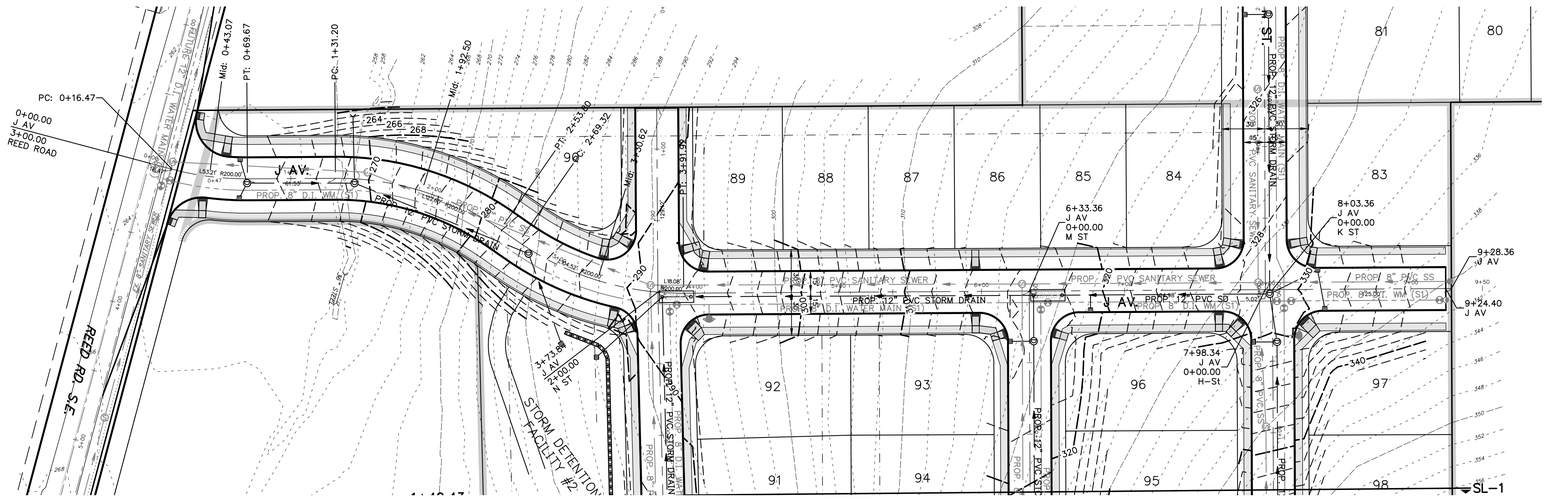
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

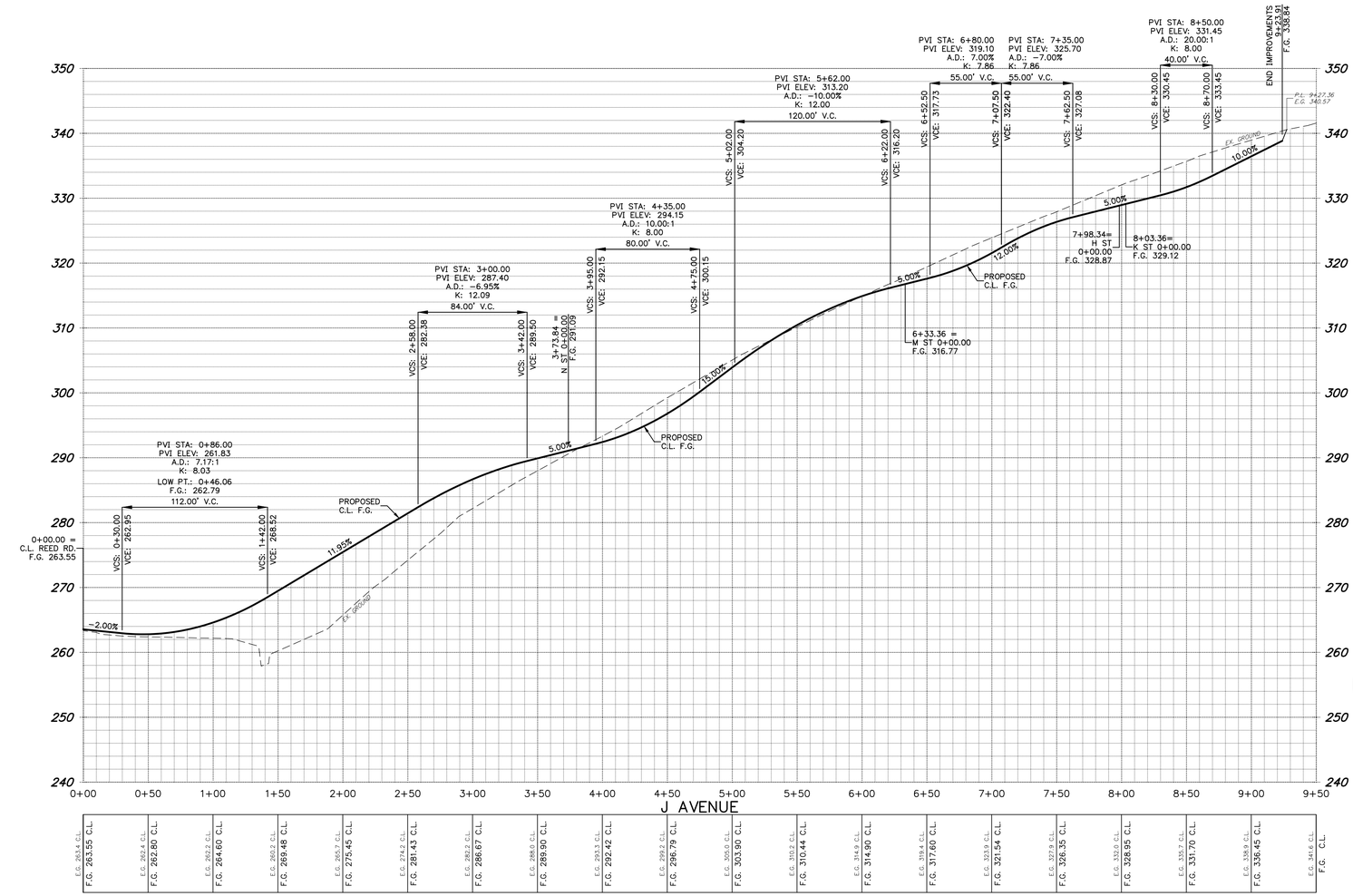
EXPIRES: 06-30-2021

JOB # 6234

P505

J:\6200-6299\6234-RoadDwg v18\6234e-dwg, P505ST, 7/1/2019 5:20:12 PM, PSanders





PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

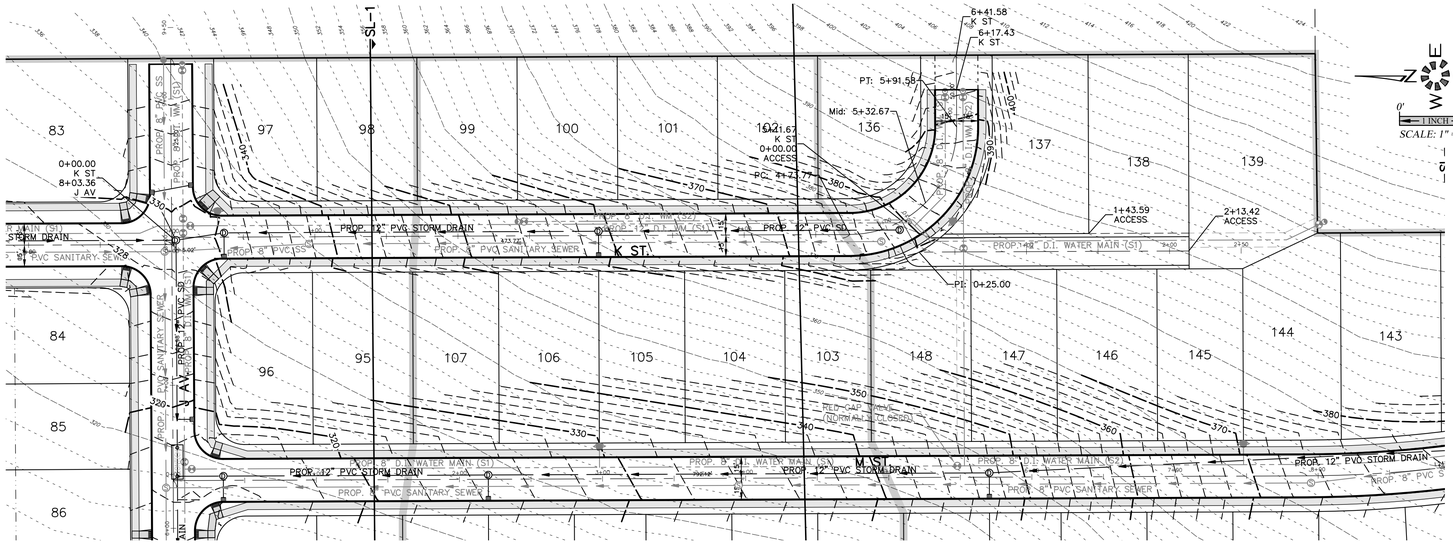
Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

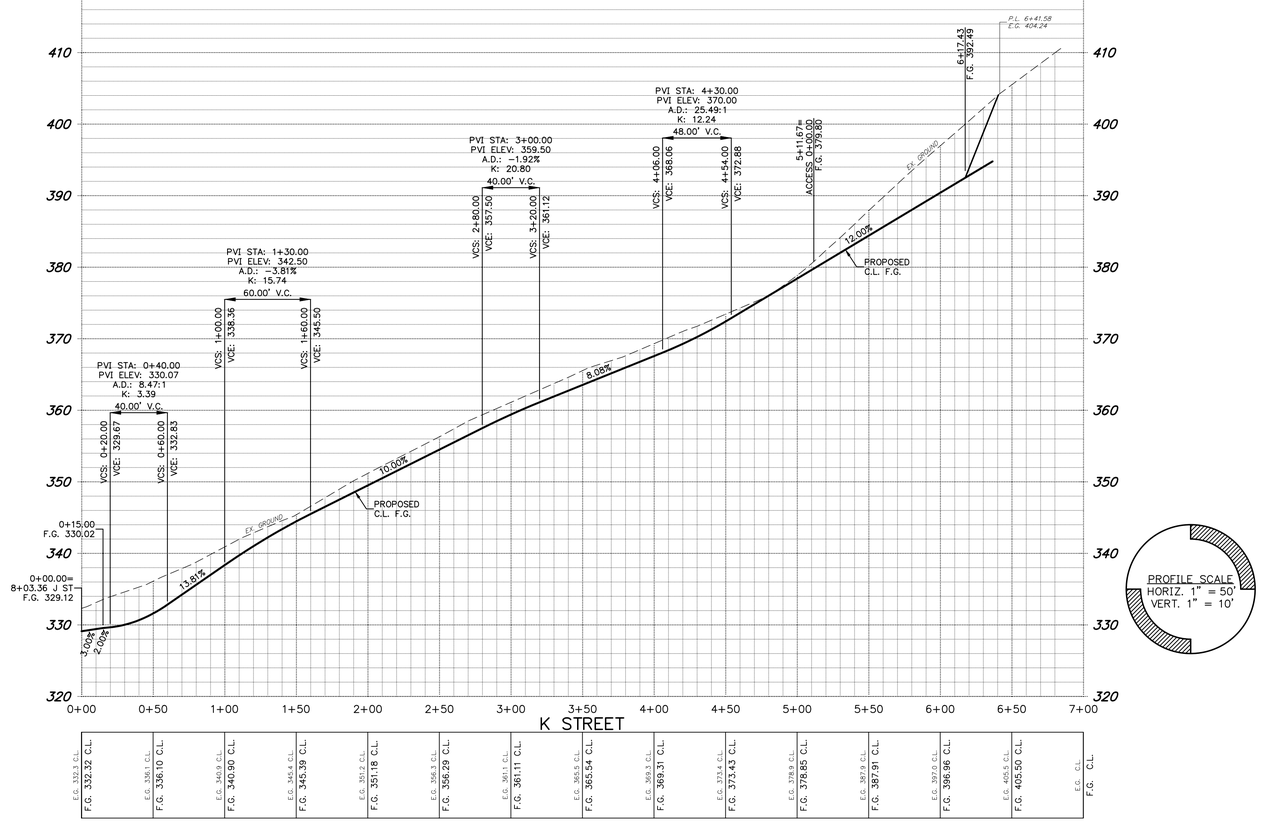
6234p P506ST

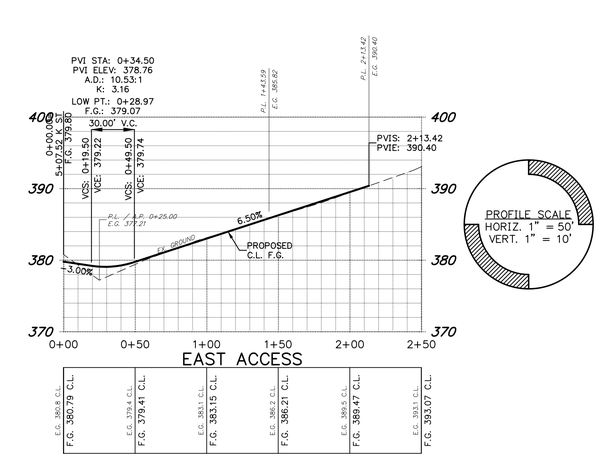
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P506







4. ADDED NEW STREETS & EX. EASEMENTS.	P.H.S.	06/28/2019
3. UPDATED PER DRAINAGE REVISIONS.	P.H.S.	06/06/2019
1. REVISED PER CITY OF SALEM REVIEW.	P.H.S.	03/25/2019

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STREET IMPROVEMENTS

COBURN GRANDVIEW ESTATES

MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY IF NOT STAMPED APPROVED

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

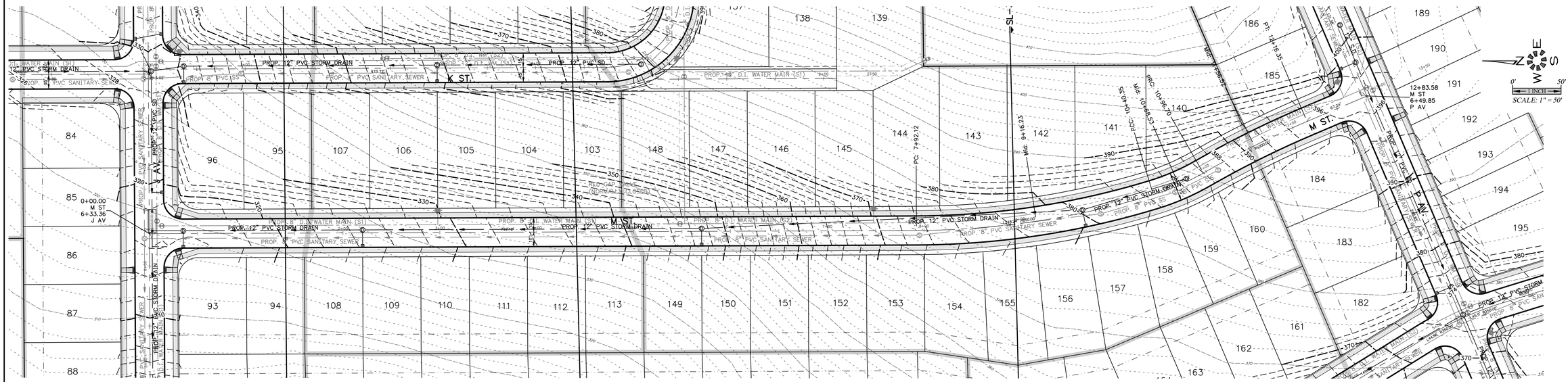
6234p P507ST

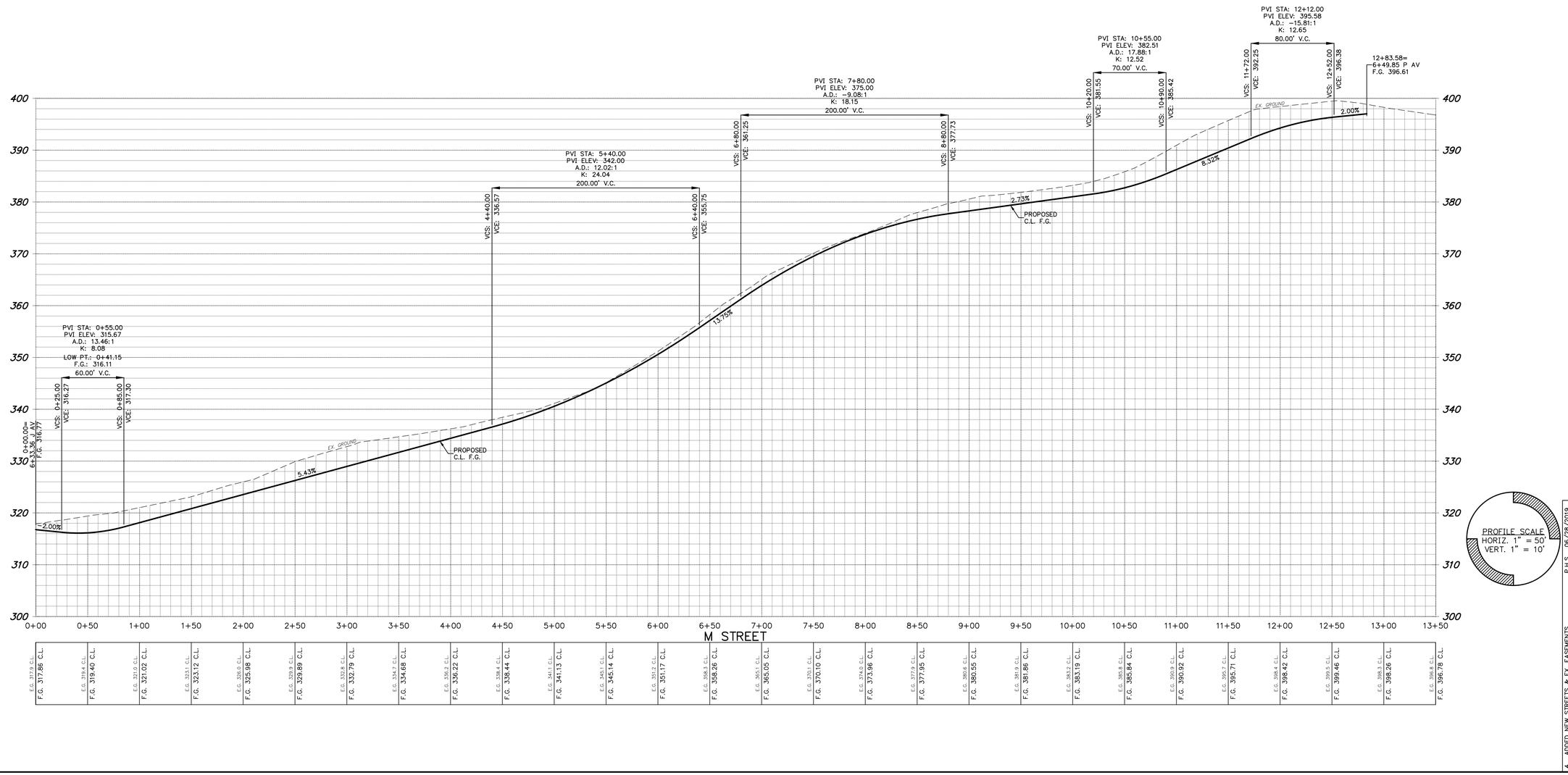
REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 14, 1974
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P507

J:\6200-6299\6234-RoadBook\Dwg v18\6234p.dwg, P507ST, 7/1/2019 5:20:25 PM, PSounders





PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

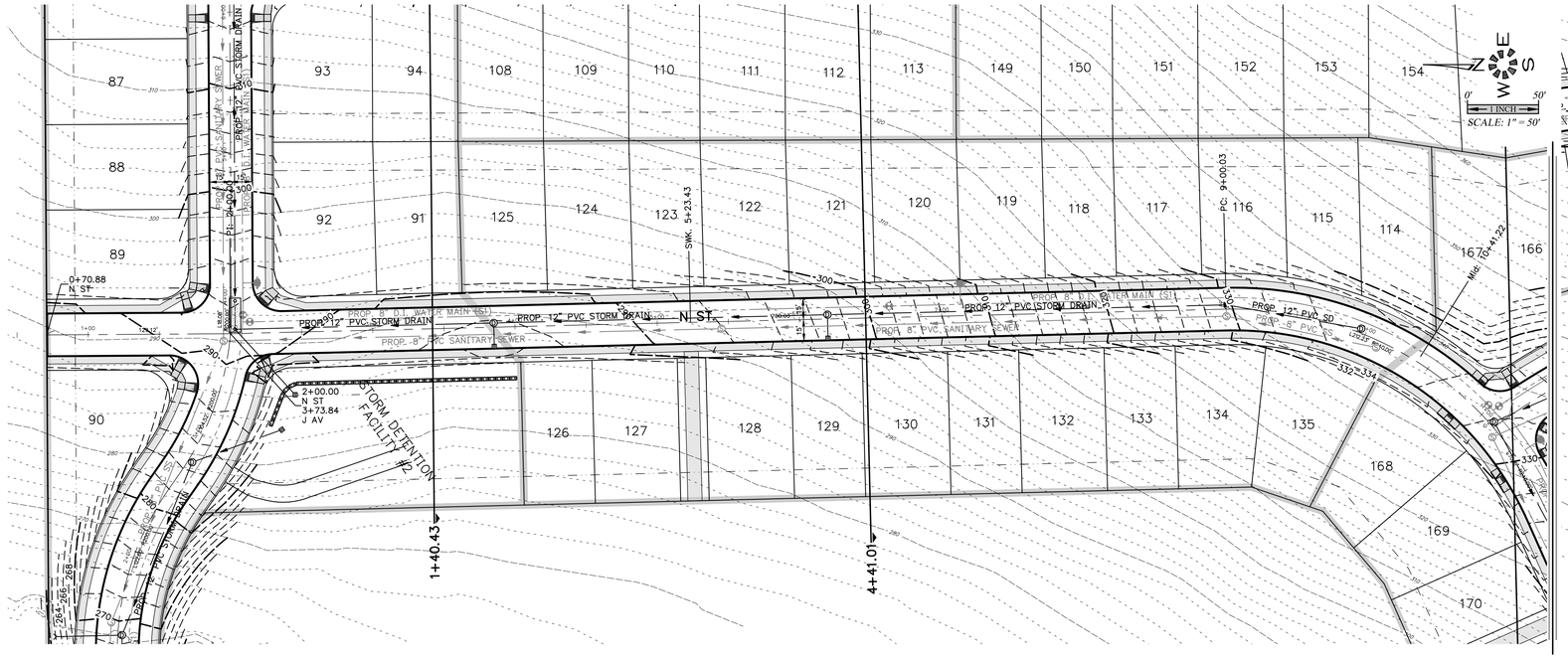
Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

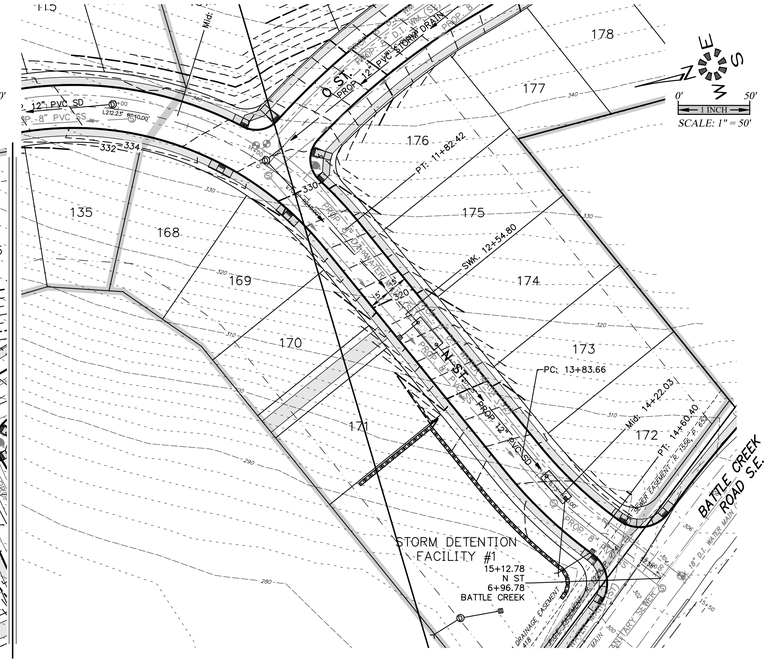
6234p P508ST

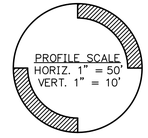
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARCUS GRENZ
EXPIRES: 06-30-2021

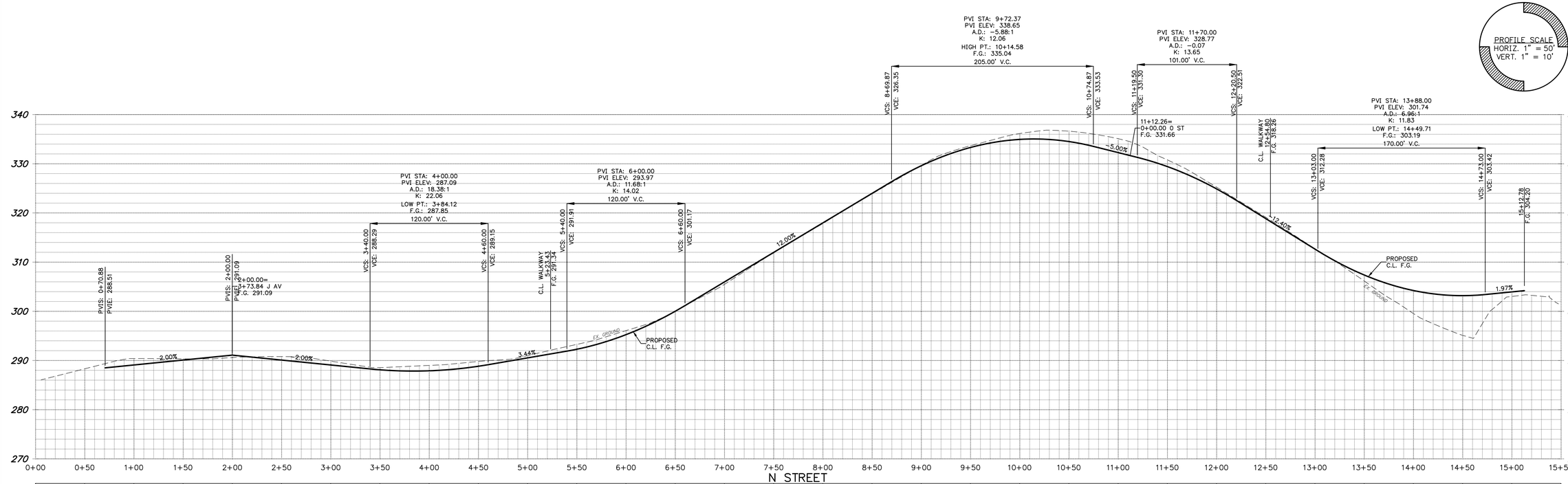
JOB # 6234

P508









N STREET

	E.G. C.L.	F.G. C.L.
0+00		
0+50	288.3	
1+00	290.4	289.09
1+50	290.3	290.09
2+00	290.6	291.09
2+50	290.8	290.09
3+00	289.9	289.09
3+50	288.5	288.11
4+00	289.0	287.91
4+50	289.8	288.83
5+00	291.0	290.53
5+50	293.3	292.29
6+00	296.1	295.25
6+50	300.1	300.01
7+00	305.5	305.97
7+50	311.8	311.97
8+00	317.8	317.97
8+50	323.8	323.97
9+00	329.7	329.59
9+50	333.7	333.31
10+00	336.1	334.95
10+50	336.6	334.52
11+00	335.1	332.27
11+50	330.8	329.43
12+00	325.2	324.90
12+50	319.1	318.85
13+00	312.7	312.65
13+50	306.2	307.39
14+00	299.6	304.23
14+50	295.1	303.19
15+00	303.0	303.95
15+50		

4. ADDED NEW STREETS & EX. EASEMENTS.	P.H.S.	06/28/2019
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1. REVISED PER CITY OF SALEM REVIEW.	P.H.S.	03/25/2019

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STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6234p P509ST
Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6234

P509

J:\6200-6299\6234-ReedRoad\Dwg v18\6234p.dwg, P509ST, 7/1/2019 5:20:37 PM, PSaunders

F.G.	C.L.
334.48	334.5
341.14	341.1
346.53	346.5
349.60	349.6
351.38	351.4
353.46	353.5
358.15	358.1
363.94	363.9
368.13	368.1
371.80	371.8
374.65	374.7
376.96	377.0
378.13	378.1
378.79	378.8
380.49	380.5
382.13	382.1
383.23	383.2
384.13	384.1

PROFILE SCALE
HORIZ. 1" = 50'
VERT. 1" = 10'

4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

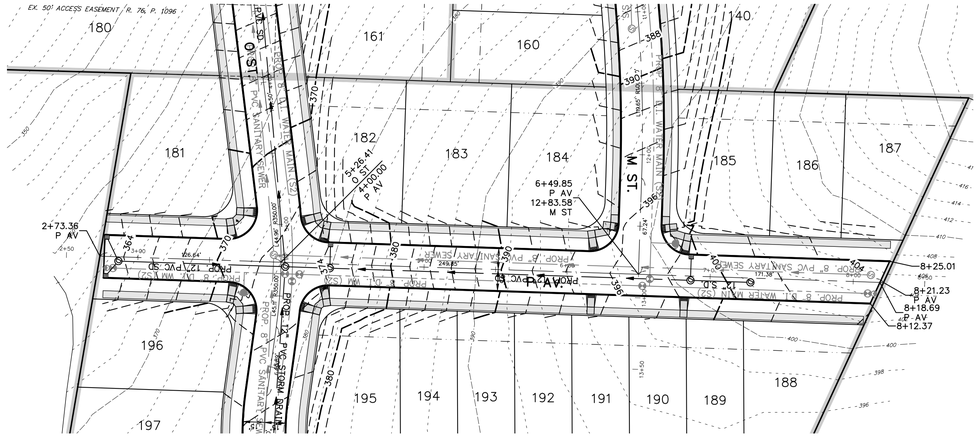
6234e PS1051

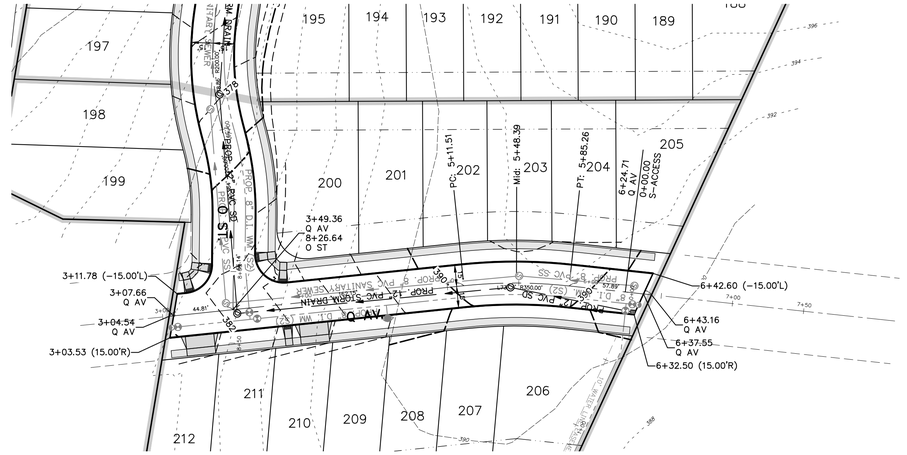
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1976
MARK D. GRENZ

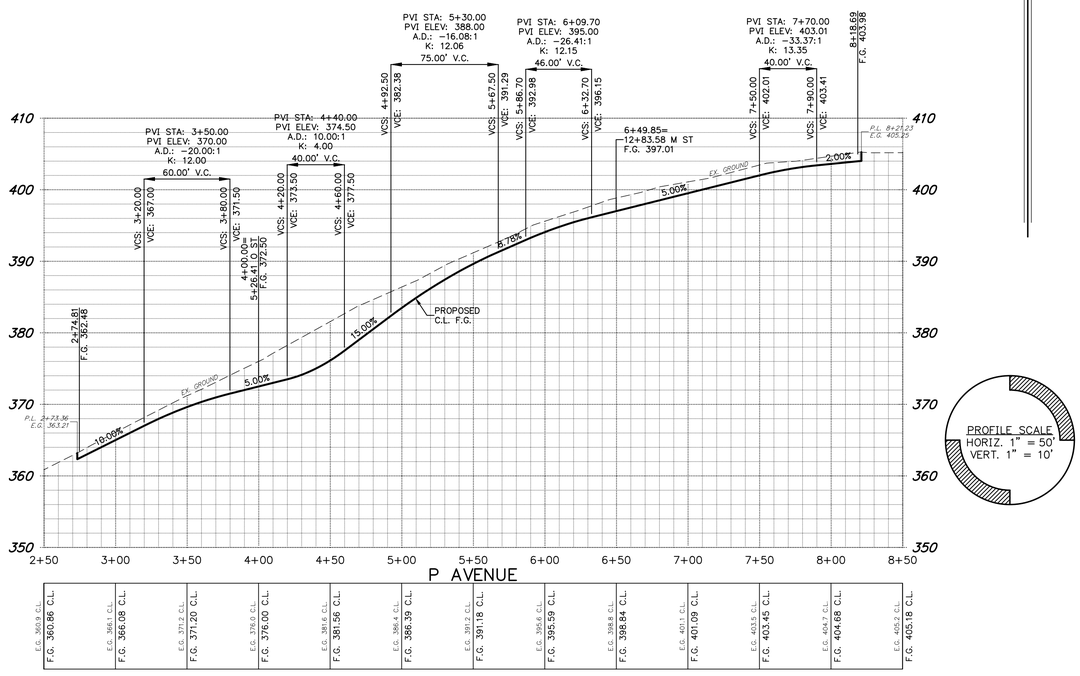
EXPIRES: 06-30-2021

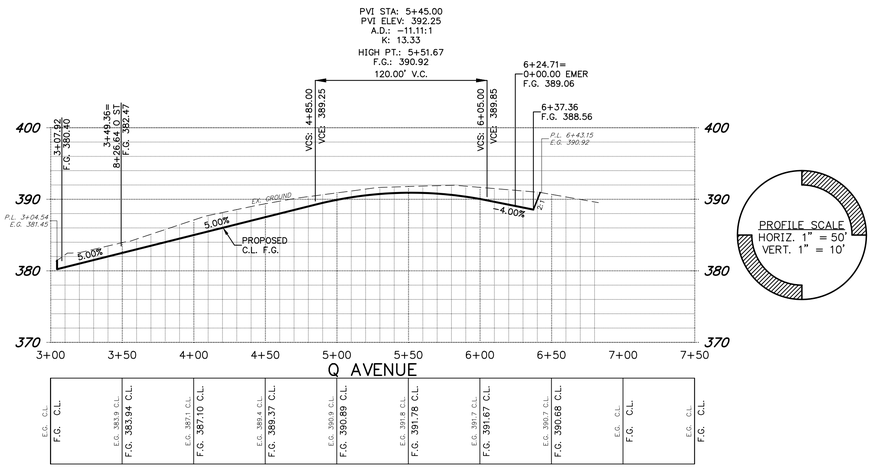
JOB # 6234

P510









4.	ADDED NEW STREETS & EX. EASEMENTS.	P.H.S. 06/28/2019
3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
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1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

STREET IMPROVEMENTS

COBURN GRAND VIEW ESTATES

MULTI/TECH ENGINEERING EXEMPT FROM LIABILITY IF NOT STAMPED APPROVED

NOT FOR CONSTRUCTION UNLESS STAMPED APPROVED HERE

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN
As-Built: ----

6234p P511ST

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6234

P511

6234

PRELIMINARY DRAINAGE REPORT
FOR

Coburn Grand View Estates
Salem, Oregon

Prepared For:
Westwood Homes, LLC
12700 NW Cornell Road
Portland, Oregon 97229

(Revised)
May 17, 2019

MULTI/TECH
ENGINEERING SERVICES, INC.

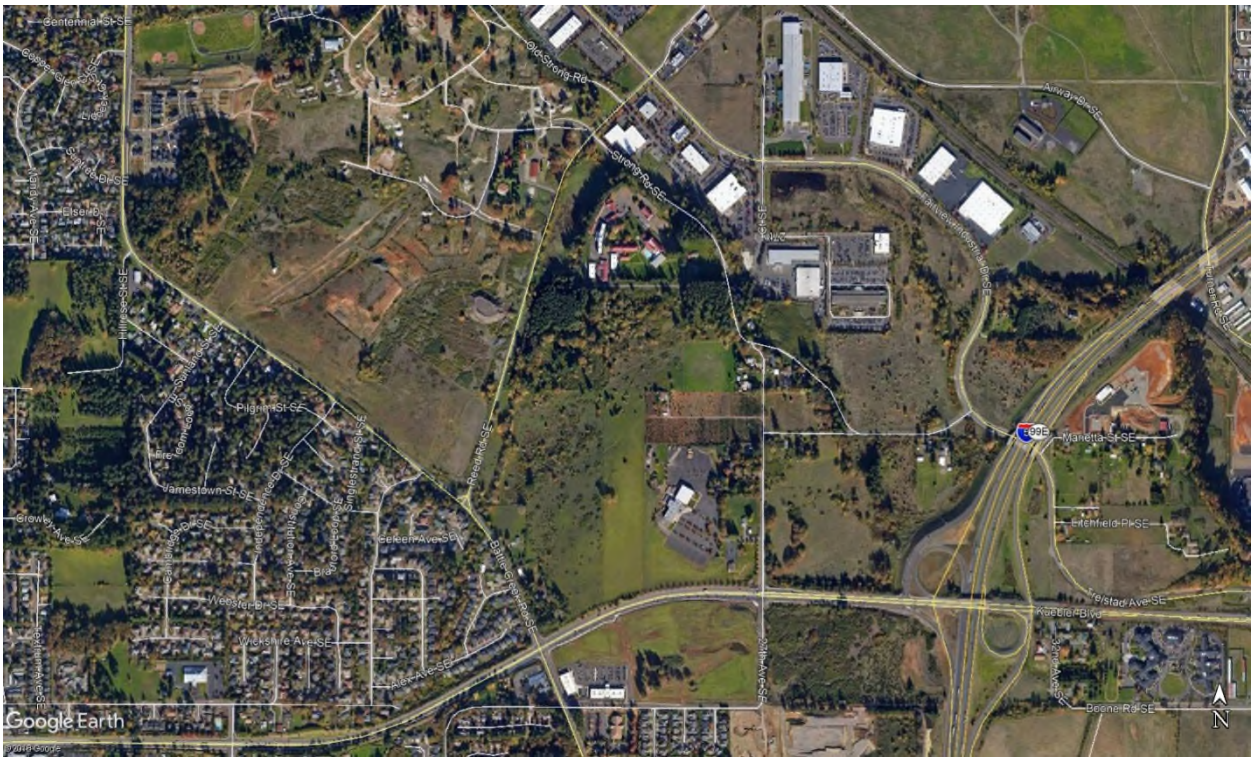
1155 13th Street SE
Salem OR 97302

PHONE: (503) 363-9227
FAX: (503) 364-1260
EMAIL: mhendrick@mtengineering.net

Contents

INTRODUCTION

The Coburn Grand View Estates development is a proposed 222 lot subdivision located north of Kuebler Blvd and east of Reed Road SE & Battle Creek Road SE. The parcel of land to be developed is Tax Lots 100, 200, 400 & 601 of Marion County Assessor's Map 08 3W 11D and Tax Lots 1600 & 1700 of Marion County Assessor's Map 08 3W 12B. A vicinity map and supporting maps are in Appendix A of this report.



Project Site

Green Stormwater Infrastructure (GSI) to the Maximum Extent Feasible (MEF) is being used for the new developed areas within Sections A through D per City of Salem Administrative Rules, Chapter 109, Division 004, Stormwater System, Appendix 4E (Standards). Because of natural steep slopes at approximately 10 percent, stormwater quality will be proposed as Manufactured Treatment Technologies; Contech Stormwater Solutions Inc. stormfilters using ZPG media devices for Sections E through K and portions of A and C. Stormwater flow control facilities will be constructed to meet the City of Salem standards.

Existing Conditions

The 45.4-acre site is irregular in the shape. Surface conditions consists of grass, brush and minimal trees. There are no identified wetlands or sensitive areas located on the property. The West Middle Fork of Pringle Creek runs through the western portion of Tax Lot 200. A topographical high point ridge is located on the easterly side of the site. Drainage from this high point flows northerly and westerly. The maximum relief is approximately 132-feet with a high point elevation of 418. The abutting properties are zoned single family residential, residential agriculture, commercial retail, public health and mixed use with public improvements that include storm water conveyance systems. Appendix A contains multiple maps of the site.

Soils

The Natural Resources Conservation Service (NRCS) Soil Resource Report for Marion County was used to determine a Hydrological Soil Group classification for runoff calculations. The report identifies the site soils to be McAlpin, Nekia and Silverton soils. All the soils are in the hydrologic soil group C. The report is in Appendix B.

Infiltration

An infiltration test was performed at the site to determine percolation rate of the soil. Test results indicate rates below 0.5 inches. Appendix B contains an excerpt from the geotechnical report with recommended infiltration rates.

Water Quality Methodology

Because of the poor percolation rates of the soils and natural steep slopes that dominate the site, green stormwater facilities are designed as volume control facilities with filtration rain garden planters for Sections A through D. Volume control facilities with Manufactured Treatment Technology devices for Sections E through K and portions of A and C.

Water Quality Analysis

Water quality flow rates will be calculated with HydroCAD 10.00. The SCS TR-20 Unit Hydrograph method will be used to generate the hydrographs. A Type 1A storm and a 24-hour rainfall depth of 1.38 inches per hour will be used to determine the water quality flow rate.

Water Quality Design

The proposed raingarden filtration planters will provide water quality treatment by allowing for the removal of pollutants through sedimentation, adsorption onto surrounding vegetation, filtration and biological uptake. The planters will be designed per the City of Salem designed standards.

Manufactured Treatment Technology Design

The proposed manufactured treatment device will be CONTECH Stormwater Solutions storm filters using ZPG media. The system will be designed in accordance to the manufacturer's recommendations per City of Salem design standards.

Stormwater Quantity Analysis

Stormwater quantity (Flow Control) is proposed to be handled by on-site detention. Runoff from the developed basins will be routed to the facilities that ultimately controls runoff to pre-developed flow rates. It should be noted that the site currently has two independent drainage basins but were analyzed as a single basin because the ultimate outlet is the nearby West Middle Fork of Pringle Creek.

Per Subsection 4.2(p)(3)(A) of the standards, one-half of the post development peak runoff rate of the two-year storm must be equal to or less than one-half of the peak runoff rate of the pre-developed two-year, 24-hour storm. This also applies to the 10-year, 24-hour storm event. Because the facility will be a volume based, the system will retain the 100-year event for post-developed conditions and control the flow to pre-developed conditions.

The pre-developed flow rates were calculated using HydroCAD 10.00. Table 1 below lists the 24-hour rainfall depths used for the analysis of each storm event. Please note that the 2-year event was halved and then analyzed.

Table 1

Storm Event	24-hour Rainfall Depth (in)
2	2.2
10	3.2
100	4.4

For the pre-developed conditions, a time of concentration of 17.4 minutes was calculated for the Basin. The time of concentration data is in Appendix C. The calculations are incorporated in the HydroCAD

output located in Appendix D. The entire area was classified as "City of Salem Pre-Development, HSG C" with a Curve Number (CN) of 72. A pre-developed basin map is in Appendix A.

The SCS TR-20 Unit Hydrograph method was used to generate the hydrographs. A Type 1A rainfall distribution was used with the above rainfall depths. Table 2 below identifies the allowable pre-developed release rate for each storm event.

Table 2

Storm Event	Basin Allowable Release Rate (cfs)
1/2 of 2-year	0.35
10-year	12.46
100-year	23.64

The post-developed flow rates were calculated using HydroCAD 10.00. A time of concentration of 10 minutes was assumed for all basins. The calculations are incorporated in the HydroCAD output located in Appendix D. Each basin was classified as 60 percent "Impervious, HSG C" with a CN of 98 and 40 percent “> 75% Grass cover, HSG C” with a CN of 74. This was based on code setback requirements and City street section standards. Table 3 below lists the CN values for the developed areas that will contribute storm water runoff to the detention systems. A developed basin map is in Appendix A.

Table 3

Basin	Impervious Area (Ac) CN = 98	Landscape Area (Ac) CN = 74	TOTAL Area (Ac)	Composite CN
Basin B1	6.42	4.28	10.70	88
Basin B2	12.20	8.14	20.34	88
Basin B3	8.64	5.76	14.40	88

Table 4 below identifies the calculated detention volume requirements for each storm event. The required detention was determined by taking the differential and proportionate runoff volume from each hydrograph between the pre-developed and post-developed conditions for the three storm events

and multiplying by 0.80. Multiplying by 0.80 gives the best approximation for facility sizing and reduces design iterations.

Table 4

Storm Event	Basin B1 Detention Volume (cf)	Basin B2 Detention Volume (cf)	Basin B3 Detention Volume (cf)
1/2 of 2-year	6,600	12,600	8,900
10-year	20,500	39,000	27,600
100-year	25,100	47,800	33,900

The proposed detention systems will be detention pond facilities located near the lowest point in each basin to maximize the capture of runoff. A basin map has been provided in Appendix A showing the locations of the detention ponds.

STORMWATER QUALITY ANALYSIS

Water quality flow rates were calculated using HydroCAD 10.00. The SCS TR-20 Unit Hydrograph method was used to generate the hydrographs. A Type 1A rainfall distribution was used with a 1.38 rainfall depth. Appendix E contains the analysis.

Because of natural slopes that exceed 10 percent for Basins 2 & 3, a design exception for implementing green stormwater infrastructure to the maximum extent feasible is being requested to allow for a manufactured stormwater treatment facility to treat runoff from the areas. A copy of the design exception request is in Appendix E.

The proposed manufactured treatment facilities will be Contech StormFilter system using ZPG media. The filters will be in a vault with a high flow bypass to convey larger storm events. The media filters will be the 27-inch height type that have the capacity to treat 22.5 gpm per filter. Table 5 below identifies flow rates and required treatment filters quantities. Appendix E contains the analysis and a generic plan of the Contech system.

Table 5

Basin	WQ Flow Rate (cfs)	WQ Flow Rate (gpm)	Required Filters	System Capacity (Filters)
B2	3.09	1,387	62	38 x 2
B3	1.90	853	38	38

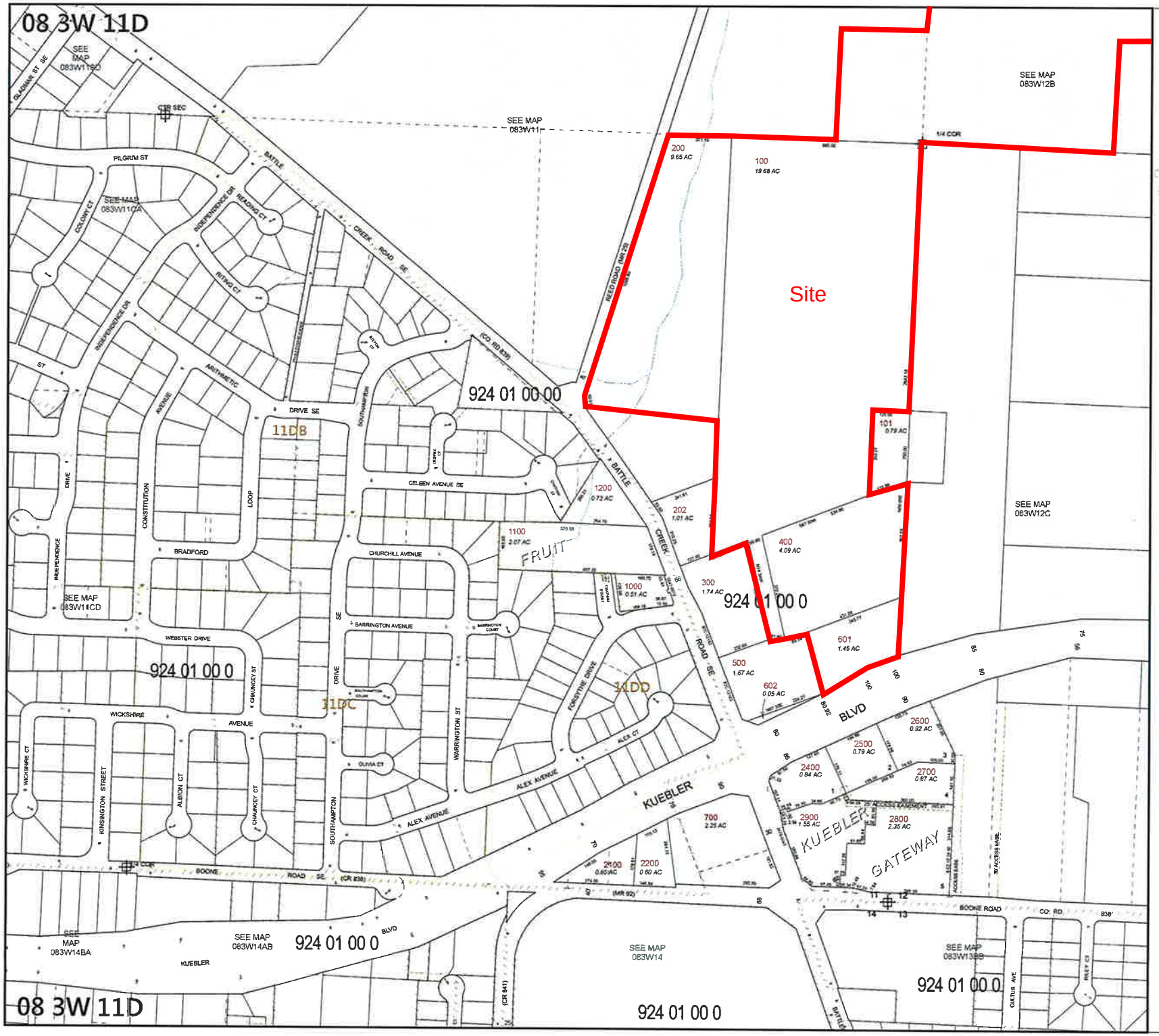
Section planter volumes were calculated by adding lot frontage tangent lengths for the 4-foot wide by one foot deep water quality facility. A 30-foot frontage length was subtracted for each lot to account for a 25-foot wide driveway with a 5-foot offset. All filtration planters will be constructed per City of Salem standard plan No. 227.

The preliminary analysis and design of the planters indicates that several planters will be at maximum capacity. During the final design it may be necessary to include Contech Stormfilter catch basin to treat stormwater runoff to reduce intake into the planters. This will be determined upon the final design of the system.

CONCLUSION

Based on the presented information, the proposed design will meet the water quality and quantity standards. If there are any questions regarding this analysis or the design, please contact Matthew Hendrick at Multi/Tech Engineering by phone at (503) 363-9227 or via e-mail at mhendrick@mtengineering.net.

Appendix A



08 3W 11D
SALEM

MARION COUNTY, OREGON
SE1/4 SEC11 T8S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

- 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

CORNER TYPES

- 1/16TH Section Cor.
- 1/4 Section Cor.
- DLC Corner
- Section Corner (16, 15, 21, 22)

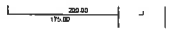
NUMBERS

Tax Code Number
000 00 00 0

Acreage 0.25 AC — All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

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



CANCELLED NUMBERS

201	1400	2302
301	1500	2303
501	1600	
502	1601	
600	1700	
603	1800	
700A1	1801	
701	1900	
702	1901	
703	2000	
800	2001	
801	2002	
900	2101	
901	2102	
902	2201	
1001	2300	
1300	2301	

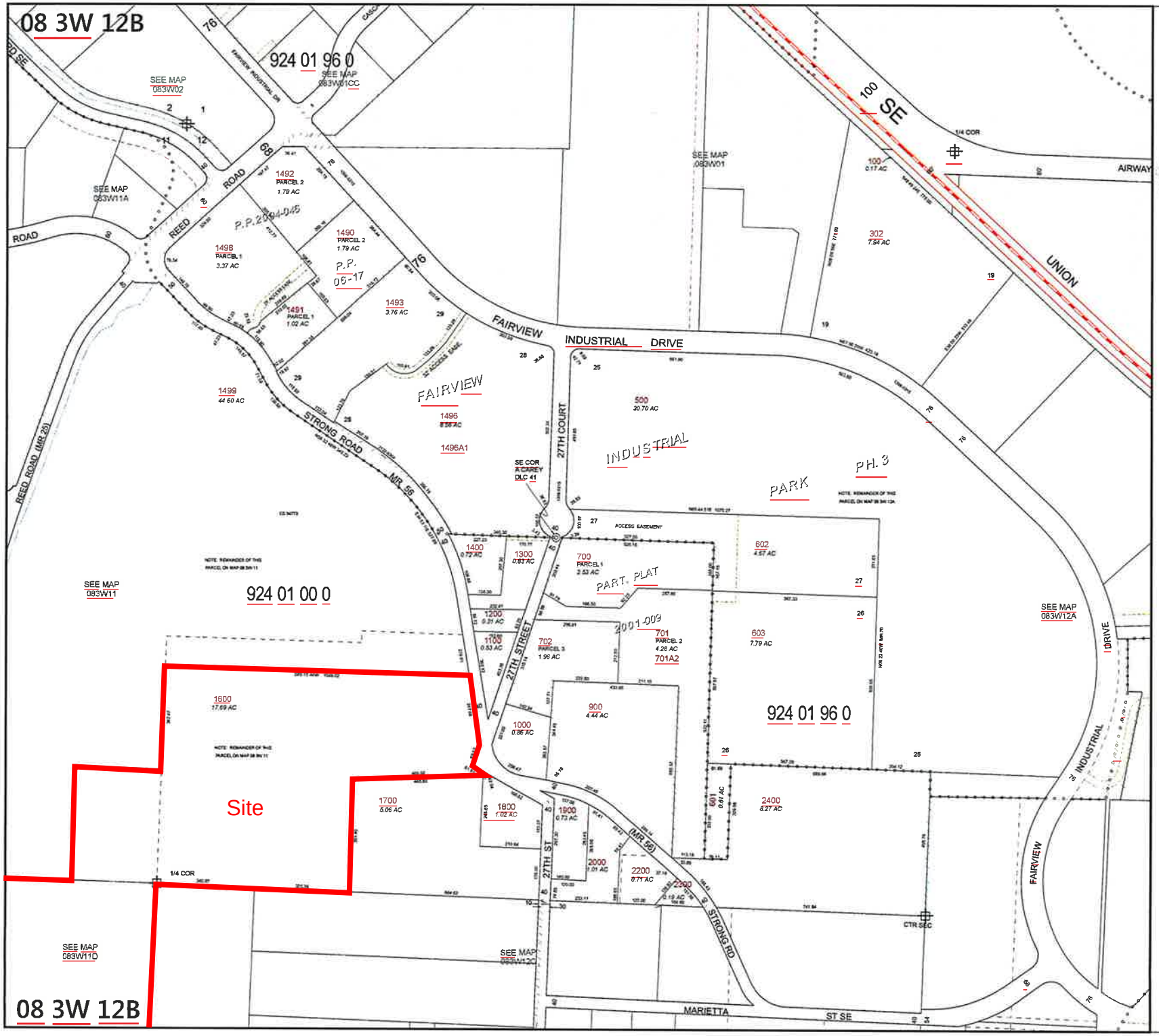
DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Assessors Office Cartography Dept

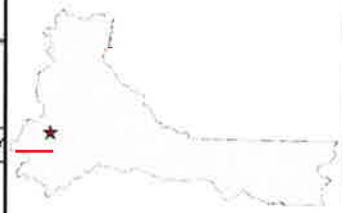
FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT www.co.marion.or.us

PLOT DATE: 1/24/2018

SALEM
08 3W 11D



08 3W 12B
SALEM



MARION COUNTY, OREGON

NW1/4 SEC12 T8S R3W W.M.

SCALE 1" = 200'

LEGEND

LINE TYPES

- 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
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- 1/16TH Section Cor.
- 1/4 Section Cor.
- DLC Corner
- Section Corner

NUMBERS

Tax Code Number

000 00 00 0

Acreage

0.25 AC

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

NOTES

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

CANCELLED NUMBERS

200	1498A1
201	1498A2
202	1498A3
300	1500
301	1601
400	2100
401	
402	
501	
502	
503	
600	
700A1	
701A1	
800	
1494	
1497	

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: 1/24/2018

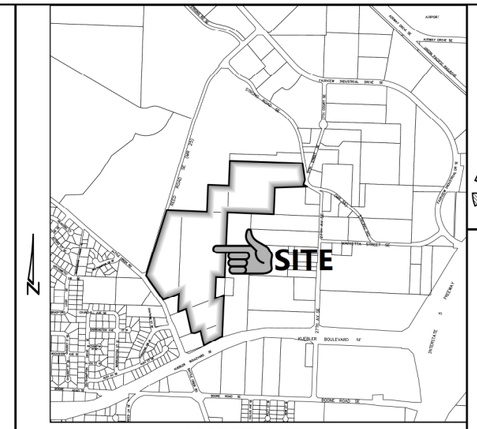
SALEM
08 3W 12B

COBURN GRAND VIEW ESTATES

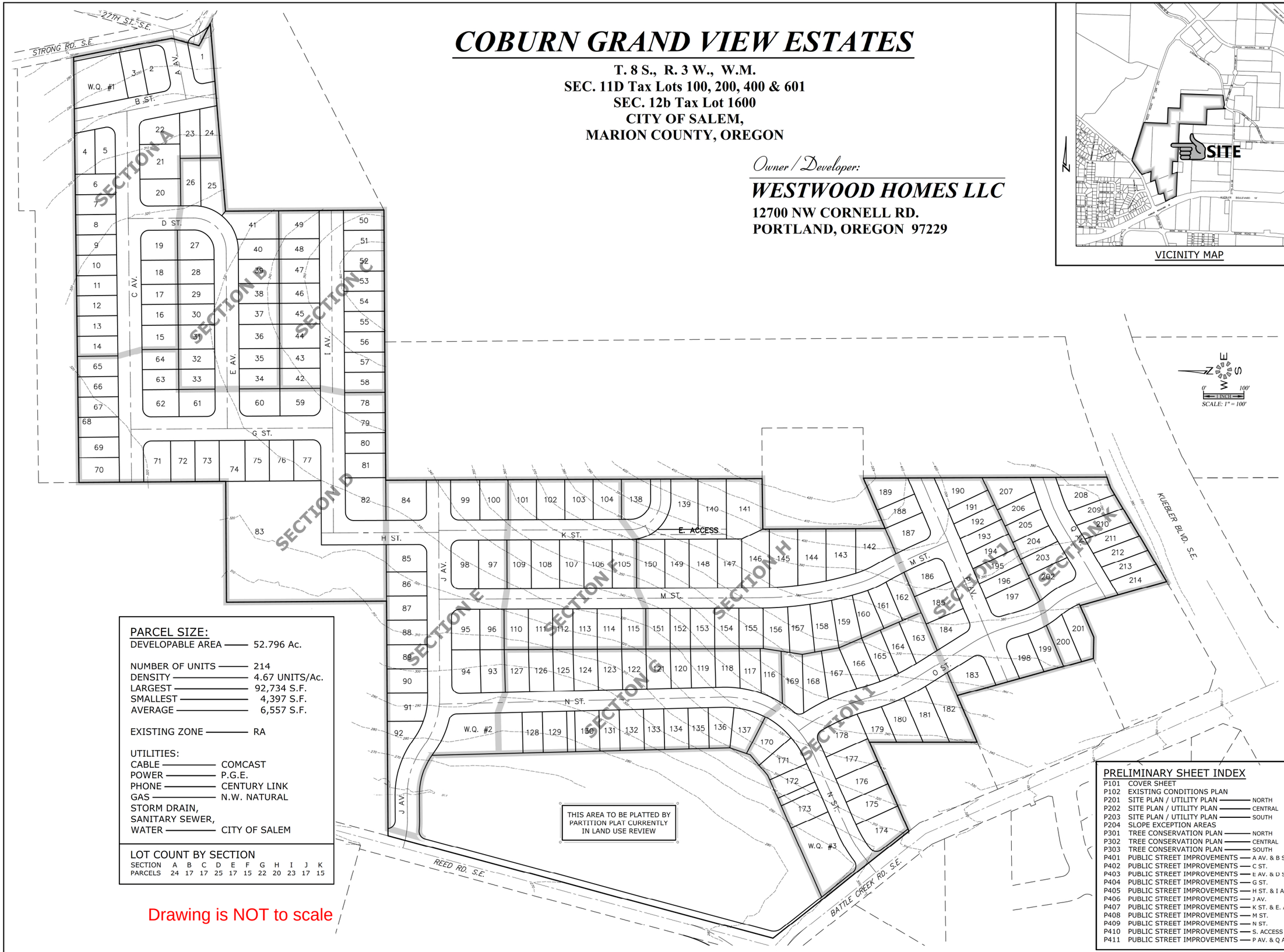
T. 8 S., R. 3 W., W.M.
SEC. 11D Tax Lots 100, 200, 400 & 601
SEC. 12b Tax Lot 1600
CITY OF SALEM,
MARION COUNTY, OREGON

Owner / Developer:

WESTWOOD HOMES LLC
12700 NW CORNELL RD.
PORTLAND, OREGON 97229



VICINITY MAP



N
W E
S
0' 100'
1 INCH
SCALE: 1" = 100'

PARCEL SIZE:

DEVELOPABLE AREA	52.796 Ac.
NUMBER OF UNITS	214
DENSITY	4.67 UNITS/Ac.
LARGEST	92,734 S.F.
SMALLEST	4,397 S.F.
AVERAGE	6,557 S.F.
EXISTING ZONE	RA

UTILITIES:

CABLE	COMCAST
POWER	P.G.E.
PHONE	CENTURY LINK
GAS	N.W. NATURAL
STORM DRAIN, SANITARY SEWER, WATER	CITY OF SALEM

LOT COUNT BY SECTION

SECTION	A	B	C	D	E	F	G	H	I	J	K
PARCELS	24	17	17	25	17	15	22	20	23	17	15

Drawing is NOT to scale

PRELIMINARY SHEET INDEX

3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
2.	ADDED PRESSURE REDUCING STATION.	P.H.S. 04/05/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

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

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2018
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
TARA C. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P101

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EXISTING CONDITIONS PLAN

COBURN GRAND VIEW ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design:	M.D.G.
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Checked:	T.J.G.
Date:	JUNE 2018
Scale:	AS SHOWN

6249 P102XC

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1995
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P102

Drawing is NOT to scale

SCALE: 1" = 100'

KUEBLER BLVD. S.E.

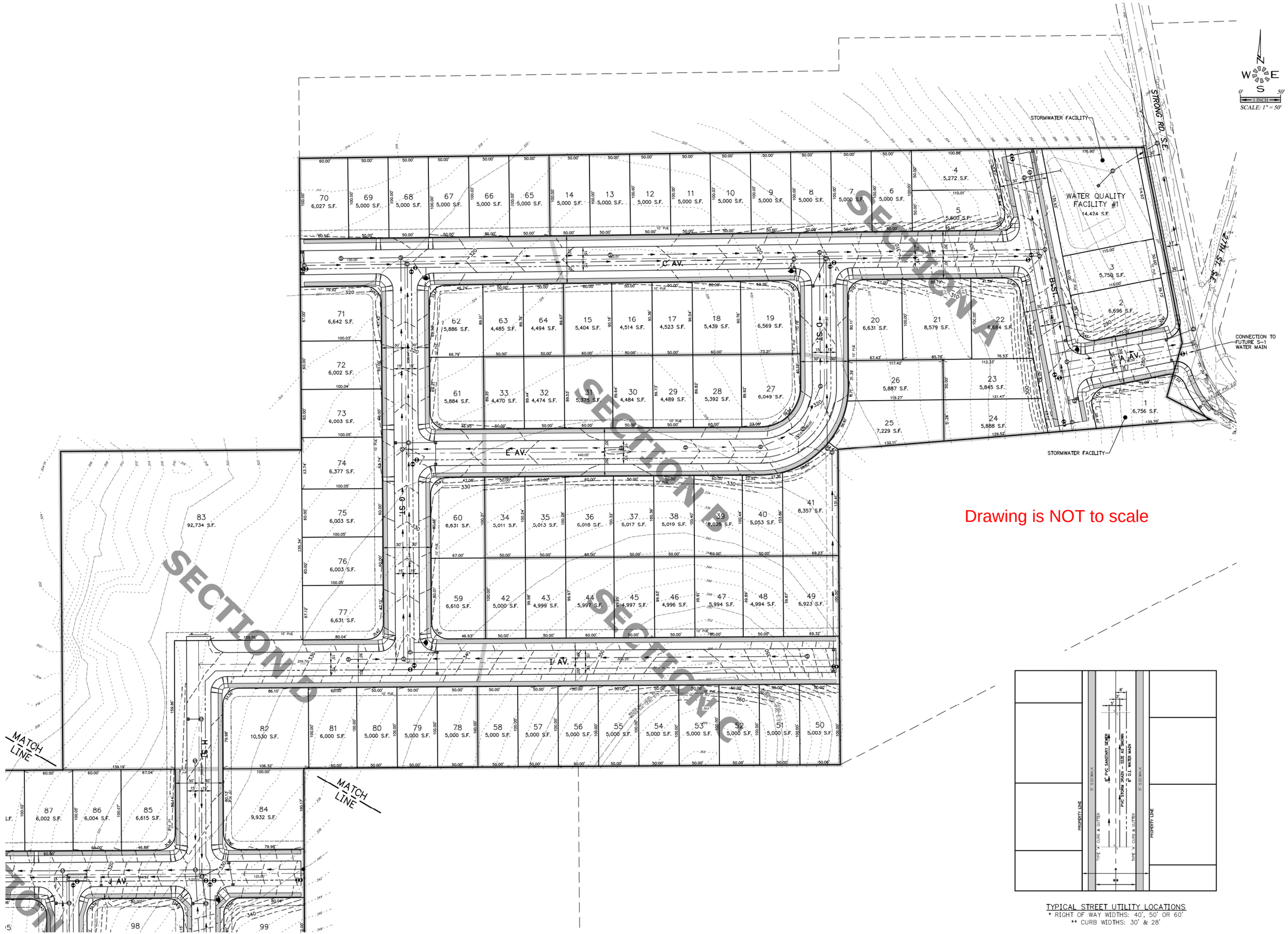
S71°50'04"W 28.54'
N59°04'40"W 269.39'
222.18'
S30°43'32"W 85.31'
N88°52'07"W 51.92'
S15°23'13"W 249.00'
S66°34'19"W 124.23'
N15°25'41"W 266.27'
N05°20'39"W 241.25'
N32°12'56"W 27.42'
BATTLE CREEK RD. S.E.

N89°14'53"E 135.88'
S00°14'26"E 601.66'
S00°14'26"E 929.86'
S00°14'26"E 3,852.14'
S00°14'26"E 302.15'
S89°14'53"W 125.34'

S89°34'53"W 340.97'
S89°38'27"W 325.40'
S89°37'45"W 579.58'
N44°55'44"W 394.09'
REED RD. S.E.

S00°25'24"E 391.41'
S85°21'49"W 464.69'
N00°24'09"W 393.39'
N89°38'19"E 299.17'
N00°24'21"W 362.52'
N89°16'48"E 1,048.94'

27TH ST. S.E.
STRONG RD. S.E.
S11°04'18"E 244.08'
S11°04'18"E 20.00'



TYPICAL STREET UTILITY LOCATIONS
* RIGHT OF WAY WIDTHS: 40', 50' OR 60'
** CURB WIDTHS: 30' & 28'

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

SITE PLAN / UTILITY PLAN - NORTH

COBURN GRAND VIEW ESTATES

3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

Design: M.D.G.
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OREGON
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MARK D. GRENZ

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P201

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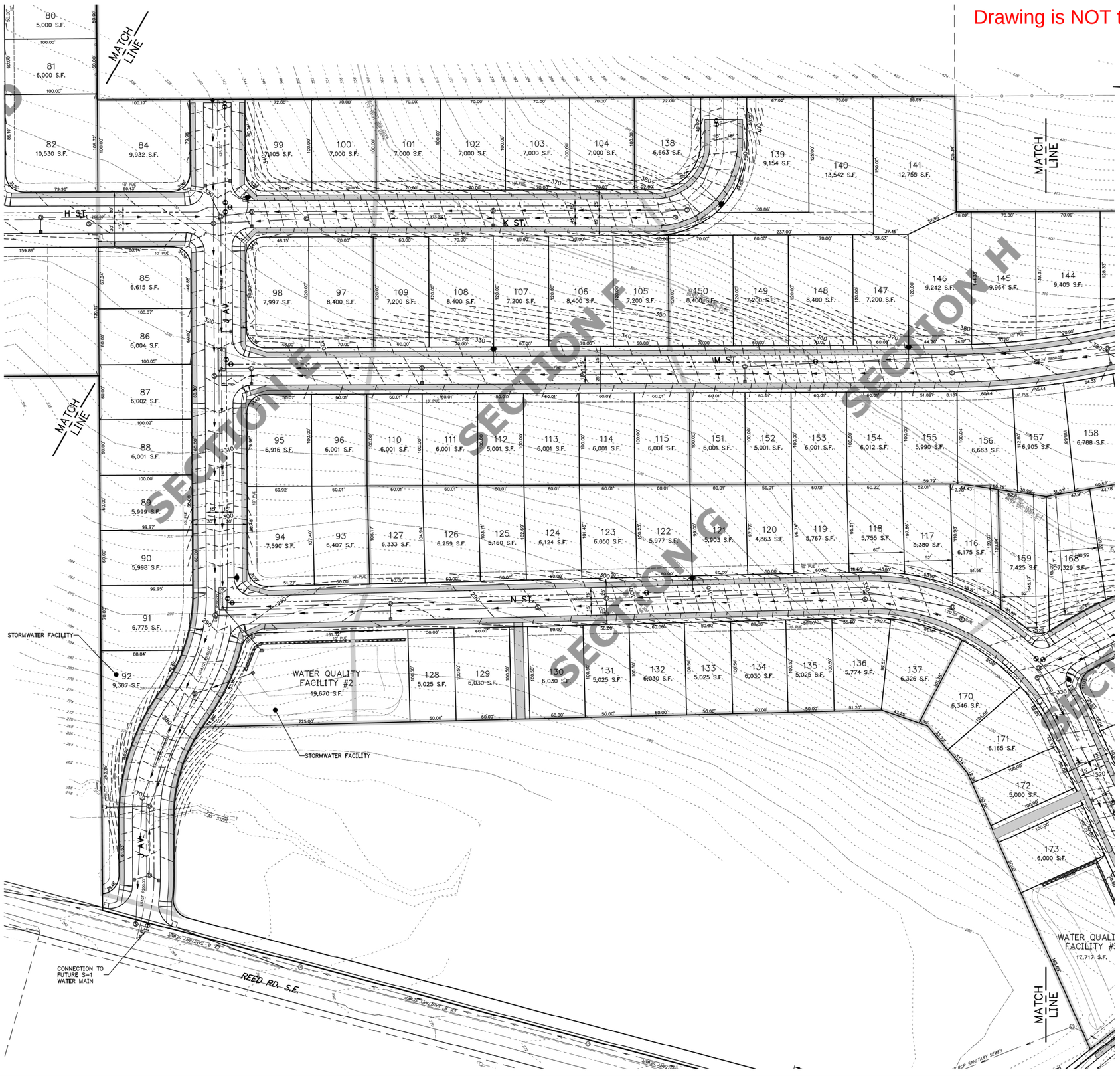

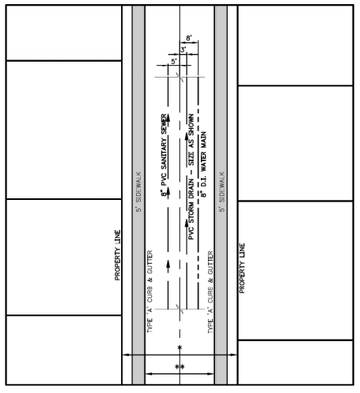

TYPICAL STREET UTILITY LOCATIONS
* RIGHT OF WAY WIDTHS: 40', 50' OR 60'
** CURB WIDTHS: 30' & 28'

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SITE PLAN / UTILITY PLAN - CENTRAL

COBURN GRAND VIEW ESTATES

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3.	UPDATED PER DRAINAGE REVISIONS.	P.H.S. 06/06/2019
1.	REVISED PER CITY OF SALEM REVIEW.	P.H.S. 03/25/2019

62349 P202001

Design: M.D.G.
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Date: JUNE 2018
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2019

JOB # 6234

P202

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TYPICAL STREET UTILITY LOCATIONS
* RIGHT OF WAY WIDTHS: 40', 50' OR 60'

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SITE PLAN / UTILITY PLAN - SOUTH

COBURN GRAND VIEW ESTATES

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3. UPDATED PER DRAINAGE REVISIONS.	P.H.S.	06/06/2019
2. ADDED PRESSURE REDUCING STATION.	P.H.S.	04/05/2019
1. REVISED PER CITY OF SALEM REVIEW.	P.H.S.	03/25/2019

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OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P203

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SITE AREA: 45.44 Ac.
✱CITY OF SALEM PRE-DEVELOPED, HSG C, CN=79

27TH ST. S.E.

STRONG RD. S.E.

KUEBLER BLVD. S.E.

BATTLE CREEK RD. S.E.

REED RD. S.E.

PRE DEVELOPED PLAN

MULTI/TECH

ENGINEERING SERVICES, INC.

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www.mtengineering.net office@mtengineering.net

6234p.dwg-01ExhPre

SECTION AREAS		
A	219,819.87 S.F.	5.05 Ac.
B	123,655.00 S.F.	2.84 Ac.
C	115,610.48 S.F.	2.65 Ac.
D	311,871.65 S.F.	7.16 Ac.
E	213,971.44 S.F.	4.91 Ac.
F	133,159.19 S.F.	3.06 Ac.
G	168,046.07 S.F.	3.86 Ac.
H	231,271.23 S.F.	5.31 Ac.
I	200,631.68 S.F.	4.61 Ac.
J	150,109.40 S.F.	3.45 Ac.
K	108,506.87 S.F.	2.49 Ac.

SITE AREA: 45.44 Ac.		
✱60% IMPERVIOUS,	HSG C,	CN=98
✱40% LANDSCAPE,	HSG C,	CN=74
COMPOSITE,	HSC C,	CN=88

27TH ST. S.E.

STRONG RD. S.E.

KUEBLER BLVD. S.E.

BATTLE CREEK RD. S.E.

REED RD. S.E.

SECTION A

SECTION B

SECTION C

SECTION D

SECTION E

SECTION F

SECTION G

SECTION H

SECTION I

SECTION J

SECTION K

POST DEVELOPED PLAN

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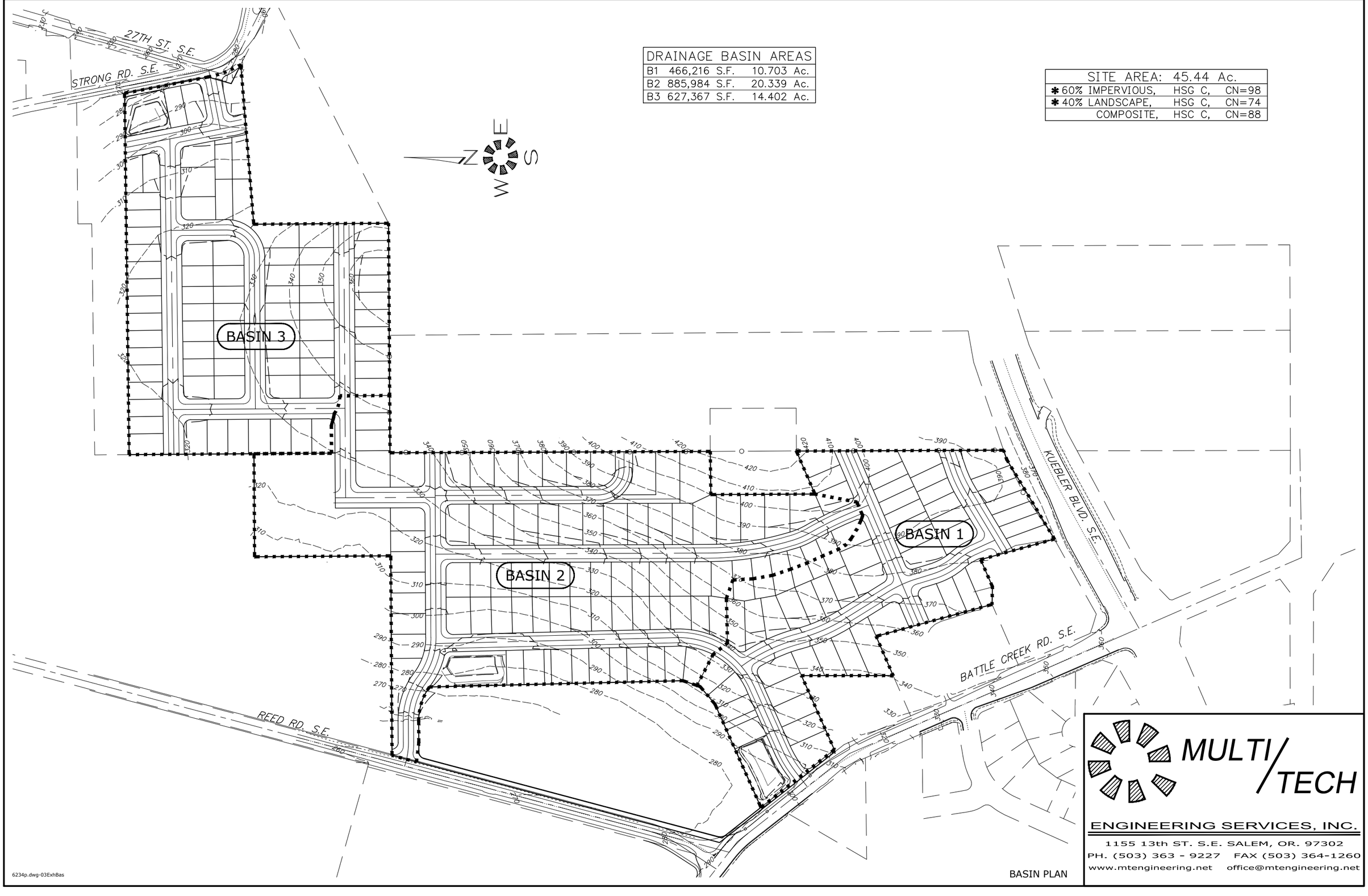
www.mtengineering.net office@mtengineering.net

6234p.dwg-02ExhBas

DRAINAGE BASIN AREAS		
B1	466,216 S.F.	10.703 Ac.
B2	885,984 S.F.	20.339 Ac.
B3	627,367 S.F.	14.402 Ac.

SITE AREA: 45.44 Ac.		
✱ 60% IMPERVIOUS,	HSG C,	CN=98
✱ 40% LANDSCAPE,	HSG C,	CN=74
COMPOSITE,	HSC C,	CN=88



BASIN PLAN

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

6234p.dwg-03ExhBas

J:\6200-6299\6234-ReedRoad\Dwg v18\6234p.dwg, 03ExhBas, 6/7/2019 9:58:08 AM, PSaunders

DRAINAGE BASIN AREAS		
B1	466,216 S.F.	10.703 Ac.
B2	885,984 S.F.	20.339 Ac.
B3	627,367 S.F.	14.402 Ac.

DETENTION FACILITY VOLUMES	
No. 1	42,306 C.F.
No. 2	51,954 C.F.
No. 3	25,209 C.F.

= Conceptual location of Contech Stormfilter vaults

27TH ST. S.E.

STRONG RD. S.E.

DETENTION FACILITY No. 3

BASIN 3

BASIN 2

BASIN 1

DETENTION FACILITY No. 2

DETENTION FACILITY No. 1

KUEBLER BLVD. S.E.

BATTLE CREEK RD. S.E.

REED RD. S.E.

STORM CONVEYANCE, WATER QUALITY AND DETENTION FACILITY PLAN

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

6234p.dwg-04ExhFac

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Appendix B

United States Department of Agriculture

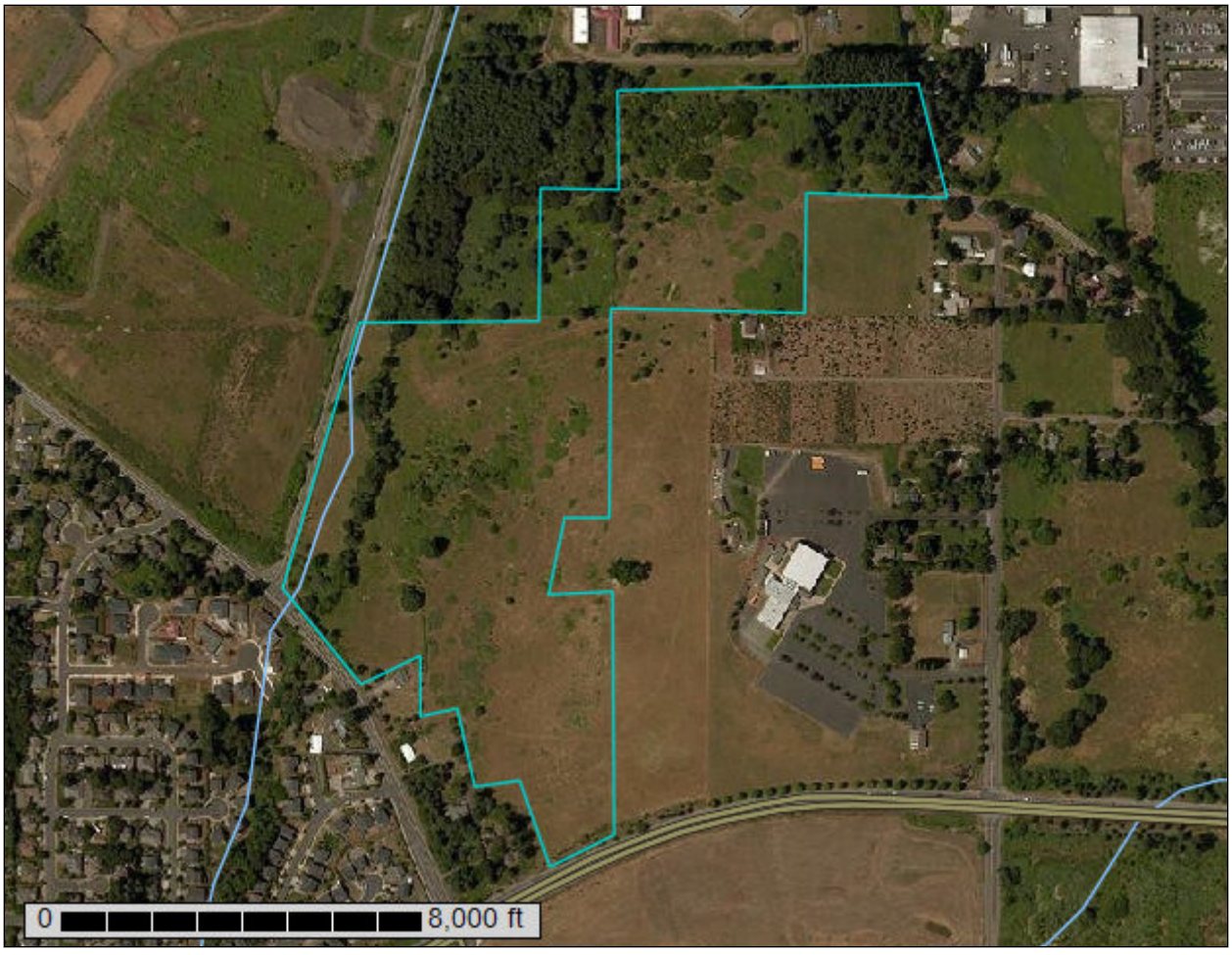
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

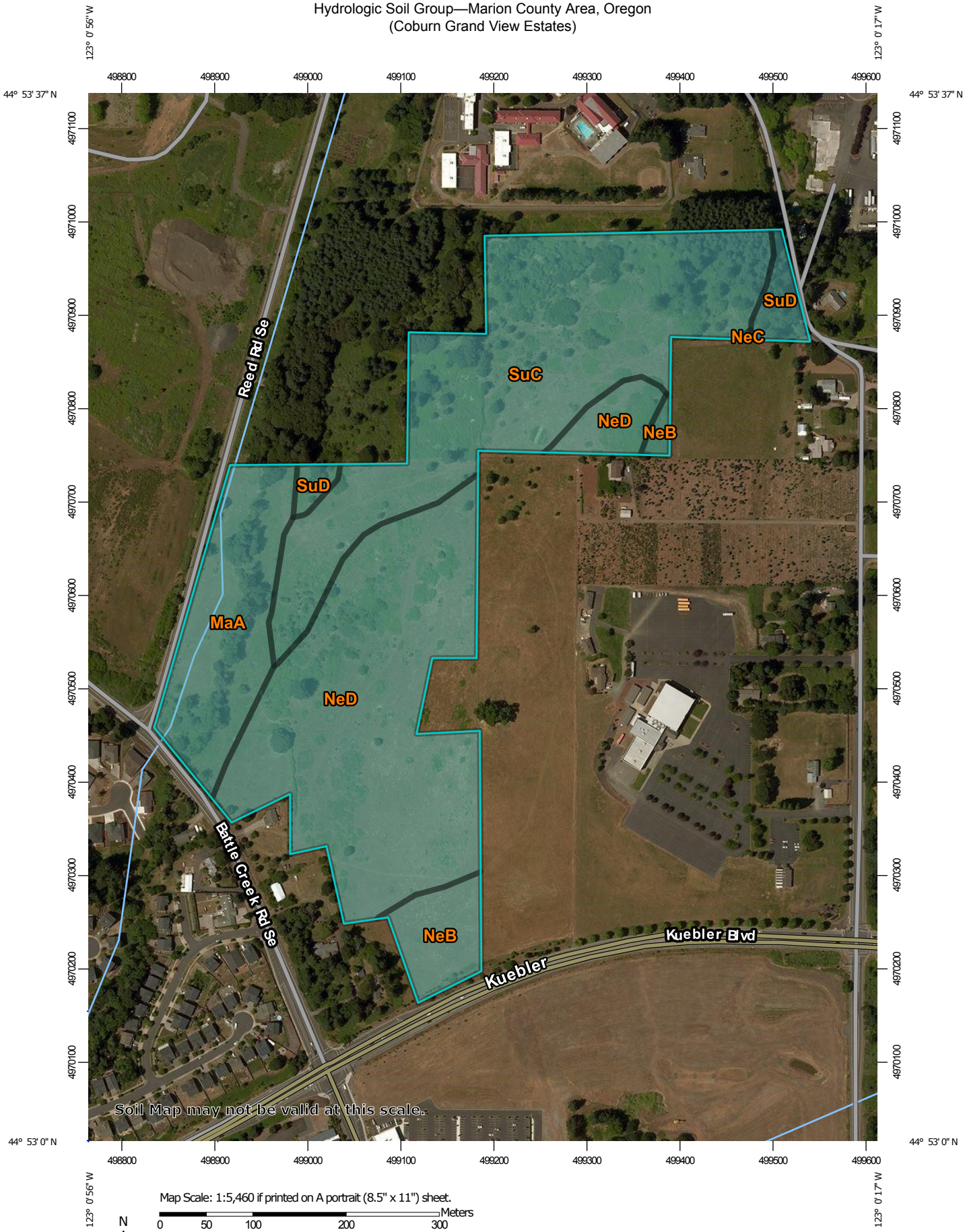
Custom Soil Resource Report for Marion County Area, Oregon

Coburn Grand View Estates



October 1, 2018

Hydrologic Soil Group—Marion County Area, Oregon
(Coburn Grand View Estates)



Map Scale: 1:5,460 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

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 15, Sep 18, 2018

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

Date(s) aerial images were photographed: Jun 15, 2015—Jun 23, 2015

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
MaA	McAlpin silty clay loam, 0 to 3 percent slopes	C	7.2	13.8%
NeB	Nekia silty clay loam, 2 to 7 percent slopes	C	2.7	5.1%
NeC	Nekia silty clay loam, 7 to 12 percent slopes	C	0.0	0.1%
NeD	Nekia silty clay loam, 12 to 20 percent slopes	C	21.3	40.8%
SuC	Silverton silt loam, 2 to 12 percent slopes	C	19.6	37.4%
SuD	Silverton silt loam, 12 to 20 percent slopes	C	1.5	2.8%
Totals for Area of Interest			**52.2**	**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

Surface Drainage/Groundwater

We recommend that positive measures be taken to properly finish grade the site so that drainage waters from the residential structures and landscaping areas as well as adjacent properties or buildings are directed away from the new residential structures foundations and/or floor slabs. All roof drainage should be directed into conduits that carry runoff water away from the residential structures to a suitable outfall. Roof downspouts should not be connected to foundation drains. A minimum ground slope of about 2 percent is generally recommended in unpaved areas around the proposed new residential structures.

Groundwater was not encountered at the site in any of the exploratory test pits (TH-#1 through TH-#11) at the time of excavation to depths of at least 7 feet beneath existing site grades. However, the northwesterly and/or westerly portion(s) of the site contains an existing seasonal drainage basin feature. Additionally, groundwater elevations in the area and/or across the subject property may fluctuate seasonally and may temporarily pond/perch near the ground surface during periods of prolonged rainfall.

As such, based on our current understand of the possible site grading required to bring the subject site and/or residential lots to finish design grade(s), we are of the opinion that an underslab drainage system is not required for the proposed single-family residential structures. However, a perimeter foundation drain is recommended for any perimeter footings and/or below grade retaining walls. A typical recommended perimeter footing/retaining wall drain detail is shown on Figure No. 4. Further, due to our understanding that various surface infiltration ditches and/or swales may be utilized for the project as well as the relatively low infiltration rates of the near surface clayey, sandy silt and/or silty sand subgrade soils anticipated within and/or near to the foundation bearing level of the proposed residential structures, we are generally of the opinion that storm water detention and/or disposal systems should not be utilized within the residential lots and/or around the proposed residential structures unless approved by the Geotechnical Engineer.

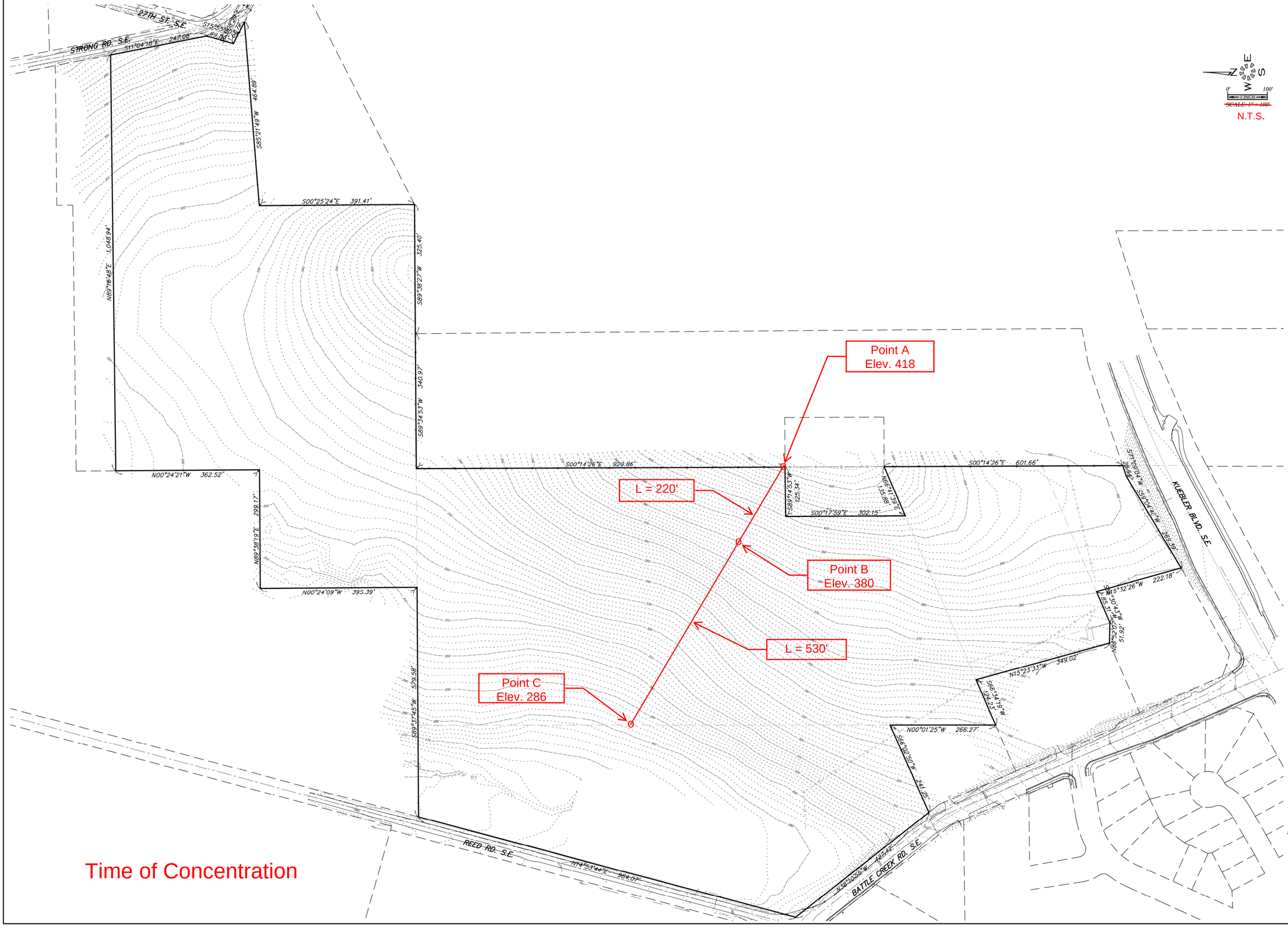
Design Infiltration Rates

Based on the results of our field infiltration testing, we recommend using the following infiltration rate(s) to design any on-site near surface storm water infiltration systems for the project:

Subgrade Soil Type	Recommended Infiltration Rate
sandy, clayey SILT (ML)	0.1 to 0.3 inches per hour (in/hr)

Note: A safety factor of two (2) was used to calculate the above recommended design infiltration rate. Additionally, given the gradational variability of the on-site sandy, clayey sit subgrade soils beneath the site as well as the anticipation of some site grading for the project, it is generally recommended that field testing be performed during and/or following construction of any on-site storm water infiltration system(s) in order to confirm that the above recommended design infiltration rates are appropriate.

Appendix C



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

EXISTING CONDITIONS PLAN

COBURN GRAND VIEW ESTATES

Design: M.D.G.
Drawn: P.H.S.
Checked: J.J.G.
Date: JUNE 2016
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6234

P102

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Coburn Grand View Estates	M. Hendrick	10/2018
Location	**Checked**	**Date**
Salem, Oregon		

Check one: ☑ Present ☐ Developed

Check one: ☑ T_c ☑ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID	A-B	
1.	Surface description (Table 4D-4)	Meadow/Pasture/Farm	
2.	Manning's roughness coefficient, n (Table 4D-4)	0.15	
3.	Flow length, L (total L † 300 ft) ft	220	
4.	Two-year 24-hour rainfall, P_2 in	2.2	
5.	Land slope, s ft/ft	0.173	
6.	$T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.156 +	= 0.156

Shallow concentrated flow

	Segment ID	B-C	
7.	Surface description (paved or unpaved)	Forest & Meadow	
8.	Flow length, L ft	530	
9.	Watercourse slope, s ft/ft	0.177	
10.	Average velocity, V (figure 3-1) ft/s	1.1	
11.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.134 +	= 0.134

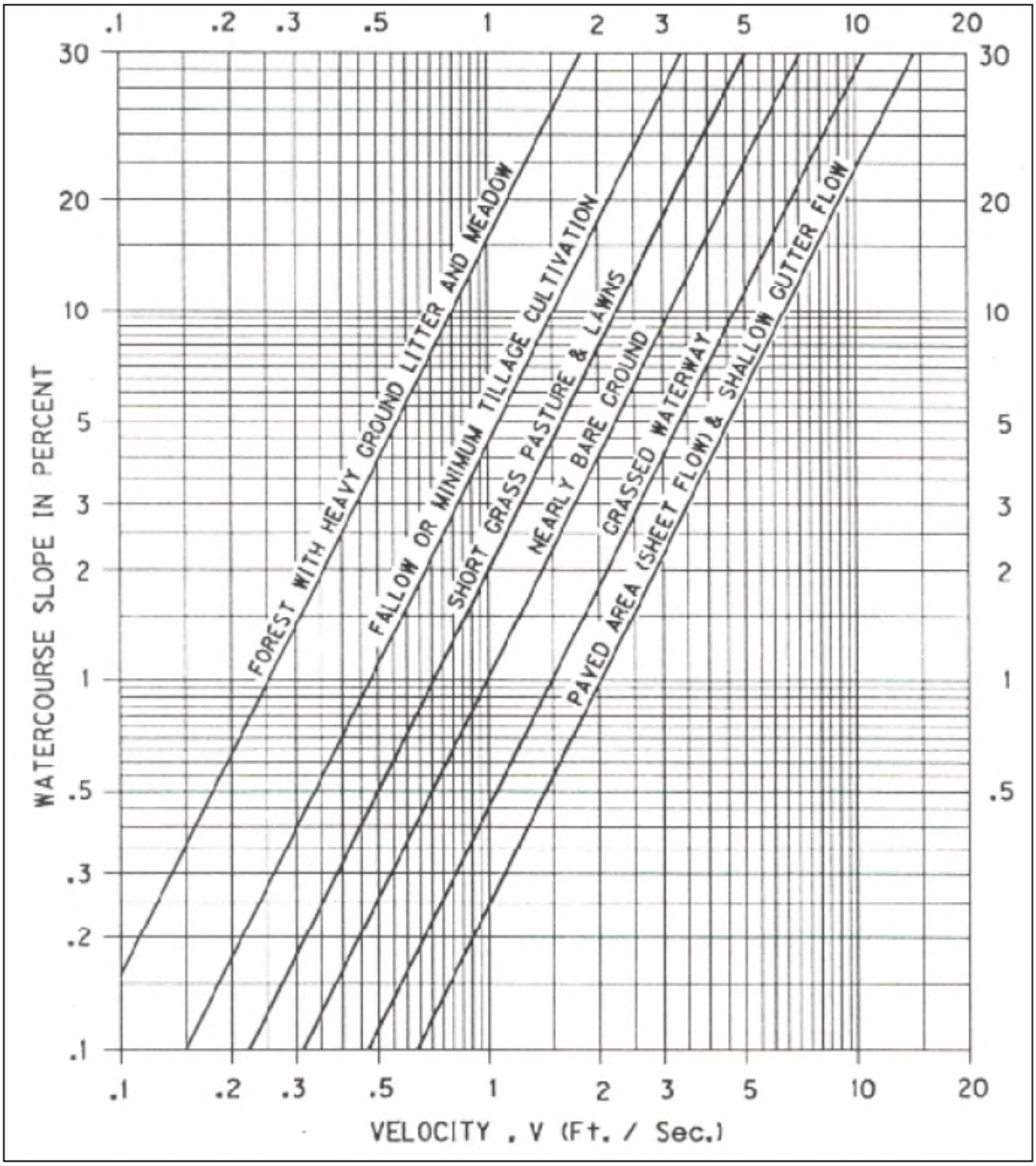
Channel flow

	Segment ID		
12.	Cross sectional flow area, a ft^2		
13.	Wetted perimeter, p_w ft		
14.	Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft		
15	Channel slope, s ft/ft		
16.	Manning's roughness coefficient, n		
17.	$V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s		
18.	~~Flow~~ length, L ft		
19.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	+	=
20.	Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr		0.29

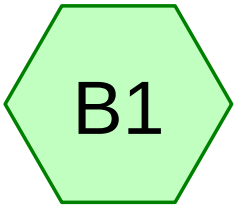
0.29 Hrs = 17.4 Minutes

Manning's Roughness Coefficients for Overland Sheet Flow	
Surface Types:	**n**
Impervious Areas	0.014
Gravel Pavement	0.02
Developed: Landscape Areas (Except Lawns)	0.08
Undeveloped: Meadow, Pasture, or Farm	0.15
Developed: Lawns	0.24
Pre-developed: Mixed	0.30
Pre-developed: Woodland and Forest	0.40
Development Types:	**n**
Commercial Development	0.015
Industrial Development, Heavy	0.04
Industrial Development, Light	0.05
Dense Residential (over 6 units/acre)	0.08
Normal Residential (3 to 6 units/acre)	0.20
Light Residential (1 to 3 units/acre)	0.30
Parks	0.40

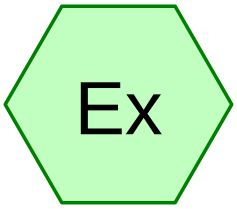
Table 4D-4. Manning's Roughness Coefficients for Overland Sheet Flow


.1
.2
.3
.5
1
2
3
5
10
20
30
20
10
5
3
2
1
.5
.3
.2
.1
WATERCOURSE SLOPE IN PERCENT
FOREST WITH HEAVY GROUND LITTER AND MEADOW
FALLOW OR MINIMUM TILLAGE CULTIVATION
SHORT GRASS PASTURE & LAWNS
NEARLY BARE GROUND
GRASSED WATERWAY
PAVED AREA (SHEET FLOW) & SHALLOW GUTTER FLOW
VELOCITY , V (Ft. / Sec.)

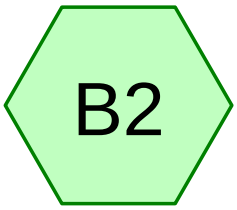
Appendix D



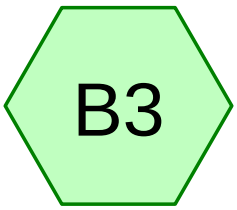
Developed Conditions



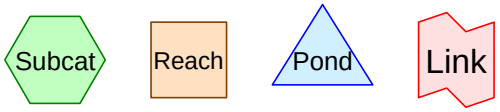
Existing Conditions



Developed Conditions



Developed Conditions



Routing Diagram for Coburn Hydrology
Prepared by Multitech Engineering Services, Inc., Printed 5/20/2019

Summary for Subcatchment Ex: Existing Conditions

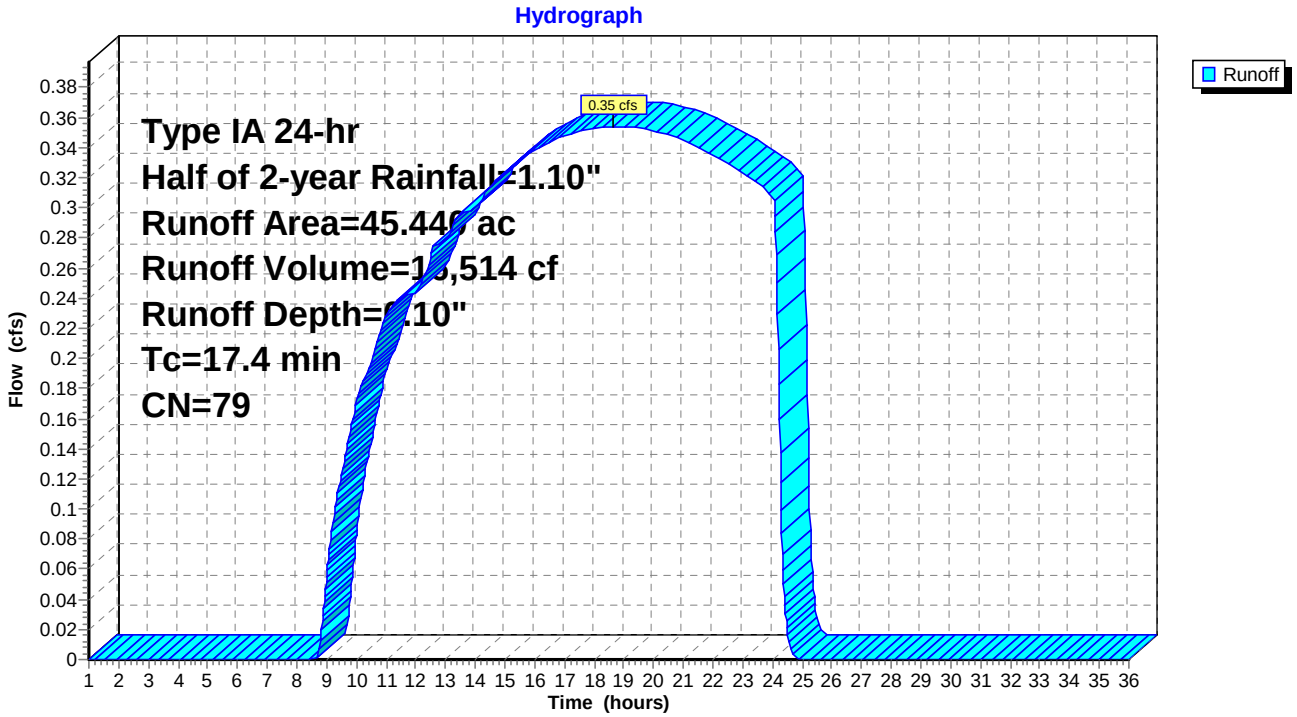
Runoff = 0.35 cfs @ 18.66 hrs, Volume= 16,514 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	45.440	79	City of Salem Pre-developed, HSG C
	45.440	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4					**Direct Entry, TR-55 Worksheet**

Subcatchment Ex: Existing Conditions



Summary for Subcatchment B1: Developed Conditions

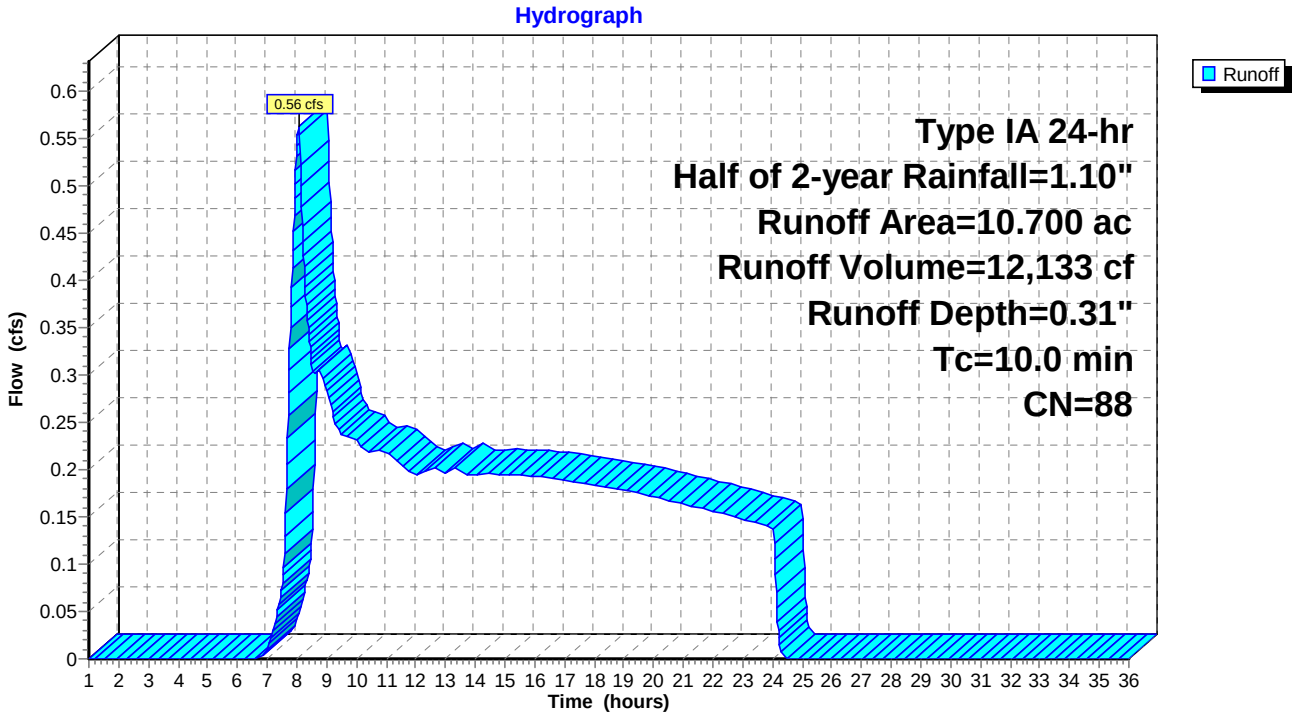
Runoff = 0.56 cfs @ 8.05 hrs, Volume= 12,133 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
	4.280	74	>75% Grass cover, Good, HSG C
*	6.420	98	Impervious surface, HSG C
	10.700	88	Weighted Average
	4.280	74	40.00% Pervious Area
	6.420	98	60.00% Impervious Area

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

Subcatchment B1: Developed Conditions



Summary for Subcatchment B2: Developed Conditions

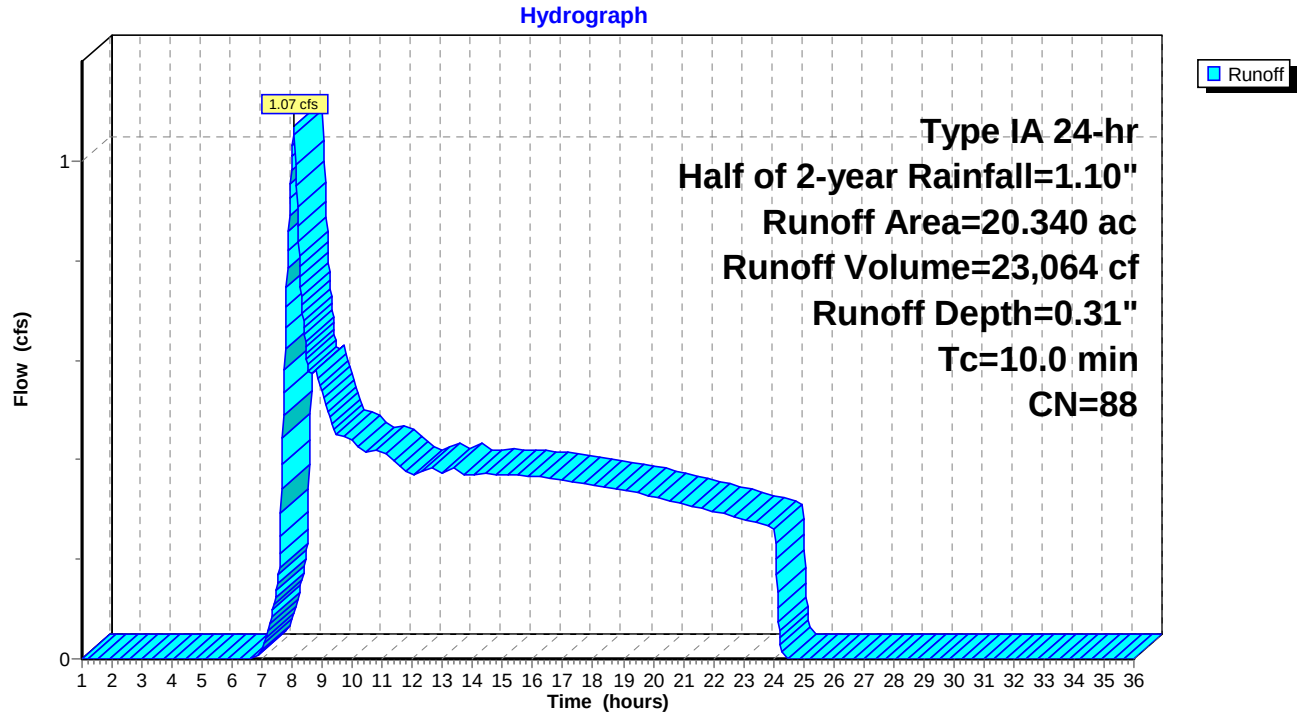
Runoff = 1.07 cfs @ 8.05 hrs, Volume= 23,064 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
	8.140	74	>75% Grass cover, Good, HSG C
*	12.200	98	Impervious surface, HSG C
	20.340	88	Weighted Average
	8.140	74	40.02% Pervious Area
	12.200	98	59.98% Impervious Area

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

Subcatchment B2: Developed Conditions



Summary for Subcatchment B3: Developed Conditions

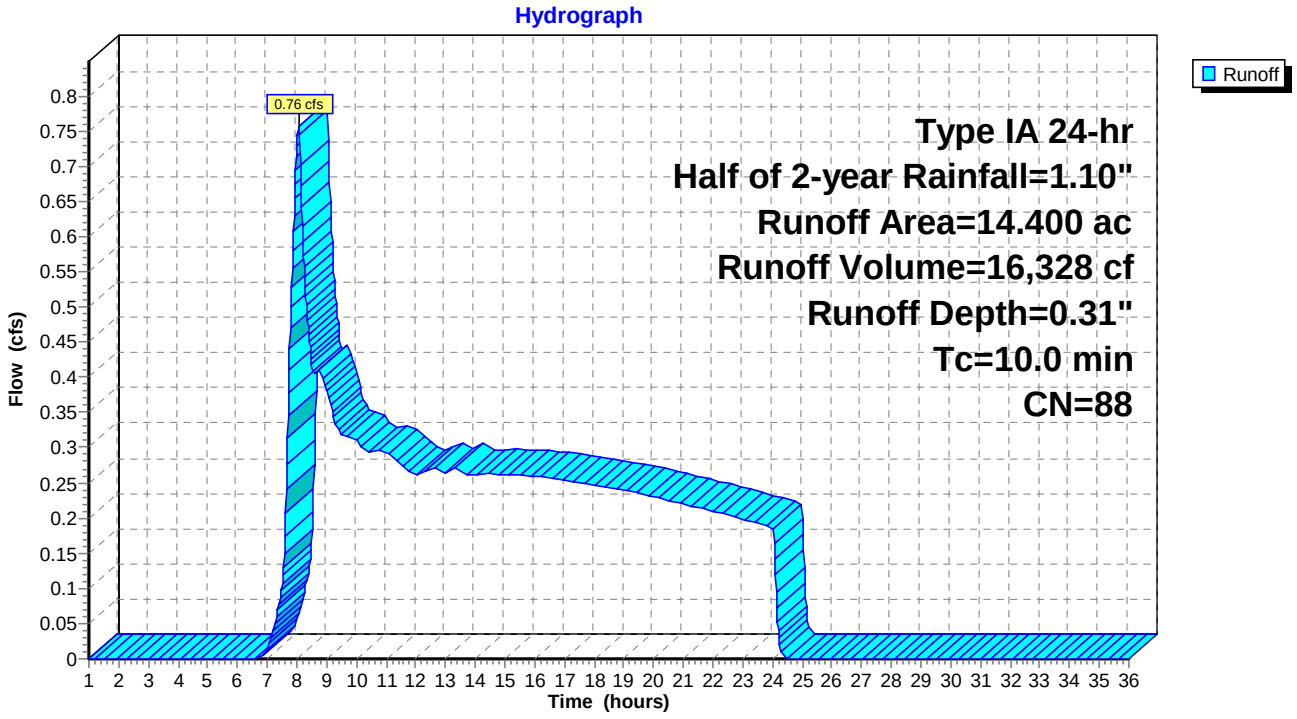
Runoff = 0.76 cfs @ 8.05 hrs, Volume= 16,328 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
	5.760	74	>75% Grass cover, Good, HSG C
*	8.640	98	Impervious surface, HSG C
	14.400	88	Weighted Average
	5.760	74	40.00% Pervious Area
	8.640	98	60.00% Impervious Area

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

Subcatchment B3: Developed Conditions



Summary for Subcatchment Ex: Existing Conditions

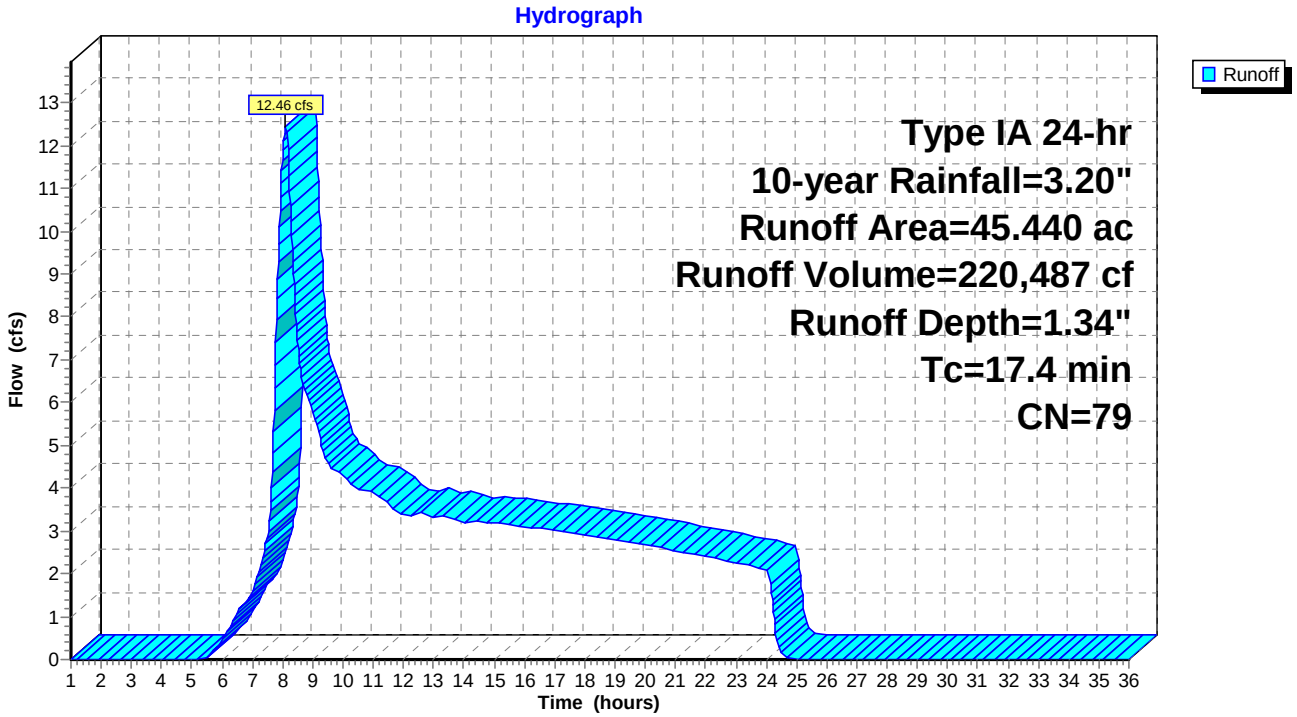
Runoff = 12.46 cfs @ 8.10 hrs, Volume= 220,487 cf, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	45.440	79	City of Salem Pre-developed, HSG C
	45.440	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4					**Direct Entry, TR-55 Worksheet**

Subcatchment Ex: Existing Conditions



Summary for Subcatchment B1: Developed Conditions

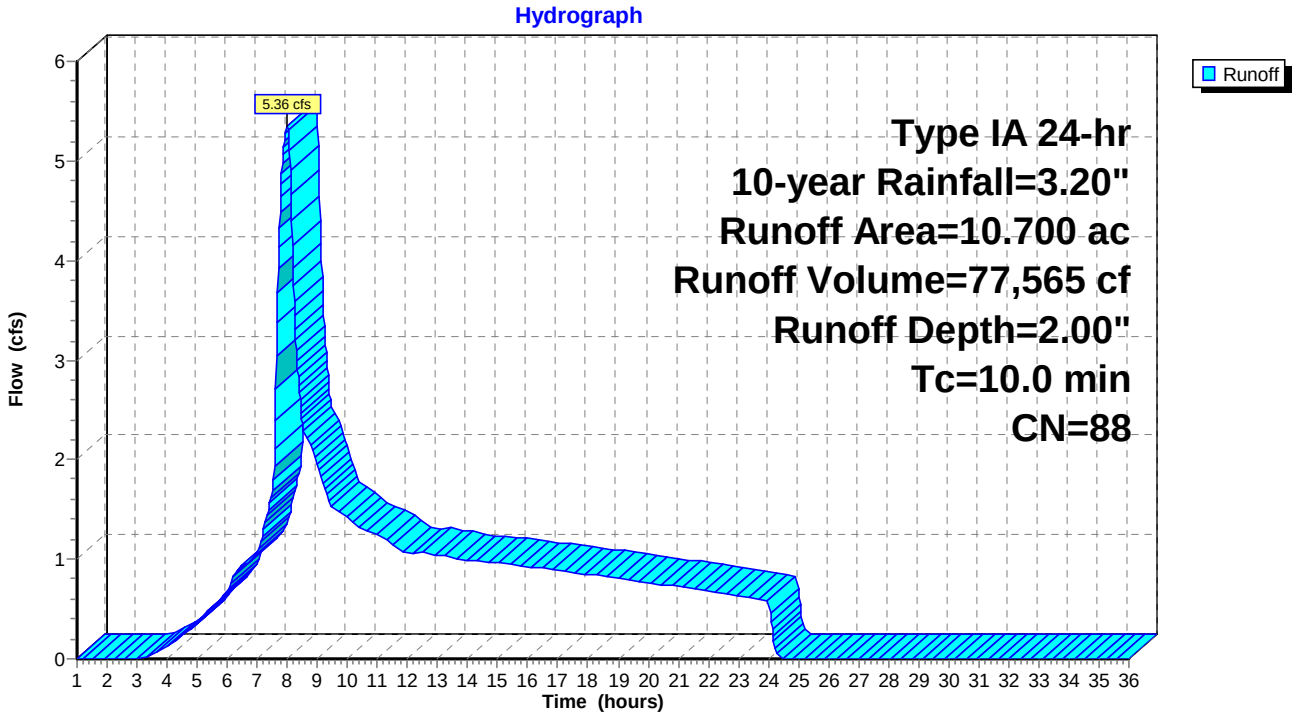
Runoff = 5.36 cfs @ 8.00 hrs, Volume= 77,565 cf, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
	4.280	74	>75% Grass cover, Good, HSG C
*	6.420	98	Impervious surface, HSG C
	10.700	88	Weighted Average
	4.280	74	40.00% Pervious Area
	6.420	98	60.00% Impervious Area

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

Subcatchment B1: Developed Conditions



Summary for Subcatchment B2: Developed Conditions

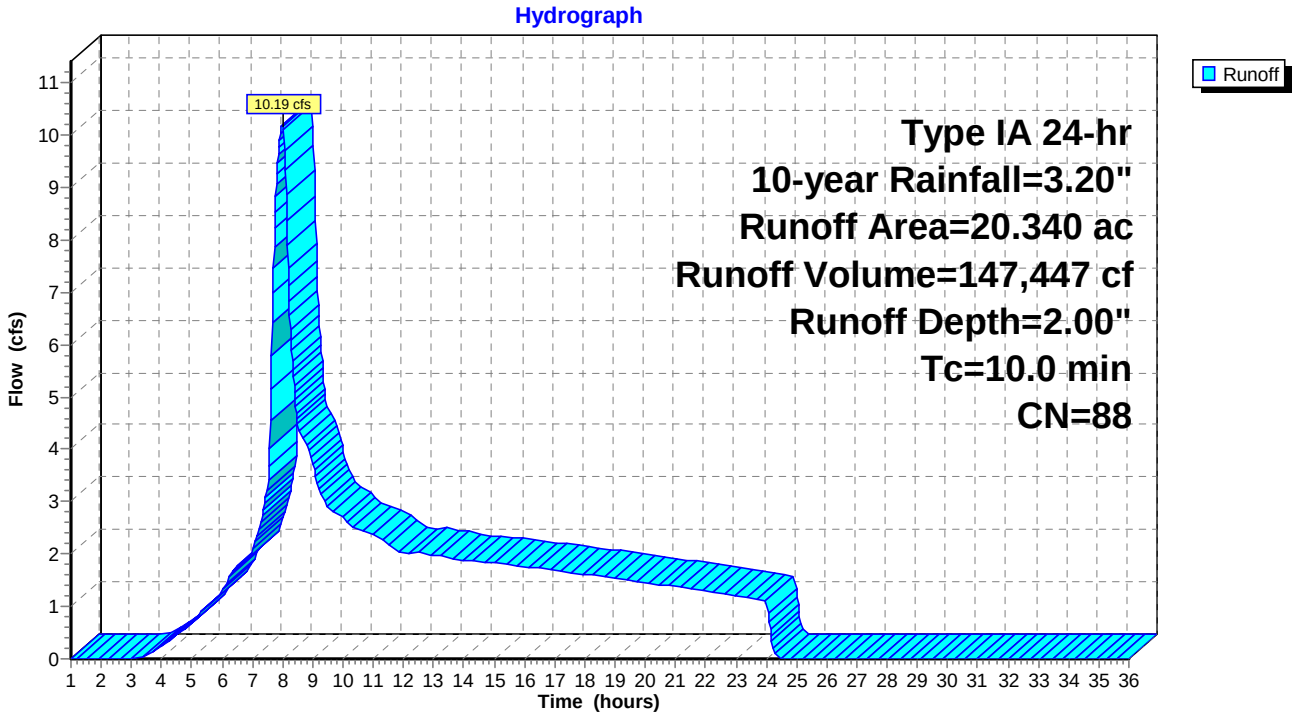
Runoff = 10.19 cfs @ 8.00 hrs, Volume= 147,447 cf, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
	8.140	74	>75% Grass cover, Good, HSG C
*	12.200	98	Impervious surface, HSG C
	20.340	88	Weighted Average
	8.140	74	40.02% Pervious Area
	12.200	98	59.98% Impervious Area

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

Subcatchment B2: Developed Conditions



Summary for Subcatchment B3: Developed Conditions

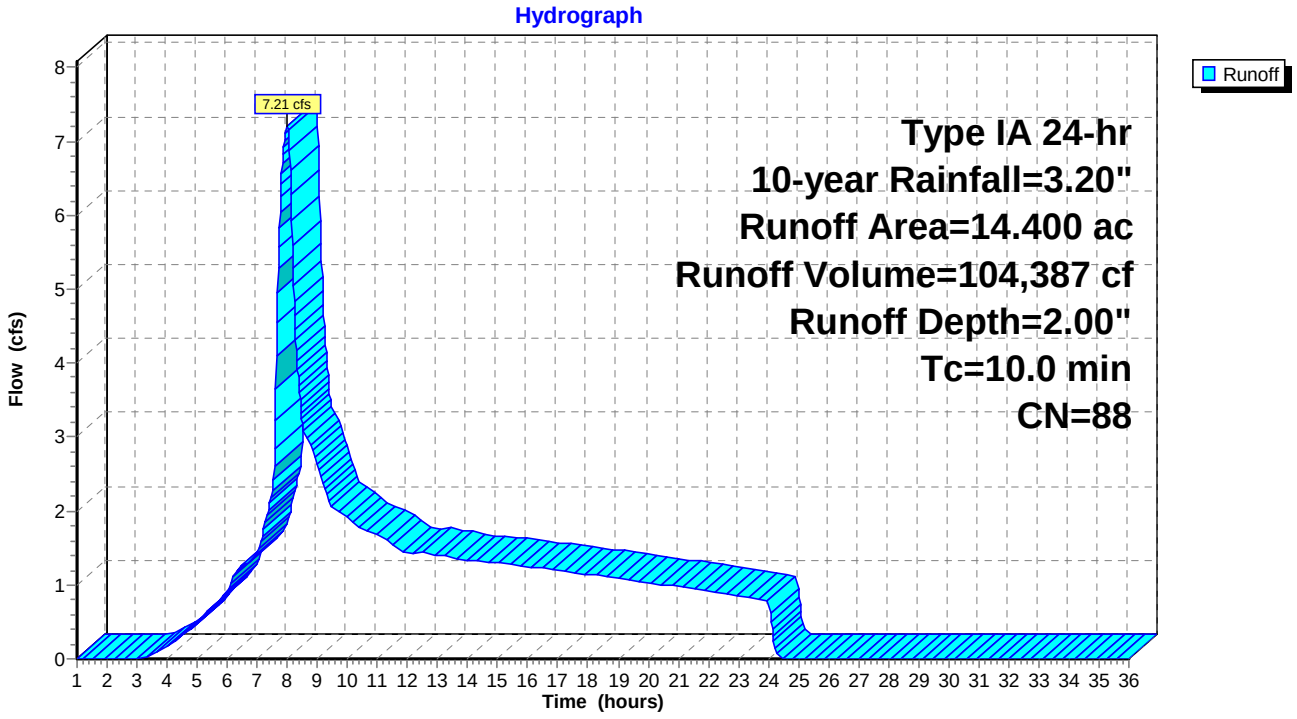
Runoff = 7.21 cfs @ 8.00 hrs, Volume= 104,387 cf, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
	5.760	74	>75% Grass cover, Good, HSG C
*	8.640	98	Impervious surface, HSG C
	14.400	88	Weighted Average
	5.760	74	40.00% Pervious Area
	8.640	98	60.00% Impervious Area

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

Subcatchment B3: Developed Conditions



Summary for Subcatchment Ex: Existing Conditions

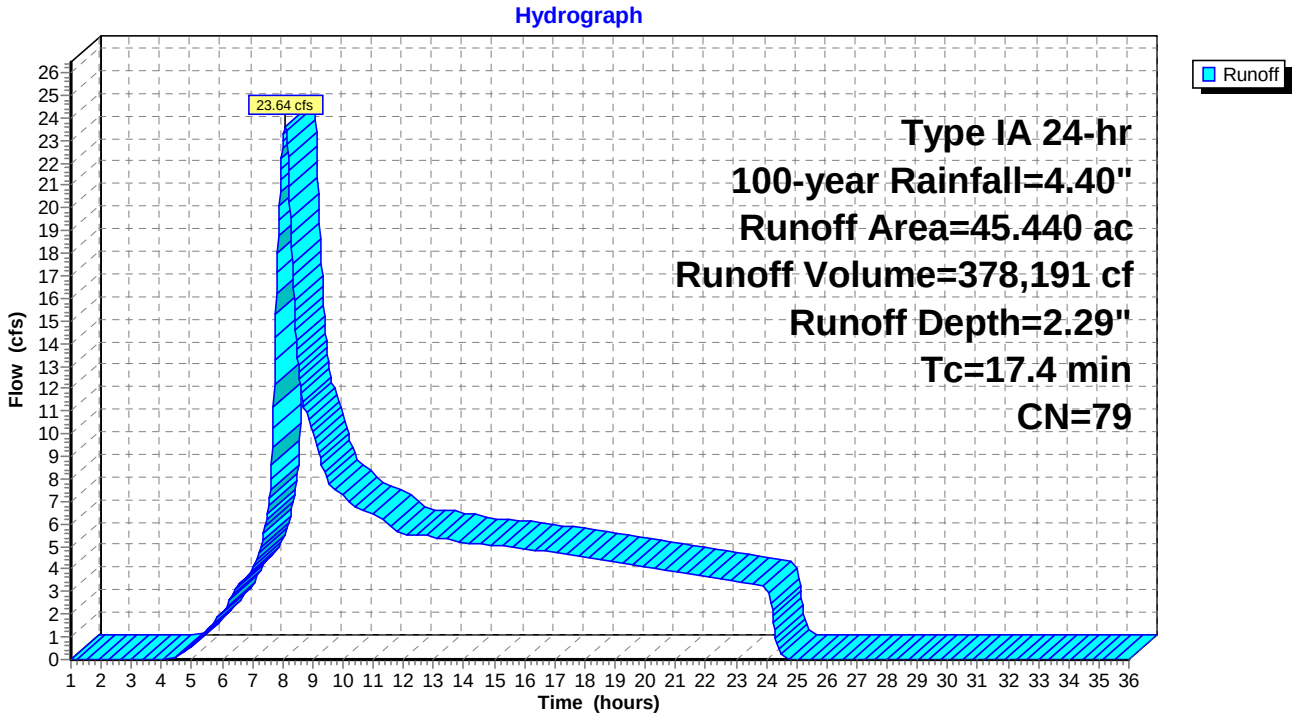
Runoff = 23.64 cfs @ 8.09 hrs, Volume= 378,191 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	45.440	79	City of Salem Pre-developed, HSG C
	45.440	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4					**Direct Entry, TR-55 Worksheet**

Subcatchment Ex: Existing Conditions



Summary for Subcatchment B1: Developed Conditions

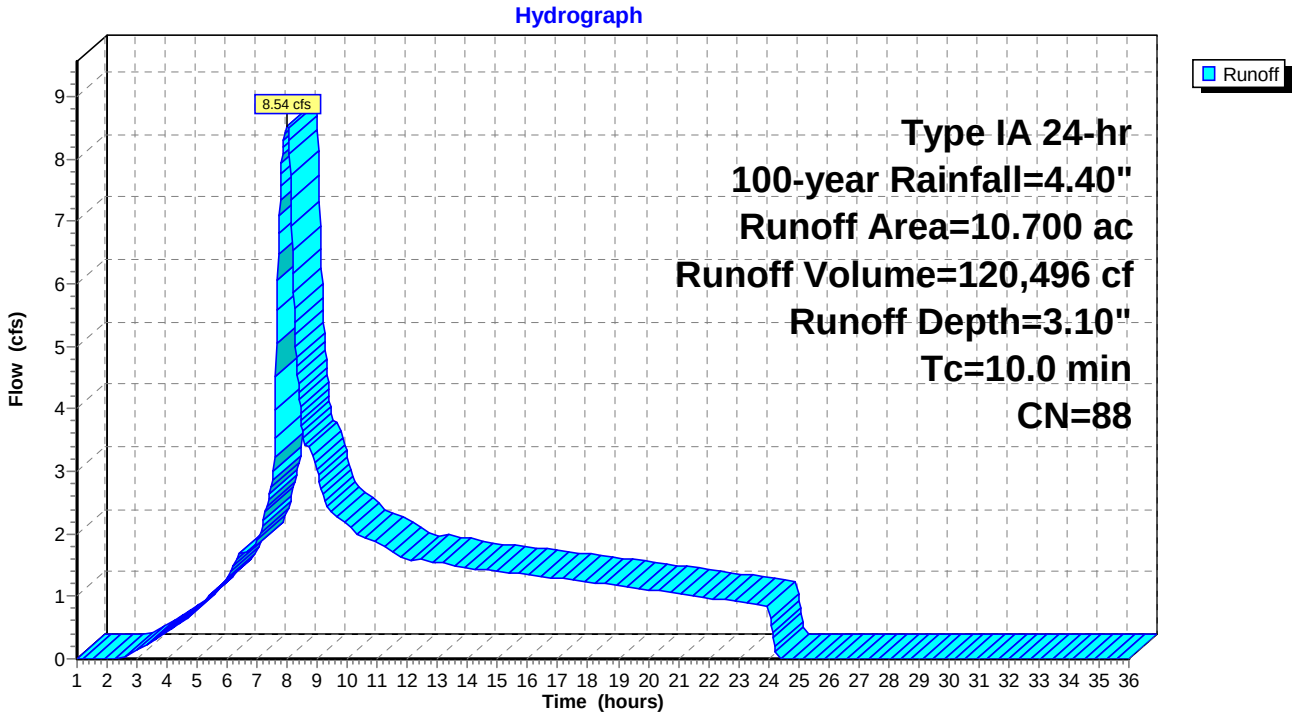
Runoff = 8.54 cfs @ 7.98 hrs, Volume= 120,496 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
	4.280	74	>75% Grass cover, Good, HSG C
*	6.420	98	Impervious surface, HSG C
	10.700	88	Weighted Average
	4.280	74	40.00% Pervious Area
	6.420	98	60.00% Impervious Area

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

Subcatchment B1: Developed Conditions



Summary for Subcatchment B2: Developed Conditions

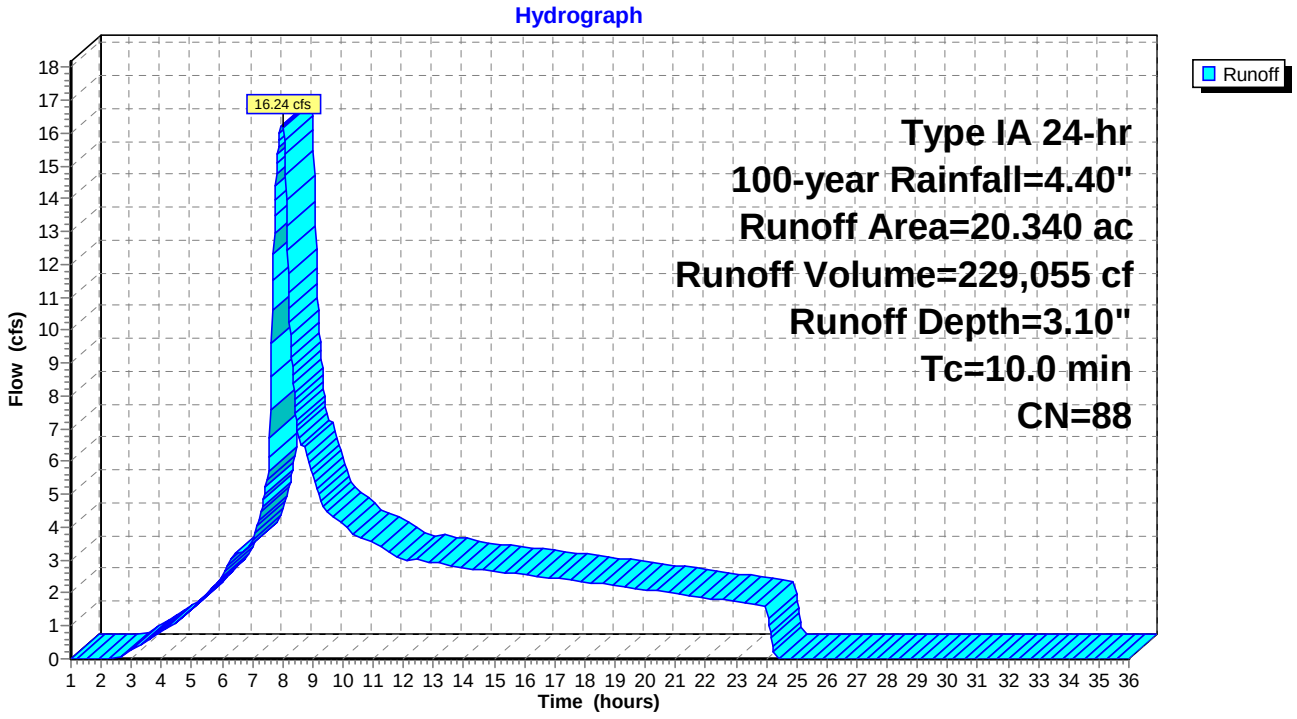
Runoff = 16.24 cfs @ 7.98 hrs, Volume= 229,055 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
	8.140	74	>75% Grass cover, Good, HSG C
*	12.200	98	Impervious surface, HSG C
	20.340	88	Weighted Average
	8.140	74	40.02% Pervious Area
	12.200	98	59.98% Impervious Area

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

Subcatchment B2: Developed Conditions



Summary for Subcatchment B3: Developed Conditions

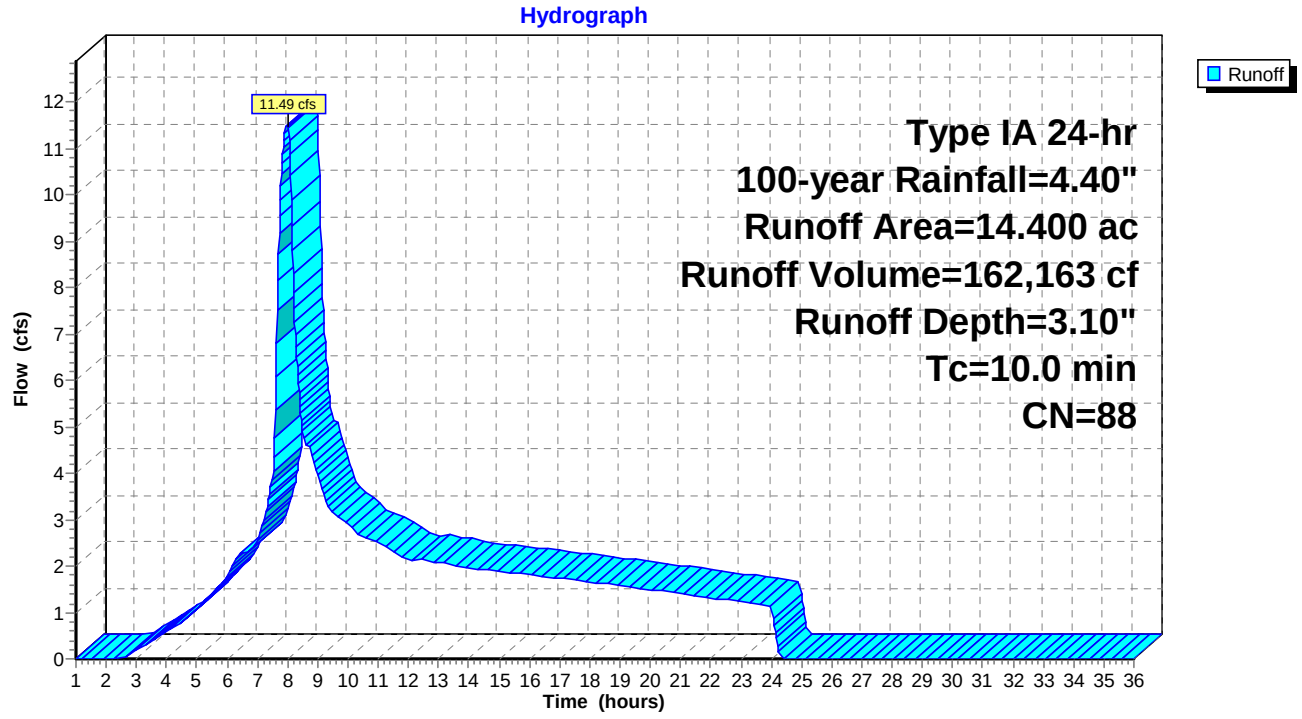
Runoff = 11.49 cfs @ 7.98 hrs, Volume= 162,163 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.02 hrs
Type IA 24-hr 100-year Rainfall=4.40"

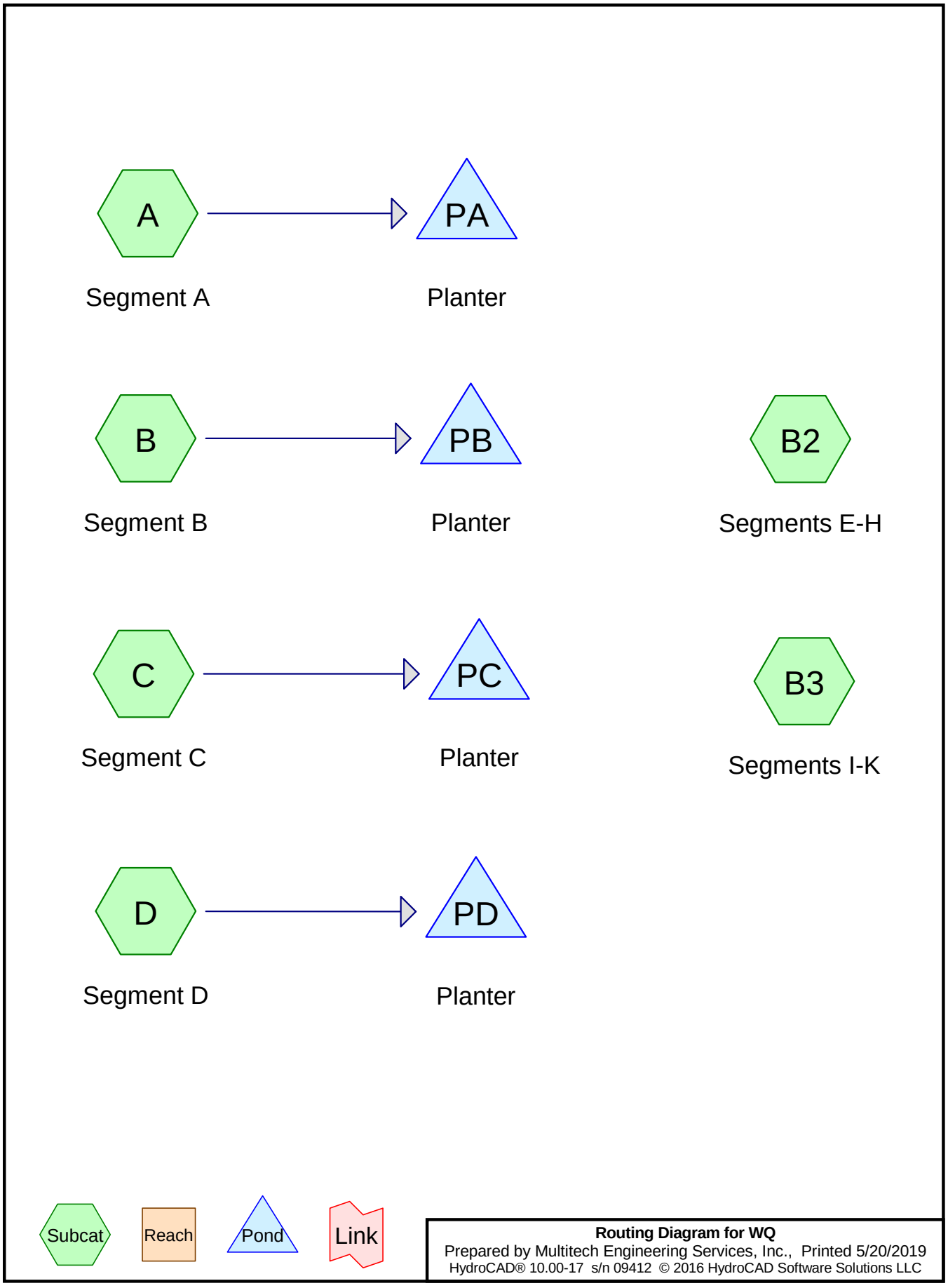
	Area (ac)	CN	Description
	5.760	74	>75% Grass cover, Good, HSG C
*	8.640	98	Impervious surface, HSG C
	14.400	88	Weighted Average
	5.760	74	40.00% Pervious Area
	8.640	98	60.00% Impervious Area

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

Subcatchment B3: Developed Conditions



Appendix E



Routing Diagram for WQ

Prepared by Multitech Engineering Services, Inc., Printed 5/20/2019

Summary for Subcatchment A: Segment A

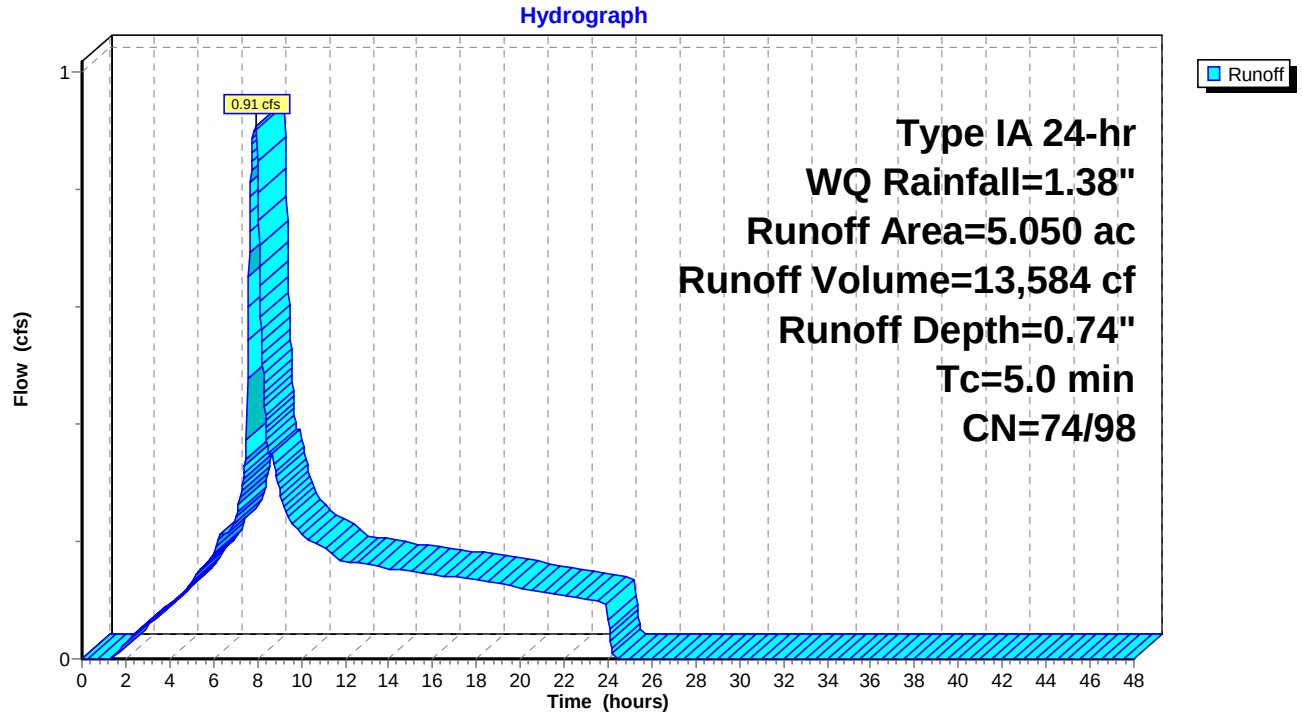
Runoff = 0.91 cfs @ 7.90 hrs, Volume= 13,584 cf, Depth= 0.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
	2.020	74	>75% Grass cover, Good, HSG C
*	3.030	98	Impervious surface, HSG C
	5.050	88	Weighted Average
	2.020	74	40.00% Pervious Area
	3.030	98	60.00% Impervious Area

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

Subcatchment A: Segment A



Summary for Pond PA: Planter

Inflow Area = 219,978 sf, 60.00% Impervious, Inflow Depth = 0.74" for WQ event
Inflow = 0.91 cfs @ 7.90 hrs, Volume= 13,584 cf
Outflow = 0.18 cfs @ 11.47 hrs, Volume= 13,584 cf, Atten= 81%, Lag= 214.5 min
Discarded = 0.18 cfs @ 11.47 hrs, Volume= 13,584 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 151.59' @ 11.47 hrs Surf.Area= 2,800 sf Storage= 3,030 cf

Plug-Flow detention time= 185.5 min calculated for 13,584 cf (100% of inflow)
Center-of-Mass det. time= 185.5 min (902.6 - 717.1)

Volume	Invert	Avail.Storage	Storage Description
#1	148.48'	4,169 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

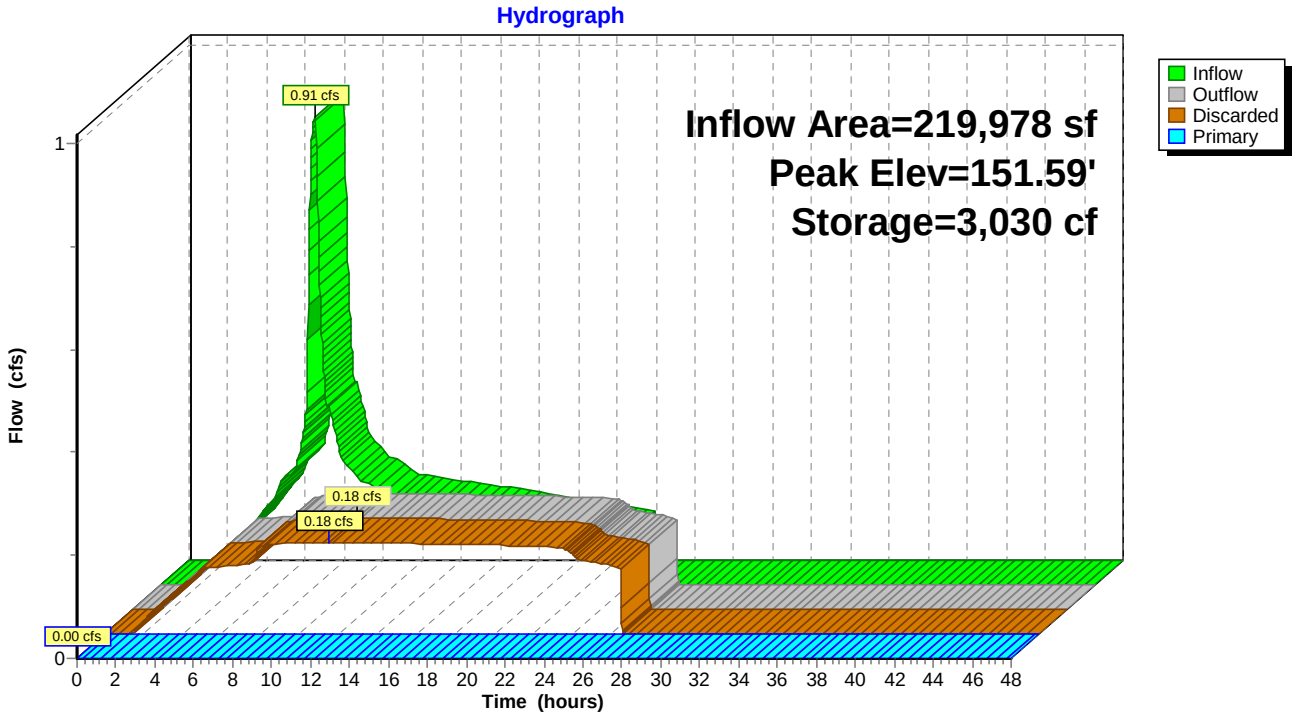
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.48	2,800	0.0	0	0
148.49	2,800	40.0	11	11
149.49	2,800	40.0	1,120	1,131
149.50	2,800	5.0	1	1,133
150.99	2,800	5.0	209	1,341
151.00	2,800	100.0	28	1,369
152.00	2,800	100.0	2,800	4,169

Device	Routing	Invert	Outlet Devices
#1	Discarded	148.48'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 140.00'
#2	Primary	151.99'	**3.0" x 30.0" Horiz. Grate X 8.00 columns** X 8 rows C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.18 cfs @ 11.47 hrs HW=151.59' (Free Discharge)
↑**1=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.48' (Free Discharge)
↑**2=Grate** (Controls 0.00 cfs)

Pond PA: Planter



Summary for Subcatchment B: Segment B

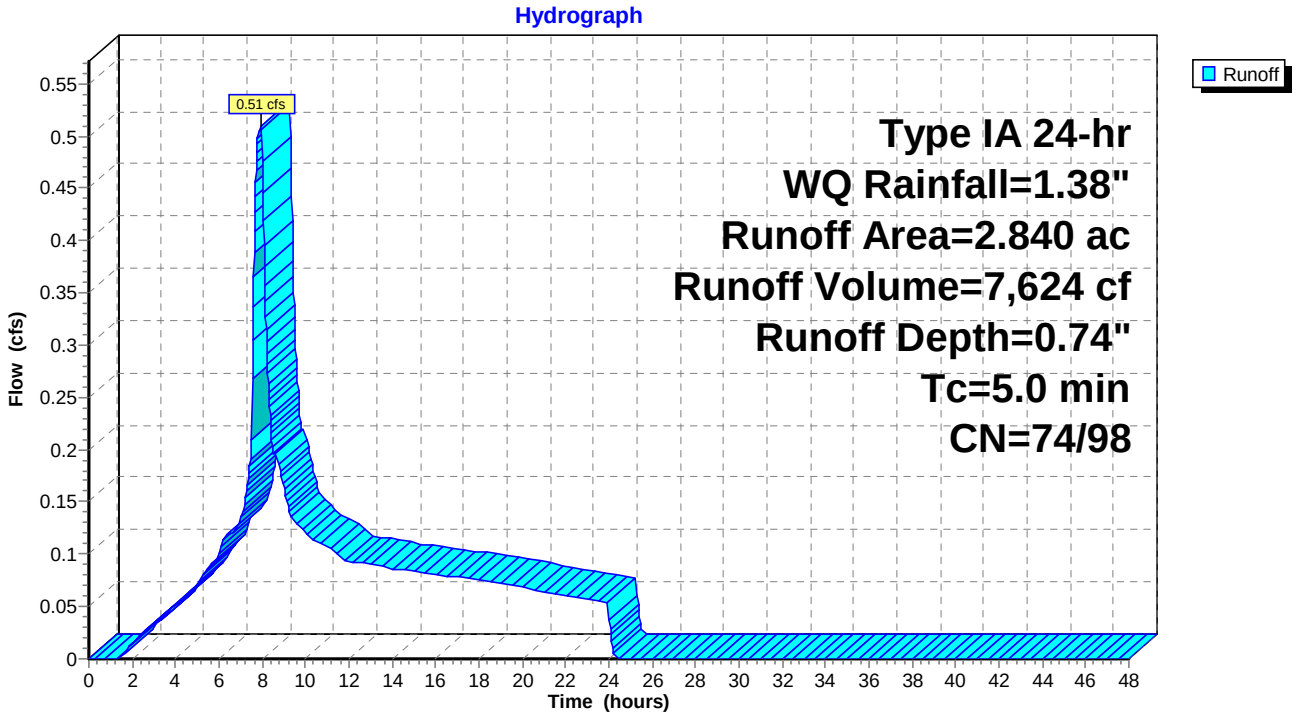
Runoff = 0.51 cfs @ 7.90 hrs, Volume= 7,624 cf, Depth= 0.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
	1.140	74	>75% Grass cover, Good, HSG C
*	1.700	98	Impervious surface, HSG C
	2.840	88	Weighted Average
	1.140	74	40.14% Pervious Area
	1.700	98	59.86% Impervious Area

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

Subcatchment B: Segment B



Summary for Pond PB: Planter

Inflow Area = 123,710 sf, 59.86% Impervious, Inflow Depth = 0.74" for WQ event
Inflow = 0.51 cfs @ 7.90 hrs, Volume= 7,624 cf
Outflow = 0.11 cfs @ 11.08 hrs, Volume= 7,624 cf, Atten= 79%, Lag= 191.0 min
Discarded = 0.11 cfs @ 11.08 hrs, Volume= 7,624 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 151.43' @ 11.08 hrs Surf.Area= 1,700 sf Storage= 1,563 cf

Plug-Flow detention time= 152.2 min calculated for 7,621 cf (100% of inflow)
Center-of-Mass det. time= 152.2 min (869.4 - 717.2)

Volume	Invert	Avail.Storage	Storage Description
#1	148.48'	2,531 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

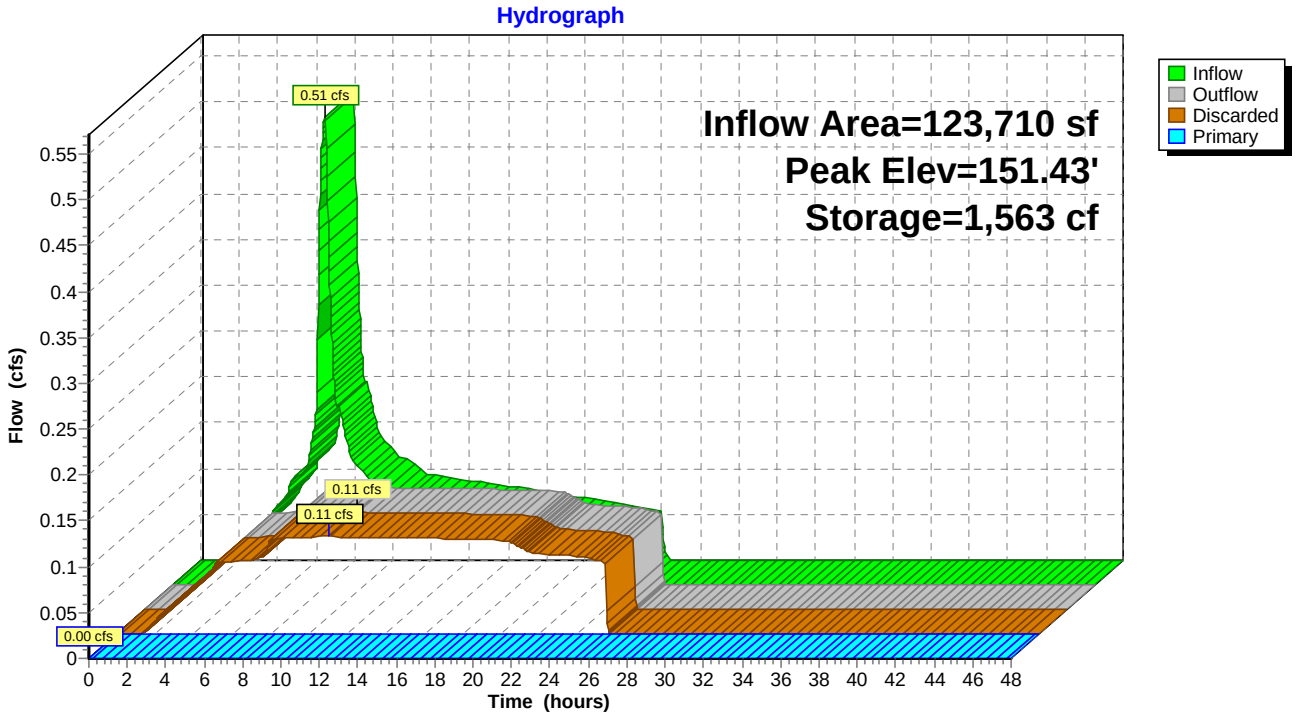
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.48	1,700	0.0	0	0
148.49	1,700	40.0	7	7
149.49	1,700	40.0	680	687
149.50	1,700	5.0	1	688
150.99	1,700	5.0	127	814
151.00	1,700	100.0	17	831
152.00	1,700	100.0	1,700	2,531

Device	Routing	Invert	Outlet Devices
#1	Discarded	148.48'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 140.00'
#2	Primary	151.99'	**3.0" x 30.0" Horiz. Grate X 8.00 columns** X 8 rows C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.08 hrs HW=151.43' (Free Discharge)
↑**1=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.48' (Free Discharge)
↑**2=Grate** (Controls 0.00 cfs)

Pond PB: Planter



Summary for Subcatchment C: Segment C

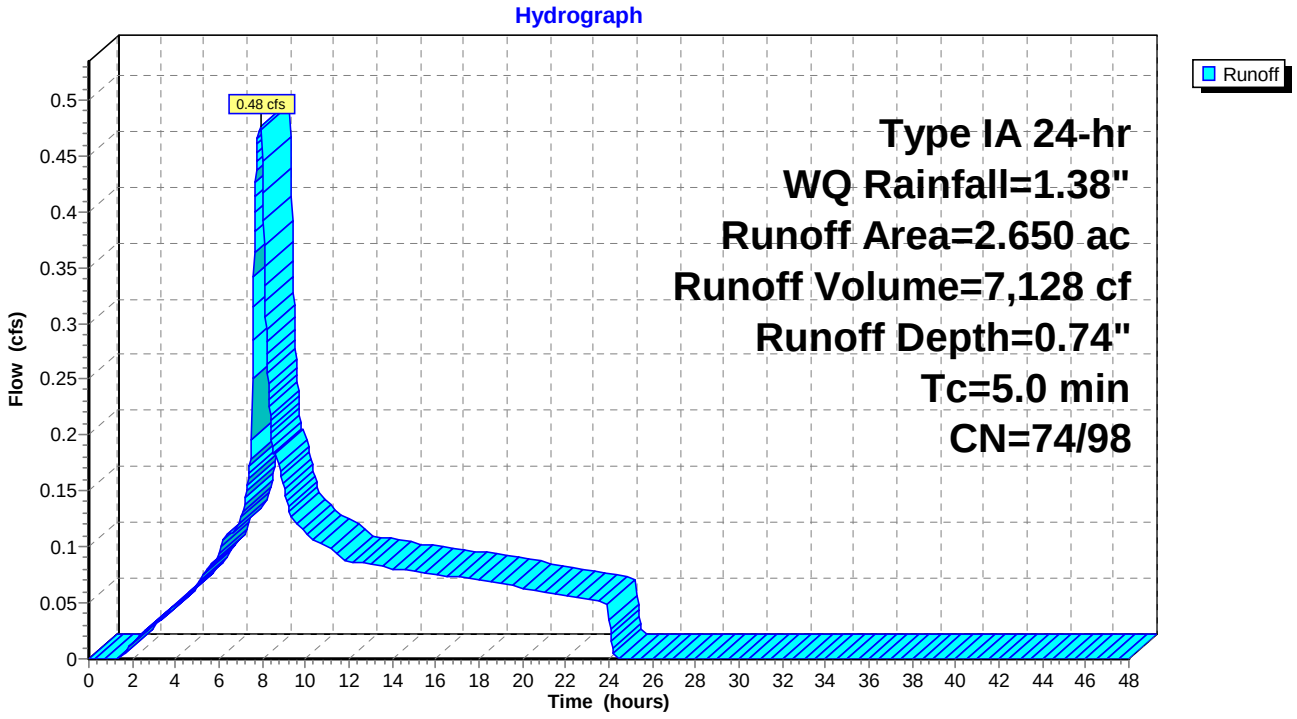
Runoff = 0.48 cfs @ 7.90 hrs, Volume= 7,128 cf, Depth= 0.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
	1.060	74	>75% Grass cover, Good, HSG C
*	1.590	98	Impervious surface, HSG C
	2.650	88	Weighted Average
	1.060	74	40.00% Pervious Area
	1.590	98	60.00% Impervious Area

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

Subcatchment C: Segment C



Summary for Pond PC: Planter

Inflow Area = 115,434 sf, 60.00% Impervious, Inflow Depth = 0.74" for WQ event
Inflow = 0.48 cfs @ 7.90 hrs, Volume= 7,128 cf
Outflow = 0.09 cfs @ 11.76 hrs, Volume= 7,128 cf, Atten= 82%, Lag= 232.1 min
Discarded = 0.09 cfs @ 11.76 hrs, Volume= 7,128 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 151.77' @ 11.76 hrs Surf.Area= 1,360 sf Storage= 1,715 cf

Plug-Flow detention time= 222.4 min calculated for 7,128 cf (100% of inflow)
Center-of-Mass det. time= 222.5 min (939.6 - 717.1)

Volume	Invert	Avail.Storage	Storage Description
#1	148.48'	2,025 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

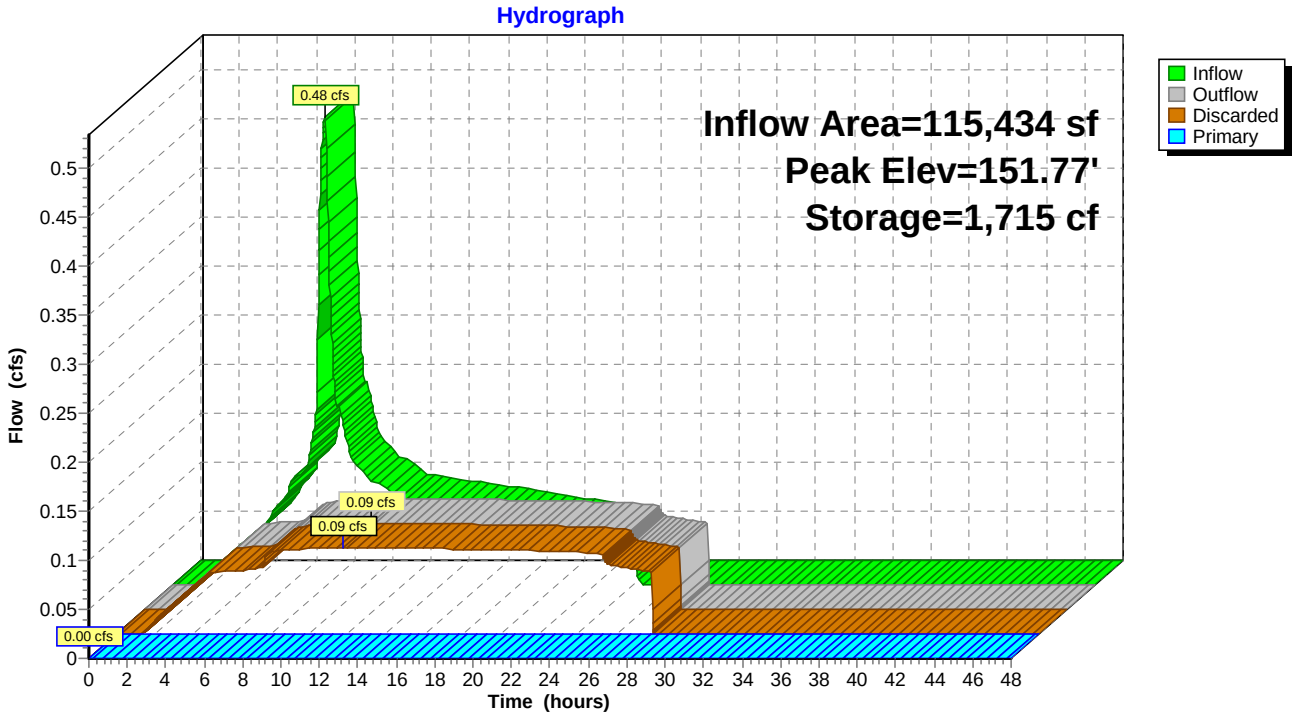
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.48	1,360	0.0	0	0
148.49	1,360	40.0	5	5
149.49	1,360	40.0	544	549
149.50	1,360	5.0	1	550
150.99	1,360	5.0	101	651
151.00	1,360	100.0	14	665
152.00	1,360	100.0	1,360	2,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	148.48'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 140.00'
#2	Primary	151.99'	**3.0" x 30.0" Horiz. Grate X 8.00 columns** X 8 rows C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.09 cfs @ 11.76 hrs HW=151.77' (Free Discharge)
↑**1=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.48' (Free Discharge)
↑**2=Grate** (Controls 0.00 cfs)

Pond PC: Planter



Summary for Subcatchment D: Segment D

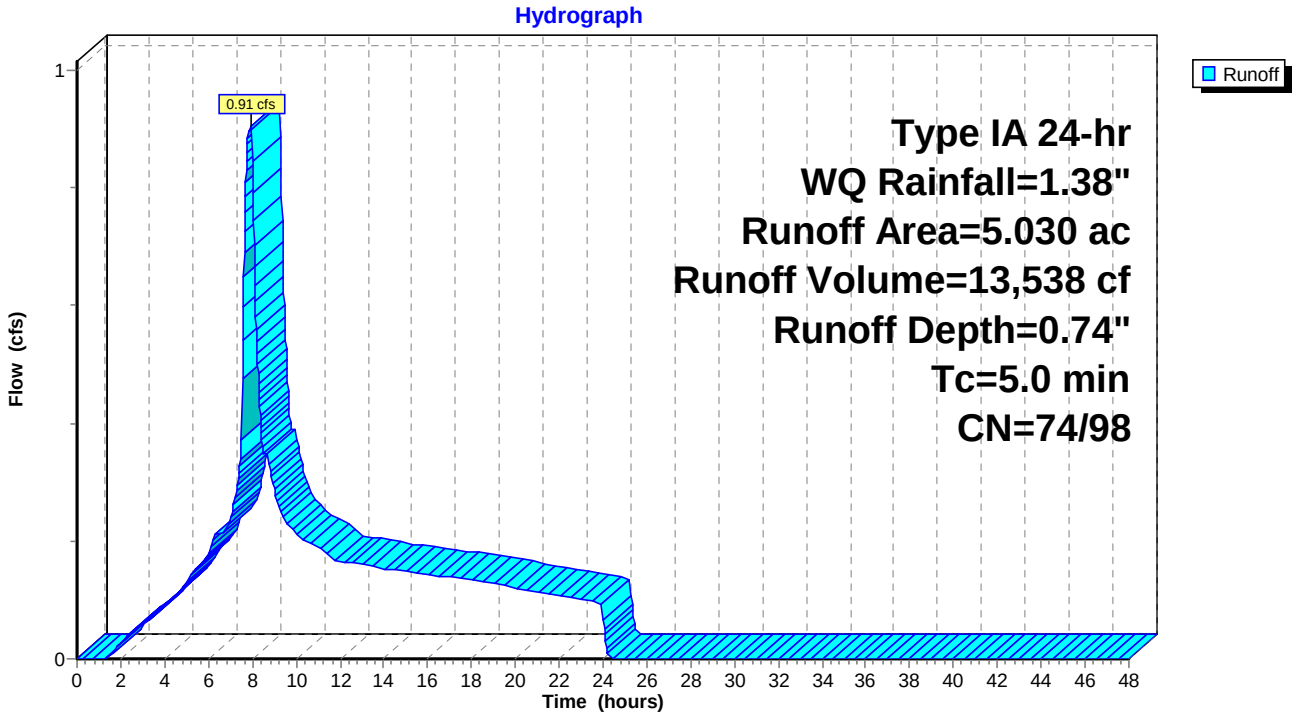
Runoff = 0.91 cfs @ 7.90 hrs, Volume= 13,538 cf, Depth= 0.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
	2.010	74	>75% Grass cover, Good, HSG C
*	3.020	98	Impervious surface, HSG C
	5.030	88	Weighted Average
	2.010	74	39.96% Pervious Area
	3.020	98	60.04% Impervious Area

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

Subcatchment D: Segment D



Summary for Pond PD: Planter

Inflow Area = 219,107 sf, 60.04% Impervious, Inflow Depth = 0.74" for WQ event
Inflow = 0.91 cfs @ 7.90 hrs, Volume= 13,538 cf
Outflow = 0.18 cfs @ 11.28 hrs, Volume= 13,538 cf, Atten= 80%, Lag= 203.3 min
Discarded = 0.18 cfs @ 11.28 hrs, Volume= 13,538 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 151.51' @ 11.28 hrs Surf.Area= 2,900 sf Storage= 2,901 cf

Plug-Flow detention time= 168.7 min calculated for 13,538 cf (100% of inflow)
Center-of-Mass det. time= 168.7 min (885.7 - 717.1)

Volume	Invert	Avail.Storage	Storage Description
#1	148.48'	4,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

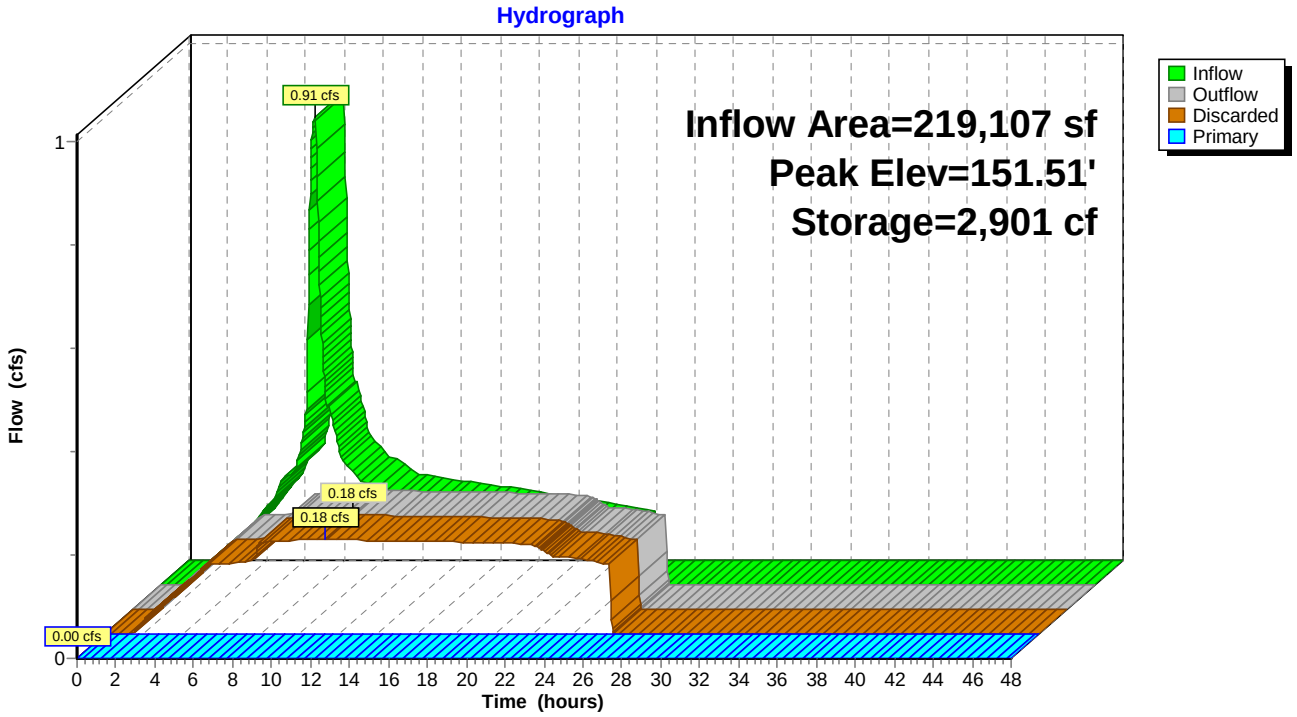
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.48	2,900	0.0	0	0
148.49	2,900	40.0	12	12
149.49	2,900	40.0	1,160	1,172
149.50	2,900	5.0	1	1,173
150.99	2,900	5.0	216	1,389
151.00	2,900	100.0	29	1,418
152.00	2,900	100.0	2,900	4,318

Device	Routing	Invert	Outlet Devices
#1	Discarded	148.48'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 140.00'
#2	Primary	151.99'	**3.0" x 30.0" Horiz. Grate X 8.00 columns** X 8 rows C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.18 cfs @ 11.28 hrs HW=151.51' (Free Discharge)
↑**1=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.48' (Free Discharge)
↑**2=Grate** (Controls 0.00 cfs)

Pond PD: Planter



Summary for Subcatchment B2: Segments E-H

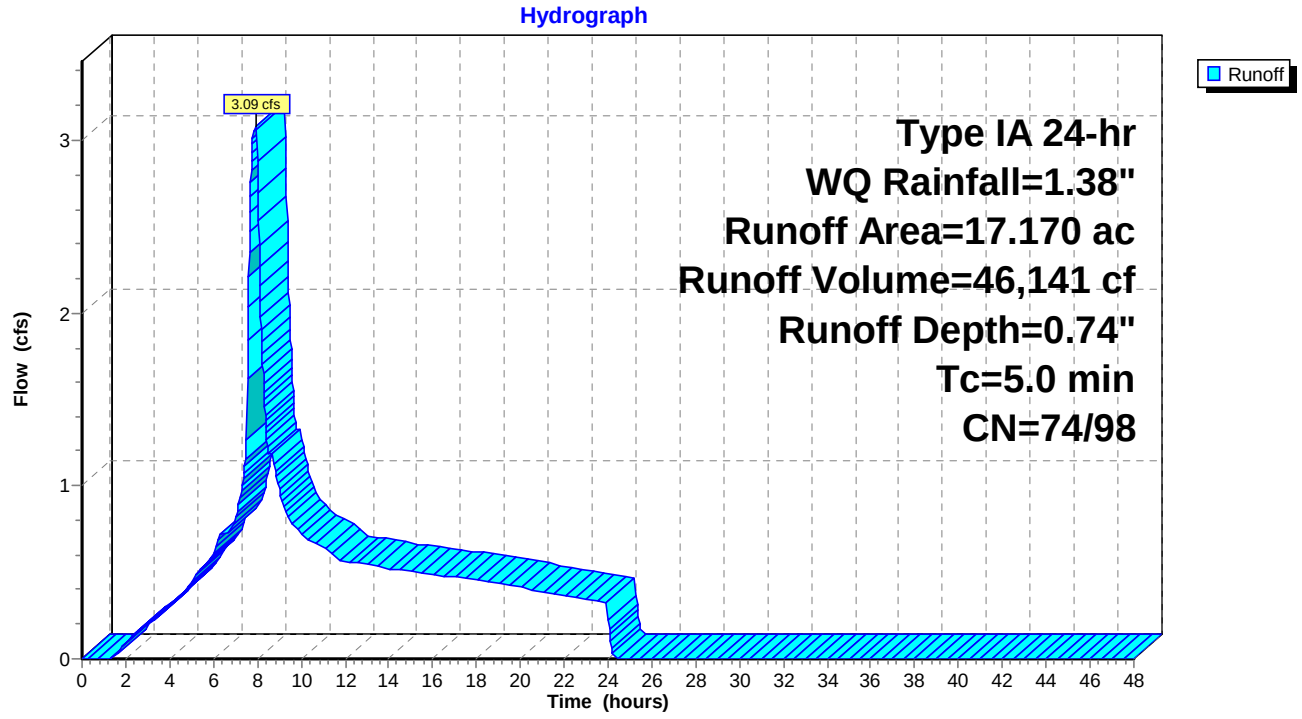
Runoff = 3.09 cfs @ 7.90 hrs, Volume= 46,141 cf, Depth= 0.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
	6.880	74	>75% Grass cover, Good, HSG C
*	10.290	98	Impervious surface, HSG C
	17.170	88	Weighted Average
	6.880	74	40.07% Pervious Area
	10.290	98	59.93% Impervious Area

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

Subcatchment B2: Segments E-H



Summary for Subcatchment B3: Segments I-K

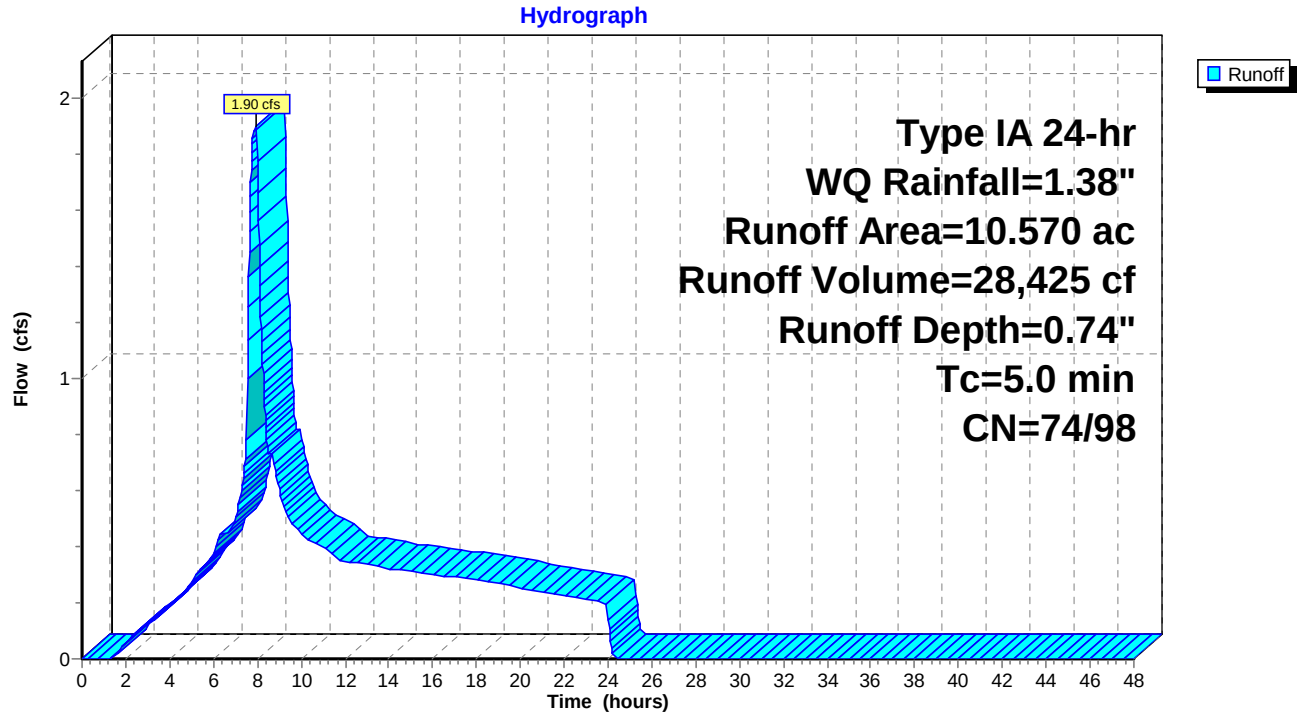
Runoff = 1.90 cfs @ 7.90 hrs, Volume= 28,425 cf, Depth= 0.74"

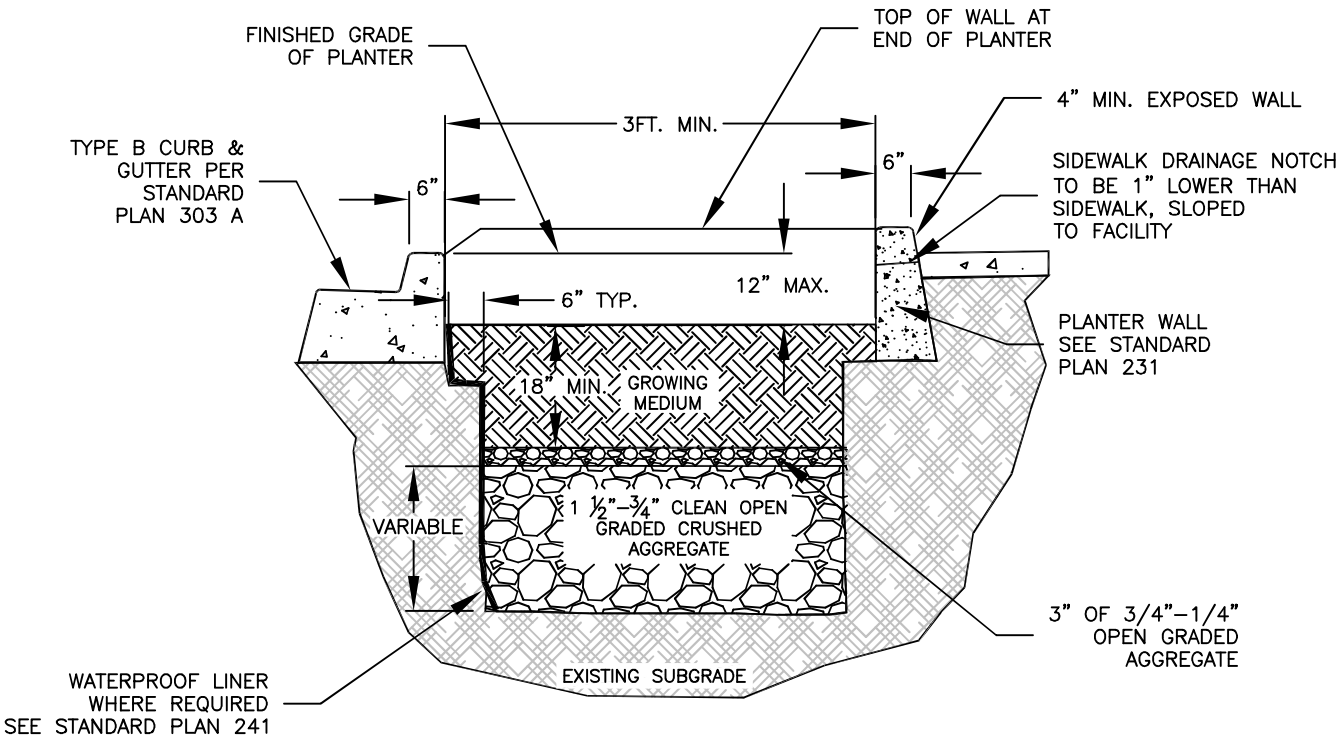
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
	4.230	74	>75% Grass cover, Good, HSG C
*	6.340	98	Impervious surface, HSG C
	10.570	88	Weighted Average
	4.230	74	40.02% Pervious Area
	6.340	98	59.98% Impervious Area

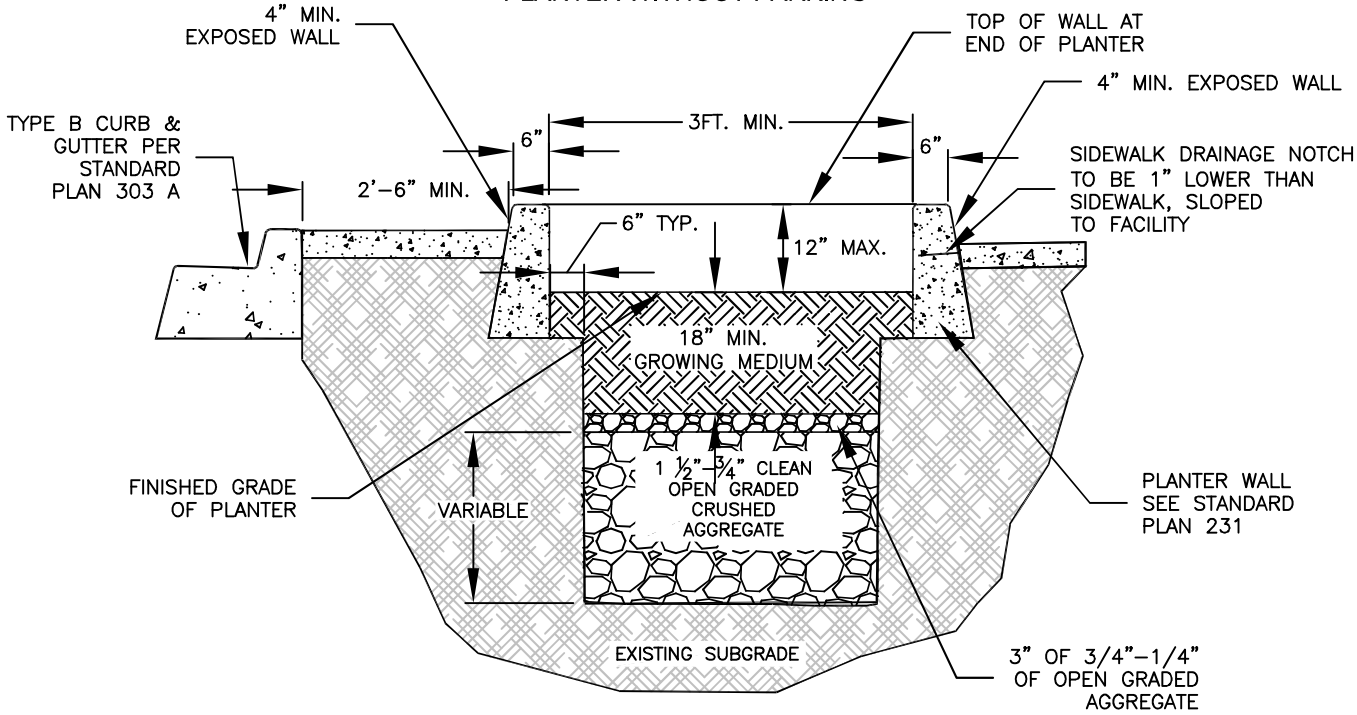
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct Entry**

Subcatchment B3: Segments I-K





SECTION A-A
PLANTER WITHOUT PARKING



SECTION B-B
PLANTER WITH PARKING

NOTES:

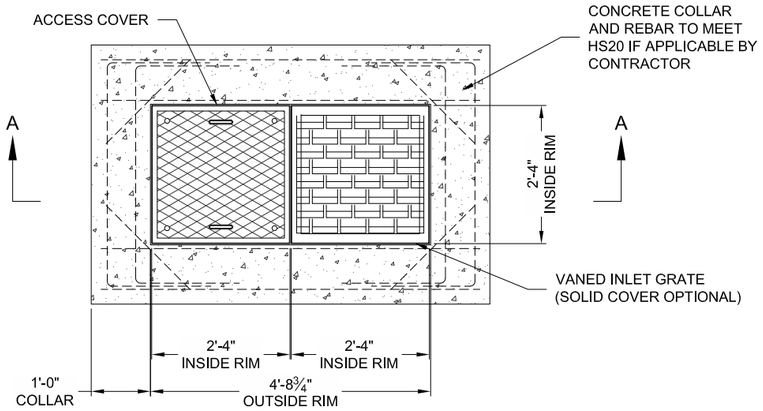
1. SCARIFY THE EXISTING SUBGRADE FOLLOWING THE INITIAL EXCAVATION AND BEFORE INSTALLING TOPSOIL OR ROCK

2. SEE STANDARD PLAN 239 FOR CHANNEL AND GRATE DETAILS

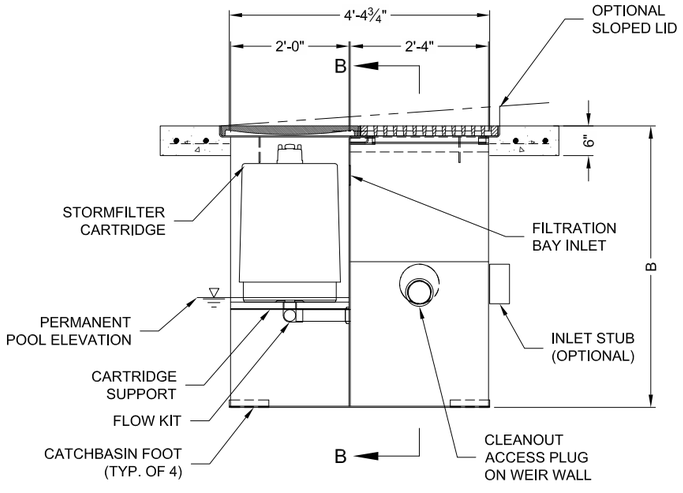
CITY OF SALEM
DEPARTMENT OF PUBLIC WORKS

STANDARD PLAN
ROW PLANTER - SECTION VIEWS

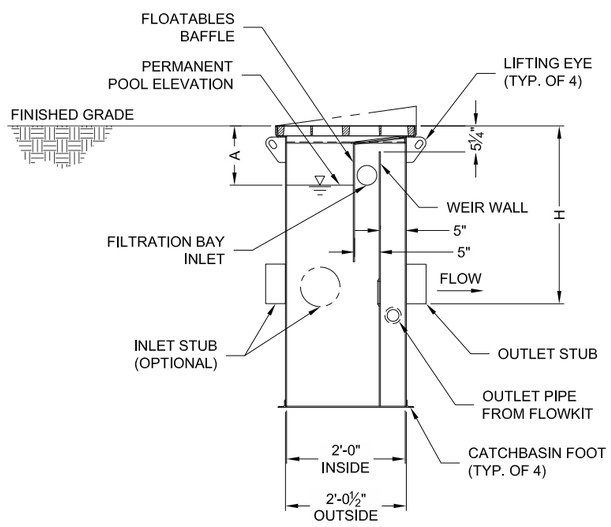
APPROVED	James L. Sorel	1/01/14	DRAWN BY	KAK	12/2013	**NO. 227**
	CITY ENGINEER	DATE	CHECKED BY	KR	12/2013	



PLAN VIEW



SECTION A-A



SECTION B-B

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF ONE CARTRIDGE. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
6. STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
7. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
8. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
9. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

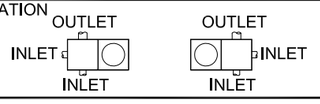
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

1-CARTRIDGE CATCHBASIN STORMFILTER DATA

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE HEIGHT (27", 18", 18" DEEP)	XX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

CONFIGURATION



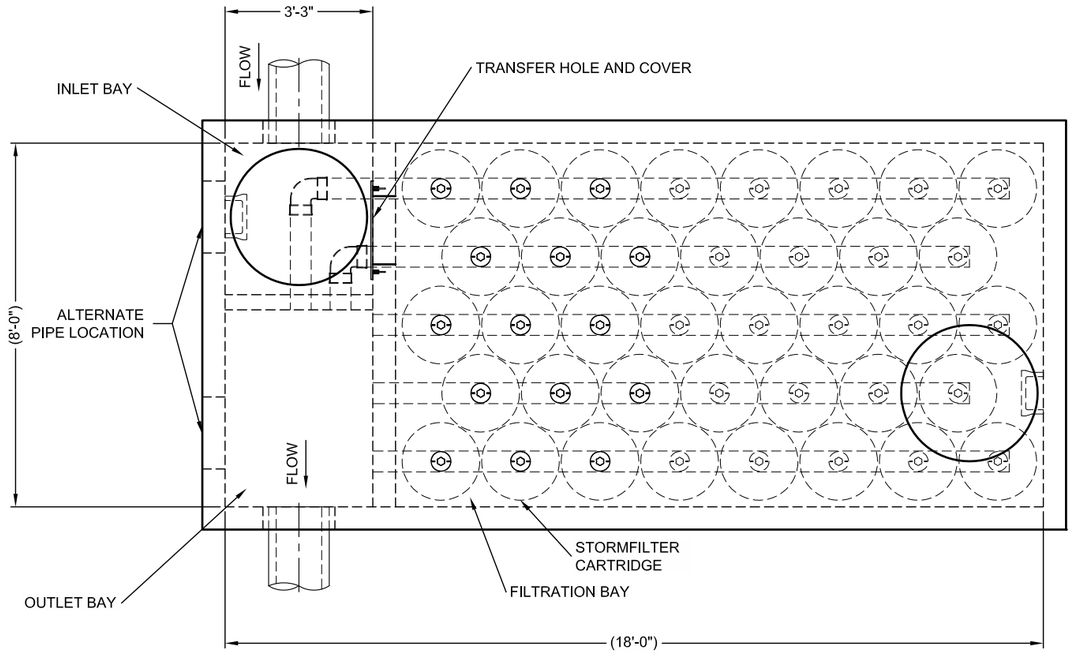
SLOPED LID	YES\NO
SOLID COVER	YES\NO

NOTES/SPECIAL REQUIREMENTS:

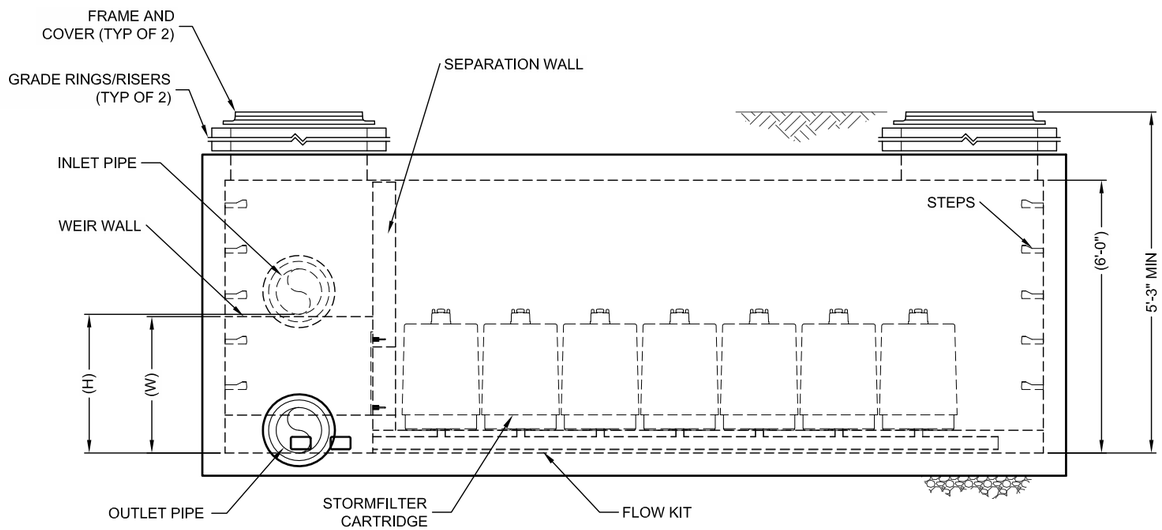
The Stormwater Management StormFilter®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,370; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS; OR OTHER PATENTS PENDING.

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-526-3999 513-645-7000 513-645-7993 FAX

1 CARTRIDGE CATCHBASIN STORMFILTER STANDARD DETAIL



PLAN



ELEVATION

The Stormwater Management StormFilter®

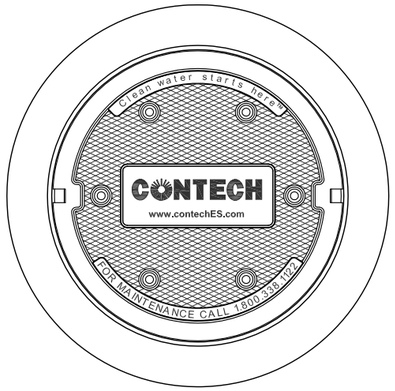
STORMFILTER DESIGN NOTES

- THE 8' x 18' PEAK DIVERSION STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCALLY APPROVED SURFACE AREA SPECIFIC FLOW RATE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.
- THE PEAK DIVERSION STORMFILTER IS AVAILABLE IN A LEFT INLET (AS SHOWN) OR RIGHT INLET CONFIGURATION.
- ALL PARTS AND INTERNAL ASSEMBLY PROVIDED BY CONTECH UNLESS OTHERWISE NOTED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
HEIGHT OF WEIR (W)	3.00'			2.25'			1.75'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB ® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

PERFORMANCE SPECIFICATION

FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **38 SECONDS**. SPECIFIC FLOW RATE SHALL BE **2 GPM/SF (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.

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www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

THE STORMWATER MANAGEMENT STORMFILTER 8' x 18' PEAK DIVERSION STORMFILTER STANDARD DETAIL

Design Exception Request

2014 City of Salem's Public Works Administrative Rules Chapter 109, Division 004

Coburn Grand View Estates Subdivision

Division	Section	Exception	Reason	City Engineer Approval Initials	Date
Stormwater System	4E.7	Allow non-GSI facilities, Manufactured Treatment Technologies, to mitigate the impacts of runoff from 80 percent of the development	The proposed subdivision is located on natural steep slopes that exceed 10 percent for the westerly portion of the development where the proposed Manufactured Treatment Technology will be located. Steep slopes of this nature do not allow GSI facilities to be constructed and are not feasible. The maximum slope for a swale is 6 percent. For planter facilities, concrete check dams would be required every 5-feet.