Exhibit 6 – Technical Documents:

a. Traffic Memo
b. Geotechnical Engineering Report
c. Geotechnical Engineering Report Addendum
d. Proposed Construction Improvement Documents (permit P2301069PDEV)
e. Proposed Construction Improvement Documents (updated sheets May 2025)
f. Drainage Report

The Cultural Resource Survey is not included in exhibits as this is not intended to be a public document.

Exhibit 6.a. - Traffic Memo

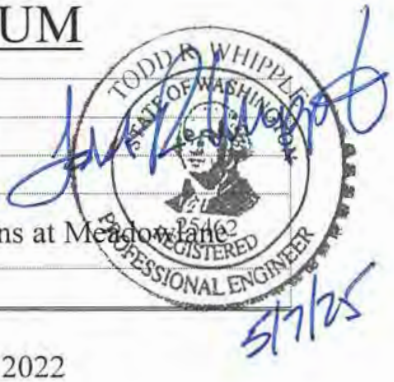
WCE

Whipple Consulting Engineers, Inc.

21 S. Pines Road
Spokane Valley, WA 99206
Ph 509-893-2617 Fax 509-926-0227

TECHNICAL MEMORANDUM

TO:	File		
FROM:	Ben Goodmansen, E.I.T. Todd R. Whipple, P.E.		
DATE:	May 7, 2025		
PROJECT NO:	20-2564 20-2699	**NAME:**	Latah Glenn/ Greens at Meadowlane
REGARDING:	16th Avenue Redirection Project		



Approved Latah Glenn Residential Community TIA Dated March 24, 2022
Excerpt Table 13.

***Table 13* – Corridor Project Trip Redirection Summary with Improvement Credit**

	Original Trips on Ramp		Redirected Trips from Ramp by SR 195 Projects								Trips on Ramp after Redirection	
			Turn Restriction @ 16th		Flashing Beacon @ Thorpe		Inland Empire Way Ramp & Meter		Total			
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Existing Trips on Ramp	1,303	643	-53	-20	-50	-20	-210	-97	**-313**	**-137**	990	506
Summit	22	17	-	-	-1	-1	-4	-3	-5	-4	17	13
Wheatland	50	9	-	-	-2	0	-10	-2	-12	-2	38	7
Tangle Ridge	10	7	-	-	-1	0	-2	-1	-3	-1	7	6
Latah Glen	13	5	-	-	-1	0	-3	-1	-4	-1	9	4
Qualchan View	42	14	-	-	-2	-1	-8	-3	-10	-4	32	10
Greens @ Meadowlane	5	3	-	-	0	0	-1	-1	-1	-1	4	2
Marshall Creek	72	33	-	-	-3	-2	-14	-7	-17	-9	55	24
Project Total	214	88	0	0	-10	-4	-42	-18	-52	-22	**162**	**66**
Total	1,517	731	-53	-20	-60	-24	-252	-115	-365	-159	1,152	572
Difference between Redirected Existing Trips & Total Project Trips on Ramp after Redirection											**-151**	**-71**

The 16th Avenue redirection project was completed by Latah Glenn and Greens @ Meadowlane developments the 16th Avenue project redirected 53 AM Peak hour Trips and 20 PM Peak hour Trips. Thus providing credit to be applied to these development projects. The Highlighted project value is changed with the change of use described in this memo.

The Greens at Meadowlane received credit for 5 AM Trips and 3 PM Trips. The Greens at Meadowlane 2 also received credit for 5 AM Trips and 3 PM Trips. As the Greens at Meadowlane 2 proceeded after the final Latah Glen TIA it was not included in the Table.

The Latah Glen Project is proposing a change of conditions to change the 157 mobile home park units into 142 single family dwelling units.

Existing Land use per Table 8 of the approved study

Table 8 -Trip Generation Rates for LUC # 240 – Mobile Home Park

Dwelling Units	AM Peak Hour Trips			PM Peak Hour Trips		
	Vol. @ 0.26 trips/units	Directional Distribution		Vol. @ 0.46 trips / Units	Directional Distribution	
		31% In	69% Out		62% In	38% Out
157	41	13	28	73	45	28

Average Daily Trip Ends (ADT)		
Units	Rate	ADT
157	5.00	785

Proposed Land Uses

For the 142 units of single-family, Land Use Code (LUC) 210 Single Family detached housing will be used to establish the number of potential trips generated by the proposed land use. Per the ITE Trip Generation handbook there are two means to calculate trip generation: Average Rate and Fitted Curve. Both methods are shown in the table with the most conservative selected. The anticipated trip generated per this method is shown in Table 1.

Table 1- Trip Generation Rates for LUC #210 Single-Family Detached Housing

Dwelling Units	AM Peak Hour			PM Peak Hour		
	Vol. per Average Rate	Directional Distribution		Vol. per Average Rate	Directional Distribution	
		25% In	75% Out		63% In	37% Out
142	99	25	74	133	84	49

Average Daily Trip Ends (ADT)		Average Rate Equations (Adj. Street):	Fitted Curve Equations (Adj. Street):
Dwelling Units	Vol. per Average Rate	AM: T = 0.70 * x = 99 PM: T = 0.94 * x = 133 ADT: T = 9.43 * x = 1339 T = Trips/units, x = Dwelling Units	AM: Ln(T) = 0.91 Ln(x) + 0.12 = 102 PM: Ln(T) = 0.94 Ln(x) + 0.27 = 138 ADT: Ln(T) = 0.92 Ln(x) + 2.68 = 1393 T = Trips/units, x = Dwelling Units
142	1,339		

Table 2- Net New Trip Generation Summary

Land Use Code	AM Peak Hour			PM Peak Hour		
	Vol. per LUC	Directional Distribution		Vol. per LUC	Directional Distribution	
		In	Out		In	Out
LUC #210 Single-Family Detached Housing (Table 1)	99	25	74	133	84	49
LUC #240 Mobile Home (Table 8)	<41>	<13>	<28>	<73>	<45>	<28>
Difference	**58**	**12**	**46**	**60**	**39**	**21**

Average Daily Trip Ends (ADT)	
Land Use Code	**Vol. per LUC**
LUC #210 Single-Family Detached Housing (Table 1)	1,339
LUC #240 Mobile Home (Table 8)	<785>
Difference	**554**

< > indicates subtraction

As shown in Table 2, the proposed change in land use is anticipated to generate 58 additional trips in the AM peak hour with 12 additional trips entering the site and 46 additional trips exiting the site. In the PM peak hour, the proposed change in land use is anticipated to generate 60 additional trips, with 39 additional trips entering the site and 21 additional trips exiting the site. The proposed change in land use is anticipated to generate a total of 554 additional average daily trip ends to/from the site.

Trip Distribution
Per the Approved TIA Trip distribution is anticipated to remain the same

At the SR195 to I-90 EB Ramp 25% of outbound project trips are anticipated to utilize the route. Per Table 1 that equates to 19 (74*0.25) AM trips and 12 (49*0.25) PM trips.

When taking the 16th redirection trips and applying trips from Meadow Lane (Phase 1 & 2), and Latah Glen, there would still be a remaining credit of 24 AM trips and a remaining deficit of 2 PM Trips per Table 3.

Table 3 – Remaining Credit

	AM	PM
16th Redirect (Table 13)	-53	-20
Greens at Meadow Lane	5	3
Greens at Meadow Lane 2	5	3
Latah Glen (Table 1)	19	12
Remaining Credit	**24**	**2**

Exhibit 6.b. - Geotechnical Engineering Report

Geotechnical Engineering Report
Latah Glen
Parcel Nos: 25364.0001 & 25361.0004
Spokane, Washington

Prepared For:
William Nascimento
Sycamore Group, LLC
10 Sycamore Canyon Drive
Dove Canyon, California 92679

Prepared By:

LIBERTY GEOTECH

Liberty Geotechnical Engineering, Inc.
3012 N Sullivan Rd
Spokane Valley, Washington 99216
(509) 255-3736



Report Date: September 30, 2020
Job Number: 20211

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Appendices

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Appendix E: Benching and Slope Fill Requirements
Appendix F: Basement Wall Drainage Detail

1.0 EXECUTIVE SUMMARY

The following geotechnical engineering report has been prepared for the Latah Glen development located at the above referenced site in Spokane, Washington. From a geotechnical perspective, the following concepts were identified as favorable for the proposed construction:

- The site is suitable for the proposed construction provided the following report recommendations are implemented.
- Most of the native soils encountered at the site will provide adequate bearing capacity for foundations, support for pavements, and drainage.

The following items have been identified at the project site and proposed construction that should be carefully considered during design and construction:

- Test pits TP-4, TP-7 to TP-10, TP-13, TP-14 and TP-24 encountered refusal due to bedrock at depths ranging from about 2.5-feet to 13-feet below the ground surface. The bedrock is anticipated to be variable across the site. A hydraulic ram or blasting may be required to excavate for utilities, house foundations or other infrastructure improvements.
- Undocumented fill was encountered in test pits TP-3 to TP-8, TP-10 to TP-16, TP-18, TP-20, TP-22 to TP-23 and TP-26 to TP-28 at depths ranging from about ½-feet to 6-feet to below ground surface. Undocumented fill should be removed and replaced with compacted *Structural Fill* below all settlement prone structures.
- Further slope stability evaluation should be performed if house foundations are closer than 30 feet from the crest of a slope steeper than 1.5H:1.0V. The exploration was based on a preliminary plan.
- Limited sub-excavations into native soils will be necessary below foundations if alluvial silts are encountered at foundation subgrade elevations. Recommendations for the sub-excavations are provided below in Section 5.1.1.
- Slope design and construction should incorporate the recommendations provided in the attached *Benching and Slope Fill Requirements* diagram in Appendix E.
- The silty sands and sandy silts at the site are moderately to highly frost-susceptible. Recommendations to help mitigate the potential for frost heave are provided below in Section 5.4.

Liberty Geotech should be involved in the design development and earthwork construction to help ensure that the report recommendations are incorporated into the design and construction Liberty Geotech is available to discuss these items further in-person or via conference call.

2.0 PROPOSED CONSTRUCTION

The project will consist of a residential development at the above referenced site. The development will consist of asphalt paved roadways, underground utilities, and stormwater

management facilities associated with 157 residential homes. Stormwater will be managed using infiltration swales with drywells.

Furthermore, the recommendations included in this report are based on the following plans:

- *Site Plan* prepared by Storhaug, dated July 15, 2020.
- *Design Review Exhibits* (sheets 1 through 4) prepared by Storhaug, dated July 15, 2020.
- *Storm Drain Plan* prepared by Storhaug, dated August 7, 2020.
- *Concept Profile* prepared by Storhaug, dated August 7, 2020.

3.0 GEOTECHNICAL EXPLORATION

3.1 Geology, Topography, and Current Site Use

The *Geologic Map of the Spokane Southwest 7.5-minute Quadrangle* (Hamilton, 2004) was reviewed to determine the geologic deposit at the site. The geologic map indicated that the geologic unit was an Alluvium, Glacial Flood Deposit, and Grande Ronde Basalt. In addition, the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2019) was reviewed. The soil survey indicates that the soil units are Marble Loamy Sand, Clayton-Hagen, Lakespring Ashy Loam. The soil survey describes the soil as sandy glaciofluvial deposits and loess mixed with minor amounts of volcanic ash over glaciolacustrine deposits.

The majority of the site is an abandoned auto salvage yard. There are 2 structures located at the northeast portion of the property. The eastern half of the property is heavily littered with abandoned vehicles and trash. The central western portion of the property is relatively steeply sloped and contains what appears to be old mining roads. Outside of the previous auto yard and possible mining area is sparsely vegetated with trees and prairie grasses. Based on elevations obtained from Google Earth™, the site slopes from the southwest to the northeast with approximately 160-feet of relief.

3.2 Subsurface Exploration

The soils encountered in the test pits were highly variable across the site. In general, the test pits encountered either topsoil or undocumented fill to depths ranging from about ½-foot to 7 ½-feet. Below the topsoil or undocumented fill, the test pits encountered alluvium, glacial outwash, wind deposits, lacustrine deposits, and/or bedrock to their termination or refusal depths. The alluvium consisted of silt and clayey and silty to poorly graded sand, the glacial outwash consisted of silty to poorly graded sand, the wind deposits consisted of silt, and the lacustrine deposits consisted of silt.

3.3 Estimated Groundwater and Bedrock Elevations

Groundwater was not observed during the exploration. Well logs in the vicinity of the site (Department of Ecology, State of Washington) indicate that the static groundwater is at depth of about 50-feet below the ground surface. However, groundwater can become perched on the shallow bedrock surface. Seasonal and annual fluctuations of groundwater levels should be anticipated.

Furthermore, bedrock was encountered in test pits TP-4, TP-7 to TP-10, TP-13, TP-14, TP-24 and TP-25 at depths ranging from about 2.5-feet to 13-feet below the ground surface.

4.0 LABORATORY TESTING RESULTS

Soil samples were obtained in the exploration locations at varying depths to characterize the soil encountered at the site. The results of the laboratory testing results are presented in Appendix C: *Laboratory Testing Results*. The laboratory testing was performed referencing the following American Society for Testing and Material Standard Methods (ASTM):

- ASTM D1140 *Amount of Material in Soils Finer than the No. 200 Sieve*,
- ASTM D2216 *Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass,*
- ASTM D6913 *Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis*.

4.1 Summary of Laboratory Testing Results

The following table summarizes the laboratory tests that were performed on the soil samples obtained from the site. Additional details are provided in Appendix B and D.

Table 4.1.A - Summary of Laboratory Testing

Soil Unit	Lab Tests Performed	Summary of Results
Native Alluvium	• Percent Passing No. 200 Sieve • Gradation Sieve • Natural Moisture Content	Soil classified as silty sand and sandy silt. • % Passing No. 200: 16% - 59% • Moisture Content: 4% - 29%
Glacial Outwash	• Percent Passing No. 200 Sieve • Gradation Sieve • Natural Moisture Content	Soil classified as poorly-graded sand. • % Passing No. 200: 1% - 7% • Moisture Content: 3% - 4%

Native Lacustrine	• Percent Passing No. 200 Sieve • Natural Moisture Content	Soil classified as sandy silt • % Passing No. 200: 63% Moisture Content: 29%

5.0 GEOTECHNICAL RECOMMENDATIONS

5.1 Earthwork

The following recommendations should be considered by the general contractors and earthwork subcontractors prior to providing a cost estimate for the earthwork on the project.

5.1.1 Subgrade Preparation

Clear and grub all vegetation, strip all topsoil and remove all undocumented fill to prepare the subgrades under foundations, slabs, and pavements. If alluvial silts are encountered at foundation subgrade elevation, the soil should be sub-excavated to at least 1 foot below bottom of footing elevation and replaced with compacted structural fill. The sub-excavations should be oversized to provide lateral stability for the structural backfill. The bottoms of the excavations should be oversized at least 1 foot beyond the outside edges of the proposed footings for each foot of excavation below the bottoms of the footings (1H:1V oversizing).

Liberty Geotech should be contacted once the foundation subgrade areas have been exposed to review the subgrade conditions.

In pavement areas, after removing any topsoil and existing fill, the upper 8 inches of the resulting subgrade should be scarified, moistened or dried to within -1 to +3 percent optimum moisture, and compacted to a minimum of 95 percent of the modified Proctor dry density determined in accordance with ASTM D 1557. Furthermore, prior to placing the aggregate base, all areas should be proof-rolled with a loaded dump truck or loaded water truck to determine if the subgrade materials are loose, soft or weak, and in need of further stabilization, compaction, or sub-excavation and re-compaction or replacement. The proof-roll should be witnessed by a geotechnical engineer from Liberty Geotech.

5.1.2 Site Grading

The pavement subgrade surface should be shaped to provide positive drainage to minimize the potential for water to pond in the subgrade. Because the site soils are moderately to highly frost susceptible, it will be important to avoid creating low areas in the subgrade where water can

pond and freeze, which could heave the pavement. Snow storage areas should be carefully considered to minimize the amount of water infiltrating in the subgrade areas.

Slope construction will require proper benching techniques as shown on the attached *Benching and Slope Fill Requirements* diagram in Appendix E. These recommendations should be applied to *Structural Fill* placed on slopes steeper than 10 percent. Furthermore, keyway and bench drains should be considered to remove potential groundwater from the keyway and benches.

Permanent slopes should be graded no steeper than 1.5:1 (horizontal:vertical). Establishing vegetation on permanent slopes as soon as possible is recommended. Slopes excavated into bedrock are often stable at steeper angles. We recommend the geotechnical engineer be retained to observe excavations into bedrock to provide final sloping recommendations.

5.1.3 Earthwork Soil Products, Compaction, and Testing Frequency

Different soil products should be used for different applications. The following table presents recommendations for anticipated earthwork construction:

Table 5.1.2.A - Soil product selection.

Soil Product	Project Use	Soil Description
Structural Fill	● Fill areas under foundation. ● Fill to achieve subgrade under pavement, slab or driveway. ● Backfill of shallow foundations. ● Fill outside 3 feet of the back face of retaining walls. ● Soil restraining a retaining wall from sliding. ● Embankment fill.	Soil classified as: ● GP-GM or GW-GM ● GM ● SP-SM or SW-SM ● SM Soil should be free of organics, deleterious material, and all material larger than 6-inches in diameter.
Retaining Wall Fill	● Fill within 3 feet of the back face of retaining walls. ● Fill within 1.5 feet of the back face of basement walls.	Free-draining soil classified as: ● GP or GW ● SP or SW Soil should be free of organics, deleterious material, and all material larger than 3-inches in diameter.
Concrete Slab	● Fill immediately below	Soil should meet the percent passing the

Cushion	slab-on-grade, sidewalks and exterior hardscapes.	following sieve size: ● 1”: 80-100% ● No. 4: 25-65% ● No. 200: 7% maximum Soil should be free of organics, clay fines, deleterious material, and all material larger than 2-inches in diameter.
Crushed Surfacing	● Fill immediately below slab-on-grade, asphaltic-pavement, concrete pavement, sidewalks and exterior hardscapes.	Crushed rock should meet the percent passing the following sieve size: ● 1-¼”: 99-100% ● 1”: 80-100% ● ⅝”: 50-80% ● No. 4: 25-45% ● No. 40: 3-18% ● No. 200: 7.5% maximum ● Sand equivalent: 40 minimum Also, the material should be free of wood, roots, bark, and deleterious material. For roadway base the following requirements should also be met: ● Fracture face: 75%, minimum ● Los Angeles Wear, 500 rev: 35%, maximum. ● Degradation factor: 15 minimum.
Landscaping Fill	● Non-structural fill areas. ● Vegetated areas.	Soil meeting the following requirements: ● Silt or Clay: 35% to 70% ● Sand: 20% to 60% ● Organic material: 2% to 20% ● Deleterious materials (gravel, rock, slag, cinder, roots, sod): 5% max ● pH between 5 and 7

The following table provides compaction recommendations specific to ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort.* All fill products should be compacted in lifts of soil not exceeding 12 inches measured prior to compaction.

Table 5.1.3.B - Compaction recommendation.

Project Use	**Recommended Compaction**
● Fill areas under foundation. ● Fill to achieve subgrade under slab or driveway.	95 percent of the maximum dry density of Modified Proctor.

• Fill immediately below slab-on-grade. • Fill immediately below the asphaltic-concrete pavement, concrete pavement, sidewalks, and exterior hardscapes.	
• Exterior wall backfill. • Utility trench backfills.	92 percent of the maximum dry density of Modified Proctor.
• Non-structural fill areas. • Vegetated areas.	80 to 85 percent of the maximum dry density of Modified Proctor.

If more than 30 percent of native or imported *Structural Fill* material is retained on the ¾" sieve, ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort* is not recommended to be used. In this case, a soil specific method specification can be developed. A nuclear density gauge can be used during earthwork operations to establish a moisture and compaction method that provides an acceptable maximum dry density. Method specification earthwork operations are recommended to have full-time soil testing to ensure adequate compaction.

The soil products are recommended to have passing compaction testing results at the following frequency to ensure the soil is uniformly meeting compaction requirements. Failing test results should be retested after additional compactive effort and, if necessary, water is added. At least 90% of the compaction testing results must achieve the required maximum dry density.

Table 5.1.3.C - Testing Frequency.

Project Use	**Testing Frequency**
• Below interior building concrete slabs for fill less than a vertical foot.	2,500 square feet and a minimum of 2 tests.
• Along the building footings for every vertical foot of fill.	50 lineal feet and a minimum of 2 tests.
• Structural fill placements larger than one foot in height	100 cubic yards
• Fill under asphalt parking areas and exterior concrete flatwork	5,000 square feet and a minimum of 2 tests.
• Utility trenches for every two vertical feet of trench backfill.	100 lineal feet and a minimum of 2 tests.

The jurisdictional requirements should be conformed to if there is a conflict with the requirements of Table 5.1.2.C. Excavations deeper than four feet must have adequate trenching protection or sloped back in accordance with state and federal requirements in order to be compaction tested.

5.1.4 Excavation Construction Considerations

The soils at the site are removable with a toothed-bucket on an excavator. However, a hydraulic breaker may be required for excavations into weathered bedrock. Blasting may be considered to remove isolated rock outcroppings if it is more economical than removal with a hydraulic breaker. A blasting plan should be prepared if blasting is required.

If groundwater is encountered in excavations we recommend dewatering. When final plans are available, we should be contacted to discuss dewatering options.

No excavation support or sloped excavations have been reviewed in preparation of this report. The contractor should perform excavations in accordance with state and federal regulations. If requested, Liberty Geotech is available to provide further analysis of excavation support or shoring design. Liberty Geotech is not responsible for the safety of trenches, excavations or shoring support.

5.1.5 Weather-Related Earthwork Considerations

Wet weather, freezing conditions, or snow can impede or prevent earthwork operations. The following recommendations should be considered by the contractors and owners during construction:

1. It is not recommended that soil products are placed during freezing conditions. No concrete or soil products should be placed on frozen soil.
2. The steeply-sloped topography may cause hazardous working conditions during winter or wet weather conditions.
3. The on-site soils, bedrock and any imported soil products may become saturated during earthwork operations and will reduce operation production.
4. Stockpiles of soil products should be protected during wet weather. Soil products that have been compacted should be protected and not travelled on during wet weather to prevent disturbing the subgrade.

This report does not provide recommendations for erosion, runoff, trackout from trucks removing site stripping, or environmental considerations associated with earthwork operations.

5.2 Shallow Foundation Design

The following design parameters are provided based on the project understanding described in Section 2.0. Liberty Geotech should be notified to revise or confirm the following

recommendations if the building location, locations of the site improvements, or structural loads change.

- If alluvial silts are encountered at foundation subgrade elevation, the soil should be sub-excavated to at least 1 foot below bottom of footing elevation and replaced with compacted structural fill.
- Allowable bearing capacity for foundations: 1,500 psf.
- Footing embedment for heated foundations*:* 2 feet.
- Footing embedment for unheated foundations: 3 feet.
- Estimated total settlement for foundations on *Structural Fill:* Less than 1 inch.
- A sliding coefficient of friction between the shallow foundations and native soil of 0.35 may be used.

Differential settlement can occur when two different foundations exert different bearing pressures on the soil. The magnitude of the differential settlement depends on the foundation pressure difference. Or, differential settlement can occur due to differences in the soil resistance to the foundation pressure. Footing foundations are not recommended to bear on both *Structural Fill* and bedrock to prevent differential settlement. Differential settlement is anticipated to be less than ½ inch.

5.3 Concrete Slab Design and Construction Considerations

The following recommendations should be considered to be the minimum design requirements. The structural engineer's design supersedes these recommendations. A structural engineer should design concrete slabs supporting more than 200 pounds per square foot.

- The concrete slab should be a minimum of four inches thick.
- The slab reinforcement should not be less than No. 3 rebar, 18 inches in the center in both directions, and constructed in the middle of the slab.
- The modulus of subgrade support is recommended to be 150 pounds per square inch per inch (pci).
- The slab should be supported with inches of compacted *Concrete Slab Cushion* soil in accordance with Section 5.1.

Vapor transmission through the concrete slabs may damage moisture sensitive floor coverings. The design and ownership team should carefully consider design publication *Guide to Concrete Floor and Slab Construction* (ACI, 2015) before ommiting a vapor retarded under the slab. The design and ownership team may consider omitting a vapor retarder under the slab based on lack of clay in the native soil, depth to groundwater, usage of *Concrete Slab Cushion*, and no proposed moisture sensitive floor coverings. If a moisture retarder is used, it should meet the requirements of ASTM E1643: *Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*.

Concrete slabs can crack because of numerous reasons. The following considerations should be mitigated during construction to reduce the risk of the concrete slabs cracking.

- The concrete mix design can be altered based on the ambient temperature, aggregate moisture content, anticipated time in the mix truck, and finishing methods. A poorly designed mix that does not incorporate these factors can cause concrete slabs to crack.
- The contractor's means and methods can cause concrete slabs to crack including improper placement of rebar support, improper crack control joints, improper curing methods or poor finishing techniques, and placing concrete during cold or hot weather.

5.4 Exterior Slabs

The silty sands and silts at the site are considered to be moderately to highly frost-susceptible. If these soils become saturated and freeze, heave may occur. One way to reduce the potential for heave is to remove any frost-susceptible soil down to bottom-of-footing grade or to a maximum depth of 3 feet, whichever is less, and replace with non-frost-susceptible sand or gravel. Sand or sandy gravel having less than 5 percent of the particles by weight passing a 200 sieve is considered to be non-frost-susceptible.

5.5 Seismicity and Liquefaction

The proposed site is designated a **Site Class D**. The following table presents seismicity coefficients referencing the IBC 2015 code.

Table 5.4.A Seismic Design Parameters

0.2 Second MCE Spectral Response Acceleration	S_s	0.330
0.2 Second MCE Spectral Response Acceleration	S_1	0.115
1.0 Second MCE Spectral Response Acceleration	S_{DS}	0.338
1.0 Second MCE Spectral Response Acceleration	S_{D1}	0.179
Design Peak Ground Acceleration	PGA_M	0.216

Latitude: 47.619941

Longitude: -117.43970

There is a low potential for liquefaction based on the *Liquefaction Susceptibility Map of Spokane County, Washington*.

5.6 Lateral Earth Pressure Design

The following table provides equivalent fluid pressures recommended to be used by the structural engineer to design retaining or basement walls.

Table 5.5.A Seismic Design Parameters

Equivalent Fluid Pressure Designation	Unit Weight (PCF)
Active Equivalent Fluid Pressure	40
At-rest Equivalent Fluid Pressure	60
Passive Equivalent Fluid Pressure	250

Concrete basement walls that are fully restrained should be designed for at-rest equivalent fluid pressure. Flexible walls or concrete walls that are allowed to crack may be designed for the active equivalent fluid pressure. Soil that is preventing a retaining wall or foundation wall from sliding may be analyzed with the passive equivalent fluid pressure.

5.7 Drainage and Stormwater Infiltration Recommendations

The following recommendations should be used by the civil engineer to design bio-infiltration swales, drywell structures, or infiltration galleries:

- The depth to a restrictive layer is highly variable across the site.
- Based on the test pits, drywells would be suitable for the proposed swales located near TP-18, TP-20, TP-21, and TP-22. Low-profile drywells could be considered for the swale located near TP-14. Furthermore, drainage areas could be repositioned such that they are located in areas of the site containing free-draining soils at depth (sands classified as SP).
- Swales and drywells should be located 10-feet from the edge of buildings and concrete hardscapes to minimize the effects of infiltration.
- Hardscaping and landscaping should be sloped at least five percent away from buildings or settlement prone site improvements.

Subsurface infiltration using bio-infiltration swales or infiltration galleries may be designed with a hydraulic conductivity of 15 inches per hour should be used for infiltration design. The following recommendations are provided in the *Stormwater Management Manual for Eastern Washington* (Stormwater, 2019).

- All biofiltration swales should be sized to empty within 72 hours of an infiltration event.

- The soil has a medium to high treatment capacity based on Table 5.6.1 of the *Stormwater Management Manual for Eastern* (Stormwater, 2004).

Single and double-depth drywells may utilize a design outflow rate of 0.14 and 0.23 cubic feet per second, respectively. Higher drywell outflow recommendations may be provided once the final drywell locations are determined. Drywells should only be placed in the free-draining sands encountered at the site. The drywells must conform to the jurisdiction specification in which they are constructed. Low profile drywells could be considered for swales in areas with shallow limiting layers.

Foundation drains should not be omitted based on the drainage characteristics of the native soils. In addition, all basement walls are recommended to have a waterproofing membrane to help prevent water infiltration. A plate in Appendix F: *Basement Wall Drainage Detail* provides recommendations for helping mitigate water seepage through the basement wall.

5.8 Pavement Section Design Recommendations

The following pavement design recommendations are provided for 3.0 inches of asphaltic-concrete pavement over 6.0 inches of *Crushed Surfacing*. Subgrade areas that are predominately silt should be over-excavated by 6.0 inches and replaced with *Structural Fill* or *Crushed Surfacing.* Alternative to over-excavation, a geotextile separation (Mirifi H2Ri or an approved equivalent) may be installed over prepared silt subgrade. The Structural Number for this pavement section is 1.91 and the number of passes with an equivalent single-axle load (ESAL) is 50,000. The following design parameters were used in the analysis:

- Subgrade support modulus, M_r: 8,000 psi (assuming the subgrade has been scarified and re-compacted to a minimum of 95 percent of the modified Proctor).
- Reliability percent: 80%.
- Standard deviation: 0.45.
- Asphaltic-concrete layer coefficient, a1: 0.42.
- Aggregate base layer coefficient, a2: 0.12.
- Drainage coefficient of aggregate base, m: 0.90.

Paving operations can be observed and tested by Liberty Geotech or by the asphalt paving company. Asphalt should be compacted to 92 percent of the Rice density. Liberty Geotech can provide additional traffic analysis or life-cycle cost analysis upon request.

6.0 DESIGN REVIEW AND CONSTRUCTION OBSERVATIONS

6.1 Geotechnical Consultant versus Geotechnical Inspector

The owner chooses to retain Liberty Geotech as either the Geotechnical Consultant or Geotechnical Inspector. Liberty Geotech provides recommendations and suggestions to the project team as the Geotechnical Consultant. In a Consultant role, Liberty Geotech has no

liability for settlement associated with *Structural Fill* placement and compaction, moisture or seepage through retaining walls or concrete slabs, site drainage, or cracks in the interior or exterior concrete flatwork. Liberty Geotech's liability is limited to the authorized proposal dated August 19, 2020. As a geotechnical inspector, Liberty Geotech provides inspections and soil testing during construction.

Liberty Geotech has been retained as a Geotechnical Consultant for the Latah Glen. At the owner's request Liberty Geotech can provide a proposal to perform additional geotechnical inspections for the project. This report cannot be relied upon for geotechnical recommendations if Liberty Geotech is not retained to observe and confirm the soil conditions as recommended in this report.

6.2 Revisions and Transfer of Geotechnical Recommendations

Liberty Geotech should be notified to update recommendations if the proposed development changes or subsurface soil or groundwater conditions vary from those described in this report. This report cannot be relied upon by property owners adjacent to this property without confirmation of their specific site soil conditions. Also, the report recommendations cannot be transferred to other business entities or subsequent property owners without written authorization. No warranty or certification of construction is provided with this report. It is recommended that Liberty Geotech is retained to provide design review of the proposed construction and be the Geotechnical Consultant during construction in order to continue to be the Geotechnical Engineer of Record.

7.0 REFERENCES

ACI Committee 302. "Guide for Concrete Floor and Slab Construction." ACI 302.1R-15. American Concrete Institute, P.O. Box 19150 Redford Station, Detroit, Michigan 48219.

Derkey, Robert E., Hamilton, Michael M., Stradling, Dale F., 2004. Geologic Map of the Spokane SW 7.5-minute Quadrangle, Spokane County, Washington. Washington Division of Geology and Earth Resources.

OSHPD. "Seismic Design Maps."Accessed September 27, 2020. https://seismicmaps.org/

Palmer, Stephen P., Magsino, Sammantha L., Bilderback, Eric L., *et. al.,* 2004. "Liquefaction Susceptibility Map of Yakima County, Washington." Washington State Department of Natural Resources.

United States Department of Agriculture, Natural Resources Conservation Service. "Web Soil Survey." Accessed September 27, 2020. http://websoilsurvey.nrcs.usda.gov/

Washington State Department of Ecology. "Stormwater Management Manual for Eastern Washington." February 2019. Publication Number 18-10-044.

Washington State Department of Ecology. “Washington State Well Report Viewer.” Accessed September 27, 2020. fortress.wa.gov/ecy/wellconstruction/map/WCLSWebMap/

APPENDIX A

Exploration Site Plan



VICINITY MAP
(GOOGLE MAPPING SERVICE™)

APPROXIMATE SCALE - FEET

0 75 150

LEGEND

TP-1 TEST PIT LOCATION

IMAGE SOURCE: GOOGLE EARTH, PARTIAL OVERLAY OF LATAH GLEN, SITE PLAN, STORHAUG, DATED JULY 15, 2020

EXPLORATION SITE PLAN

LATAH GLEN

PARCEL NOS: 25364.0001 AND 25361.0004

SPOKANE, WASHINGTON

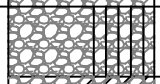
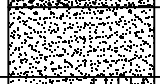
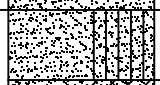
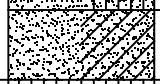
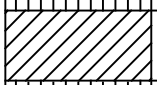
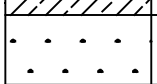
LIBERTY GEOTECH

JOB NO. 20211	SEPTEMBER 30, 2020	PLATE 1

APPENDIX B

Subsurface Exploration Logs

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS GROUP SYMBOL	SOIL DECRIPTION
COURSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	WELL-GRADED GRAVEL
				GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES		GM	SILTY GRAVEL SILTY GRAVEL WITH SAND
				GC	CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
	SAND	CLEAN SAND		SW	WELL-GRADED SAND
				SP	POORLY-GRADED SAND
		SAND WITH FINES		SM	SILTY SAND
				SC	CLAYEY SAND
	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	INELASTIC SILT
				CL	LEAN CLAY
				OL	ORGANIC SILT
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	ELASTIC SILT
				CH	FAT CLAY
				OH	ORGANIC CLAY
				PT	PEAT

ABBREVATIONS
BGS - BELOW EXISTING GROUND SURFACE
N.E. - NOT ENCOUNTERED

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Poorly-Graded Sand with Silt (SP-SM) Loose, Brown, Dry	1934	0								
ALLUVIUM - Sandy Silt (ML) Firm, Brown, Dry	1930	5								cobbles and boulders up to 16"
ALLUVIUM - Silty Sand (SM) Medium Dense, Brown, Moist	1925	10								

Test pit terminated at 10-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 1		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: ne	Logged By: MK		Sheet: 1 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Silty Sand (SM) Loose, Light Brown, Dry	1920	0								
ALLUVIUM - Sandy Silt (ML) Firm, Light Brown, Dry	1915	5		1-Gallon Bag		57		8		
ALLUVIUM - Silty Sand (SM) Dense, Brown, Moist	1910	10		1-Gallon Bag		33		8		

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 2		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: ne	Logged By: MK		Sheet: 2 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Dense, Brown, Dry	1910	5		1-Gallon Bag						
	1905	10								
	1900	15								

Test pit terminated at 15-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 3		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 3 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1910	0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Light Brown, Dry	1905	5		1-Gallon Bag		16		13		
LACUSTRINE - Sandy Silt (ML) Firm, Light Brown, Moist	1900	10		1-Gallon Bag	4.5+	63		29		
BEDROCK - Poorly-Graded Gravel (GP) Hard, Brown, Moist										

Test pit terminated at 13-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 4		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 4 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt (SP-SM) Loose, Light Brown, Dry	1902	0								
EOLIAN - Sandy Silt (ML) Hard, Brown, Dry	1900	5		1-Gallon Bag						
ALLUVIUM - Silty Sand with Gravel (SM) Dense, Dark Brown, Moist	1895			1-Gallon Bag						
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Dark Brown, Moist		10								

Test pit terminated at 11-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 5		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 5 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1865	0								
ALLUVIUM - Silty Sand (SM) Loose, Brown, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Dense, Dark Brown, Moist	1860	10		1-Gallon Bag		1		4.8		angular cobbles

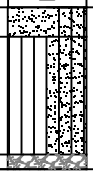
Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 6		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 6 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1892	0								
BEDROCK - Poorly-Graded Gravel (GP) Dense, Light Brown, Dry										

Test pit terminated at 4-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 7		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 7 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1864	0								
LACUSTRINE - Sandy Silt (ML) Soft, Light Brown, Dry										
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Dry										

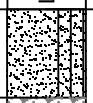
Test pit terminated at 2.75-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 8		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 8 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
ALLUVIUM - Silty Sand (SM) Loose, Light Brown, Dry	1855	0		1-Gallon Bag						
LACUSTRINE - Sandy Silt (ML) Very Hard, Brown, Dry	1850	5		1-Gallon Bag 1-Gallon Bag	4.5+					
LACUSTRINE - Sandy Silt (ML) Very Hard, Dark Brown, Moist					4.5+					
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Moist				1-Gallon Bag	4.5+					

Test pit terminated at 9-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 9		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 9 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1880	0								
BEDROCK - Poorly-Graded Gravel (GP) Very Hard, Brown, Dry										

Test pit terminated at 2.5-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 10		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 10of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt with Gravel (ML) Very Soft, Light Brown, Dry	1850	0								
ALLUVIUM - Silty Sand (SM) Loose, Tan, Dry	1845	5		1-Gallon Bag						
ALLUVIUM - Sandy Silt (ML) Firm, Tan, Dry				1-Gallon Bag		59		32		
ALLUVIUM - Silty Sand (SM) Dense, Light Brown, Dry	1840	10		1-Gallon Bag		33		18		

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 11		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 11of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt with Gravel (ML) Very Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1845									
ALLUVIUM - Silty Sand (SM) Medium Dense, Brown, Moist		5								
	1840									
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense Gray, Moist		10		1-Gallon Bag		4		6		
	1835									

Test pit terminated at 14-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 12		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 12of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silt (ML) Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1830	5								
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Dark Brown, Moist										

Test pit terminated at 8-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 13		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 13of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1860	0								angular basalt cobbles
UNDOCUMENTED FILL - Silty Sand (SM) Medium Dense, Tan, Dry										andgular cobbels from builidng the road.
ALLUVIUM - Poorly-Graded Sand (SP) Dense, Dark Brown, Moist	1855	5								angular cobbles
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Dark Brown, Moist		10								

Test pit terminated at 10-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 14		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 14of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1855	0								angular basalt cobbles, old car parts
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Dark Brown, Dense	1850									angular cobbles

Test pit terminated at 9-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 15		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 15of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1850	0								
UNDOCUMENTED FILL - Silty Gravel with Sand (GM) Loose, Tan, Dry										cobble and boulders up to 30"
	1845	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Medium Dense, Gray, Moist										
	1840	10								

Test pit terminated at 11-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 16		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 16of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
ALLUVIUM - Sandy Silt (ML) Very Soft, Light Brown, Dry		0		1-Gallon Bag		32		4		
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1830	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Gray, Medium Dense	1825	10								angular cobbles

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 17		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 17of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry	1825	0								
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry		5								cobbles and boulders up to 36"/ concrete blocks
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Light Gray, Moist	1820	10								
	1815									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 18		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 18of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1850	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Silt (SP-SM) Medium Dense, Dark Brown, Dry	1845	10		1-Gallon Bag		7		3		
	1840									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 19		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 19of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1845	0								Garbage and road building material
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1840	10								
	1835									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 20		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 20of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Soft, Light Brown, Dry	1845	0								
ALLUVIUM - Silty Sand (SM) Dense, Tan, Dry	1840	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1835	10								

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 21		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 21of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Very Soft, Light Brown, Dry	1835	0								
ALLUVIUM - Silty Sand (SM) Loose, Tan, Dry	1830	5								
		10								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1825									cobbles

Test pit terminated at 14-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 22		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 22of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Gray, Dry	1825	0								
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry		5		1-Gallon Bag						cobbles and boulders up to 20" and garbage
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Light Gray, Dry	1820	10		1-Gallon Bag		1		4		
	1815									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 23		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 23of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Silty Sand with Gravel (SM) Loose, Light Gray, Dry		0								
UNDOCUMENTED FILL - Silt (ML) Loose, Light Gray, Dry	1810	5		5-Gallon Bulk						boulders up to 20", Very ashy, Small pieces of charcoal
ALLUVIUM - Silty Sand with Gravel (SM) Loose, Brown, Dry	1805			1-Gallon Bag		18		4		boulders up to 20"
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Dry										Basalt bedrock

Test pit terminated at 9-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 24		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 24of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Loose, Dark Brown, Dry ALLUVIUM - Sandy Silt (ML) Soft, Light Brown, Dry										With roots With roots and cobbles

Test pit terminated at 3.5-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 25		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 1 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry	1815									With cobbles, boulders, and debris
UNDOCUMENTED FILL - Poorly-Graded Sand with Gravel (SP) Loose, Dark Gray, Dry	1810	5								With cobbles and boulders
ALLUVIUM - Clayey Sand (SC) Loose, Brown, Moist										
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	10								

Test pit terminated at 13.5-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 26		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 2 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry		0								With cobbles and debris
GLACIAL FLOOD DEPOSITS - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1810	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	10		1-Gallon Bag		2		4		

Test pit terminated at 12-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 27		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 3 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry	1810									With cobbles and debris
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	5								With cobbles and boulders
		10								

Test pit terminated at 10-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 28		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 4 of 4

APPENDIX C

Laboratory Testing Results

ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

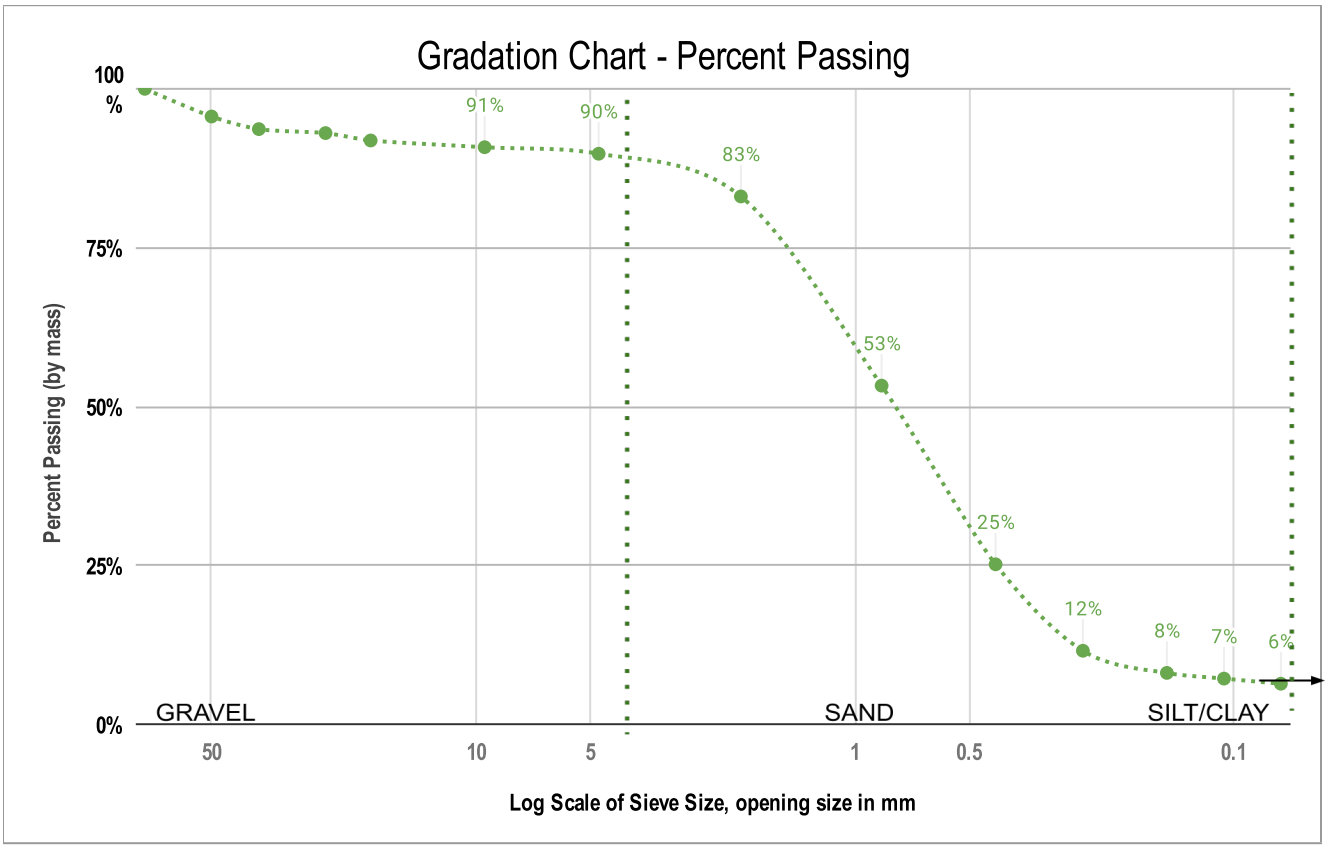
Project: Latah Glen **Test No.:** 20211.2 **Testing Date:** 9/21/2020

Job No: 20211 **Sample Location:** TP-23@3.5' **Laboratory Technician:** James Swearingen

Method Used: Method A Max Particle Size: 3/8"

Total Sample Mass: 25,336 grams Minimum Sample Size: 165 grams

Drying Method: Oven Dry



Notes:

Excluded Material: None.

Additional Results

Soil Classification: Poorly-Graded Sand with Silt

Percent Moisture: 2.7%

%Gravel: 10% **%Sand:** 83% **%Fines:** 6%

Coefficient of Uniformity, Cu: 5.0

Coefficient of Curvature, Cc: 1.3

ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

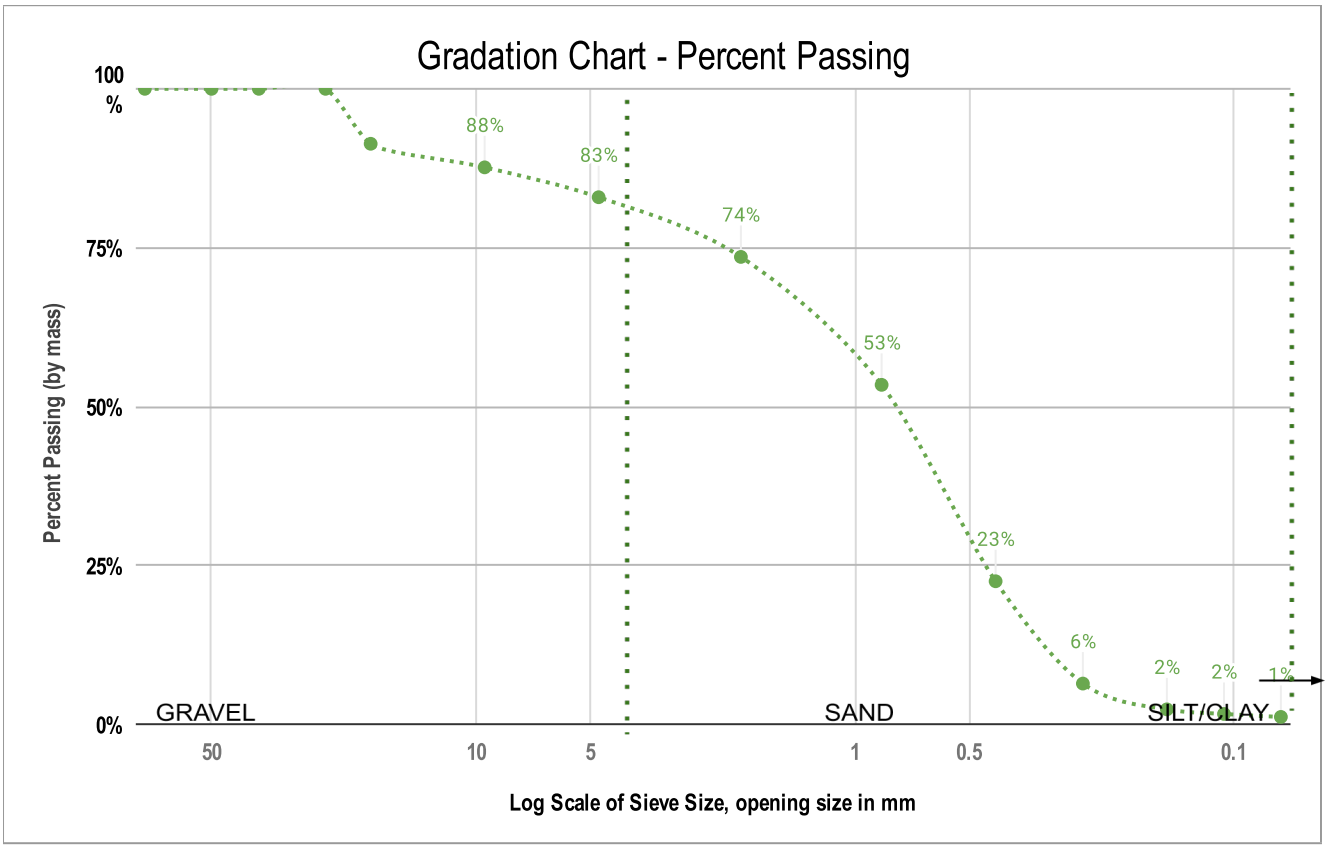
Project: Latah Glenn **Test No.:** 20211.4 **Testing Date:** 9/11/2020

Job No: 20211 **Sample Location:** TP-6@12' **Laboratory Technician:** James Swearingen

Method Used: Method A Max Particle Size: 3/4"

Total Sample Mass: 1,521 grams Minimum Sample Size: 1,300 grams

Drying Method: Oven Dry



Notes:

Excluded Material: None.

Additional Results

Soil Classification: Well-Graded Sand with Gravel

Percent Moisture: 4.8%

%Gravel: 17% **%Sand:** 82% **%Fines:** 1%

Coefficient of Uniformity, Cu: 5.0

Coefficient of Curvature, Cc: 0.5

APPENDIX D

Photo Log

Appendix E: Photo Log



PHOTO 1: TP-1



PHOTO 2: TP-2



PHOTO 3: TP-3



PHOTO 4: TP-4



PHOTO 5: TP-5

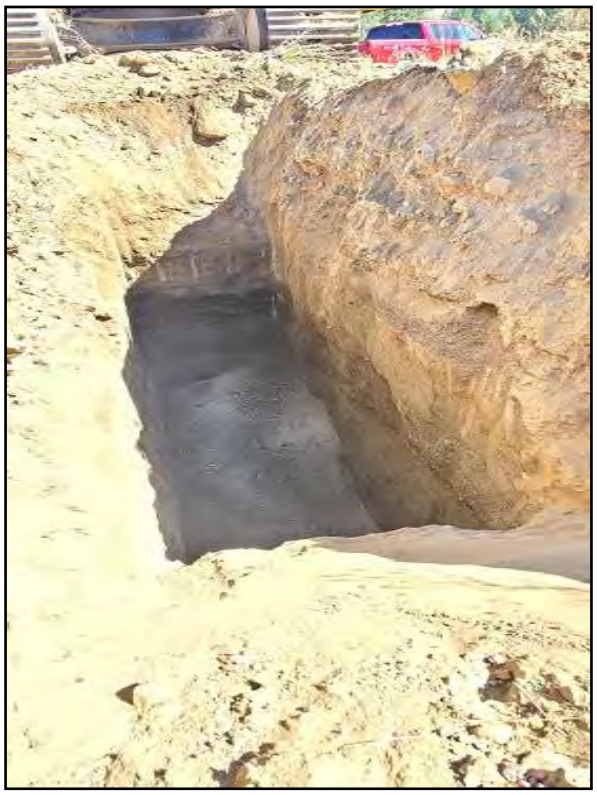


PHOTO 6: TP-6



PHOTO 7: TP-7



PHOTO 8: TP-8

Appendix E: Photo Log

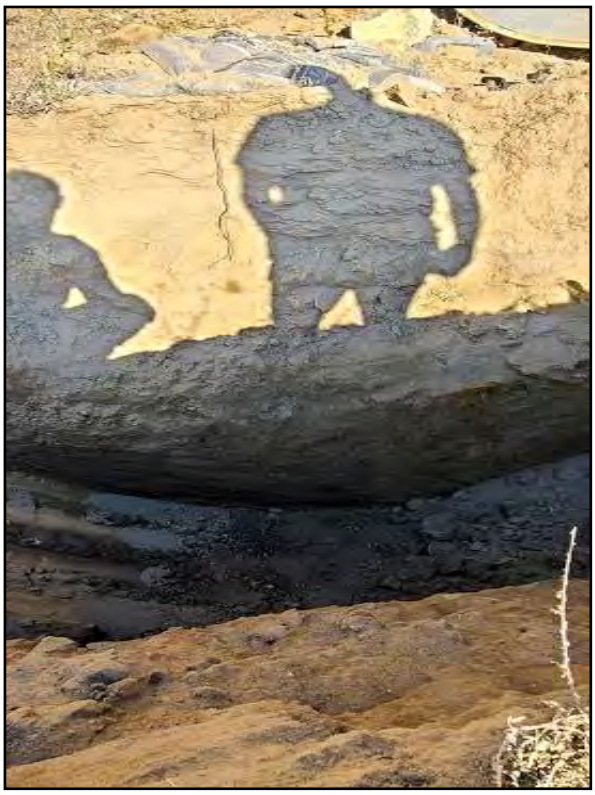


PHOTO 9: TP-9



PHOTO 10: TP-10



PHOTO 11: TP-11



PHOTO 12: TP-12



PHOTO 13: TP-13



PHOTO 14: TP-14



PHOTO 15: TP-15



PHOTO 16: TP-16



PHOTO 17: TP-17



PHOTO 18: TP-18



PHOTO 19: TP-19



PHOTO 20: TP-20

Appendix E: Photo Log



PHOTO 21: TP-21

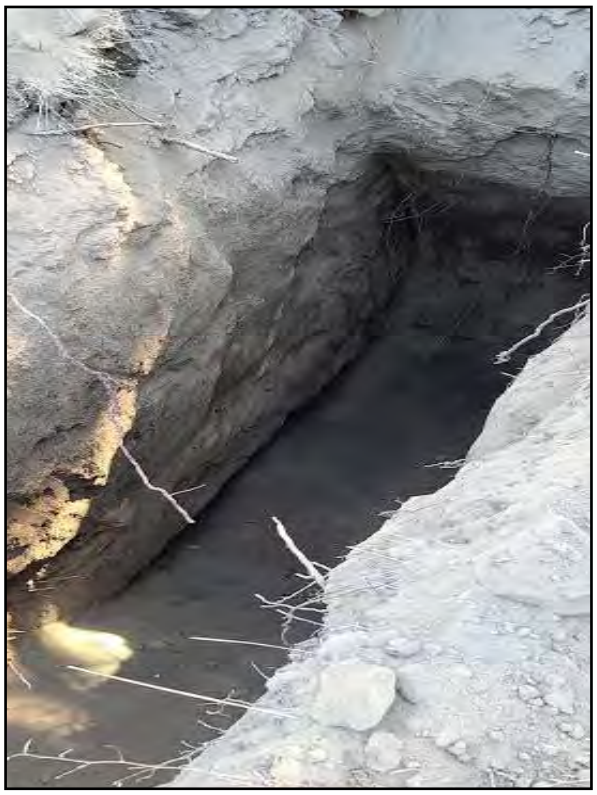


PHOTO 22: TP-22



PHOTO 23: TP-23



PHOTO 24: TP-24



PHOTO 25: TP-25



PHOTO 26: TP-26



PHOTO 27: TP-27

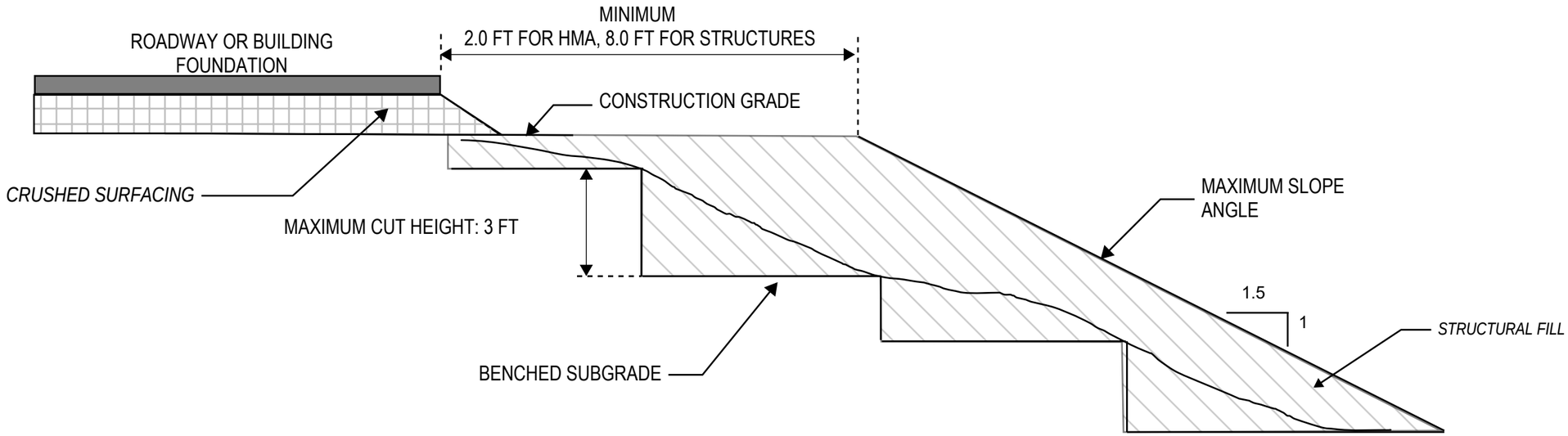


PHOTO 28: TP-28

APPENDIX E

BENCHING AND SLOPE FILL REQUIREMENTS

BENCHING AND CONSTRUCTION REQUIREMENTS FOR SLOPE CONSTRUCTION



GENERAL NOTES

1. THE SLOPE BENCHING SHOULD BE CONSTRUCTED ON SUBGRADE SURFACE THAT HAVE BEEN PREPARED IN ACCORDANCE WITH THE *SITE STRIPPING* OF THE GEOTECHNICAL REPORT. THE SUBGRADE SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF THE FIRST LIFT.
2. ALL SLOPING SURFACES SHOULD BE BENCHED WITH A MAXIMUM VERTICAL CUT OF 3 FEET.
3. ALL LOOSE LIFT HEIGHTS SHOULD BE LIMITED TO 12 INCHES PRIOR TO COMPACTION
4. REFER TO THE GEOTECH REPORT FOR ADDITIONAL DESIGN RECOMMENDATIONS AND CONSTRUCTION RECOMMENDATIONS.

BENCHING AND SLOPE FILL REQUIREMENTS
LATAH GLEN
PARCEL NOS: 25364.0001 AND 25361.0004
SPOKANE, WASHINGTON

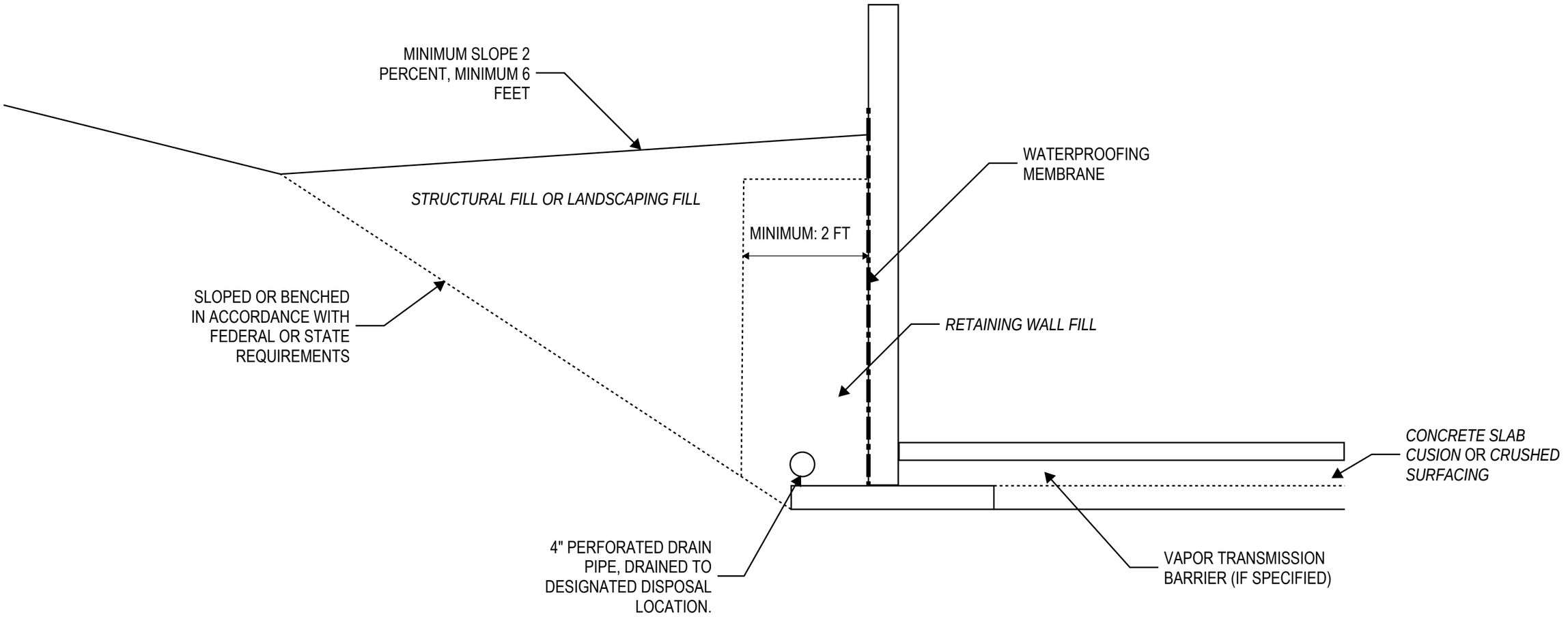
LIBERTY GEOTECH

JOB NO. 20211	SEPTEMBER 30, 2020	PLATE 2

APPENDIX F

BASEMENT WALL DRAINAGE
DETAIL

BASEMENT WALL DRAINAGE DETAIL



GENERAL NOTES

1. ALL FILL SHOULD BE PLACED AND COMPACTED IN ACCORDANCE WITH THE GEOTECH REPORT.
2. DRAIN PIPE SHOULD BE PLACED BELOW INTERIOR SLAB ELEVATION.
3. ALL LOOSE LIFT HEIGHTS SHOULD BE LIMITED TO 12 INCHES PRIOR TO COMPACTION
4. REFER TO THE GEOTECH REPORT FOR ADDITIONAL DESIGN RECOMMENDATIONS AND CONSTRUCTION RECOMMENDATIONS.

BASEMENT WALL DRAINAGE DETAIL

LATAH GLEN

PARCEL NOS: 25364.0001 AND 25361.0004

SPOKANE, WASHINGTON

LIBERTY GEOTECH

JOB NO. 20211	SEPTEMBER 30, 2020	PLATE 3

Exhibit 6.c. - Geotechnical Engineering Report Addendum

LIBERTY GEOTECH

3012 N Sullivan Rd, Suite D
Spokane Valley, Washington 99216
(509) 255-3736

May 18, 2021
Project Number: 20211

William Nascimento
Sycamore Group, LLC
10 Sycamore Canyon Drive
Dove Canyon, California 92679

Subject: Geohazard Evaluation and Mitigation Letter
Latah Glen
Parcel Numbers: 25364.0001 and 25361.0004
Spokane, Washington

Dear Mr. Nascimento:

Liberty Geotech has performed a Geohazard Evaluation, as required by the City of Spokane and outlined in Spokane Municipal Code, Section 17E.040. This letter is an addendum to the *Geotechnical Engineering Report* provided by Liberty Geotech and dated September 30, 2020. The geotech report in combination with this letter should be considered a *Geohazard Evaluation and Mitigation Plan.* The following geologic conditions inherent in the site's geologic setting are defined as a potentially hazardous to life, property, and critical area functions:

- Any area with a slope of thirty percent or greater,
- Areas of the Latah formation, and
- Areas of uncompacted fill.

Slopes should be benched in accordance with Appendix F: *Benching and Slope Fill Construction*, in the geotech report. The Latah formation was investigated during subsurface exploration. No clay lenses were observed. The soil material observed during exploration is anticipated to be stable at the cut and fill slopes indicated in the geotech report. All *Structural Fill* should conform to Table 5.1.2.A and be compacted as recommended in the geotech report to minimize the potential for slope instability or consolidation.

Liberty Geotech should be retained to observe subgrade soil conditions conform to the observations in the geotech report. The undersigned may be contacted at (509) 213-0400, extension 2 if there are any questions or concerns with this letter.

Respectfully,



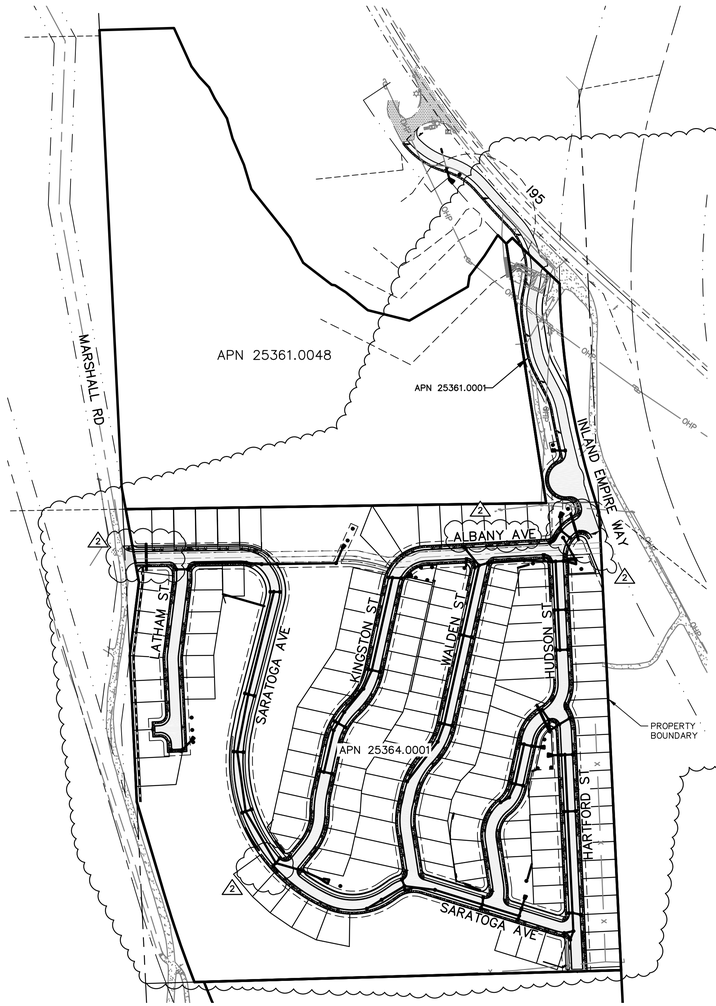
Ben Vance, P.E.
Liberty Geotechnical Engineering, Inc.

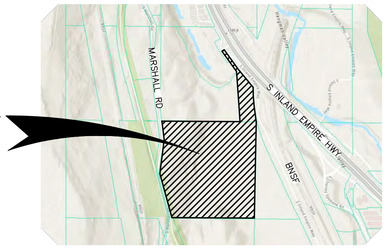
Exhibit 6.d. - Proposed Construction Improvement Documents (permit P2301069PDEV)

CONSTRUCTION IMPROVEMENTS

LATAH GLEN RESIDENTIAL COMMUNITY

SECTION 36, TOWNSHIP 25 NORTH, RANGE 42 EAST, W.M.,
CITY OF SPOKANE, SPOKANE COUNTY, WASHINGTON





VICINITY MAP

STREET AND DRAINAGE SHEET INDEX

SHEET NO. 1	–	ROAD & DRAINAGE COVER AND INDEX
SHEET NO. 1A	–	PHASING PLAN
SHEET NO. 2	–	EROSION & SEDIMENT CONTROL PLAN
SHEET NO. 3A	–	EROSION & SEDIMENT CONTROL DETAILS
SHEET NO. 3B	–	EROSION & SEDIMENT CONTROL DETAILS
SHEET NO. 4	–	DETAILED GRADING PLAN
SHEET NO. 5	–	DETAILED GRADING PLAN
SHEET NO. 6	–	INLAND EMPIRE WAY ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 7	–	SARATOGA AVE ROAD & DRAINAGE PLAN AND PROFILE STA 26+00 TO STA 37+00
SHEET NO. 8	–	SARATOGA AVE ROAD & DRAINAGE PLAN AND PROFILE STA 37+00 TO STA 47+92
SHEET NO. 9	–	LATHAM ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 10	–	KINGSTON ST & ALBANY AVE ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 11	–	WALDEN ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 12	–	HUDSON ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 13	–	HARTFORD ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 14	–	STREET DETAILS
SHEET NO. 15	–	INTERSECTION DETAILS
SHEET NO. 16	–	INTERSECTION DETAILS
SHEET NO. 17	–	SWALE DETAILS
SHEET NO. 18	–	SWALE DETAILS
SHEET NO. 19	–	NOTES
SHEET NO. 20	–	STANDARD DETAILS
SHEET NO. 20A	–	STANDARD DETAILS
SHEET NO. 21	–	RETAINING WALL DETAILS
SHEET NO. 22	–	RETAINING WALL DETAILS

SANITARY SEWER SHEET INDEX

SHEET NO. 1	–	SANITARY SEWER COVER
SHEET NO. 2	–	INLAND EMPIRE WAY SANITARY SEWER PLAN & PROFILE
SHEET NO. 3	–	SARATOGA AVE SANITARY SEWER PLAN AND PROFILE STA 26+00 TO STA 38+00
SHEET NO. 4	–	SARATOGA AVE SANITARY SEWER PLAN AND PROFILE STA 38+00 TO STA 47+92
SHEET NO. 5	–	LATHAM ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 6	–	KINGSTON ST & ALBANY AVE SANITARY SEWER PLAN & PROFILE
SHEET NO. 7	–	WALDEN ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 8	–	HUDSON ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 9	–	HARTFORD ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 10	–	NORTH SEWER MAIN CONNECTION PLAN & PROFILE
SHEET NO. 11	–	SEWER DETAILS

WATER SHEET INDEX

SHEET NO. 1	–	WATERLINE COVER
SHEET NO. 2	–	SARATOGA AVE WATERLINE PLAN AND PROFILE STA 26+00 TO STA 38+00
SHEET NO. 3	–	SARATOGA AVE WATERLINE PLAN AND PROFILE STA 38+00 TO STA 47+92
SHEET NO. 4	–	LATHAM ST WATERLINE PLAN & PROFILE
SHEET NO. 5	–	KINGSTON ST & ALBANY AVE WATERLINE PLAN & PROFILE
SHEET NO. 6	–	WALDEN ST WATERLINE PLAN & PROFILE
SHEET NO. 7	–	HUDSON ST WATERLINE PLAN & PROFILE
SHEET NO. 8	–	HARTFORD ST WATERLINE PLAN & PROFILE
SHEET NO. 9	–	DOMESTIC WATER DETAILS

SHEET INDEX

SHEET NO. 1	–	LA–0.0 LANDSCAPE COVER
SHEET NO. 2	–	LA–1.0 LANDSCAPE PLAN – NORTH HALF
SHEET NO. 3	–	LA–1.1 LANDSCAPE PLAN – SOUTH HALF
SHEET NO. 4	–	LA–2.0 BLOW–UP PLANS OF BUFFERS
SHEET NO. 5	–	LA–2.1 BLOW–UP PLANS OF SHRUB AREAS
SHEET NO. 6	–	LA–3.0 STANDARD DETAIL AND NOTES
SHEET NO. 7	–	CITY OF SPOKANE DETAILS AND NOTES

GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.

storhäug
civil engineering | planning
landscape architecture | surveying
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

SE#19–342

PRELIMINARY
NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DATE: 6/11/24

0
0

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19–342	GENERAL REVISION	3
10/10/24	LC	19–342	GENERAL REVISION	2
4/10/24	LC	19–342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

100' 0' 100' 200'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

SEGMENT LIMITS:

COVER & INDEX

APN 25361.0001 & 25364.0001

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	STREET
PROJECT NO.	PLAN NO.
2023517 2023518 2023519 2023520	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

STREET AND DRAINAGE IMPROVEMENTS

LATAH GLEN RESIDENTIAL COMMUNITY

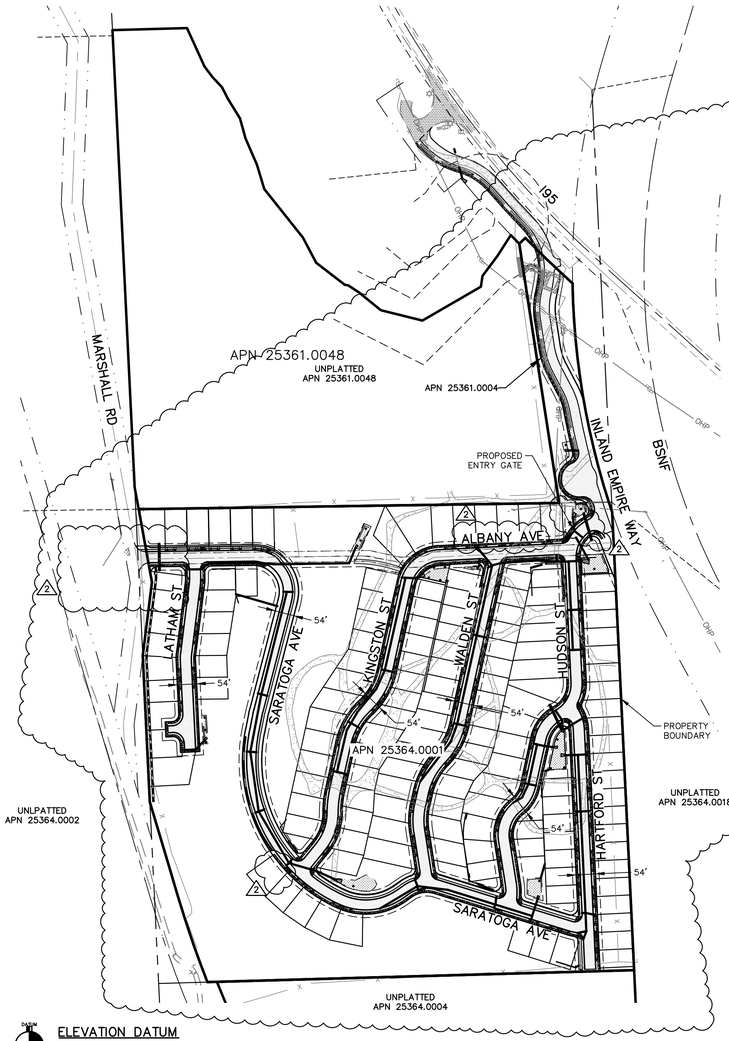
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CITY OF SPOKANE, SPOKANE COUNTY, WASHINGTON

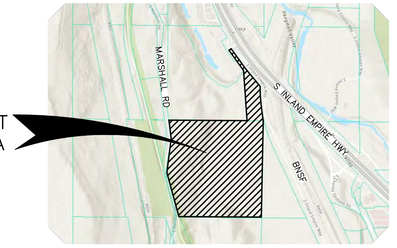
GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL NOTIFY THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT LEAST 48 HOURS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITY, OR CONSTRUCTION ON ANY AND ALL SEWER AND WATER IMPROVEMENTS.
2. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE CITY OF SPOKANE AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
3. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB ON-SITE AT ALL TIMES.
4. IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED BY THE CONTRACTOR, HIS SUBCONTRACTORS, OR OTHER AFFECTED PARTIES, WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY.
5. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH M.U.T.C.D. TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY (CITY, COUNTY, OR STATE) FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING, THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT AT THE CONSTRUCTION SITE, AND MADE AVAILABLE TO THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT ALL TIMES.
8. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION, PRIOR TO ANY OTHER GROUND-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREAS ARE STABILIZED WITH HARD SURFACE OR LANDSCAPING.
9. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY IS SUBJECT TO THE JURISDICTION OF SPOKANE COUNTY.
10. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT, CONSTRUCTION EQUIPMENT AND ANY OTHER ASSOCIATED EQUIPMENT SHALL GENERALLY BE LIMITED TO THE PERIOD BETWEEN 7:00 A.M. AND 10:00 P.M. WEEKDAYS, 9:00AM AND 10:00PM WEEKENDS, UNLESS OTHERWISE APPROVED BY THE COUNTY.
11. NO REVISIONS SHALL BE MADE TO THESE PLANS WITHOUT THE APPROVAL OF THE CITY ENGINEER AND NOTIFICATION OF THE ENGINEER OF RECORD.
12. STATIONING AND OFFSET IS BASED ON STATIONING FOR THE REFERENCED STREET ALIGNMENT.
13. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEED PRIOR TO CONSTRUCTION. COORDINATE WITH APPLICABLE UTILITY COMPANY.
14. RESTRAINTS SHALL BE INSTALLED ON ALL PRESSURE PIPELINES IN ACCORDANCE WITH CITY OF SPOKANE STANDARDS. REFER TO RESTRAINED JOINT TABLE ON THESE PLANS.
15. INSTALL TREE PROTECTION AT THE WEST EDGE OF THIS PROPERTY TO PROTECT ALL EXISTING TREES IN THE PUBLIC RIGHT OF WAY ALONG MARSHALL ROAD PER CITY OF SPOKANE TREE PROTECTION SPECIFICATIONS AND DETAIL PRIOR TO ANY MORE EXCAVATION WORK FOR THE WALL ALONG THIS AREA. FENCING TO REMAIN INTACT THROUGHOUT ALL PHASES OF DEMOLITION AND CONSTRUCTION.
16. THE GENERAL CONTRACTOR IS RESPONSIBLE TO ENSURE THE ABOVE REQUIREMENTS ARE MET. THE CITY MAY SEEK RESTITUTION AT TREBLE THE APPRAISED TREE VALUE FOR DAMAGES TO ANY TREES IN THE PUBLIC RIGHT OF WAY DUE TO CONSTRUCTION ACTIVITIES/EQUIPMENT AND FOR ANY RIGHT OF WAY TREES THAT ARE REMOVED WITHOUT OF PERMISSION FROM THE CITY OF SPOKANE.

STREET & STORM DRAINAGE NOTES

1. REFER TO CONSTRUCTION NOTES AND DETAILS SHOWN ON DETAIL SHEET.
2. REFER TO LANDSCAPE DOCUMENTS FOR ADDITIONAL INFORMATION REGARDING PLANTINGS, IRRIGATION SYSTEM, SITE FURNITURE, LANDSCAPE BERMS, STEPS, AND LANDSCAPE WALLS.
3. REFER TO ARCHITECTURAL DOCUMENTS FOR ADDITIONAL INFORMATION REGARDING ANY STEPS IN FINISH FLOOR, BASEMENT ELEVATION, AND EXTERIOR DOOR LOCATIONS. COORDINATE ARCHITECTURAL ELEVATIONS WITH SITE GRADING.
4. MAINTAIN AT LEAST 3 FEET OF COVER OVER STORM DRAIN PIPES, UNLESS DUCTILE IRON. FOR DUCTILE IRON MAINTAIN AT LEAST 1 FOOT OF COVER.
5. SPOT ELEVATIONS REPRESENT FINISH SURFACE GRADES.
6. LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES. CONTRACTOR TO PERFORM NECESSARY FIELD VERIFICATION, INCLUDING SUBSURFACE EXPLORATION, FOR ALL EXISTING CONDITIONS TO BE INCLUDED IN CONTRACTOR BID. ANY CONFLICTING UTILITIES SHALL BE RELOCATED PRIOR TO CONSTRUCTION OF PROPOSED IMPROVEMENTS.
7. ADJUST ALL EXISTING UTILITY COVERS TO FINISHED GRADE AS NECESSARY.
8. ALL MATERIALS, WORKMANSHIP, TESTING AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE WASHINGTON STATE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, THE CITY OF SPOKANE STANDARDS, AND THE CITY OF SPOKANE SPECIAL PROVISIONS FOR PRIVATE CONTRACTS.
9. ALL APPROVALS AND PERMITS REQUIRED BY THE CITY OF SPOKANE SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. AN OBSTRUCTION PERMIT IS REQUIRED FOR ALL WORK WITHIN THE CITY RIGHT-OF-WAY. IF APPLICABLE, A TRAFFIC CONTROL PLAN, (INCLUDING PEDESTRIAN TRAFFIC CONTROL FOR SIDEWALK CLOSURES) WILL BE REQUIRED WITH THE OBSTRUCTION PERMIT APPLICATION.
10. THE CONTRACTOR SHALL PLACE MARKING TAPE IN THE EXCAVATION TRENCH AT MID-DEPTH LOCATION FOR ALL UNDERGROUND SIDE SERVICE INSTALLATIONS FOR THE PURPOSE OF ALERTING ANY FUTURE EXCAVATION IN THE SPECIFIC AREA.
11. NO REVISIONS SHALL BE MADE TO THE PLANS WITHOUT APPROVAL FROM THE CITY OF SPOKANE AND THE DESIGN ENGINEER OF RECORD.
12. STORMWATER FACILITIES, INCLUDING DRYWELLS, CB'S, PIPES, AND INFILTRATION GALLERIES, MUST BE CONSTRUCTED UNDER SUPERVISION OF THE WASTEWATER MANAGEMENT DIVISION. STORMWATER TREATMENT FACILITIES (208 SWALES) SHALL BE INSPECTED PRIOR TO PLACEMENT OF TOPSOIL, PLANTINGS, OR GRASS. THE CONTRACTOR SHALL CONTACT THE WASTEWATER MAINTENANCE DIVISION OFFICE AT (509) 625-7905 OR (509) 625-7912 IN ORDER TO ARRANGE A MUTUALLY AGREEABLE INSPECTION SCHEDULE.
13. ALL SIDEWALKS, CURBS, AND DRIVEWAY APPROACHES ADJACENT TO THE PROPERTY WILL BE REVIEWED AT THE END OF THE PROJECT WHEN A CERTIFICATE OF OCCUPANCY IS REQUESTED. IF ANY ARE FOUND TO BE BROKEN, HEAVED, SUNKEN, OR MISSING, THEY MUST BE REPAIRED/REPLACED WHETHER THE DAMAGE WAS EXISTING OR CAUSED BY CONSTRUCTION. IF YOU WOULD LIKE A SIDEWALK INSPECTION PRIOR TO REQUESTING OCCUPANCY, PLEASE CONTACT THE CITY OF SPOKANE AT (509) 625-6300 TO ARRANGE A SITE VISIT.
14. PROPERTY LINES OF SUBJECT PROPERTY HAVE BEEN VERIFIED BY A BOUNDARY SURVEY
15. CONTRACTOR TO REMOVE AND LEGALLY DISPOSE ALL EXISTING TREES THAT CONFLICT WITH PROPOSED IMPROVEMENTS.
16. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES.
17. CONTRACTOR IS RESPONSIBLE FOR SIGN REMOVAL, MAINTENANCE, AND NEW SIGN INSTALLATION DURING CONSTRUCTION.
18. REFER TO TABLE 6-1 IN THE SPOKANE REGIONAL STORMWATER MANUAL FOR TREATMENT SOIL CRITERIA.
19. ALL PAVEMENT CUTS MUST CONFORM TO THE SPOKANE REGIONAL PAVEMENT CUT POLICY.
20. SEE CITY OF SPOKANE STANDARD PLAN NO. A-5 ON SHEET 20 FOR CITY STANDARDS ON WATER/SEWER CROSSINGS
21. CITY OF SPOKANE HYDRANT PERMIT PROGRAM REQUIRES AN RPBA AND FLOW METER ASSEMBLY FOR ALL FIRE HYDRANT WATER USAGE IF NEEDED FOR CONSTRUCTION PHASE OF THE PROJECT (E.G. DUST CONTROL, ETC.). THIS HYDRANT PROGRAM REQUIRES A PERMIT FEE, CONSUMPTION BILLING, AND DEPOSIT FOR THE RPBA & METER ASSEMBLY. PLEASE CALL 311 OR CITY WATER DEPT. AT 509-625-7800 FOR MORE INFO.





PROJECT AREA

VICINITY MAP

STREET AND DRAINAGE SHEET INDEX

SHEET NO. 1 – STREET & DRAINAGE COVER AND INDEX
SHEET NO. 1A – PHASING PLAN
SHEET NO. 2 – EROSION & SEDIMENT CONTROL PLAN
SHEET NO. 3A – EROSION & SEDIMENT CONTROL DETAILS
SHEET NO. 3B – EROSION & SEDIMENT CONTROL DETAILS
SHEET NO. 4 – DETAILED GRADING PLAN
SHEET NO. 5 – DETAILED GRADING PLAN
SHEET NO. 6 – INLAND EMPIRE WAY ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 6A – INLAND EMPIRE WAY SIGNING AND STRIPING PLAN
SHEET NO. 7 – SARATOGA AVE ROAD & DRAINAGE PLAN AND PROFILE: STA 26+00 TO STA 37+00
SHEET NO. 8 – SARATOGA AVE ROAD & DRAINAGE PLAN AND PROFILE: STA 37+00 TO STA 47+92
SHEET NO. 9 – LATHAM ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 10 – KINGSTON ST & ALBANY AVE ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 11 – WALDEN ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 12 – HUDSON ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 13 – HARTFORD ST ROAD & DRAINAGE PLAN AND PROFILE
SHEET NO. 14 – STREET DETAILS
SHEET NO. 15 – INTERSECTION DETAILS
SHEET NO. 16 – INTERSECTION DETAILS
SHEET NO. 17 – SWALE DETAILS
SHEET NO. 18 – SWALE DETAILS
SHEET NO. 19 – NOTES
SHEET NO. 20 – STANDARD DETAILS
SHEET NO. 20A – STANDARD DETAILS
SHEET NO. 21 – RETAINING WALL DETAILS
SHEET NO. 22 – RETAINING WALL DETAILS

LEGEND

EXISTING FEATURES	PROPOSED IMPROVEMENTS
ASPHALT SURFACING	ASPHALT SURFACING
CURB	CURB
GRAVEL	CONCRETE OR SIDEWALK
SIDEWALK OR CONCRETE	DRYWELL
DRYWELL	STORM MANHOLE
STORM MANHOLE	CONCRETE INLET
CATCH BASIN	CURB INLET
POWER POLE/TELEPHONE POLE	POWER POLE
TELEPHONE ENCLOSURE	SIGN
WATER VALVE	WATER VALVE
FIRE HYDRANT	WATER METER
SANITARY SEWER MANHOLE	FIRE HYDRANT
WATER LINE	WATER SHUTOFF / WATER VAULT
SANITARY SEWER LINE	SANITARY SEWER MANHOLE
STORM DRAIN LINE / CULVERT	INACTIVE/COMPLETED PHASE
POWER LINE (OHP OR BP)	CLEANOUT (CO)
TELEPHONE LINE (OHT OR BT)	GAS METER
GAS LINE	WATER LINE (AS SIZED)
CONTOURS	SLEEVE FOR WATER / SEWER CROSSING
FENCE	SANITARY SEWER LINE
FIBER OPTIC LINE	STORM DRAIN LINE / CULVERT
	CONTOURS
	STORM WATER SWALE / POND
	DIRECTION OF SURFACE STORM WATER DRAINAGE
	TOP OF CURB ELEVATION / FLOWLINE ELEVATION
	CURB INLET / INLET ELEVATION AT FLOWLINE
	FINISHED GRADE ELEVATION

ELEVATION DATUM

NAVD88 ESTABLISHED FROM GPS OBSERVATION ON LOCAL CONTROL POINTS USING THE WASHINGTON STATE REFERENCE NETWORK.

SITE TBM

3" BRASS CAP, WA DNR
LOCATED NEAR THE NORTHEAST CORNER OF
APN: 25364.0001
ELEVATION: 1822.53

GRAPHIC SCALE

200 0 100 200 400
(IN FEET)
1 inch = 200 ft.

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SE#19-342
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

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FOR REGULATORY REVIEW ONLY

DATE: 6/11/24

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

100' 0' 100' 200'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
STREET & DRAINAGE COVER AND INDEX
APN 25361.0001 & 25364.0001

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

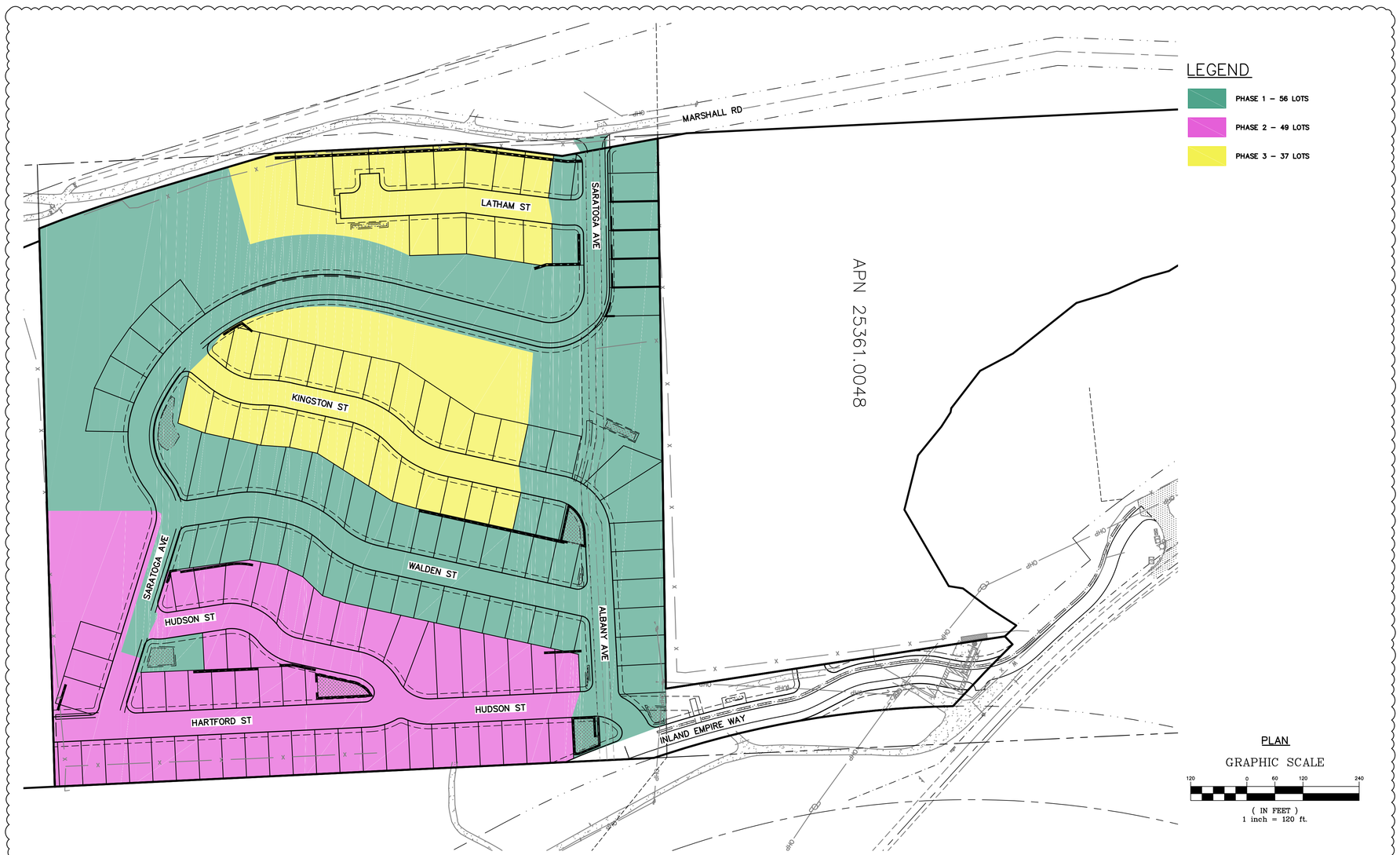
TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

1
22

CALL BEFORE YOU DIG 1-800-424-5555

SEC. 36, T. 25 N., R. 42 E., WM



PRELIMINARY
NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DATE: 5/09/24

1A
22

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1800.20

CBM NO. :

NAVD88 DATUM

60' 0' 60' 120'

SCALE IN FEET

BENCH MARK LOCATION: MAG NAIL SET IN PAVEMENT
APPROX. 600 FEET NE OF NE CORNER OF SUBJECT PARCEL
WEST OF GUARD RAIL OF SOUTHBOUND SR 195

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

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SE#19-342

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:

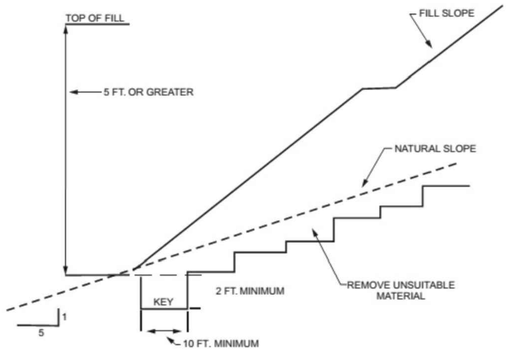
PHASING PLAN

APN 25361.0001 & 25364.0001

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



- The terrace should have enough capacity to handle the peak runoff expected from a 2-year, 24-hour design storm without overtopping.
- The terrace cross-section should be proportioned to fit the land slope. The ridge height should include a reasonable settlement factor. The ridge should have a minimum top width of 3 feet at the design height. The minimum cross-sectional area of the terrace channel should be 8 square feet for land slopes of 5 percent or less, 7 square feet for slopes from 5 to 8 percent, and 6 square feet for slopes steeper than 8 percent. The terrace can be constructed wide enough to be maintained using a small cat.

Maintenance Standards

- Maintenance should be performed as needed. Terraces should be inspected regularly; at least once a year, and after large storm events.

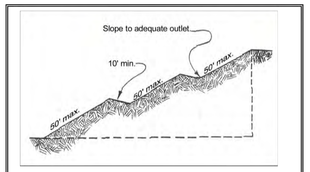


Figure 7.3.8 - Gradient Terraces

TERRACED SLOPE
NTS (TS)

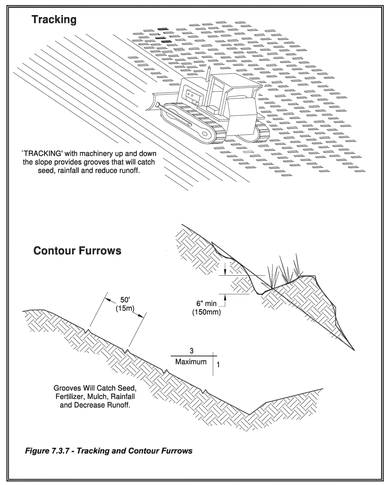
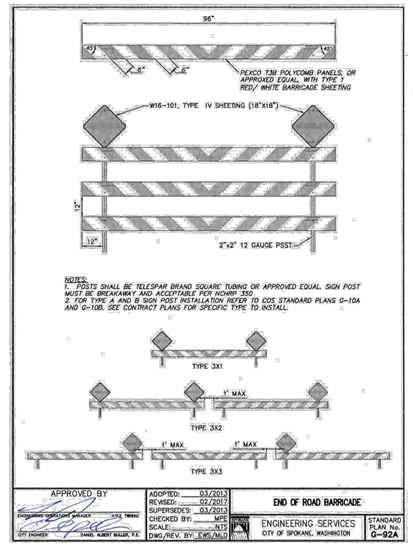


Figure 7.3.7 - Tracking and Contour Furrows

SLOPE STABILIZATION
NTS (SS)



TERMINUS BARRICADE DETAIL (BC)

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

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SE#19-342
510 east third avenue | spokane, wa | 99202
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CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PRELIMINARY
NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DATE: 6/11/24

3B
22

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
EROSION CONTROL NOTES AND DETAILS

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

CALL BEFORE YOU DIG 1-800-424-5555

STANDARD NOTES: A. THE FILTER FABRIC FENCE SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, OVERLAP FILTER CLOTH AND SECURELY FASTEN BOTH ENDS TO THE POST.

B. POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 30 INCHES (WHERE PHYSICALLY POSSIBLE).

C. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 8 INCHES WIDE AND 12 INCHES DEEP ALONG THE LINE OF POSTS AND UP-SLOPE FROM THE BARRIER. THE TRENCH SHALL BE CONSTRUCTED TO FOLLOW THE CONTOURS.

D. WHEN SLIT FILM FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UP-SLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

E. SLIT FILM FILTER FABRIC SHALL BE WIRED TO THE FENCE, AND 20 INCHES OF THE FABRIC SHALL EXTEND INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES. OTHER TYPES OF FABRIC MAY BE STAPLED TO THE FENCE.

F. WHEN EXTRA-STRENGTH OR MONOFILAMENT FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF STANDARD NOTE "E" APPLYING. EXTRA CARE SHOULD BE USED WHEN JOINING OR OVERLAPPING THESE STIFFER FABRICS.

G. LOCAL GOVERNMENTS MAY SPECIFY THE USE OF PROPERLY COMPACTED NATIVE MATERIALS. IN MANY INSTANCES, THIS MAY BE THE PREFERRED ALTERNATIVE BECAUSE THE SOIL FORMS A MORE CONTINUOUS CONTACT WITH THE TRENCH BELOW.

DEFINITION: A TEMPORARY SEDIMENT BARRIER CONSISTING OF A FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED. THE FILTER FENCE IS CONSTRUCTED OF STAKES AND SYNTHETIC FILTER FABRIC WITH A RIGID WIRE FENCE BACKING WHERE NECESSARY FOR SUPPORT.

PURPOSE: 1. TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT UNDER SHEET FLOW CONDITIONS FROM DISTURBED AREAS DURING CONSTRUCTION OPERATIONS IN ORDER TO PREVENT SEDIMENT FROM LEAVING THE SITE.

2. TO DECREASE THE VELOCITY OF SHEET FLOWS.

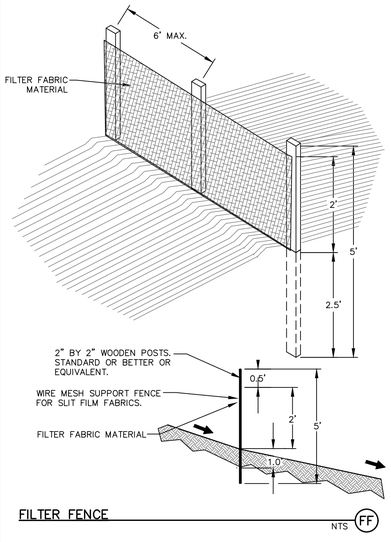
CONDITIONS WHERE PRACTICE APPLIES: FILTER FENCES MUST BE PROVIDED JUST UPSTREAM OF THE POINT(S) OF DISCHARGE OF RUNOFF FROM A SITE, BEFORE THE FLOW BECOMES CONCENTRATED. THEY MAY ALSO BE REQUIRED:

1. BELOW DISTURBED AREAS WHERE RUNOFF MAY OCCUR IN THE FORM OF SHEET AND RILL EROSION; WHEREVER RUNOFF HAS THE POTENTIAL TO IMPACT DOWNSTREAM RESOURCES.

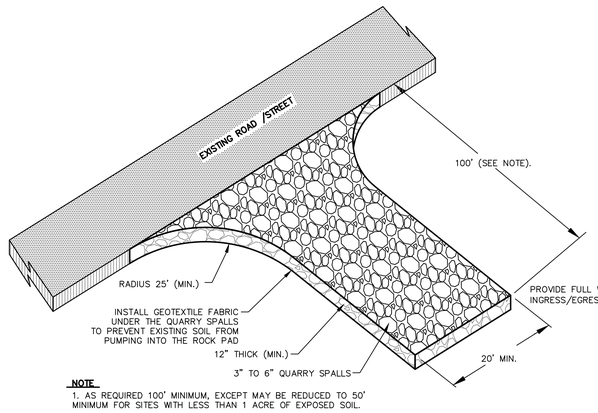
2. PERPENDICULAR TO MINOR SWALES OR DITCH LINES FROM CONTRIBUTING DRAINAGE AREAS UP TO ONE ACRE IN SIZE.

3. CONTRACTOR SHALL COORDINATE WITH DESIGN ENGINEER FOR ACTUAL PLACEMENT LOCATIONS.

MAINTENANCE: THE FILTER FENCE AND INLET PROTECTIONS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD AND SEDIMENT OFF OF THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC CLEANING WHEN SEDIMENT BUILD UP IS SIX INCHES OR ONE-THIRD OF THE FENCE OR INLET PROTECTION'S ORIGINAL HEIGHT.



FILTER FENCE (FF) NTS



NOTE
1. AS REQUIRED 100' MINIMUM, EXCEPT MAY BE REDUCED TO 50' MINIMUM FOR SITES WITH LESS THAN 1 ACRE OF EXPOSED SOIL.

DEFINITION: A TEMPORARY STONE-STABILIZED PAD LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE.

PURPOSE: TO REDUCE THE AMOUNT OF MUD, DIRT, ROCK, ETC. TRANSPORTED ONTO PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF BY CONSTRUCTING A STABILIZED PAD OF ROCK SPALLS AT ENTRANCES TO CONSTRUCTION SITES AND WASHING OF TIRES DURING EGRESS.

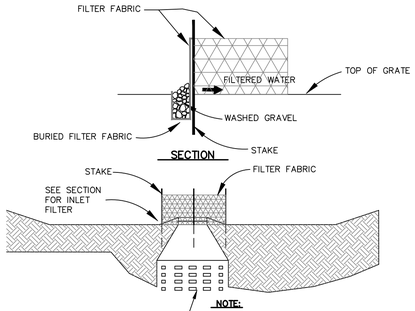
CONDITIONS WHERE PRACTICE APPLIES: WHEREVER TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD OR OTHER PAVED AREAS.

MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2-INCH STONES, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED.

TIRE WASH: TIRE WASH IS RECOMMENDED DUE TO ONSITE SOILS. THE TIRE WASH SHALL BE REQUIRED BY THE CITY IF IT IS FOUND THAT ANY OF THE FOLLOWING ITEMS ARE NOT BEING DONE:
1. THE ROCK CONSTRUCTION EXIT IS NOT BUILT TO THE EASTERN WASHINGTON STORM WATER MANUAL STANDARDS.
2. THE ROCK CONSTRUCTION ENTRANCE IS NOT MAINTAINED PER THE EASTERN WASHINGTON STORM WATER MANUAL STANDARDS.
3. ANY MATERIAL TRACKED OFF THE SITE IN NOT CLEANED UP REGULARLY

THE CITY MAY AT IT'S DISCRETION REQUIRE THE TIRE WASH AREA TO BE INSTALLED IF IT FEELS THAT IT IS IN THE BEST INTEREST OF THE CITY OR THE NEIGHBORS TO REQUIRE IT.

STABILIZED CONSTRUCTION EXIT/ TIRE WASH (CE) NTS



NOTE:
1. ALL DRYWELLS, INLETS, CATCH BASIN AND ANY OTHER STORMDRAIN FIXTURES WITH GRATED INLETS SHALL BE PROTECTED.
2. PROTECTION SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED.
3. SEDIMENT MUST BE REMOVED WHEN IT REACHES 6" OR ¼ OF THE HEIGHT OF THE FENCE.

TEMPORARY INLET PROTECTION (IP) NTS

SEC. 36, T. 25 N., R. 42 E., WM

USE THE FOLLOWING SEEDING SPECIFICATIONS WHEREVER SOIL IS DISTURBED:

PROVIDE FRESH, CLEAN NEW CROP SEED COMPLYING WITH TOLERANCE FOR PURITY AND GERMINATION ESTABLISHED BY OFFICIAL SEED ANALYSTS OF NORTH AMERICA. PROVIDE SEED MIXTURE COMPOSED OF GRASS SPECIES AND PERCENTAGES AS FOLLOWS:

20 PERCENT ELKA PERENNIAL RYE
20 PERCENT DURAR HARD FESCUE
45 PERCENT COVAR SHEEP /FESCUE
15 PERCENT REUBENS CANADIAN BLUEGRASS

PROVIDE MIXTURE COMPOSED OF GRASS SEED AND FERTILIZER IN PERCENTAGES AS FOLLOWS:

GRASS SEED MIXTURE: 90 LBS. PER ACRE
FERTILIZER: 16:16:16 TIMED RELEASE COMPOSITION, 300 LBS. PER ACRE

ALL SEEDING OF SLOPES SHALL BE DONE IN ACCORDANCE WITH CITY OF SPOKANE VALLEY STANDARDS.

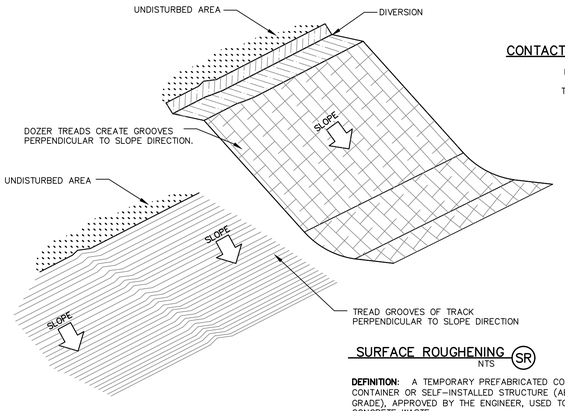
CONTRACTOR SHALL IRRIGATE SEEDED AREAS UNTIL SEED HAS GERMINATED AND HAS BEEN ACCEPTED BY OWNER.

SEEDING SPECIFICATION

DEFINITION:
PROVISION OF A ROUGH SOIL SURFACE WITH HORIZONTAL DEPRESSIONS CREATED BY OPERATING A TILLER OR OTHER SUITABLE EQUIPMENT ON THE CONTOUR OR BY LEAVING SLOPES IN A ROUGHED CONDITION BY NOT FINE GRADING THEM.

PURPOSE:
TO AID IN ESTABLISHMENT OF VEGETATIVE COVER, REDUCE RUNOFF VELOCITY, INCREASE INFILTRATION, AND PROVIDE FOR SEDIMENT TRAPPING.

CONDITIONS WHERE PRACTICE APPLIES:
ALL SLOPES STEEPER THAN 4:1 IN BOTH CUT AND FILL REQUIRE SURFACE ROUGHENING WITH DOZER TRACKING. IN ADDITION SLOPES STEEPER THAN 3O:1 IN BOTH CUT AND FILL REQUIRE SURFACE ROUGHENING WITH EITHER STAIR-STEP GRADING, GROOVING, FURROWING, OR TRACKING. COMPLETE SURFACE ROUGHENING PER IDEQ CATALOG OF BEST MANAGEMENT PRACTICES VOLUME 2, BMP 84.



SURFACE ROUGHENING (SR) NTS

DEFINITION: A TEMPORARY PREFABRICATED CONCRETE WASHOUT CONTAINER OR SELF-INSTALLED STRUCTURE (ABOVE OR BELOW GRADE), APPROVED BY THE ENGINEER, USED TO DETAIN CONCRETE WASTE.

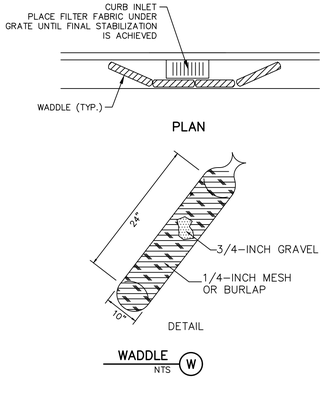
PURPOSE: TO PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORMWATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA TO PREVENT POLLUTANTS FROM ENTERING SURFACE WATERS OR GROUNDWATER.

CONDITIONS WHERE PRACTICE APPLIES: WHENEVER CONCRETE IS USED AS A CONSTRUCTION MATERIAL AND IT IS NOT POSSIBLE TO DISPOSE OF ALL CONCRETE WASTEWATER AND WASHOUT OFFSITE.

MAINTENANCE: THE CONCRETE WASHOUT FACILITY SHALL BE INSPECTED FOR CAPACITY AND LEAKAGE PRIOR TO THE COMMENCEMENT OF CONCRETE WORK AND DAILY THEREAFTER. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES PROVIDED AND READY FOR USE ONCE THE WASHOUT BECOMES 75% FULL.

NOTES:
1. CONCRETE TRUCK CHUTES, PUMPS, AND INTERNALS SHALL BE WASHED OUT ONLY INTO FORMED AREAS AWAITING INSTALLATION OF CONCRETE OR ASPHALT.
2. UN-USED CONCRETE REMAINING IN THE TRUCK AND PUMP SHALL BE RETURNED TO THE ORIGINATING BATCH PLANT FOR RECYCLING.
3. HAND TOOLS INCLUDING, BUT NOT LIMITED TO, SCREEDS, SHOVELS, RAKES, FLOATS, AND TROWELS SHALL BE WASHED OFF ONLY INTO FORMED AREAS AWAITING INSTALLATION OF CONCRETE OR ASPHALT.
4. EQUIPMENT THAT CANNOT BE EASILY MOVED, SUCH AS CONCRETE PAVERS, SHALL ONLY BE WASHED IN AREAS THAT NO NOT DIRECTLY DRAIN TO NATURAL OR CONSTRUCTED STORMWATER CONVEYANCES.
5. WHEN NO FORMED AREAS ARE AVAILABLE, WASHWATER AND LEFTOVER PRODUCT SHALL BE CONTAINED IN A LINED CONTAINER. CONTAINED CONCRETE SHALL BE DISPOSED OF IN A MANNER THAT DOES NOT VIOLATE GROUNDWATER OR SURFACE WATER QUALITY STANDARDS.

CONCRETE WASHOUT NOTES (CW)



WADDLE (W) NTS

CONTACT PERSON/PERMIT APPLICANT

LAGUNA CANYON GROUP L.L.C
10 SYCAMORE CANYON DR.
TRABUCCO CANYON, CA, 92674
PHONE:
CONTACT:

PROJECT / SITE DESCRIPTION

THE PROPOSED PROJECT INCLUDES ROAD AND UTILITY CONSTRUCTION WITH ASSOCIATED STORM DRAINAGE FACILITIES FOR A PROPOSED RESIDENTIAL SUBDIVISION.

ESC MEASURES

PROTECT EXISTING AND PROPOSED STORM WATER MANAGEMENT FACILITIES FROM SEDIMENTATION DURING CONSTRUCTION ACTIVITIES. FILTER FENCES SHALL BE USED TO AID IN CONTAINING ANY SEDIMENT ON THE SITE DURING GRADING AND CONSTRUCTION. STABILIZED CONSTRUCTION EXITS SHALL BE USED AT POINTS OF INGRESS AND EGRESS FOR CONSTRUCTION VEHICLES. INLET PROTECTION SHALL BE USED AT ALL STORM WATER INLETS AND DRYWELLS. PROVIDE DUST CONTROL DURING DRY SEASON.

REFER TO PLAN VIEW ON THIS SHEET FOR APPROXIMATE LOCATION OF THE ABOVE ITEMS.

ALL DISTURBED AREAS SHALL BE SEEDED OR LANDSCAPED PER THE LANDSCAPE PLAN.

NOTES

EROSION AND SEDIMENT CONTROL MEASURES SHALL CONFORM TO THE CITY OF HAYDEN CODE AND THE STATE OF IDAHO CATALOG OF STORM WATER BEST MANAGEMENT PRACTICES FOR IDAHO CITIES AND COUNTIES PREPARED BY THE WATERSHED AND AQUIFER PROTECTION BUREAU OF THE IDAHO DIVISION OF ENVIRONMENTAL QUALITY.

EROSION CONTROL MEASURES IN ADDITION TO THOSE INDICATED AS PART OF THIS PLAN MAY BE REQUIRED IF THE CITY ENGINEER DETERMINES INDICATED MEASURES ARE INADEQUATE.

PERIODIC MAINTENANCE OF EROSION CONTROL MEASURES IS REQUIRED UNTIL PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL AND SUFFICIENT VEGETATION IS ESTABLISHED.

CONTRACTOR SHALL PROVIDE DUST CONTROL DURING CONSTRUCTION.

CONTRACTOR IS RESPONSIBLE FOR PREPARATION OPF STORM WATER POLLUTION PREVENTION PLAN (SWPPP), NOTICE OF INTENT, AND IMPLEMENTATION OF PERMIT.

EXISTING CONDITIONS

THE PROJECT SITE IS AN UNDEVELOPED SITE WITH SOME TREES AND GRAVEL.

1. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE FOLLOWED IN ORDER TO BEST MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENTATION CONTROL PROBLEMS:
   1.a. CLEAR AND GRUB SUFFICIENTLY FOR INSTALLATION OF TEMPORARY ESC BMPS;
   1.b. INSTALL TEMPORARY ESC BMPS, CONSTRUCTING SEDIMENT TRAPPING BMPS AS ONE OF THE FIRST STEPS PRIOR TO GRADING;
   1.c. CLEAR, GRUB AND ROUGH GRADE FOR ROADS, TEMPORARY ACCESS POINTS AND UTILITY LOCATIONS;
   1.d. STABILIZE ROADWAY APPROACHES AND TEMPORARY ACCESS POINTS WITH THE APPROPRIATE CONSTRUCTION ENTRY BMP;
   1.e. CLEAR, GRUB AND GRADE INDIVIDUAL LOTS OR GROUPS OF LOTS;
   1.f. TEMPORARILY STABILIZE, THROUGH RE-VEGETATION OR OTHER APPROPRIATE BMPS, LOTS OR GROUPS OF LOTS IN SITUATIONS WHERE SUBSTANTIAL CUT OR FILL SLOPES ARE A RESULT OF THE SITE GRADING;
   1.g. CONSTRUCT ROADS, BUILDINGS, PERMANENT STORMWATER FACILITIES (I.E. INLETS, PONDS, UIC FACILITIES, ETC.);
   1.h. PROTECT ALL PERMANENT STORMWATER FACILITIES UTILIZING THE APPROPRIATE BMPS;
   1.i. INSTALL PERMANENT ESC CONTROLS, WHEN APPLICABLE; AND,
   1.j. REMOVE TEMPORARY ESC CONTROLS WHEN:
      1.j.a. PERMANENT ESC CONTROLS, WHEN APPLICABLE, HAVE BEEN COMPLETELY INSTALLED;
      1.j.b. ALL LAND-DISTURBING ACTIVITIES THAT HAVE THE POTENTIAL TO CAUSE EROSION OR SEDIMENTATION PROBLEMS HAVE CEASED; AND,
      1.j.c. VEGETATION HAD BEEN ESTABLISHED IN THE AREAS NOTED AS REQUIRING VEGETATION ON THE ACCEPTED ESC PLAN ON FILE WITH THE LOCAL JURISDICTION.
2. INSPECT ALL ROADWAYS, AT THE END OF EACH DAY, ADJACENT TO THE CONSTRUCTION ACCESS ROUTE. IF IT IS EVIDENT THAT SEDIMENT HAS BEEN TRACKED OFF SITE AND/OR BEYOND THE ROADWAY APPROACH, CLEANING IS REQUIRED.
3. IF SEDIMENT REMOVAL IS NECESSARY PRIOR TO STREET WASHING, IT SHALL BE REMOVED BY SHOVELING OR PICKUP SWEEPING AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
4. IF STREET WASHING IS REQUIRED TO CLEAN SEDIMENT TRACKED OFF SITE, ONCE SEDIMENT HAS BEEN REMOVED, STREET WASH WASTEWATER SHALL BE CONTROLLED BY PUMPING BACK ON-SITE OR OTHERWISE PREVENTED FROM DISCHARGING INTO SYSTEMS TRIBUTARY TO WATERS OF THE STATE.
5. RESTORE CONSTRUCTION ACCESS ROUTE EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITION.
6. RETAIN THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION IN AN UNDISTURBED STATE TO THE MAXIMUM EXTENT PRACTICAL.
7. INSPECT SEDIMENT CONTROL BMPS WEEKLY AT A MINIMUM, DAILY DURING A STORM EVENT, AND AFTER ANY DISCHARGE FROM THE SITE (STORMWATER OR NON-STORMWATER). THE INSPECTION FREQUENCY MAY BE REDUCED TO ONCE A MONTH IF THE SITE IS STABILIZED AND INACTIVE.
8. CONTROL FUGITIVE DUST FROM CONSTRUCTION ACTIVITY IN ACCORDANCE WITH THE STATE AND/OR LOCAL AIR QUALITY CONTROL AUTHORITIES WITH JURISDICTION OVER THE PROJECT AREA.
9. STABILIZE EXPOSED UNWORKED SOILS (INCLUDING STOCKPILES), WHETHER AT FINAL GRADE OR NOT, WITHIN 10 DAYS DURING THE REGIONAL DRY SEASON (JULY 1 THROUGH SEPTEMBER 30) AND WITHIN 5 DAYS DURING THE REGIONAL WET SEASON (OCTOBER 1 THROUGH JUNE 30). SOILS MUST BE STABILIZED AT THE END OF A SHIFT BEFORE A HOLIDAY WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. THIS TIME LIMIT MAY ONLY BE ADJUSTED BY A LOCAL JURISDICTION WITH A "QUALIFIED LOCAL PROGRAM," IF IT CAN BE DEMONSTRATED THAT THE RECENT PRECIPITATION JUSTIFIES A DIFFERENT STANDARD AND MEETS THE REQUIREMENTS SET FOURTH IN THE CONSTRUCTION STORMWATER GENERAL PERMIT.
10. PROTECT INLETS, DRYWELLS, CATCH BASINS AND OTHER STORMWATER MANAGEMENT FACILITIES FROM SEDIMENT, WHETHER OR NOT FACILITIES ARE OPERABLE.
11. KEEP ROADS ADJACENT TO INLETS CLEAN.
12. INSPECT INLETS WEEKLY AT A MINIMUM AND DAILY DURING STORM EVENTS.
13. CONSTRUCT STORMWATER CONTROL FACILITIES (DETENTION/RETENTION STORAGE POND OR SWALES) BEFORE GRADING BEGINS. THESE FACILITIES SHALL BE OPERATIONAL BEFORE THE CONSTRUCTION OF IMPERVIOUS SITE IMPROVEMENTS.
14. STOCKPILE MATERIALS (SUCH AS TOPSOIL) ON SITE, KEEPING OFF OF ROADWAY AND SIDEWALKS.
15. COVER, CONTAIN AND PROTECT ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCT, AND NONINERT WASTES PRESENT ON SITE FROM VANDALISM (SEE CHAPTER 173-304 WAC FOR THE DEFINITION OF INERT WASTE), USE SECONDARY CONTAINMENT FOR ON-SITE FUELING TANKS.
16. CONDUCT MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES INVOLVING OIL CHANGES, HYDRAULIC SYSTEM REPAIRS, SOLVENT AND DEGREASING OPERATIONS, FUEL TANK DRAIN DOWN AND REMOVAL, AND OTHER ACTIVITIES THAT MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO STORMWATER RUNOFF USING SPILL PREVENTION MEASURES, SUCH AS DRIP PANS. CLEAN ALL CONTAMINATED SURFACES IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT. IF RAINING OVER EQUIPMENT OR VEHICLE, PERFORM EMERGENCY REPAIRS ON SITE USING TEMPORARY PLASTIC BENEATH THE VEHICLE.
17. CONDUCT APPLICATION OF AGRICULTURAL CHEMICALS, INCLUDING FERTILIZERS AND PESTICIDES, IN SUCH A MANNER, AND AT APPLICATION RATES, THAT INHIBITS THE LOSS OF CHEMICALS INTO STORMWATER RUNOFF FACILITIES. AMEND MANUFACTURER'S RECOMMENDED APPLICATION RATES AND PROCEDURES TO MEET THIS REQUIREMENT, IF NECESSARY.
18. INSPECT ON A REGULAR BASIS (AT A MINIMUM WEEKLY, AND DAILY DURING/AFTER A RUNOFF PRODUCING STORM EVENT) AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL BMPS TO ENSURE SUCCESSFUL PERFORMANCE OF THE BMPS. NOTE THAT INLET PROTECTION DEVICES SHALL BE CLEANED OR REMOVED AND REPLACE BEFORE SIX INCHES OF SEDIMENT CAN ACCUMULATE.
19. REMOVE TEMPORARY ESC BMPS WITHIN 30 DAYS AFTER THE TEMPORARY BMPS ARE NO LONGER NEEDED.
20. PERMANENTLY STABILIZE AREAS THAT ARE DISTURBED DURING THE REMOVAL PROCESS.
20. BMP'S SHALL BE IN ACCORDANCE WITH CHAPTER 7 OF THE STORMWATER MANAGEMENT MANUAL FOR EASTERN WASHINGTON.

ESC STANDARD NOTES

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DATE: 6/11/24

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SE#19-342

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		BY	DATES
	HORIZONTAL SCALE (22 x 34)	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

SEGMENT LIMITS:
EROSION CONTROL NOTES AND DETAILS

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

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SEC. 36, T. 25 N., R. 42 E., WM



GENERAL NOTES:

1. ALL GRADING ACTIVITIES SHALL USE ONSITE HAUL ROUTES.
2. CUT AND FILL SLOPES SHALL BE STABILIZED WITH TERRACING, CAT TRACKING, JUTE MATS, AND/OR HYDROSEEDING.
3. FILL SLOPES WILL NOT BE CONSTRUCTED ON EXISTING SLOPES STEEPER THAN 1.5:1 WITHOUT GEOTECHNICAL ENGINEERING APPROVAL.
4. FILL MATERIAL SHALL BE PLACED IN LIFTS OF NO MORE THAN 12" AND THE FILL MATERIAL WITHIN BUILDING ENVELOPES SHALL BE COMPACTED TO A MINIMUM RELATIVE DRY DENSITY OF 95%, MODIFIED PROCTOR, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER. PROVIDE COMPACTION VERIFICATION FOR ALL FILL THAT WILL SUPPORT A STRUCTURE OR ROADWAY.
5. PROVIDE ENGINEERED KEYS FOR FILL SLOPES 5:1 OR STEEPER WITH FILL HEIGHTS EXCEEDING 5' AND FOR ANY FILL WITH HEIGHTS EXCEEDING 20'.
6. THE CONTRACTOR SHALL DETERMINE WHERE INTERCEPTOR DITCHES ARE NECESSARY TO PREVENT OFFSITE RUNOFF AND TO PREVENT ONSITE EROSION.
7. THE TOE OF A FILL SLOPE AND/OR THE TOP OF A CUT SLOPE SHALL BE SETBACK FROM THE PLAT BOUNDARY 1/5 OF THE FILL/CUT SLOPE HEIGHT.
8. EXISTING AND PROPOSED CONTOURS ARE SHOWN AT 5' INTERVALS.
9. ALL SITE DISTURBANCES ON EXISTING SLOPES STEEPER THAN 30% OR WHERE THE CONSTRUCTION WILL CREATE SLOPES STEEPER THAN 30% SHALL PROVIDE A GEOTECHNICAL EVALUATION AND ENGINEERING PRIOR TO PERMIT ISSUANCE.
10. PROVIDE TERRACE BREAKS FOR FILLS EXCEEDING 20' IN HEIGHT OR 75' IN SLOPE LENGTH.

ESC MEASURES

- (CW) CONCRETE WASHOUT
- (CE) CONSTRUCTION EXIT
- (FF) FILTER FENCE
- (IP) INLET PROTECTION
- (BC) BARRICADE
- (W) WADDLE
- (SR) SURFACE ROUGHENING
- (TS) TERRACED SLOPE
- (SS) SLOPE STABILIZATION

SEE SHEET 3 FOR FURTHER DETAILS

LEGEND

EXISTING FEATURES

- ASPHALT SURFACING
- STORM MANHOLE
- CATCH BASIN
- SD — STORM DRAIN LINE / CULVERT
- 2434 — CONTOURS
- X — X — FENCE

PROPOSED IMPROVEMENTS

- ASPHALT SURFACING
- CURB
- CONCRETE OR SIDEWALK
- DRYWELL
- STORM MANHOLE
- CONCRETE INLET
- CURB INLET
- 1924 — CONTOURS
- STORM WATER SWALE / POND
- FILTER FABRIC
- BARRACADES

GRAPHIC SCALE

80 0 40 80 160

(IN FEET)
1 inch = 80 ft.

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REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

40' 0' 40' 80'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: EROSION & SEDIMENT CONTROL PLAN

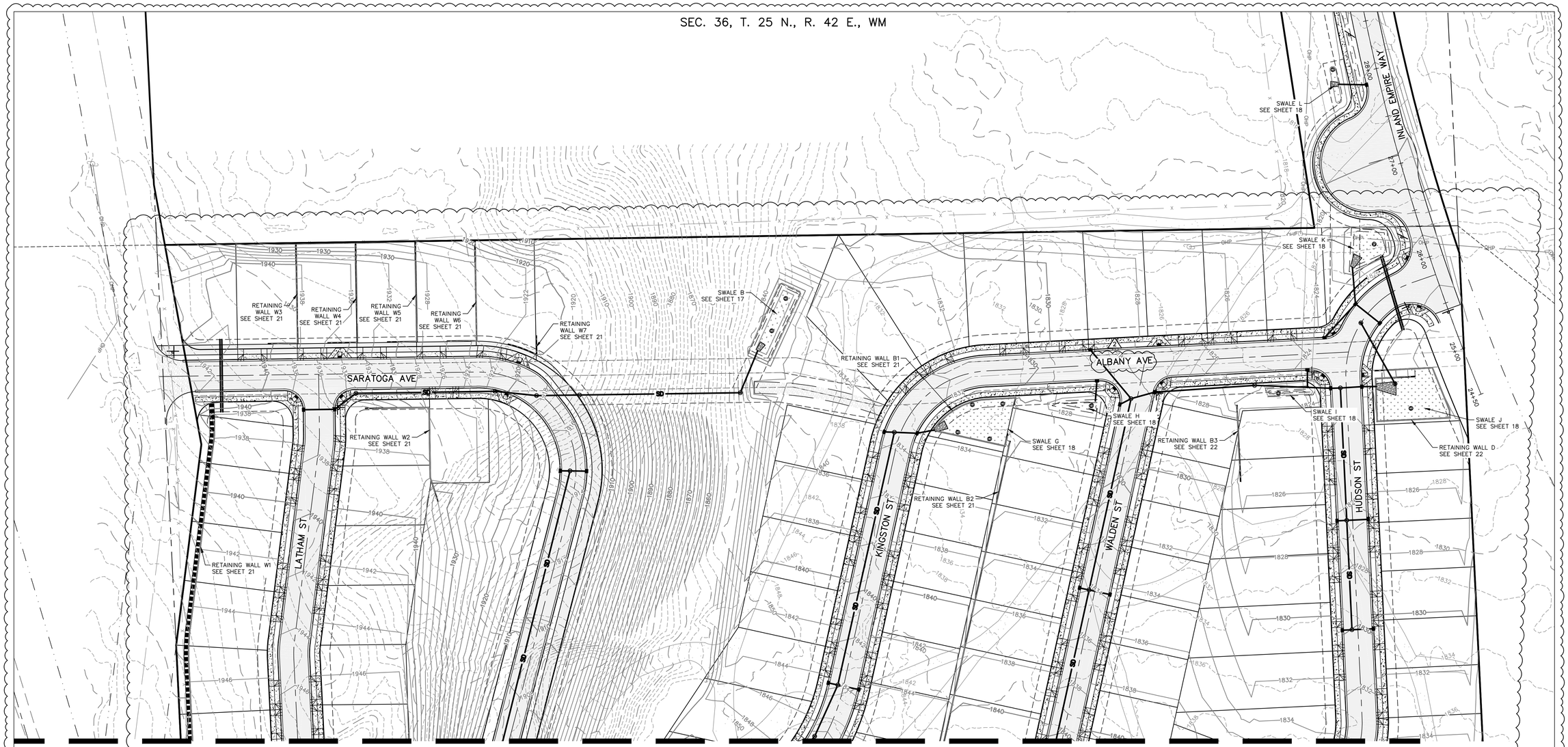
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

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MATCHLINE – SEE SHEET 5

NOTES

1. SEE SHEET 17 & 18 FOR SWALE DETAILS.
2. SEE SHEET 15 & 16 FOR INTERSECTION DETAILS.
3. SEE SHEET 14 FOR STREET CROSS SECTION DETAILS.
4. SEE SHEET 20 FOR STANDARD CITY DETAILS.
5. SEE SHEET 21 & 22 FOR WALL DETAILS.

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

4
22

PRELIMINARY
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REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:

DETAILED GRADING PLAN

NORTH

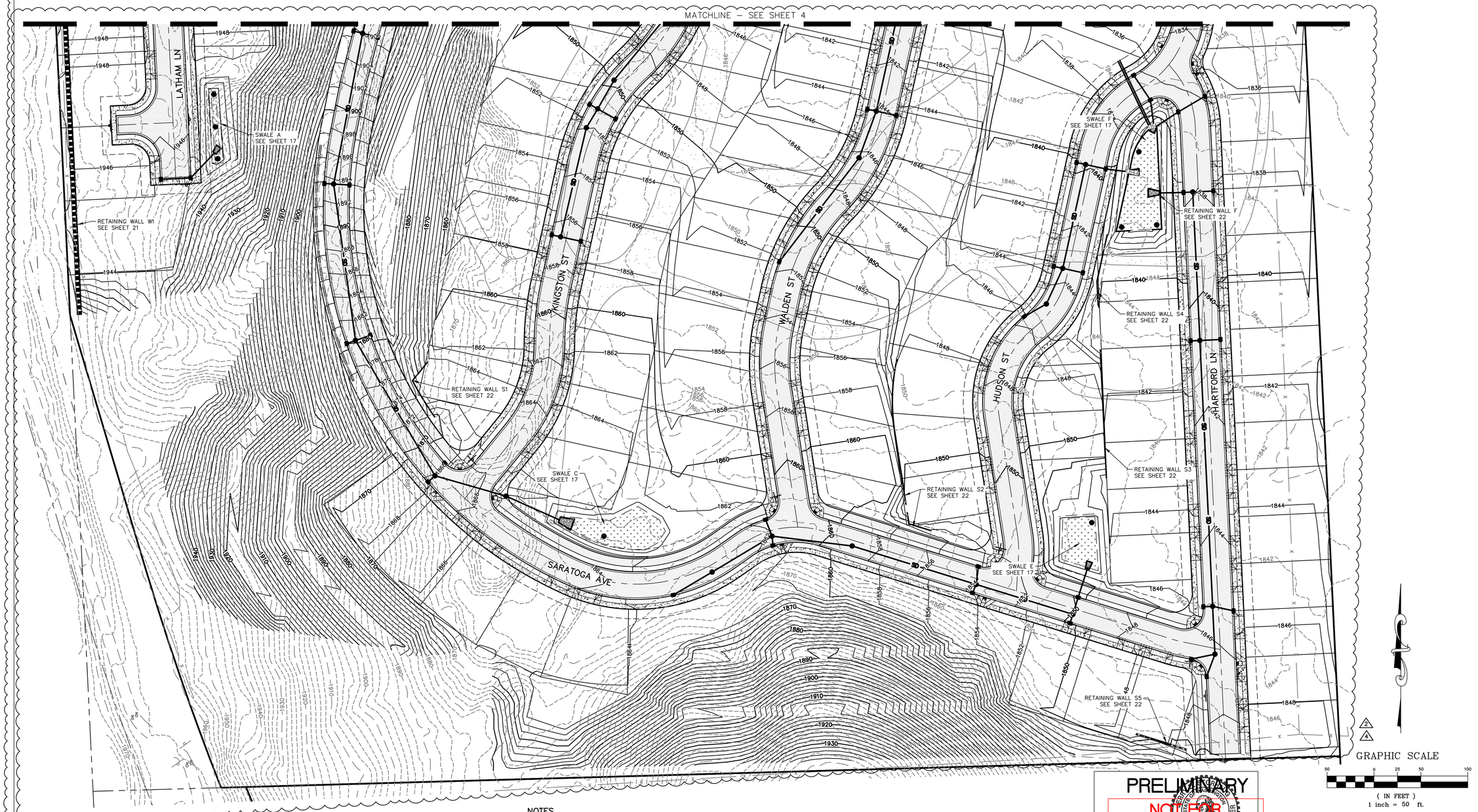
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

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SEC. 36, T. 25 N., R. 42 E., WM



GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

NOTES

1. SEE SHEET 17 & 18 FOR SWALE DETAILS.
2. SEE SHEET 15 & 16 FOR INTERSECTION DETAILS.
3. SEE SHEET 14 FOR STREET CROSS SECTION DETAILS.
4. SEE SHEET 20 FOR STANDARD CITY DETAILS.
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REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
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4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:

DETAILED GRADING PLAN

SOUTH

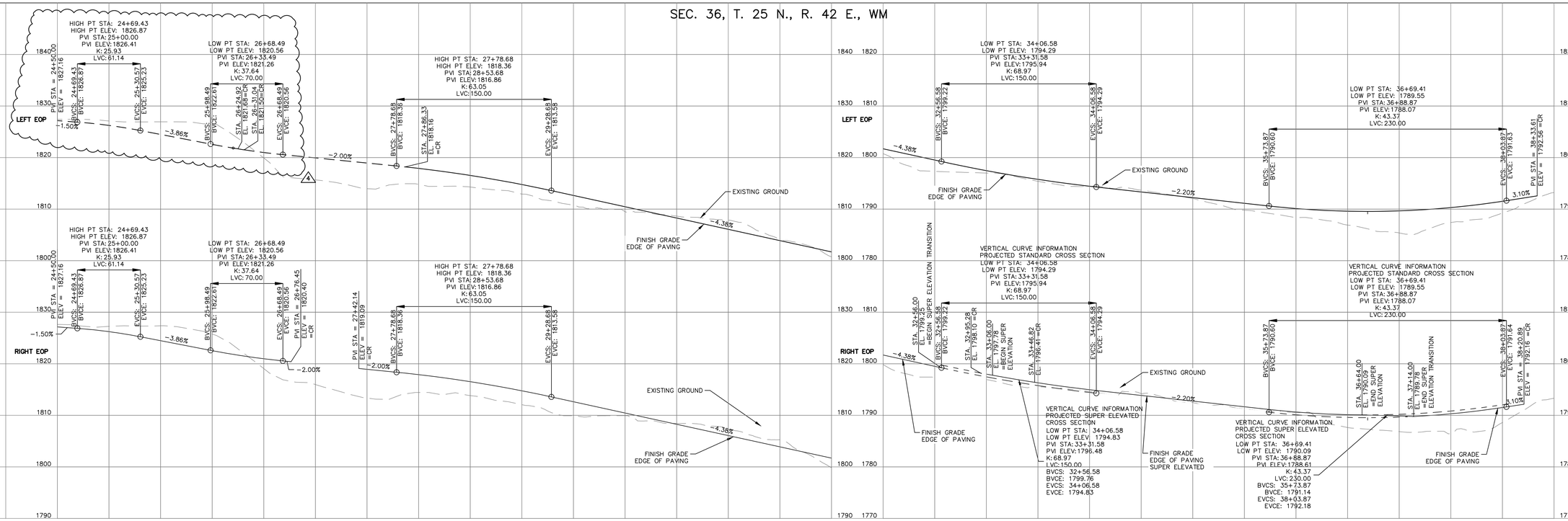
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

4

SEC. 36, T. 25 N., R. 42 E., WM



INLAND EMPIRE WAY PROFILE

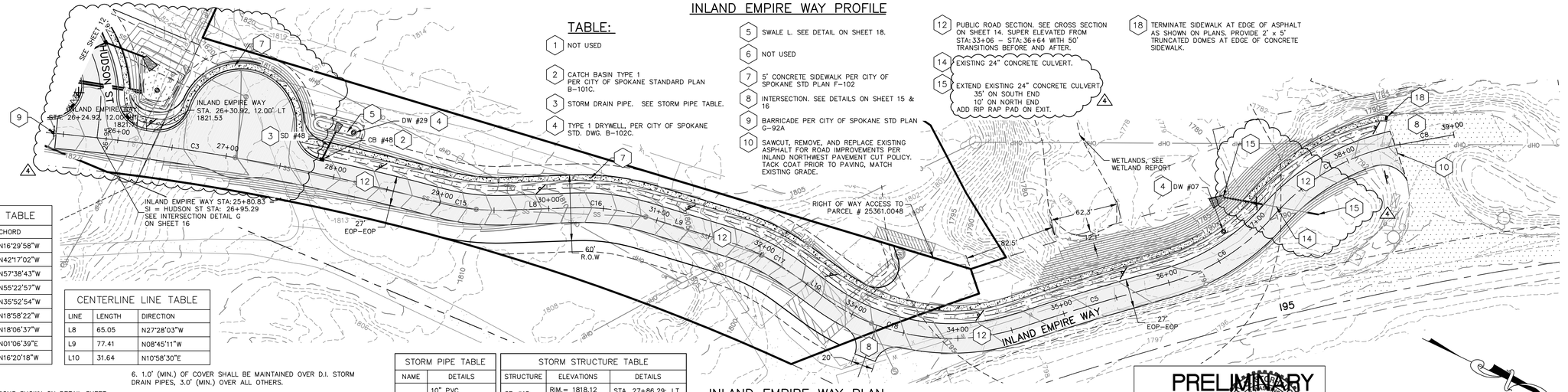


TABLE:

1. NOT USED
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. TYPE 1 DRYWELL, PER CITY OF SPOKANE STD. DWG. B-102C.
5. SWALE L. SEE DETAIL ON SHEET 18.
6. NOT USED
7. 5' CONCRETE SIDEWALK PER CITY OF SPOKANE STD PLAN F-102
8. INTERSECTION. SEE DETAILS ON SHEET 15 & 16
9. BARRICADE PER CITY OF SPOKANE STD PLAN G-92A
10. SAWCUT, REMOVE, AND REPLACE EXISTING ASPHALT FOR ROAD IMPROVEMENTS PER INLAND NORTHWEST PAVEMENT CUT POLICY. TACK COAT PRIOR TO PAVING, MATCH EXISTING GRADE.
12. PUBLIC ROAD SECTION. SEE CROSS SECTION ON SHEET 14. SUPER ELEVATED FROM STA:33+06 – STA:36+64 WITH 50' TRANSITIONS BEFORE AND AFTER.
14. EXISTING 24" CONCRETE CULVERT.
15. EXTEND EXISTING 24" CONCRETE CULVERT. 35' ON SOUTH END 10' ON NORTH END ADD RIP RAP PAD ON EXIT.
18. TERMINATE SIDEWALK AT EDGE OF ASPHALT AS SHOWN ON PLANS. PROVIDE 2' x 5' TRUNCATED DOMES AT EDGE OF CONCRETE SIDEWALK.

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C3	2140.00	449.79	N16°29'58"W
C5	2920.00	139.44	N42°17'02"W
C6	200.00	116.79	N57°38'43"W
C7	200.00	132.59	N55°22'57"W
C8	2995.00	53.19	N35°52'54"W
C15	200.00	59.30	N18°58'22"W
C16	200.00	65.33	N18°06'37"W
C17	200.00	68.86	N01°06'39"E
C18	200.00	190.68	N16°20'18"W

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L8	65.05	N27°28'03"W
L9	77.41	N08°45'11"W
L10	31.64	N10°58'30"E

STORM PIPE TABLE	
NAME	DETAILS
SD #48	10" PVC L.= 28.7' S.= 0.0101 FT/FT

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #48	RIM.= 1818.12 IE.= 1815.31 (W)	STA. 27+86.29; LT INLAND EMPIRE WAY
DW #07	RIM.= 1789.55	STA. 36+69.26; LT INLAND EMPIRE WAY
DW #29	RIM.= 1815.00	STA. 28+09.00; LT INLAND EMPIRE WAY

NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.
3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.
4. EXISTING UTILITY LINE LOCATIONS HAVE BEEN EXTRACTED FROM RECORD UTILITY DRAWINGS AND FOUND SURFACE FEATURES. FIELD VERIFY EXACT LOCATIONS.
5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.
6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.
7. CONTRACTOR SHALL VERIFY UTILITY SERVICE ELEVATIONS AT ALL CROSSINGS PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE IMPROVEMENTS.
8. ALL STATIONING REFERENCES INLAND EMPIRE WAY ALIGNMENT.
9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.
10. CONTRACTOR TO OBTAIN PERMISSION AND PERMITS TO WORK WITHIN WSDOT ROW.
11. CATCH BASINS ON GRADE
RIM = FLOWLINE –0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE – 0.17'

INLAND EMPIRE WAY PLAN

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

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DATE: 6/11/24

6
22

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
	HORIZONTAL SCALE (22 x 34)	1"=50'
	VERTICAL SCALE (22 x 34)	1"=10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
INLAND EMPIRE WAY ROAD & DRAINAGE
(PUBLIC) PLAN & PROFILE STA 25+43 TO STA 38+45

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	INLAN W (03) 1 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

SEC. 36, T. 25 N., R. 42 E., WM

TABLE:

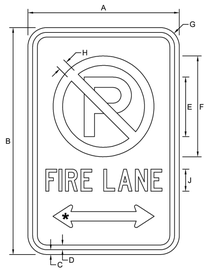
9	BARRICADE PER CITY OF SPOKANE STD PLAN G-92A TYPE 3 x 2
16	"NO PARKING FIRE LANE" SIGN (R7-19) PER CITY OF SPOKANE STANDARDS. 4
17	STREET NAME SIGN PER CITY OF SPOKANE STD PLAN G-20B
18	SURVEY MONUMENT PER CITY OF SPOKANE STANDARDS. SEE MONUMENT NOTE ON THIS SHEET.

NOTE:

SPEED LIMIT SIGN ARE NOT POSTED ON LOCAL ACCESS STREET. ALL EXISTING SPEED LIMIT SIGNS NEED TO BE REMOVED.

R7-19

11/23



DIMENSIONS (INCHES)								
A	B	C	D	E	F	G	H	J
12	18	.375	.375	4.75E	8	1.5	.75	1.75D

✱ SEE APPENDIX A-1 FOR ARROW DETAILS (USE X=.75)

COLORS

CIRCLE SLASH & DIAGONAL - RED
ARROW & LEGEND - RED
"P" & BORDER - BLACK
BACKGROUND & MARGIN - WHITE

MFR	SERIES
3M	
AD	
NC	

Page 145 — COS Manual of Approved Signs, April 2024

SIGNING AND STRIPING GENERAL NOTES

1. TRAFFIC SIGN POST LOCATIONS SHALL BE FIELD LOCATED BY THE CITY OF SPOKANE, PRIOR TO INSTALLATION. THE CONTRACTOR SHALL CONTACT THE CITY OF SPOKANE TRAFFIC SIGNS AND MARKERS SUPERVISOR, AT 232-8803, AT LEAST FIVE CITY WORKDAYS PRIOR TO INSTALLATION, TO ARRANGE FOR A CITY REPRESENTATIVE TO FIELD LOCATE SAID SIGN POSTS.

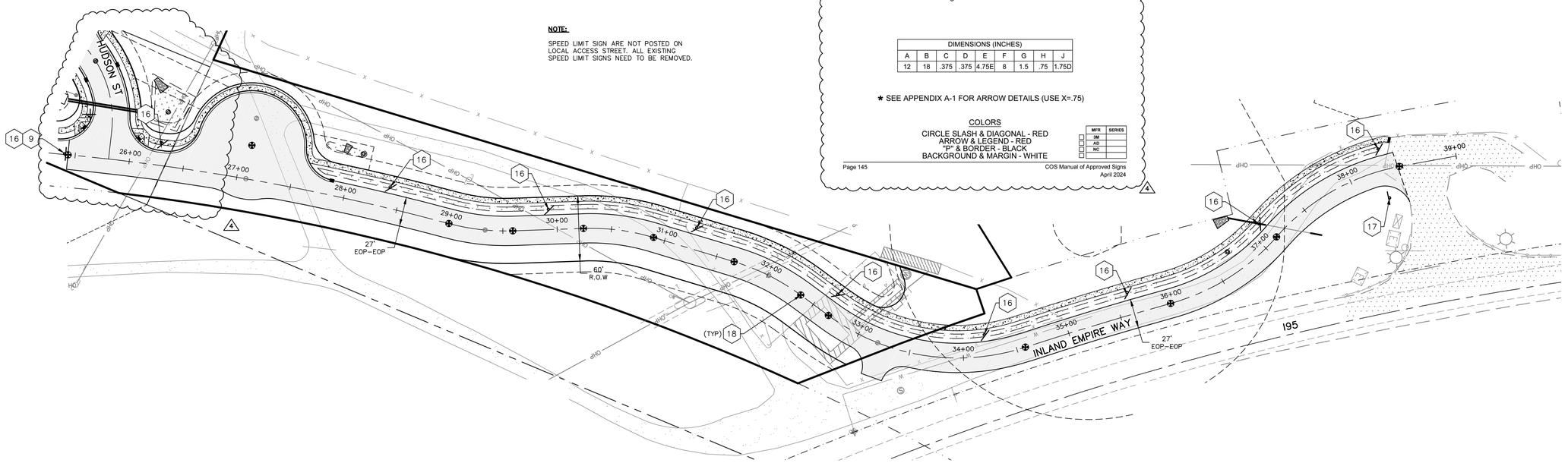
2. FOR ALL TRAFFIC CONTROL SIGNS WITHIN THE RIGHT-OF-WAY: A SPEC. DRAWING SHALL BE SUBMITTED FOR APPROVAL, PRIOR TO MANUFACTURE, AND COMPLETED SIGNS SHALL BE PRESENTED FOR INSPECTION, PRIOR TO INSTALLATION, TO THE CITY OF SPOKANE TRAFFIC SIGNS AND MARKERS SUPERVISOR, AT 901 N. NELSON ST. AN APPOINTMENT IS NECESSARY. THIS INCLUDES ALL SIGNS ATTACHED TO SIGNALS, PHBS AND RRFBS.

3. AT THE TIME OF INSTALLATION, ALL SIGNAGE AND STRIPING WITHIN RIGHT-OF-WAY SHALL BE COMPLETED ACCORDING TO THE MOST UP-TO-DATE CITY OF SPOKANE STANDARDS AND SPECIFICATIONS.

4. TRAFFIC SIGNS REMOVED DURING ANY PHASE OF THE CONSTRUCTION PROCESS ARE THE CONTRACTOR'S PROPERTY AND ARE TO BE DISPOSED OF BY THE CONTRACTOR. THESE SIGNS ARE NOT TO BE REUSED.

5. PAVEMENT MARKINGS ARE TO BE OBLITERATED PER CITY OF SPOKANE SPECIFICATIONS, (WATER BLASTING) PAINTING OVER EXISTING MARKINGS IS NOT ALLOWED.

6. ANY DAMAGE TO EXISTING MARKINGS DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AS THEIR EXPENSE.



INLAND EMPIRE WAY PLAN

MONUMENT NOTE:
AT A MINIMUM, MONUMENTATION SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS:
A) AT CENTER OF EACH CUL-DE-SAC
B) AT POINT OF CURVATURE ON ALL HORIZONTAL CURVES
C) AT POINT OF TANGENCY ON ALL HORIZONTAL CURVES
D) ON THE ROADWAY CENTERLINE AT THE END OF EVERY PLAT. MONUMENT PINS WITH CASES SHALL BE INSTALLED AT THESE LOCATIONS IN ACCORDANCE WITH THE CITY'S STANDARD PLANS.

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

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DATE: 6/11/24

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REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
	HORIZONTAL SCALE (22 x 34)	1"=50'
	VERTICAL SCALE (22 x 34)	1"=10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
INLAND EMPIRE WAY ROAD & DRAINAGE
(PUBLIC) SIGNING & STRIPING PLAN: STA 25+43 TO STA 38+45

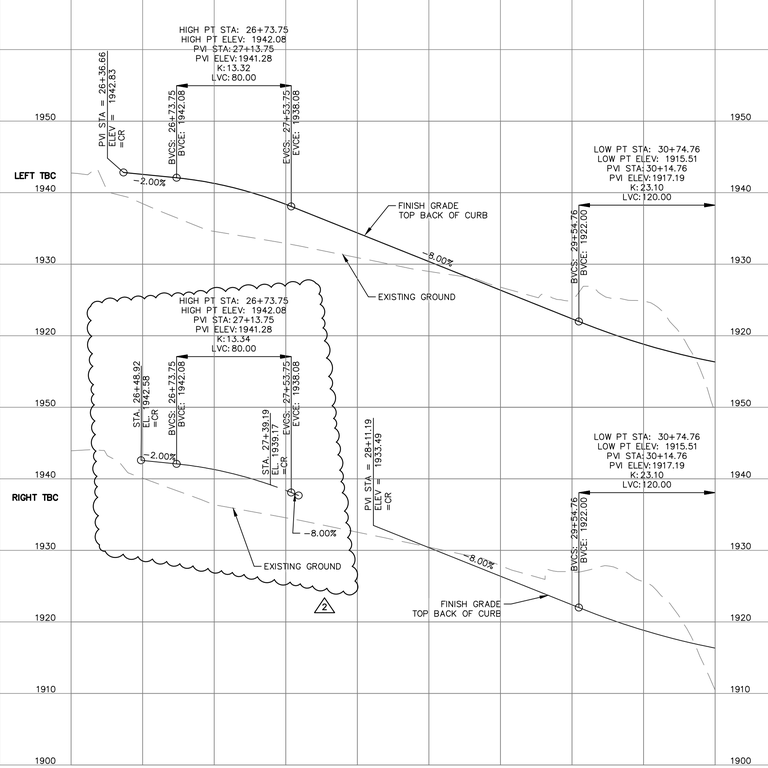
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

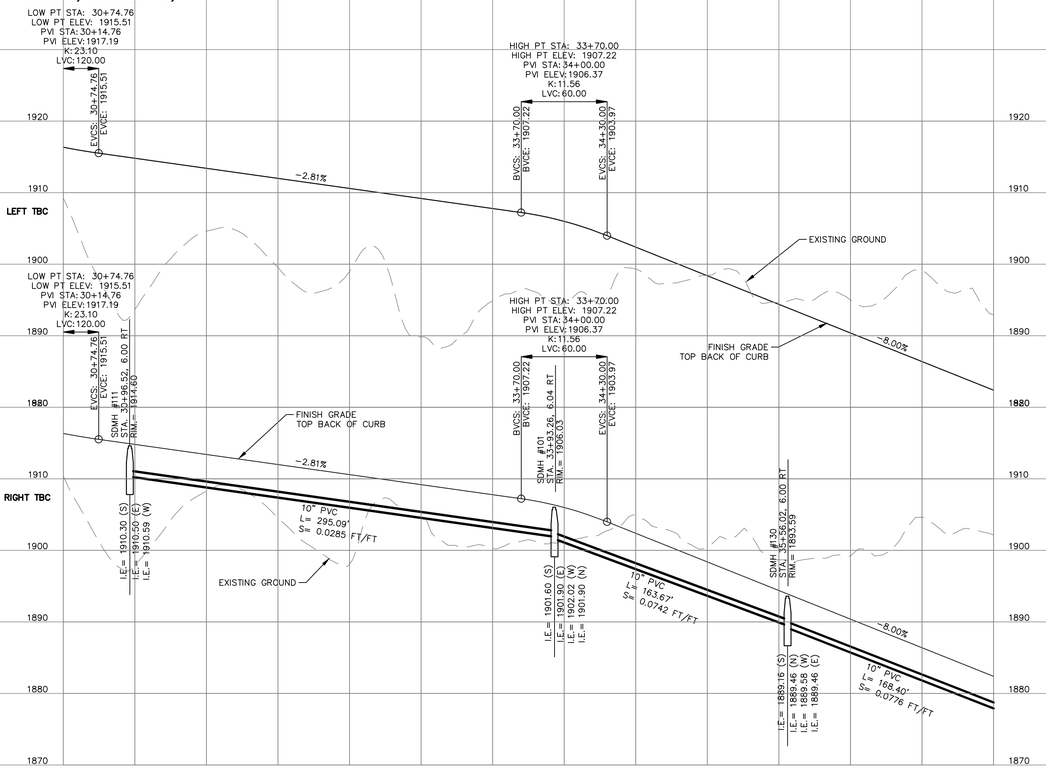
TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	INLAN W (03) 1 36-25N-42E

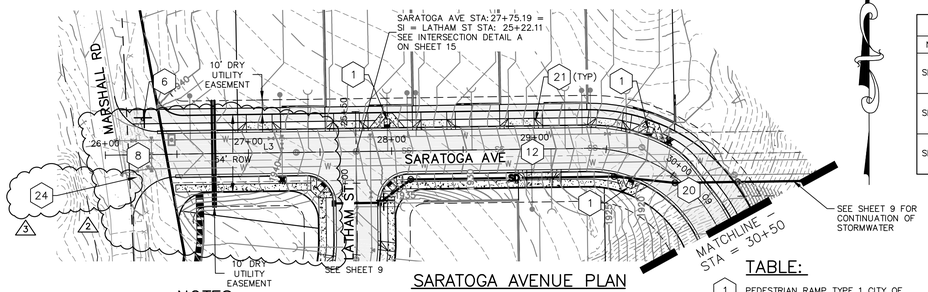
CALL BEFORE YOU DIG 1-800-424-5555

SEC. 36, T. 25 N., R. 42 E., WM





SARATOGA AVENUE PROFILE
STA 26+00 TO 30+50



SARATOGA AVENUE PLAN
STA 26+00 TO 30+50

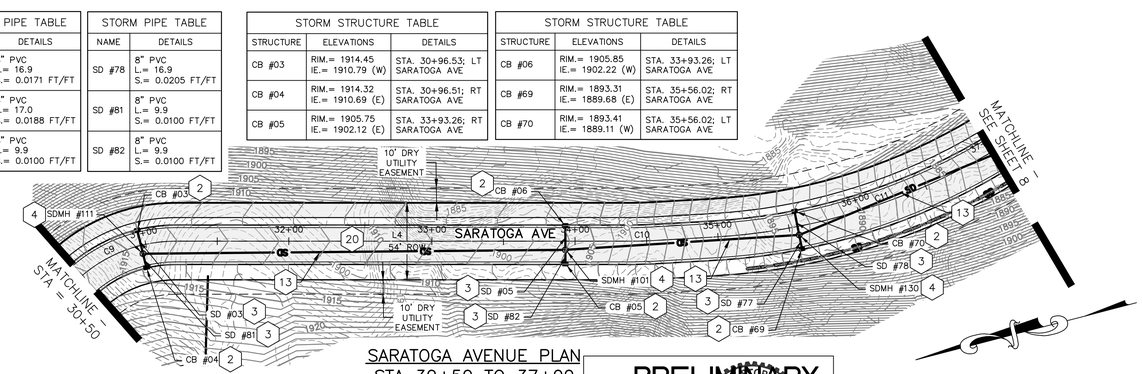
STORM PIPE TABLE	
NAME	DETAILS
SD #03	8" PVC L.= 16.9 S.= 0.0171 FT/FT
SD #05	8" PVC L.= 17.0 S.= 0.0188 FT/FT
SD #77	8" PVC L.= 9.9 S.= 0.0100 FT/FT

STORM PIPE TABLE	
NAME	DETAILS
SD #78	8" PVC L.= 16.9 S.= 0.0205 FT/FT
SD #81	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #82	8" PVC L.= 9.9 S.= 0.0100 FT/FT

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #03	RIM.= 1914.45 IE.= 1910.79 (W)	STA. 30+96.53; LT SARATOGA AVE
CB #04	RIM.= 1914.32 IE.= 1910.69 (E)	STA. 30+96.51; RT SARATOGA AVE
CB #05	RIM.= 1905.75 IE.= 1902.12 (E)	STA. 33+93.26; RT SARATOGA AVE

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #06	RIM.= 1905.85 IE.= 1902.22 (W)	STA. 33+93.26; LT SARATOGA AVE
CB #69	RIM.= 1893.31 IE.= 1889.68 (E)	STA. 35+56.02; RT SARATOGA AVE
CB #70	RIM.= 1893.41 IE.= 1889.11 (W)	STA. 35+56.02; LT SARATOGA AVE

SARATOGA AVENUE PROFILE
STA 30+50 TO 37+00



SARATOGA AVENUE PLAN
STA 30+50 TO 37+00

NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.
3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.
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5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.
6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.
7. CONTRACTOR SHALL VERIFY UTILITY SERVICE ELEVATIONS AT ALL CROSSINGS PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE IMPROVEMENTS.
8. ALL STATIONING REFERENCES SARATOGA AVENUE ALIGNMENT.
9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.
11. CATCH BASINS ON GRADE
RIM = FLOWLINE -0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE - 0.17'

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L3	336.82	N89°11'02"E
L4	320.64	S14°29'26"W

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C9	100.00	183.79	S38°09'46"E
C10	200.00	11.40	S12°51'29"W
C11	425.00	569.34	S27°09'07"E

TABLE:

1. PEDESTRIAN RAMP TYPE 1 CITY OF SPOKANE STANDARD F-105.
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C. SEE STORM STRUCTURE TABLE.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. SD MANHOLE WITH FRAME AND SOLID COVER PER CITY OF SPOKANE STD PLAN Z-101
5. NOT USED.
6. STOP SIGN/STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
8. INTERSECTION. SEE MARSHALL ROAD AND SARATOGA AVENUE INTERSECTION DETAIL J OF SHEET 16.
12. INTERNAL ROAD SECTION. SEE SHEET 14.
13. STORM DRAIN PIPE. SEE PLAN & PROFILE
20. INTERNAL ROAD SECTION (SIDEWALK ON LEFT SIDE). SEE SHEET 14.
21. CONCRETE DRIVEWAY APPROACH PER CITY OF SPOKANE STANDARD PLAN F-104.
24. GRAVEL PAVING, 12" CSTC OVER NATIVE COMPACTED SUBGRADE.

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SE#19-342

PRELIMINARY
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FOR REGULATORY REVIEW ONLY

GRAPHIC SCALE
(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

DATE: 6/11/24

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
HORIZONTAL SCALE (22 x 34)	1"=50'	
VERTICAL SCALE (22 x 34)	1"=10'	

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED: JDS		01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
SARATOGA AVENUE ROAD & DRAINAGE
PLAN & PROFILE STA 26+00 TO STA 37+00
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

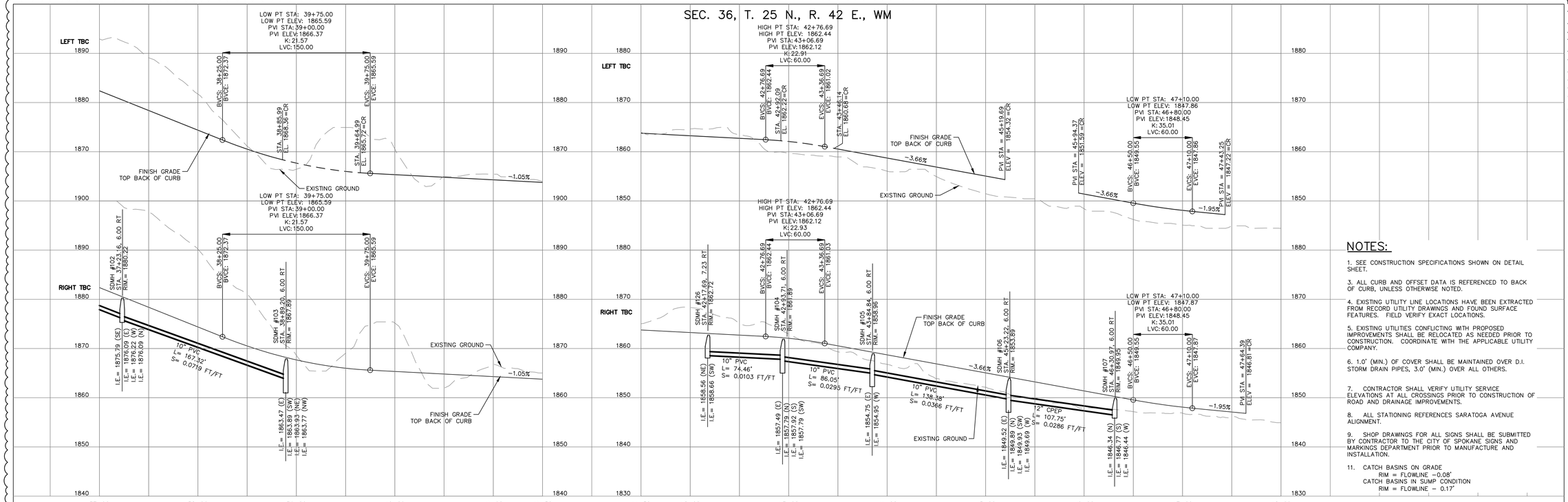
TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	SARAT A (03) 4 36-25N-42E

7
22

CALL BEFORE YOU DIG 1-800-424-5555

4

SEC. 36, T. 25 N., R. 42 E., WM



NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.
3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.
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5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.
6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.
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8. ALL STATIONING REFERENCES SARATOGA AVENUE ALIGNMENT.
9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.
11. CATCH BASINS ON GRADE
RIM = FLOWLINE −0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE − 0.17'

SARATOGA AVENUE PROFILE
STA 37+00 TO STA 47+92

SARATOGA AVENUE PLAN
STA 37+00 TO STA 47+92

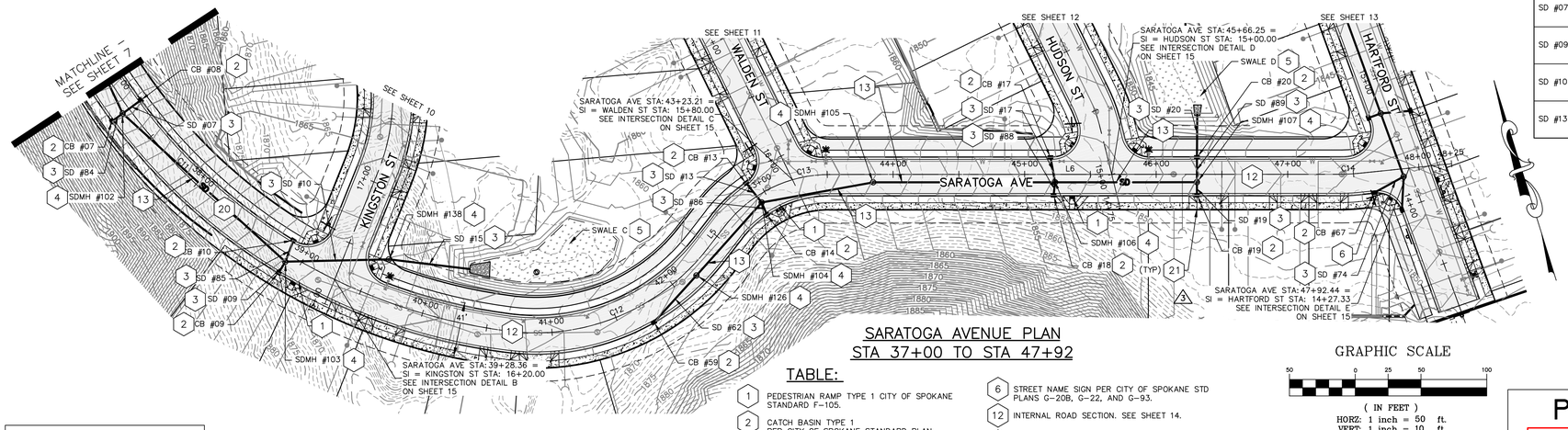


TABLE:

1. PEDESTRIAN RAMP TYPE 1 CITY OF SPOKANE STANDARD F-105.
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C. SEE STORM STRUCTURE TABLE.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. SD MANHOLE WITH FRAME AND SOLID COVER PER CITY OF SPOKANE STD PLAN Z-101
5. SWALE. SEE DETAIL ON SHEETS 17 & 18
6. STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
12. INTERNAL ROAD SECTION. SEE SHEET 14.
13. STORM DRAIN PIPE. SEE PLAN & PROFILE
20. INTERNAL ROAD SECTION (SIDEWALK ON LEFT SIDE). SEE SHEET 14.
21. CONCRETE DRIVEWAY APPROACH PER CITY OF SPOKANE STANDARD PLAN F-104.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C11	425.00	569.34	S27°09'07"E
C12	165.00	171.33	N84°43'23"E
C13	100.00	91.19	N81°06'02"E
C14	100.00	10.16	S75°41'06"E

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L5	22.25	N54°58'32"E
L6	389.73	S72°46'29"E

STORM PIPE TABLE	
NAME	DETAILS
SD #07	8" PVC L= 16.9 S= 0.0189 FT/FT
SD #09	8" PVC L= 9.9 S= 0.0100 FT/FT
SD #10	12" PVC L= 78.8 S= 0.0261 FT/FT
SD #13	8" PVC L= 19.0 S= 0.0147 FT/FT

STORM PIPE TABLE	
NAME	DETAILS
SD #15	15" CPEP L= 61.9 S= 0.0050 FT/FT
SD #17	8" PVC L= 19.2 S= 0.0147 FT/FT
SD #19	8" PVC L= 9.9 S= 0.0100 FT/FT
SD #20	12" CPEP L= 33.5 S= 0.0050 FT/FT

STORM PIPE TABLE	
NAME	DETAILS
SD #62	10" PVC L= 48.1 S= 0.0100 FT/FT
SD #74	8" PVC L= 25.4 S= 0.0100 FT/FT
SD #84	8" PVC L= 9.9 S= 0.0100 FT/FT
SD #85	8" PVC L= 17.2 S= 0.0187 FT/FT

STORM PIPE TABLE	
NAME	DETAILS
SD #86	8" PVC L= 10.1 S= 0.0100 FT/FT
SD #87	10" PVC L= 138.4 S= 0.0366 FT/FT
SD #88	8" PVC L= 10.0 S= 0.0100 FT/FT
SD #89	12" CPEP L= 18.9 S= 0.0050 FT/FT

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #19	RIM.= 1849.67 IE.= 1846.87 (N)	STA. 46+30.97; RT SARATOGA AVE
CB #20	RIM.= 1849.73 IE.= 1846.25 (S) IE.= 1846.15 (N)	STA. 46+31.02; LT SARATOGA AVE
CB #59	RIM.= 1862.95 IE.= 1859.14 (NE)	STA. 41+73.34; RT SARATOGA AVE
CB #67	RIM.= 1846.23 IE.= 1842.60 (E)	STA. 47+64.39; RT SARATOGA AVE
SDMH #138	RIM.= 1866.04 IE.= 1861.41 (W) IE.= 1861.31 (SE)	STA. 39+61.26; LT SARATOGA AVE

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #07	RIM.= 1879.95 IE.= 1876.32 (E)	STA. 37+23.16; RT SARATOGA AVE
CB #08	RIM.= 1880.04 IE.= 1876.41 (W)	STA. 37+23.16; LT SARATOGA AVE
CB #09	RIM.= 1867.62 IE.= 1863.99 (NE)	STA. 38+89.20; RT SARATOGA AVE
CB #10	RIM.= 1867.88 IE.= 1864.25 (SW)	STA. 38+85.99; LT SARATOGA AVE
CB #13	RIM.= 1861.57 IE.= 1858.07 (S)	STA. 42+92.09; LT SARATOGA AVE
CB #14	RIM.= 1861.65 IE.= 1858.02 (N)	STA. 42+91.56; RT SARATOGA AVE
CB #17	RIM.= 1853.80 IE.= 1850.17 (S)	STA. 45+19.69; LT SARATOGA AVE
CB #18	RIM.= 1853.66 IE.= 1850.03 (NE)	STA. 45+22.04; RT SARATOGA AVE

PRELIMINARY
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REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
	HORIZONTAL SCALE (22 x 34)	1"=50'
	VERTICAL SCALE (22 x 34)	1"=10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

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510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001
SE#19-342

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

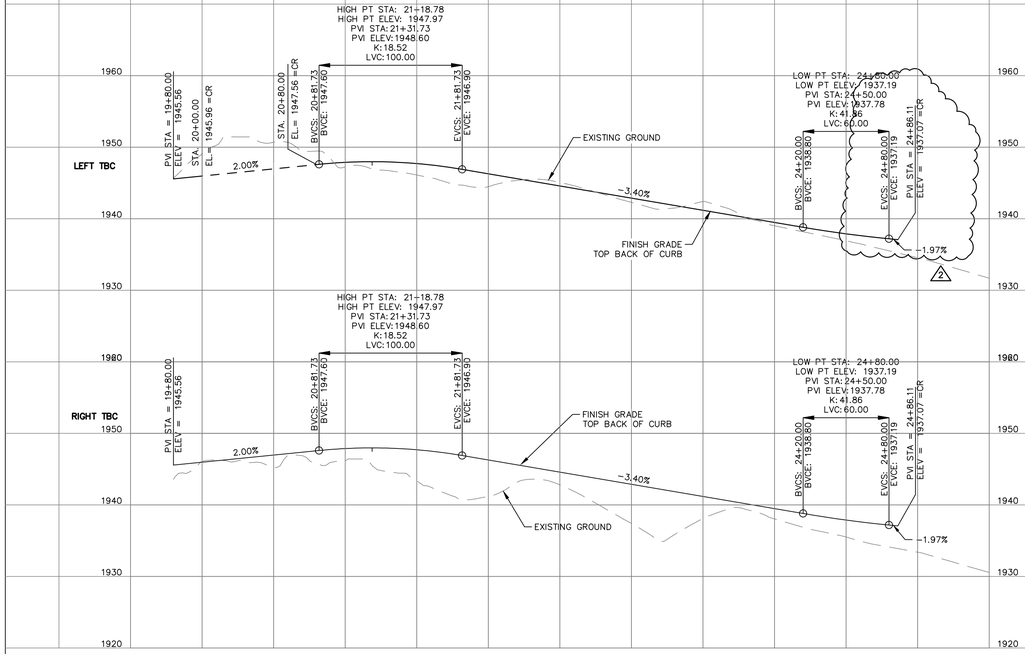
DATE: 6/11/24
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS:
SARATOGA AVENUE ROAD & DRAINAGE
PLAN & PROFILE STA 37+00 TO STA 47+92
PROJECT LIMITS: LATAH GLEN RESIDENTIAL
TYPE OF IMPROVEMENT: SITE/DRAINAGE

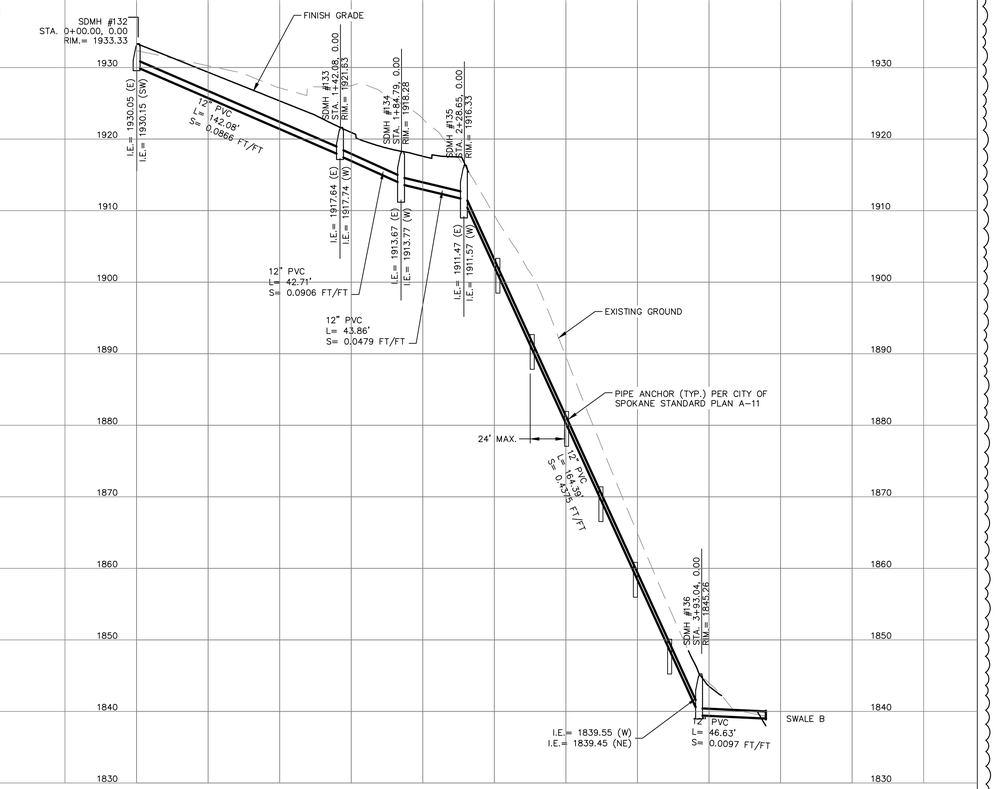
PROJECT NO.	PLAN NO.
2023519/2023520	SARAT A (04) 4 36-25N-42E

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SEC. 36, T. 25 N., R. 42 E., WM

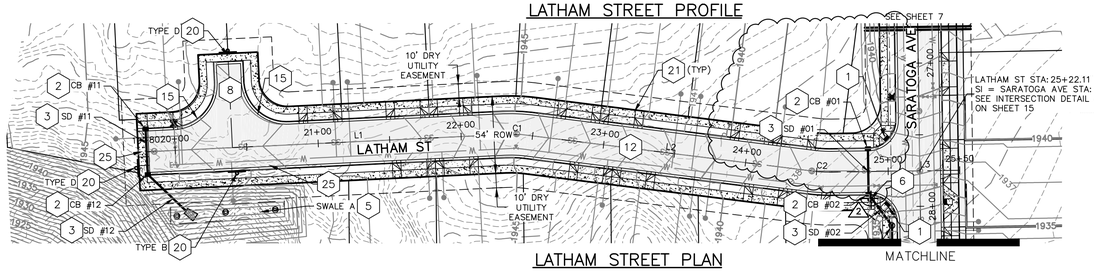


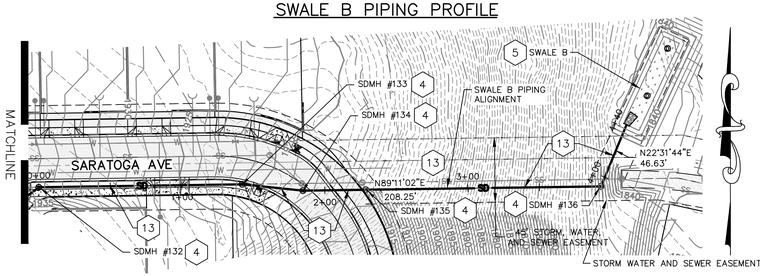


LATHAM STREET PROFILE

SWALE B PIPING PROFILE

LATHAM STREET PLAN





GRAPHIC SCALE

50 0 25 50 100

(IN FEET)

HORZ: 1 inch = 50 ft.

VERT: 1 inch = 10 ft.

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L1	250.09	N02°45'53"W
L2	199.33	N07°08'58"E
L3	89.38	N00°48'58"W

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C1	100.00	17.30	N02°11'33"E
C2	100.00	13.90	N03°10'00"E

NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.

3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.

4. EXISTING UTILITY LINE LOCATIONS HAVE BEEN EXTRACTED FROM RECORD UTILITY DRAWINGS AND FOUND SURFACE FEATURES. FIELD VERIFY EXACT LOCATIONS.

5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.

6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.

7. CONTRACTOR SHALL VERIFY UTILITY SERVICE ELEVATIONS AT ALL CROSSINGS PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE IMPROVEMENTS.

8. ALL STATIONING REFERENCES LATHAM STREET ALIGNMENT.

9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.

11. CATCH BASINS ON GRADE
RIM = FLOWLINE -0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE - 0.17'

TABLE:

1. PEDESTRIAN RAMP TYPE 1 PER CITY OF SPOKANE STANDARD F-105.
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C. SEE STORM STRUCTURE TABLE.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. SD MANHOLE WITH FRAME AND SOLID COVER PER CITY OF SPOKANE STD PLAN Z-101.
5. SWALE. SEE DETAIL ON SHEETS 17 & 18.
6. STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
8. TURNAROUND. SEE DETAIL I ON SHEET 16.
9. NOT USED.
12. INTERNAL ROAD SECTION. SEE SHEET 14.
13. STORM DRAIN PIPE. SEE PROFILE.
15. NOT USED.
20. "NO PARKING FIRE LANE" SIGN PER SPOKANE FIRE DEPT STANDARDS. SEE SHEET 14 FOR SIGN TYPE DETAIL AND SPACING STANDARDS. 4
21. CONCRETE DRIVEWAY APPROACH PER CITY OF SPOKANE STANDARD PLAN F-104.
25. CONCRETE DRIVEWAY APPROACH PER CITY OF SPOKANE STANDARD PLAN F-103A.

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #01	RIM.= 1936.40 IE.= 1932.68 (E)	STA. 24+86.11; LT LATHAM ST 2
CB #02	RIM.= 1936.49 IE.= 1932.36 (W) IE.= 1932.26 (NE)	STA. 24+86.11; RT LATHAM ST
CB #11	RIM.= 1944.89 IE.= 1942.01 (E)	STA. 19+80.08; LT LATHAM ST
CB #12	RIM.= 1944.89 IE.= 1941.85 (W) IE.= 1941.75 (NE)	STA. 19+80.08; RT LATHAM ST

SWALE B PIPING PLAN

STORM PIPE TABLE	
NAME	DETAILS
SD #01	10" PVC L.= 31.8 S.= 0.0100 FT/FT 2
SD #02	12" PVC L.= 27.2 S.= 0.0775 FT/FT
SD #11	10" PVC L.= 31.8 S.= 0.0050 FT/FT
SD #12	10" PVC L.= 36.8 S.= 0.0050 FT/FT

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DATE: 6/11/24

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SE#19-342

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
	HORIZONTAL SCALE (22 x 34)	1"=50'
	VERTICAL SCALE (22 x 34)	1"=10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
LATHAM STREET ROAD & DRAINAGE
PLAN & PROFILE STA 19+80 TO STA 25+37

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

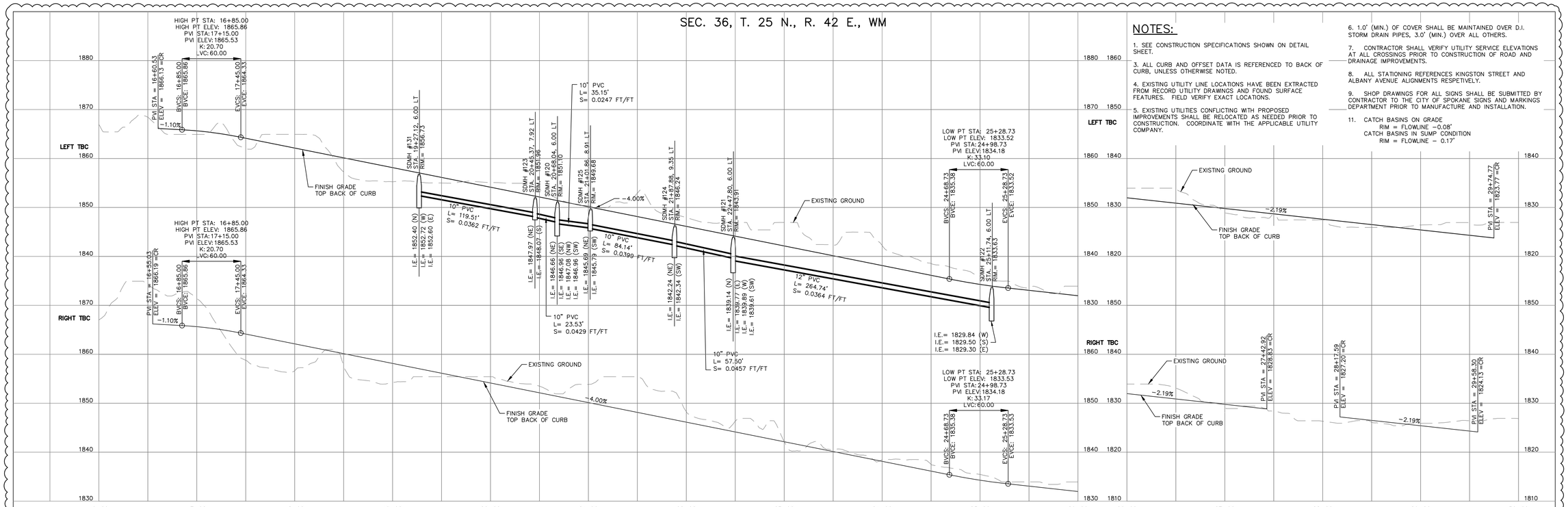
PROJECT NO.	PLAN NO.
2023519/2023520	LATHA S (02) 4 36-25N-42E

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SEC. 36, T. 25 N., R. 42 E., WM

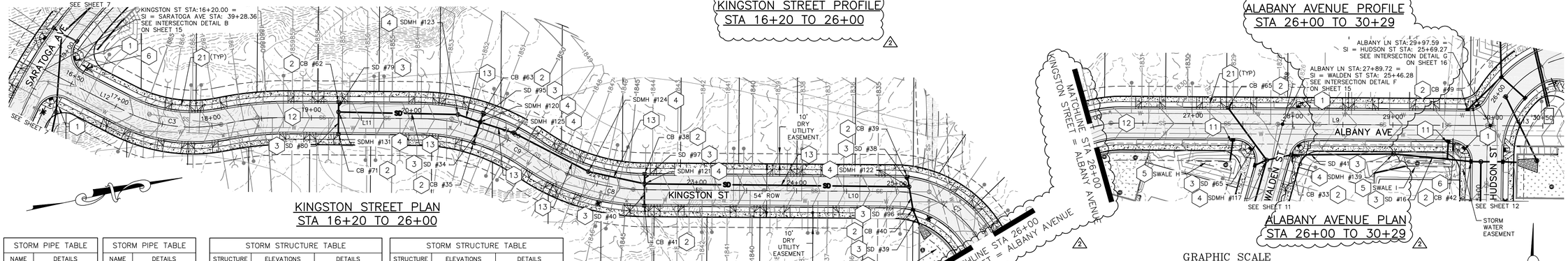


NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.
3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.
4. EXISTING UTILITY LINE LOCATIONS HAVE BEEN EXTRACTED FROM RECORD UTILITY DRAWINGS AND FOUND SURFACE FEATURES. FIELD VERIFY EXACT LOCATIONS.
5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.
6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.
7. CONTRACTOR SHALL VERIFY UTILITY SERVICE ELEVATIONS AT ALL CROSSINGS PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE IMPROVEMENTS.
8. ALL STATIONING REFERENCES KINGSTON STREET AND ALBANY AVENUE ALIGNMENTS RESPETIVELY.
9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.
11. CATCH BASINS ON GRADE
RIM = FLOWLINE −0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE − 0.17'

KINGSTON STREET PROFILE
STA 16+20 TO 26+00

ALBANY AVENUE PROFILE
STA 26+00 TO 30+29



KINGSTON STREET PLAN
STA 16+20 TO 26+00

ALBANY AVENUE PLAN
STA 26+00 TO 30+29

STORM PIPE TABLE		
NAME	DETAILS	
SD #16	15" CPEP L= 77.8 S= 0.0062 FT/FT	
SD #34	8" PVC L= 21.9 S= 0.0100 FT/FT	
SD #38	8" PVC L= 10.4 S= 0.0100 FT/FT	
SD #39	15" PVC L= 17.8 S= 0.0072 FT/FT	
SD #40	8" PVC L= 21.9 S= 0.0100 FT/FT	
SD #41	12" PVC L= 102.7 S= 0.0384 FT/FT	

STORM PIPE TABLE		
NAME	DETAILS	
SD #65	8" D.I. L= 64.9 S= 0.0100 FT/FT	
SD #79	8" PVC L= 9.9 S= 0.0100 FT/FT	
SD #80	8" PVC L= 21.9 S= 0.0100 FT/FT	
SD #95	8" PVC L= 9.9 S= 0.0100 FT/FT	
SD #96	12" PVC L= 23.4 S= 0.0051 FT/FT	
SD #97	8" PVC L= 9.9 S= 0.0100 FT/FT	

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #33	RIM.= 1827.77 IE.= 1823.74 (W) IE.= 1823.64 (E)	STA. 25+18.95; RT WALDEN ST
CB #35	RIM.= 1850.81 IE.= 1847.18 (NW)	STA. 20+68.04; RT KINGSTON ST
CB #38	RIM.= 1843.62 IE.= 1839.99 (E)	STA. 22+47.80; LT KINGSTON ST
CB #39	RIM.= 1833.57 IE.= 1829.94 (E)	STA. 25+08.95; LT KINGSTON ST
CB #40	RIM.= 1833.12 IE.= 1829.18 (W) IE.= 1828.92 (E)	STA. 25+20.42; RT KINGSTON ST
CB #41	RIM.= 1843.62 IE.= 1839.99 (W)	STA. 22+47.80; RT KINGSTON ST
CB #42	RIM.= 1823.15 IE.= 1818.97 (W) IE.= 1818.72 (E)	STA. 25+32.98; LT HUDSON ST

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #49	RIM.= 1823.18 IE.= 1820.55 (NE)	STA. 29+74.77; LT ALBANY LN
CB #62	RIM.= 1856.45 IE.= 1852.82 (E)	STA. 19+27.12; LT KINGSTON ST
CB #63	RIM.= 1850.82 IE.= 1847.18 (SE)	STA. 20+68.04; LT KINGSTON ST
CB #65	RIM.= 1828.52 IE.= 1826.31 (SE)	STA. 27+35.14; LT ALBANY LN
CB #71	RIM.= 1856.45 IE.= 1852.82 (W)	STA. 19+27.12; RT KINGSTON ST
SDMH #117	RIM.= 1828.37 IE.= 1824.40 (SW) IE.= 1824.00 (E) IE.= 1825.66 (NW) IE.= 1824.40 (S)	STA. 25+07.35; LT WALDEN ST
SDMH #139	RIM.= 1825.12 IE.= 1819.70 (W) IE.= 1819.45 (E)	STA. 29+00.88; RT KINGSTON ST

TABLE:

1. PEDESTRIAN RAMP TYPE 1 CITY OF SPOKANE STANDARD F-105.
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C. SEE STORM STRUCTURE TABLE.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. SD MANHOLE WITH FRAME AND SOLID COVER PER CITY OF SPOKANE STD PLAN Z-101
5. SWALE. SEE DETAIL ON SHEETS 17 & 18
6. STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
11. CURB DROP INLET WITH SIDEWALK UNDER DRAIN. SEE SHEET 18 FOR DETAILS.
12. INTERNAL ROAD SECTION. SEE SHEET 14.
13. STORM DRAIN PIPE. SEE PROFILE
15. NOT USED.
20. NOT USED.
21. CONCRETE DRIVEWAY APPROACH PER CITY OF SPOKANE STANDARD PLAN F-104.
22. NOT USED.

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L9	369.75	N87°00'31"E
L10	249.78	N12°22'45"E
L11	132.22	N12°22'45"E
L12	59.40	N39°08'47"E
L13	52.41	N87°00'31"E

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C3	150.00	99.83	N20°04'51"E
C7	100.00	130.25	N49°41'38"E
C8	200.00	119.84	N29°32'42"E
C9	200.00	119.84	N29°32'42"E

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

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DATE: 6/11/24

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: KINGSTON ST & ALBANY AVE ROAD & DRAINAGE
PLAN & PROFILE STA 16+20 TO STA 30+29

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	KINGS S (02) 4 ALBAN A (03) 4 35-25N-42E

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

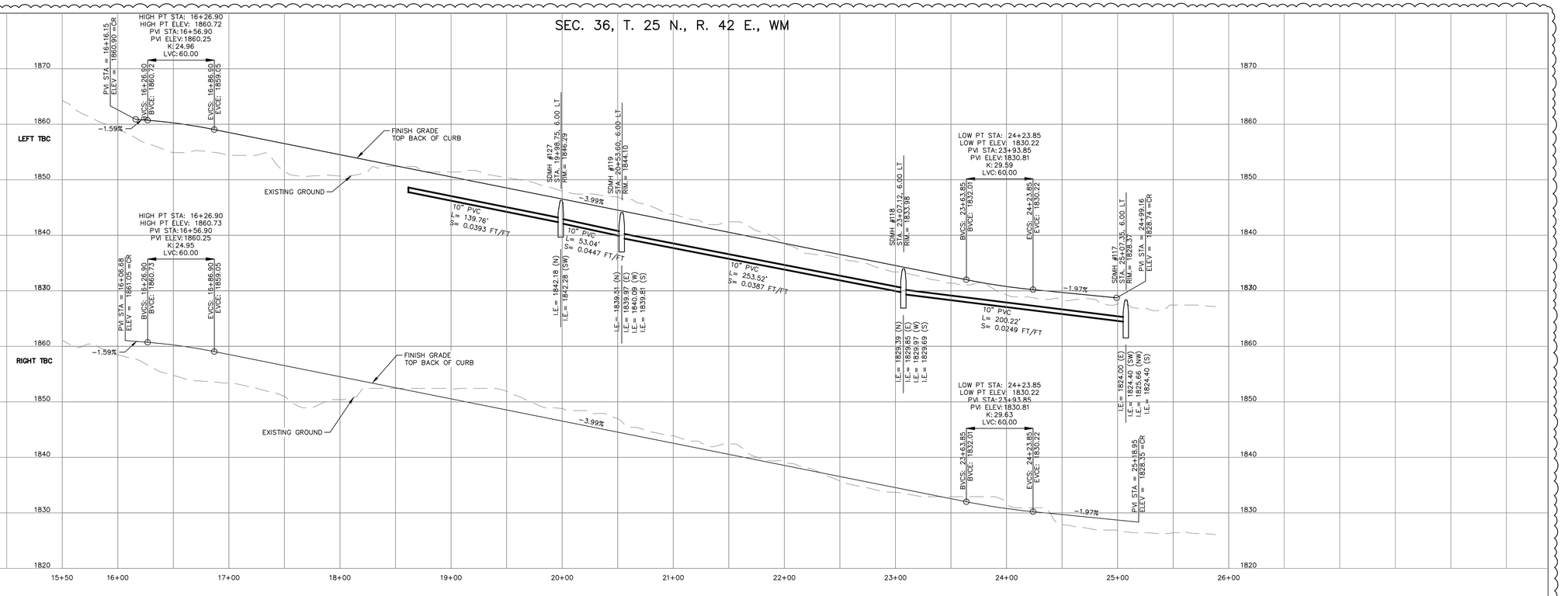
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP
PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		BY	DATES
	HORIZONTAL SCALE (22 x 34) 1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34) 1"=10'	APPROVED: JDS	01/19/2024

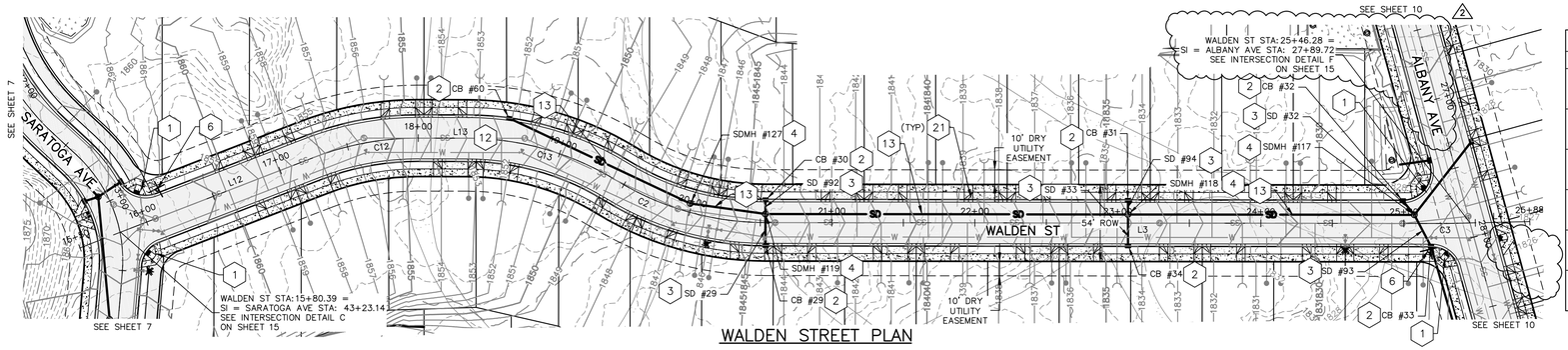
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WALDEN STREET PROFILE



WALDEN STREET PLAN

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L3	473.97	N12°22'45"E
L4	58.07	N11°00'59"E
L12	175.39	N08°49'37"W
L13	34.78	N12°22'45"E

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C2	200.00	109.70	N28°05'33"E
C3	100.00	2.38	N11°41'52"E
C12	200.00	74.02	N01°46'34"E
C13	200.00	109.72	N28°05'41"E

STORM PIPE TABLE	
NAME	DETAILS
SD #29	8" PVC L.= 21.9 S.= 0.0100 FT/FT
SD #32	8" PVC L.= 12.9 S.= 0.0100 FT/FT
SD #33	8" PVC L.= 21.9 S.= 0.0100 FT/FT
SD #92	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #93	12" PVC L.= 24.8 S.= 0.0105 FT/FT
SD #94	8" PVC L.= 9.9 S.= 0.0100 FT/FT

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #29	RIM.= 1843.82 IE.= 1840.19 (W)	STA. 20+53.60; RT WALDEN ST
CB #30	RIM.= 1843.82 IE.= 1840.19 (E)	STA. 20+53.60; LT WALDEN ST
CB #31	RIM.= 1833.70 IE.= 1830.07 (E)	STA. 23+07.12; LT WALDEN ST
CB #32	RIM.= 1828.07 IE.= 1824.53 (NE)	STA. 24+99.16; LT WALDEN ST
CB #33	RIM.= 1827.77 IE.= 1823.74 (W) IE.= 1823.64 (E)	STA. 25+18.95; RT WALDEN ST
CB #34	RIM.= 1833.70 IE.= 1830.07 (W)	STA. 23+07.12; RT WALDEN ST
CB #60	RIM.= 1851.58 IE.= 1847.77 (NE)	STA. 18+61.59; LT WALDEN ST

NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.
3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.
4. EXISTING UTILITY LINE LOCATIONS HAVE BEEN EXTRACTED FROM RECORD UTILITY DRAWINGS AND FOUND SURFACE FEATURES. FIELD VERIFY EXACT LOCATIONS.
5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.
6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.
7. CONTRACTOR SHALL VERIFY UTILITY SERVICE ELEVATIONS AT ALL CROSSINGS PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE IMPROVEMENTS.
8. ALL STATIONING REFERENCES WALDEN STREET ALIGNMENT.
9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.
11. CATCH BASINS ON GRADE
RIM = FLOWLINE −0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE − 0.17'

TABLE:

1. PEDESTRIAN RAMP TYPE 1 CITY OF SPOKANE STANDARD F-105.
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C. SEE STORM STRUCTURE TABLE.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. SD MANHOLE WITH FRAME AND SOLID COVER PER CITY OF SPOKANE STD PLAN Z-101.
5. NOT USED.
6. STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
12. INTERNAL ROAD SECTION. SEE SHEET 14.
13. STORM DRAIN PIPE. SEE PROFILE.
20. NOT USED.
21. CONCRETE DRIVEWAY APPROACH PER CITY OF SPOKANE STANDARD PLAN F-104.
22. NOT USED.

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

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PRELIMINARY
DATE: 6/11/24

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

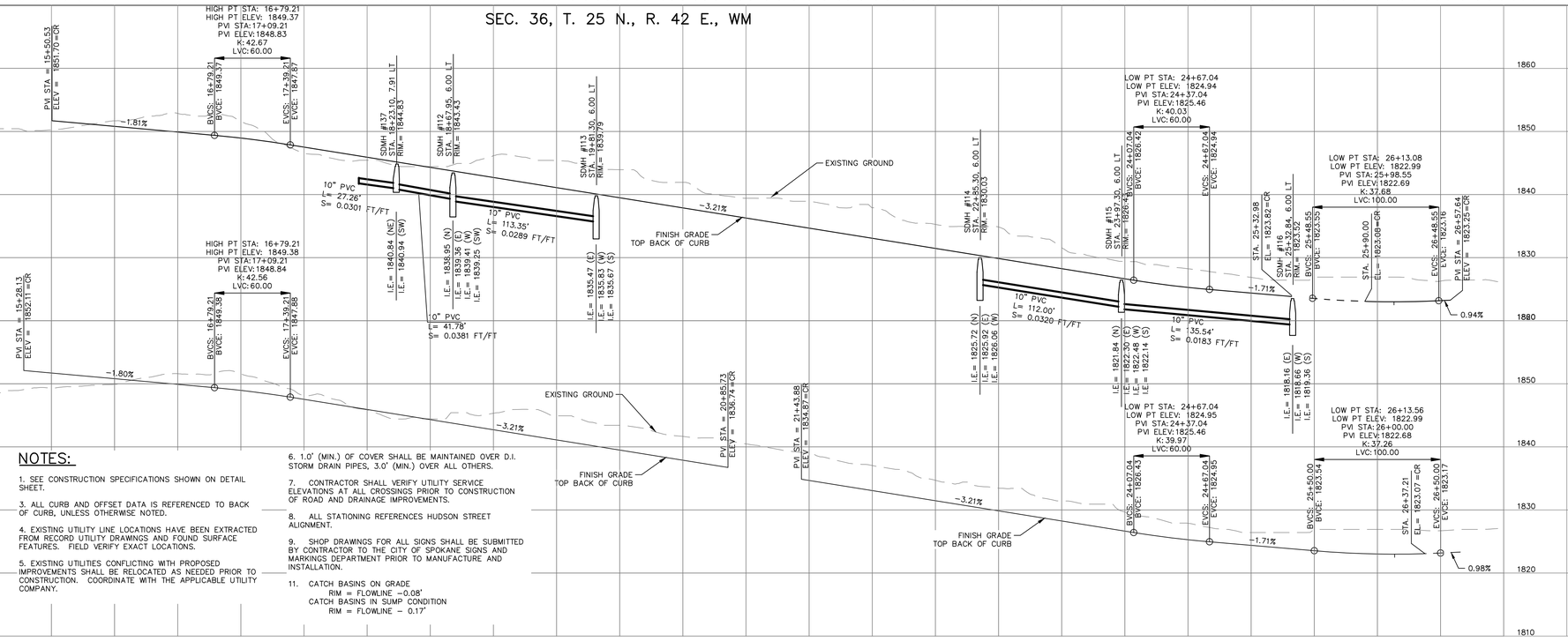
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS:
WALDEN STREET ROAD & DRAINAGE
PLAN & PROFILE STA 15+80TO STA 25+67
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	WALDE S (02) 4 36-25N-42E

11
22

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SEC. 36, T. 25 N., R. 42 E., WM



NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.
3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.
4. EXISTING UTILITY LINE LOCATIONS HAVE BEEN EXTRACTED FROM RECORD UTILITY DRAWINGS AND FOUND SURFACE FEATURES. FIELD VERIFY EXACT LOCATIONS.
5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.
6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.
7. CONTRACTOR SHALL VERIFY UTILITY SERVICE ELEVATIONS AT ALL CROSSINGS PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE IMPROVEMENTS.
8. ALL STATIONING REFERENCES HUDSON STREET ALIGNMENT.
9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.
11. CATCH BASINS ON GRADE
RIM = FLOWLINE −0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE − 0.17'

STORM PIPE TABLE	
NAME	DETAILS
SD #25	8" D.I. L.= 31.9 S.= 0.0100 FT/FT
SD #26	10" PVC L.= 28.0 S.= 0.0182 FT/FT
SD #27	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #28	12" PVC L.= 25.7 S.= 0.1047 FT/FT
SD #42	18" CPEP L.= 9.9 S.= 0.0062 FT/FT
SD #43	24" PVC L.= 14.9 S.= 0.0050 FT/FT

STORM PIPE TABLE	
NAME	DETAILS
SD #44	8" PVC L.= 21.9 S.= 0.0100 FT/FT
SD #49	8" D.I. L.= 46.9 S.= 0.0260 FT/FT
SD #50	8" PVC L.= 21.9 S.= 0.0100 FT/FT
SD #64	8" PVC L.= 21.9 S.= 0.0100 FT/FT
SD #91	10" PVC L.= 21.9 S.= 0.0050 FT/FT
SD #98	24" PVC L.= 21.9 S.= 0.0050 FT/FT

STORM PIPE TABLE	
NAME	DETAILS
SD #99	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #100	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #109	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #115	8" CPEP L.= 31.8 S.= 0.0080 FT/FT
SD #116	10" CPEP L.= 37.6 S.= 0.0050 FT/FT

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #25	RIM.= 1836.23 IE.= 1833.43 (SE)	STA. 20+83.24; LT HUDSON ST
CB #26	RIM.= 1836.07 IE.= 1833.11 (NW) IE.= 1833.01 (S)	STA. 20+85.73; RT HUDSON ST
CB #27	RIM.= 1839.56 IE.= 1835.93 (E)	STA. 19+81.30; LT HUDSON ST
CB #28	RIM.= 1839.52 IE.= 1835.36 (W) IE.= 1835.19 (E)	STA. 19+81.30; RT HUDSON ST
CB #42	RIM.= 1823.15 IE.= 1818.97 (W) IE.= 1818.72 (E)	STA. 25+32.98; LT HUDSON ST
CB #43	RIM.= 1823.23 IE.= 1818.05 (W) IE.= 1817.95 (E)	STA. 25+33.11; RT HUDSON ST
CB #44	RIM.= 1829.77 IE.= 1826.14 (W)	STA. 22+85.30; RT HUDSON ST
CB #45	RIM.= 1829.79 IE.= 1826.16 (E)	STA. 22+85.30; LT HUDSON ST

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
CB #49	RIM.= 1823.18 IE.= 1820.55 (NE)	STA. 29+74.77; LT KINGSTON ST
CB #50	RIM.= 1843.21 IE.= 1839.58 (W)	STA. 18+67.95; RT HUDSON ST
CB #51	RIM.= 1843.14 IE.= 1839.51 (E)	STA. 18+67.95; LT HUDSON ST
CB #55	RIM.= 1826.15 IE.= 1822.52 (W)	STA. 23+97.30; RT HUDSON ST
CB #56	RIM.= 1826.21 IE.= 1822.58 (E)	STA. 23+97.30; LT HUDSON ST
CB #57	RIM.= 1845.56 IE.= 1841.76 (NE)	STA. 17+93.48; LT HUDSON ST
CB #75	RIM.= 1829.49 IE.= 1819.33 (SW) IE.= 1819.33 (SE) IE.= 1819.16 (N)	STA. 26+13.66; LT HUDSON ST
CB #76	RIM.= 1822.29 IE.= 1819.58 (NW)	STA. 26+13.99; RT HUDSON ST

HUDSON STREET PROFILE

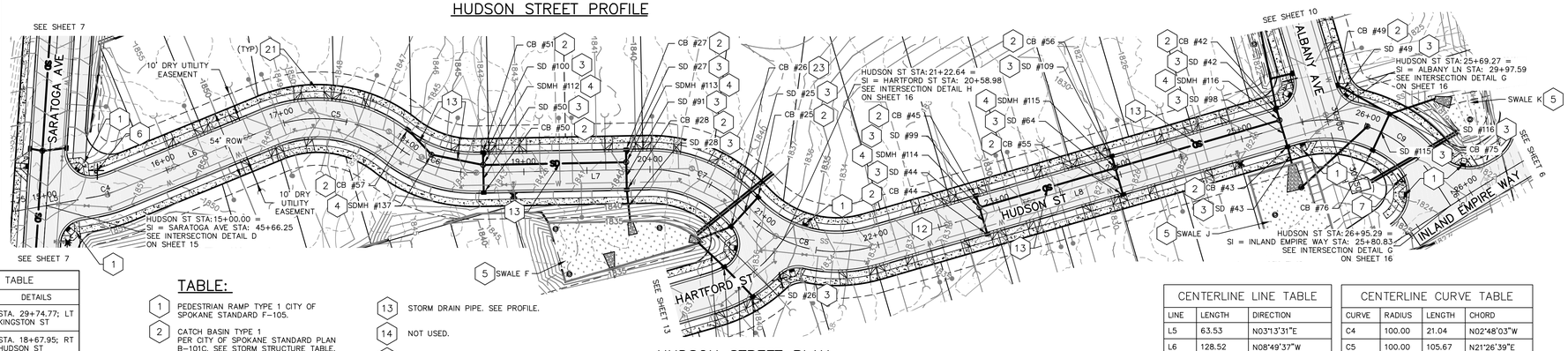


TABLE:

1. PEDESTRIAN RAMP TYPE 1 CITY OF SPOKANE STANDARD F-105.
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C. SEE STORM STRUCTURE TABLE.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. SD MANHOLE WITH FRAME AND SOLID COVER PER CITY OF SPOKANE STD PLAN Z-101
5. SWALE. SEE DETAIL ON SHEETS 17 & 18
6. STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
7. STOP SIGN/STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
11. CURB DROP INLET WITH SIDEWALK UNDER DRAIN. SEE SHEET 18 FOR DETAILS.
12. INTERNAL ROAD SECTION. SEE SHEET 14.
13. STORM DRAIN PIPE. SEE PROFILE.
14. NOT USED.
15. NOT USED.
20. NOT USED.
21. CONCRETE DRIVEWAY APPROACH PER CITY OF SPOKANE STANDARD PLAN F-103A.

HUDSON STREET PLAN

GRAPHIC SCALE

50 0 25 50 100
(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L5	63.53	N03°13'31"E
L6	128.52	N08°49'37"W
L7	135.75	N12°22'45"E
L8	346.03	N02°44'38"W

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C4	100.00	21.04	N02°48'03"W
C5	100.00	105.67	N21°26'39"E
C6	100.00	68.65	N32°02'50"E
C7	100.00	85.09	N36°45'24"E
C8	100.00	111.49	N29°11'42"E
C9	100.00	128.68	N34°07'09"E

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PRELIMINARY
STATE OF WASHINGTON JOSEPH D. SCHMITT 19559 REGISTERED PROFESSIONAL ENGINEER
DATE: 6/11/24

12
22

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

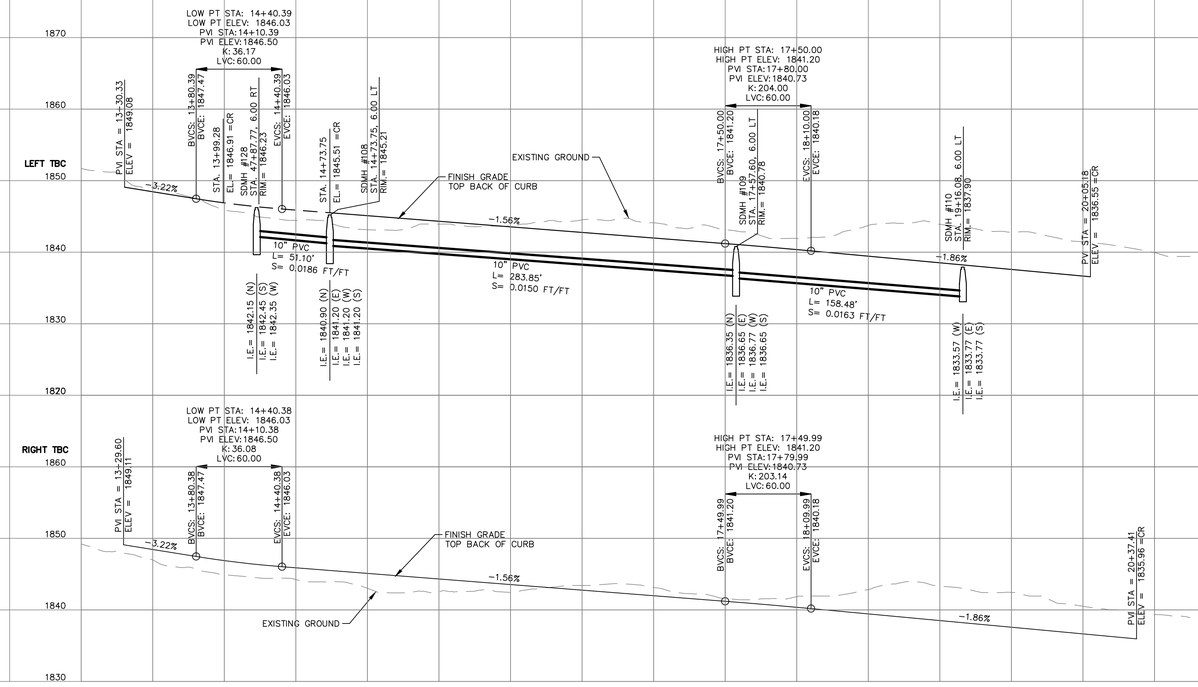
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS:
HUDSON STREET ROAD & DRAINAGE
PLAN & PROFILE STA 15+00 TO STA 27+61
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	HUDSO S (02) 4 36-25N-42E

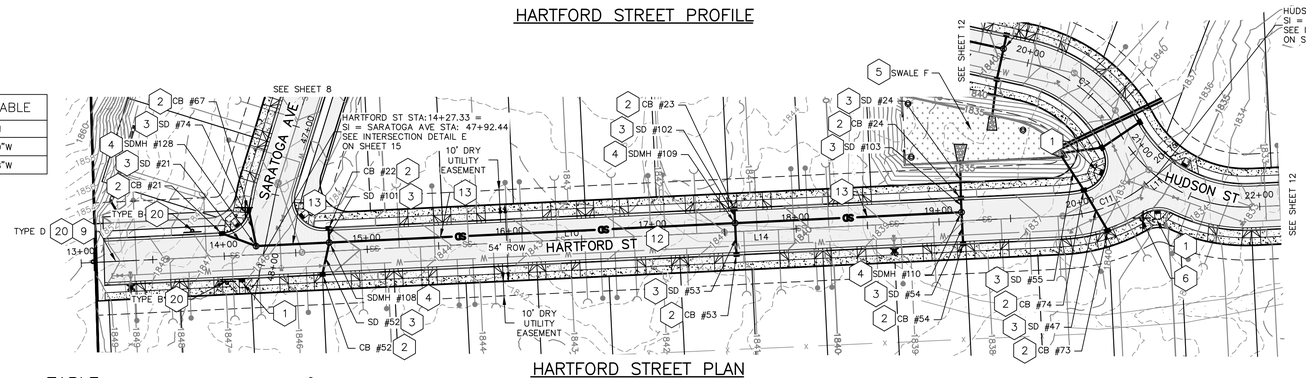
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4

SEC. 36, T. 25 N., R. 42 E., WM



HARTFORD STREET PROFILE



HARTFORD STREET PLAN

CENTERLINE CURVE TABLE			
CURVE	RADIUS	LENGTH	CHORD
C11	100.00	65.02	N21°22'19"W

CENTERLINE LINE TABLE		
LINE	LENGTH	DIRECTION
L11	23.27	N40°00'00"W
L14	686.56	N02°44'38"W

TABLE:

1. PEDESTRIAN RAMP TYPE 1 CITY OF SPOKANE STANDARD F-105.
2. CATCH BASIN TYPE 1 PER CITY OF SPOKANE STANDARD PLAN B-101C. SEE STORM STRUCTURE TABLE.
3. STORM DRAIN PIPE. SEE STORM PIPE TABLE.
4. SD MANHOLE WITH FRAME AND SOLID COVER PER CITY OF SPOKANE STD PLAN Z-101
5. SWALE. SEE DETAIL ON SHEETS 17 & 18.
6. STREET NAME SIGN PER CITY OF SPOKANE STD PLANS G-20B, G-22, AND G-93.
9. BARRICADE PER CITY OF SPOKANE STD PLAN G-92A 3X2
11. NOT USED.
12. INTERNAL ROAD SECTION. SEE SHEET 14.
13. STORM DRAIN PIPE. SEE PLAN & PROFILE
15. NOT USED.
20. "NO PARKING FIRE LANE" SIGN PER SPOKANE FIRE DEPT STANDARDS. SEE SHEET 14 FOR SIGN TYPE DETAIL AND SPACING STANDARDS. 4

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SHOWN ON DETAIL SHEET.
3. ALL CURB AND OFFSET DATA IS REFERENCED TO BACK OF CURB, UNLESS OTHERWISE NOTED.
4. EXISTING UTILITY LINE LOCATIONS HAVE BEEN EXTRACTED FROM RECORD UTILITY DRAWINGS AND FOUND SURFACE FEATURES. FIELD VERIFY EXACT LOCATIONS.
5. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEEDED PRIOR TO CONSTRUCTION. COORDINATE WITH THE APPLICABLE UTILITY COMPANY.
6. 1.0' (MIN.) OF COVER SHALL BE MAINTAINED OVER D.I. STORM DRAIN PIPES, 3.0' (MIN.) OVER ALL OTHERS.
7. CONTRACTOR SHALL VERIFY UTILITY SERVICE ELEVATIONS AT ALL CROSSINGS PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE IMPROVEMENTS.
8. ALL STATIONING REFERENCES HARTFORD STREET ALIGNMENT.
9. SHOP DRAWINGS FOR ALL SIGNS SHALL BE SUBMITTED BY CONTRACTOR TO THE CITY OF SPOKANE SIGNS AND MARKINGS DEPARTMENT PRIOR TO MANUFACTURE AND INSTALLATION.
11. CATCH BASINS ON GRADE
RIM = FLOWLINE −0.08'
CATCH BASINS IN SUMP CONDITION
RIM = FLOWLINE − 0.17'

STORM STRUCTURE TABLE			2
STRUCTURE	ELEVATIONS	DETAILS	
CB #21	RIM.= 1846.33 IE.= 1842.70 (N)	STA. 13+99.28; LT HARTFORD ST	
CB #22	RIM.= 1844.93 IE.= 1841.30 (E)	STA. 14+73.75; LT HARTFORD ST	
CB #23	RIM.= 1840.50 IE.= 1836.87 (E)	STA. 17+57.60; LT HARTFORD ST	
CB #24	RIM.= 1837.62 IE.= 1833.27 (W) IE.= 1833.52 (E)	STA. 19+16.08; LT HARTFORD ST	
CB #52	RIM.= 1845.52 IE.= 1841.89 (W)	STA. 14+67.91; RT HARTFORD ST	
CB #53	RIM.= 1840.50 IE.= 1836.87 (W)	STA. 17+57.60; RT HARTFORD ST	
CB #54	RIM.= 1837.62 IE.= 1833.99 (W)	STA. 19+16.08; RT HARTFORD ST	
CB #67	RIM.= 1846.23 IE.= 1842.60 (E)	STA. 47+64.39; RT SARATOGA AVE	
CB #73	RIM.= 1835.84 IE.= 1833.03 (SW)	STA. 20+13.54; RT HARTFORD ST	
CB #74	RIM.= 1835.88 IE.= 1832.70 (NE) IE.= 1832.60 (SW)	STA. 20+05.18; LT HARTFORD ST	

STORM PIPE TABLE	
NAME	DETAILS
SD #21	8" PVC L.= 25.4 S.= 0.0100 FT/FT
SD #24	15" PVC L.= 25.6 S.= 0.0301 FT/FT
SD #47	8" CPEP L.= 32.9 S.= 0.0100 FT/FT
SD #52	8" PVC L.= 22.8 S.= 0.0303 FT/FT
SD #53	8" PVC L.= 21.9 S.= 0.0100 FT/FT
SD #54	8" PVC L.= 21.9 S.= 0.0100 FT/FT
SD #55	10" CPEP L.= 28.1 S.= 0.0050 FT/FT
SD #74	8" PVC L.= 25.4 S.= 0.0100 FT/FT
SD #101	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #102	8" PVC L.= 9.9 S.= 0.0100 FT/FT
SD #103	12" PVC L.= 9.9 S.= 0.0050 FT/FT

PRELIMINARY

DATE: 6/11/24

13
22

REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

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SE#19-342

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
HARTFORD STREET ROAD & DRAINAGE
PLAN & PROFILE STA 13+20 TO STA 20+59

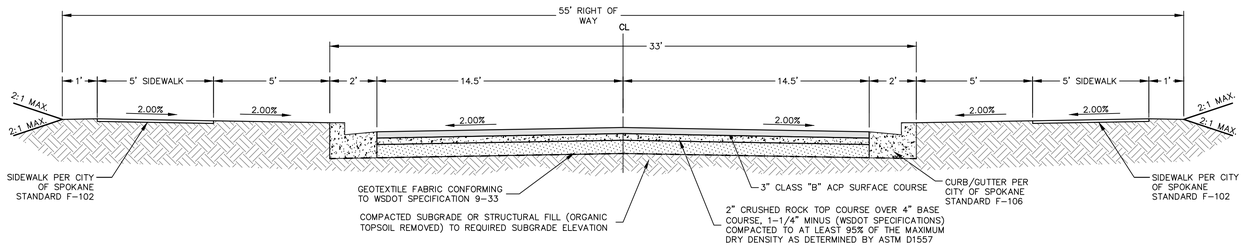
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	HARTF S (02) 4 36-25N-42E

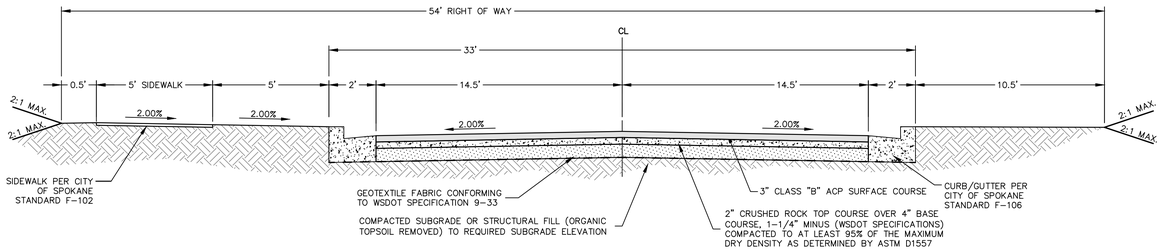
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4



INTERNAL ROAD SECTION

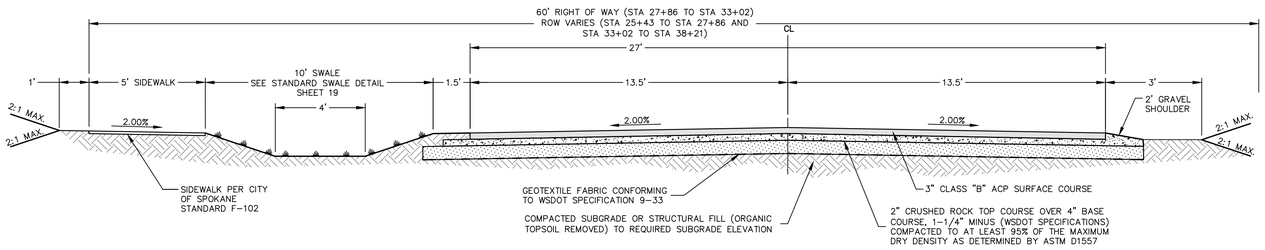
NTS



INTERNAL ROAD SECTION (SIDEWALK ON LEFT SIDE)

NTS

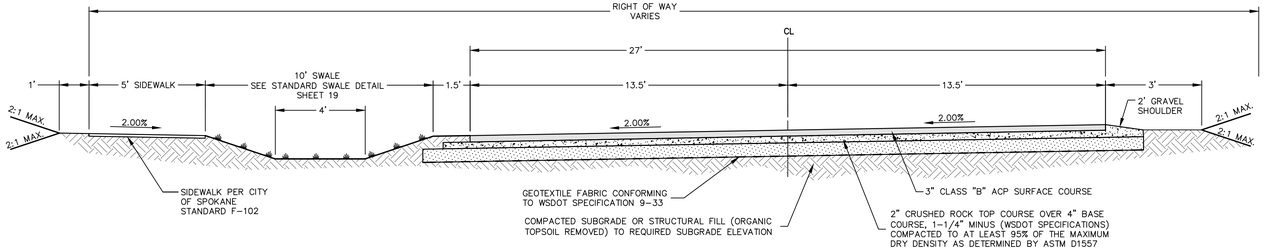
SARATOGA AVE: 29+75 TO 38+90



INLAND EMPIRE WAY ROAD SECTION

NTS

INLAND EMPIRE WAY: 27+86 TO 32+56
37+14 TO 38+17



INLAND EMPIRE WAY ROAD SECTION SUPERELEVATED

NTS

INLAND EMPIRE WAY: 33+06 TO 36+64

Sign Types

Type "A" Type "B"



Type "C" Type "D"



NO PARKING FIRE LANE SIGN TYPES

NTS

NO PARKING FIRE LANE SIGN NOTE
SIGNS TO BE INSTALLED ON ONE SIDE OF ROAD AS SHOWN ON PLANS.
- 50' ON CENTER ALONG CURVES.
- 140' ON CENTER ALONG TANGENTS.

JERRY D. STORHAUG STATE OF WASHINGTON 22668 REGISTERED PROFESSIONAL ENGINEER

14
22

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
02/03/25	SE	19-342	COS COMMENTS	4
12/24/24	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. 1843.87

CBM NO. :

NAVD88 DATUM

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	2/3/2025

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p 509.242.1000 | f 509.242.1001

19-342

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: STREET CROSS SECTIONS

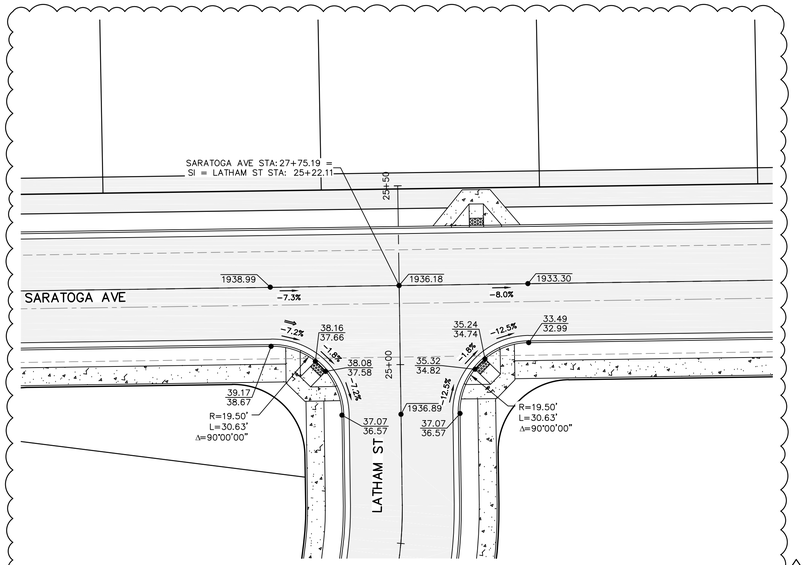
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

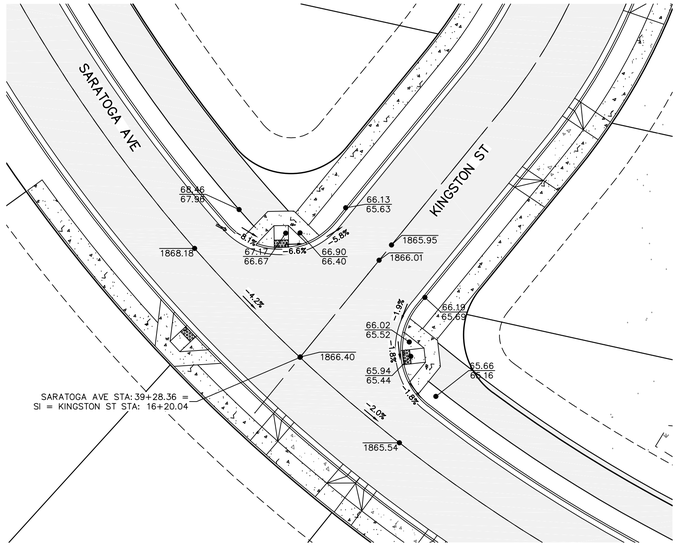
PROJECT NO.	PLAN NO.
2023519	
2023520	36-25-43

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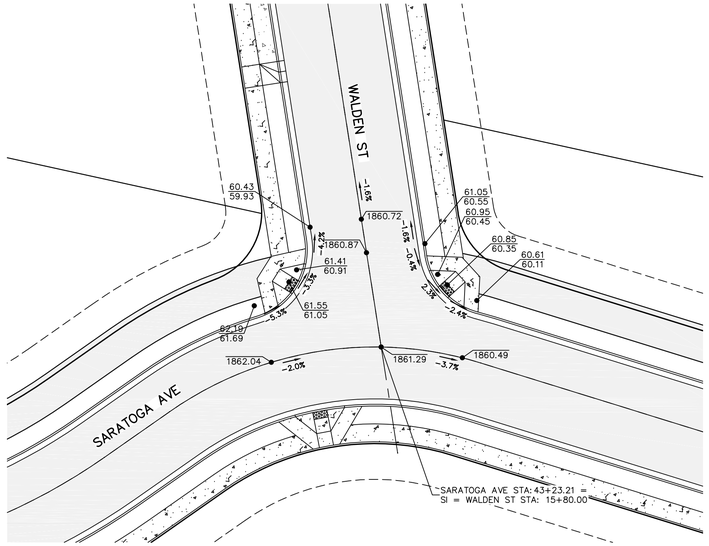
SEC. 36, T. 25 N., R. 42 E., WM



SARATOGA & LATHAM INT. DETAIL (A)
SCALE 1"=20'



SARATOGA & KINGSTON INT. DETAIL (B)
SCALE 1"=20'



SARATOGA & WALDEN INT. DETAIL (C)
SCALE 1"=20'

SARATOGA & HUDSON INT. DETAIL (D)
SCALE 1"=20'

SARATOGA & HARTFORD INT. DETAIL (E)
SCALE 1"=20'

ALBANY & WALDEN INT. DETAIL (F)
SCALE 1"=20'

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

JERRY D. STORHAUG
STATE OF WASHINGTON
09509
REGISTERED
PROFESSIONAL ENGINEER

15
22

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
02/03/25	SE	19-342	COS COMMENTS	4
12/24/24	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. 1843.87
CBM NO. :
NAVD88 DATUM
10' 0' 10' 20'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP
PLS 48373 AT THE SOUTHEAST PROPERTY CORNER
SCALE
HORIZONTAL SCALE (22 x 34)
VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	2/3/2025

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19-342

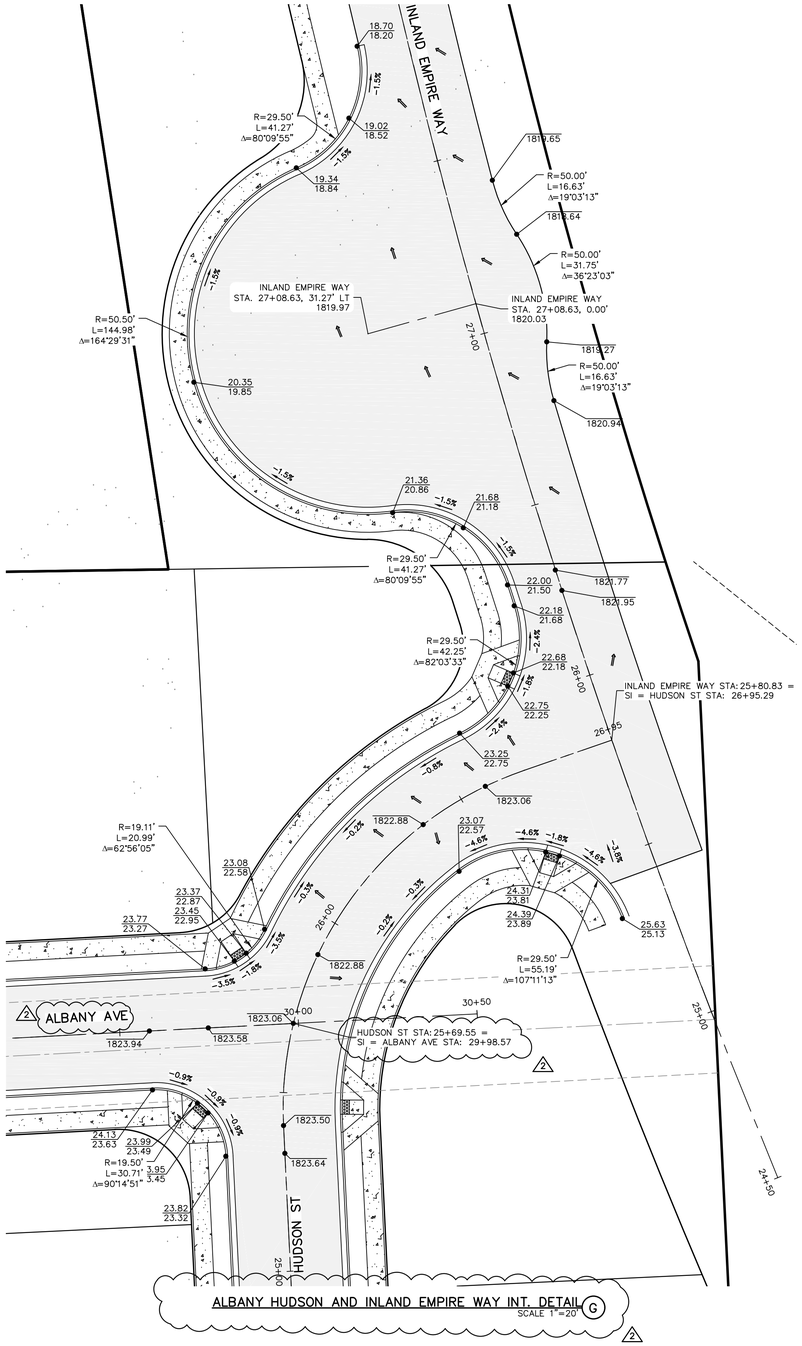
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS: INTERSECTION DETAILS
PROJECT LIMITS: LATAH GLEN RESIDENTIAL
TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519 2023520	36-25-43

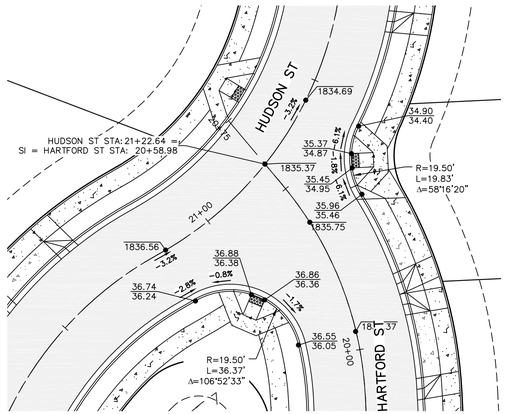
CALL BEFORE YOU DIG 1-800-424-5555

4

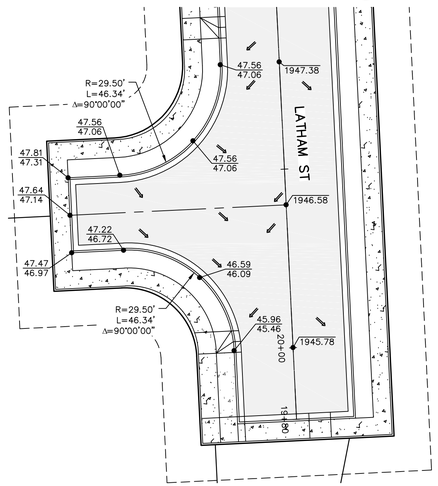
SEC. 36, T. 25 N., R. 42 E., WM



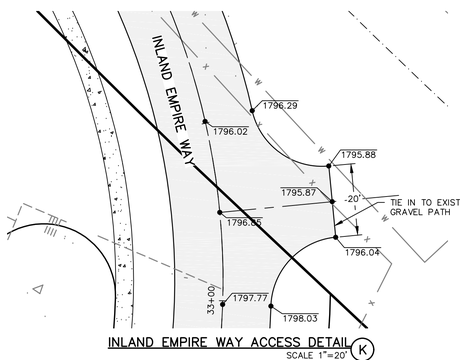
ALBANY HUDSON AND INLAND EMPIRE WAY INT. DETAIL (G)
SCALE 1"=20'



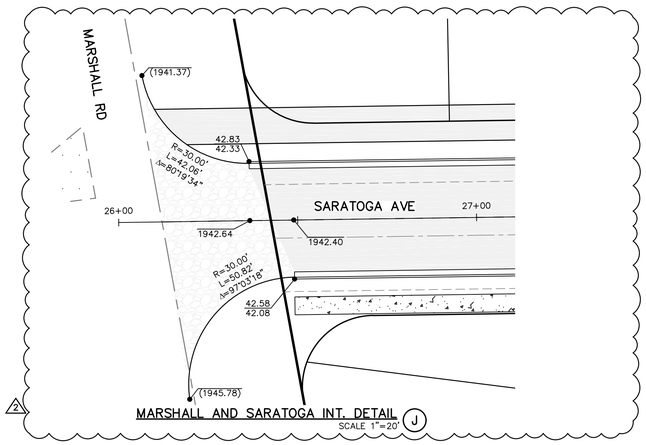
HUDSON & HARTFORD INT. DETAIL (H)
SCALE 1"=20'



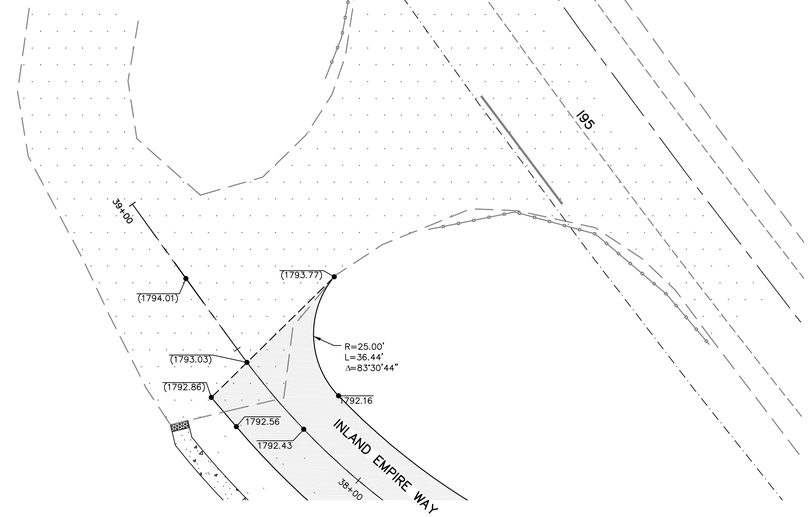
LATHAM ST TURNAROUND DETAIL (I)
SCALE 1"=20'



INLAND EMPIRE WAY ACCESS DETAIL (K)
SCALE 1"=20'



MARSHALL AND SARATOGA INT. DETAIL (J)
SCALE 1"=20'



INLAND EMPIRE WAY AND I95 INT. DETAIL (L)
SCALE 1"=20'

JERRY D. STORHAUG STATE OF WASHINGTON 25525 REGISTERED PROFESSIONAL ENGINEER
11-24

16
22

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
02/03/25	SE	19-342	COS COMMENTS	4
12/24/24	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. 1843.87

CBM NO. :

NAVD88 DATUM

10' 0' 10' 20'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	2/3/2025

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landscape architecture | surveying
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

19-342

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: INTERSECTION DETAILS

TYPE OF IMPROVEMENT: SITE/DRAINAGE

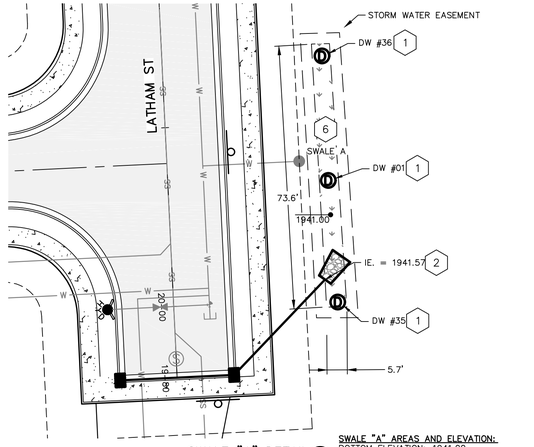
PROJECT NO.	PLAN NO.
2023519	
2023520	36-25-43

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

CALL BEFORE YOU DIG 1-800-424-5555

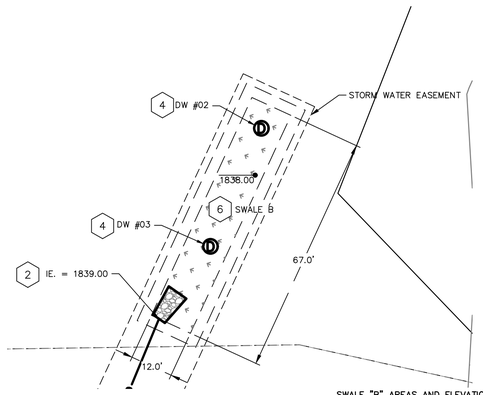
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SEC. 36, T. 25 N., R. 42 E., WM



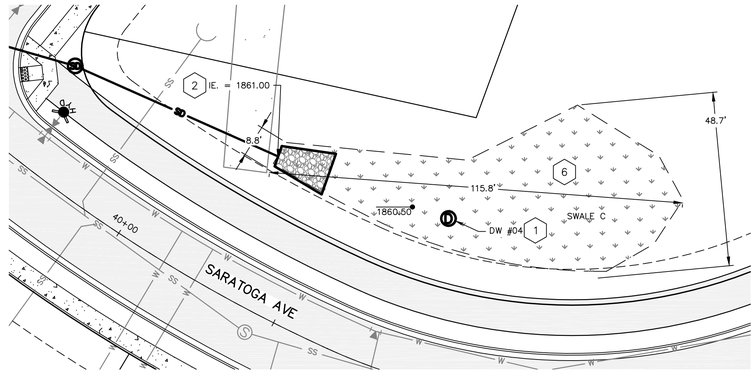
SWALE "A" DETAIL
SCALE 1"=20'

SWALE "A" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1941.00
DRYWELL RIM ELEVATION: 1941.50
BOTTOM AREA: 393 SF
SEE TYPICAL SWALE SECTION A, SHEET 18



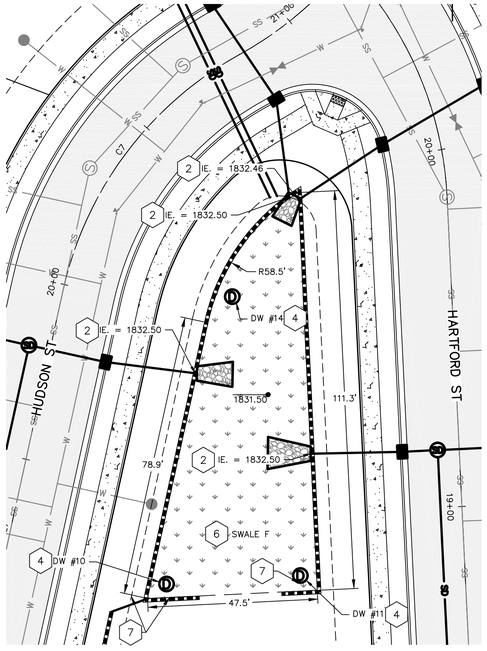
SWALE "B" DETAIL
SCALE 1"=20'

SWALE "B" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1838.00
DRYWELL RIM ELEVATION: 1839.00
BOTTOM AREA: 805 SF
SEE TYPICAL SWALE SECTION A, SHEET 18



SWALE "C" DETAIL
SCALE 1"=20'

SWALE "C" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1860.50
DRYWELL RIM ELEVATION: 1861.50
BOTTOM AREA: 1806 SF
SEE TYPICAL SWALE SECTION A, SHEET 18



SWALE "F" DETAIL
SCALE 1"=20'

SWALE "F" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1831.50
DRYWELL RIM ELEVATION: 1832.50
BOTTOM AREA: 3437 SF
SEE TYPICAL SWALE SECTION B, SHEET 18

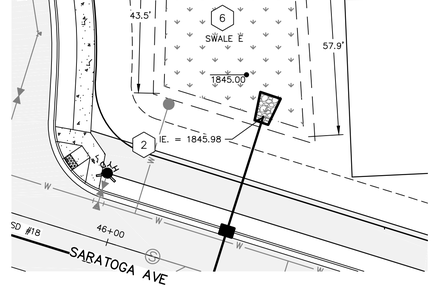
STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
DW #01	RIM.= 1942.00	STA. 20+33.10; 44.85' RT LATHAM ST
DW #02	RIM.= 1839.00	STA. 25+45.06; 172.92' LT KINGSTON ST
DW #03	RIM.= 1839.00	STA. 25+32.00; 165.10' LT KINGSTON ST
DW #04	RIM.= 1861.50	STA. 40+88.61; 46.08' LT SARATOGA AVE.
DW #08	RIM.= 1846.00	STA. 46+21.27; 93.36' LT SARATOGA AVE
DW #10	RIM.= 1832.50	STA. 18+82.30; 83.47' LT HARTFORD ST
DW #11	RIM.= 1832.50	STA. 18+82.86; 46.00' LT HARTFORD ST
DW #14	RIM.= 1832.50	STA. 19+61.66; 61.27' LT HARTFORD ST
DW #35	RIM.= 1942.00	STA. 19+99.02; 45.86' RT LATHAM ST
DW #36	RIM.= 1942.00	STA. 20+67.90; 44.78' RT LATHAM ST

TABLE:

1. TYPE 1 DRYWELL, PER CITY OF SPOKANE STD. DWG. B-102C. SEE TABLE FOR MORE DETAILS
2. STORM DRAIN LINE OUTFALL PER OUTFALL DETAIL ON SHEET 18.
3. NOT USED.
4. TYPE 2 DRYWELL, PER CITY OF SPOKANE STD. DWG. B-102C. SEE TABLE FOR MORE DETAILS
5. NOT USED.
6. LID SWALE, SEE DETAILS ON SHEET 19.
7. 4" PVC WALL DRAIN

SWALE NOTES:

1. DRYWELLS LOCATED IN SWALE BOTTOMS SHALL HAVE GRATED LIDS, DRYWELLS NOT LOCATED IN SWALE BOTTOMS SHALL HAVE SOLID LIDS.
2. SEE L.I.D. SWALE WITH WALL DETAIL AND STANDARD SWALE DETAIL ON SHEET 19 FOR ADDITIONAL INFORMATION.
3. RETAINING WALLS IN L.I.D SWALES MUST BE DESIGNED BY A PROFESSIONAL ENGINEER AND NOT BY CONTRACTOR



SWALE "E" DETAIL
SCALE 1"=20'

SWALE "E" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1845.35
DRYWELL RIM ELEVATION: 1846.35
BOTTOM AREA: 443 SF
SEE TYPICAL SWALE SECTION B, SHEET 18

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
HORZ: 1 inch = 20 ft.

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DATE: 6/11/24

17
22

REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

10' 0' 10' 20'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=20'	DRAWN:	LMC 3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED:	JDS 01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: SWALE PLAN

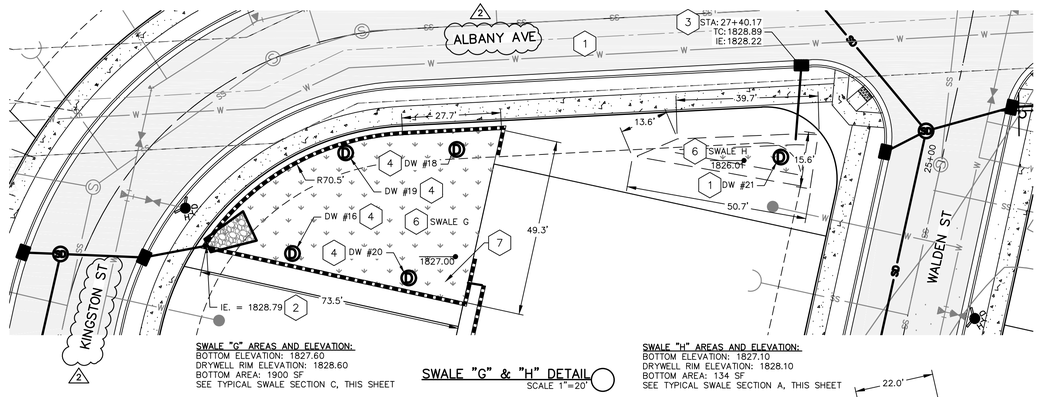
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

4

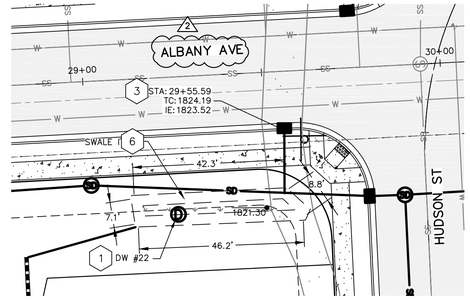
SEC. 36, T. 25 N., R. 42 E., WM



SWALE "G" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1827.60
DRYWELL RIM ELEVATION: 1828.60
BOTTOM AREA: 1900 SF
SEE TYPICAL SWALE SECTION C, THIS SHEET

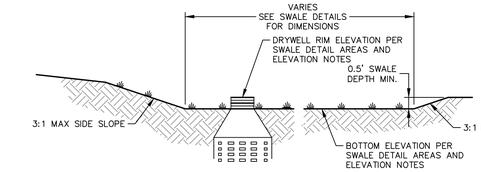
SWALE "G" & "H" DETAIL
SCALE 1"=20'

SWALE "H" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1827.10
DRYWELL RIM ELEVATION: 1828.10
BOTTOM AREA: 134 SF
SEE TYPICAL SWALE SECTION A, THIS SHEET

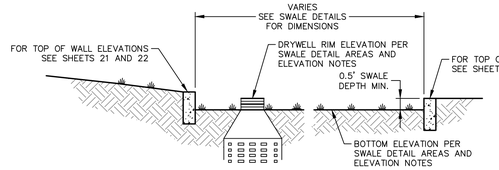


SWALE "I" DETAIL
SCALE 1"=20'

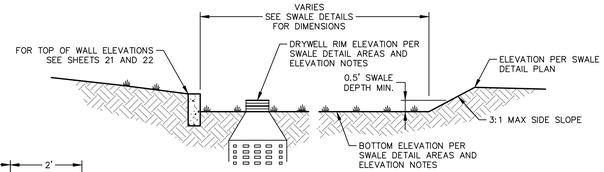
SWALE "I" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1822.40
DRYWELL RIM ELEVATION: 1823.40
BOTTOM AREA: 152 SF
SEE TYPICAL SWALE SECTION A, THIS SHEET



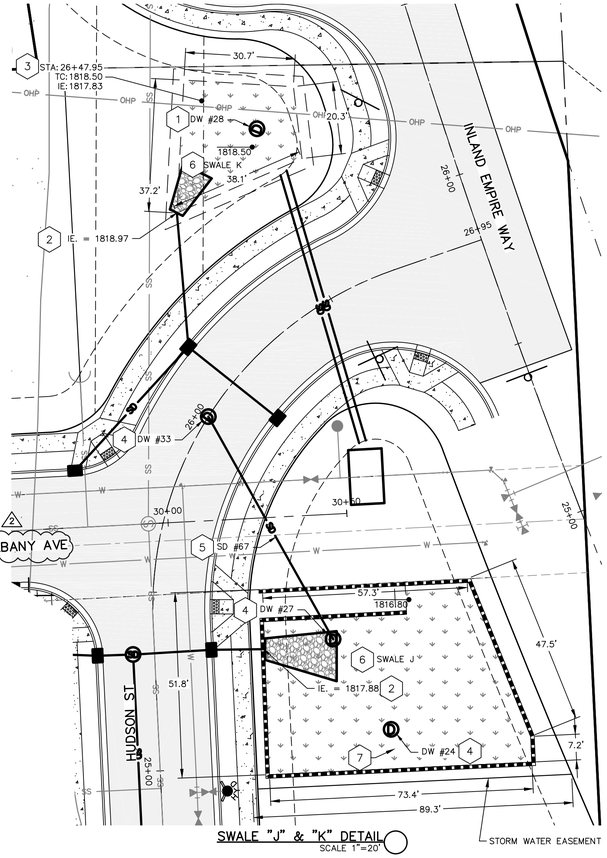
TYPICAL SWALE SECTION (A)
NTS



TYPICAL SWALE SECTION (B)
NTS



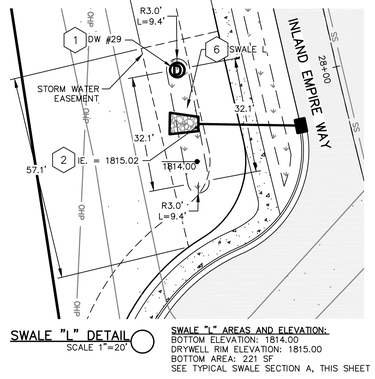
TYPICAL SWALE SECTION (C)
NTS



SWALE "J" & "K" DETAIL
SCALE 1"=20'

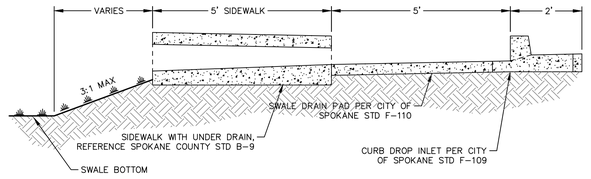
SWALE "J" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1816.80
DRYWELL RIM ELEVATION: 1817.80
BOTTOM AREA: 3450 SF
SEE TYPICAL SWALE SECTION B, THIS SHEET

SWALE "K" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1818.50
DRYWELL RIM ELEVATION: 1819.50
BOTTOM AREA: 263 SF
SEE TYPICAL SWALE SECTION A, THIS SHEET



SWALE "L" DETAIL
SCALE 1"=20'

SWALE "L" AREAS AND ELEVATION:
BOTTOM ELEVATION: 1814.00
DRYWELL RIM ELEVATION: 1815.00
BOTTOM AREA: 221 SF
SEE TYPICAL SWALE SECTION A, THIS SHEET



CURB INLET WITH SIDEWALK UNDERDRAIN
NTS

TABLE:

1. TYPE 1 DRYWELL, PER CITY OF SPOKANE STD. DWG. B-102C. SEE TABLE FOR MORE DETAILS
2. STORM DRAIN LINE OUTFALL PER OUTFALL DETAIL THIS SHEET.
3. CURB DROP INLET WITH SIDEWALK UNDER DRAIN. SEE DETAIL THIS SHEET.
4. TYPE 2 DRYWELL, PER CITY OF SPOKANE STD. B-102C. SEE TABLE FOR MORE DETAILS
5. STORM DRAIN PIPE. SEE STORM PIPE TABLE
6. LID SWALE, SEE DETAILS ON SHEET 19.
7. 4" PVC WALL DRAIN.

STORM PIPE TABLE	
NAME	DETAILS
SD #67	8" PVC L.= 71.3 S.= 0.0000 FT/FT

STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
DW #16	RIM.= 1828.00	STA. 25+58.38; 49.27' RT ALBANY AVE
DW #18	RIM.= 1828.00	STA. 26+42.75; 34.36' RT ALBANY AVE
DW #19	RIM.= 1828.00	STA. 26+03.93; 31.79' RT ALBANY AVE
DW #20	RIM.= 1828.00	STA. 26+26.68; 69.53' RT ALBANY AVE
DW #21	RIM.= 1827.01	STA. 27+33.09; 41.21' RT ALBANY AVE
DW #22	RIM.= 1822.30	STA. 29+24.79; 38.41' RT ALBANY AVE
DW #24	RIM.= 1817.80	STA. 25+08.47; 65.04' RT HUDSON ST
DW #27	RIM.= 1817.80 IE.= 1813.09 (NW)	STA. 25+34.45; 50.04' RT HUDSON ST
DW #28	RIM.= 1819.50	STA. 26+53.96; 51.56' LT HUDSON ST
DW #29	RIM.= 1815.00	STA. 28+09.00; 43.47' LT INLAND EMPIRE WAY

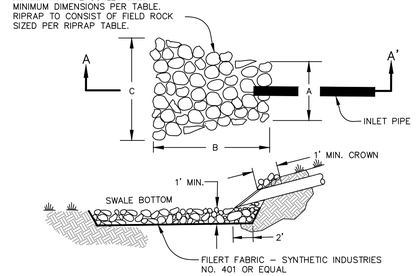
STORM STRUCTURE TABLE		
STRUCTURE	ELEVATIONS	DETAILS
DW #33	RIM.= 1822.82 IE.= 1813.09 (SE)	STA. 26+02.01; 0.00' HUDSON ST

SWALE NOTES:

1. DRYWELLS LOCATED IN SWALE BOTTOMS SHALL HAVE GRATED LIDS, DRYWELLS NOT LOCATED IN SWALE BOTTOMS SHALL HAVE SOLID LIDS.
2. SEE L.I.D. SWALE WITH WALL DETAIL AND STANDARD SWALE DETAIL ON SHEET 19 FOR ADDITIONAL INFORMATION.
3. RETAINING WALLS IN L.I.D SWALES MUST BE DESIGNED BY A PROFESSIONAL ENGINEER AND NOT BY CONTRACTOR

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
HORZ: 1 inch = 20 ft.

OUTFALL TABLE						
LOCATION		RIPRAP SIZE	PAD DIMENSIONS			
DESCRIPTION	PIPE SIZE	D_{50}	DEPTH	A	B	C
SWALE A	10"	6"	12"	8'	6'	4'
SWALE B	10"	6"	12"	9'	6'	4'
SWALE C	21"	6"	12"	15'	12'	6'
SWALE E	10"	6"	12"	8'	6'	4'
SWALE F (EAST)	15"	6"	12"	12'	9'	4'
SWALE F (NORTH)	10"	6"	12"	8'	6'	4'
SWALE F (WEST)	12"	6"	12"	10'	7'	4'
SWALE G	15"	6"	12"	13'	9'	4'
SWALE J	24"	6"	12"	20'	14'	6'
SWALE K	10"	6"	12"	8'	6'	4'
SWALE L	10"	6"	12"	8'	6'	4'



SECTION A-A'

OUTFALL DETAIL
NTS

PRELIMINARY
NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

18
22

DATE: 6/11/24

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: SWALE DETAILS

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

10' 0' 10' 20'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
	HORIZONTAL SCALE (22 x 34)	1"=20'
	VERTICAL SCALE (22 x 34)	1"=10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

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landscape architecture | surveying
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001
SE#19-342

CALL BEFORE YOU DIG 1-800-424-5555

1. CONSTRUCTION SHALL CONFORM TO CITY OF SPOKANE STANDARDS FOR SEWER, WATER AND STORMWATER MANAGEMENT IMPROVEMENTS. UNLESS IT IS SPECIFICALLY EXCEPTED IN THE PLANS OR CONTRACT DOCUMENTS, ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH THE 2004 STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION AS PROMULGATED JOINTLY BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT), THE AMERICAN PUBLIC WORKS ASSOCIATION (APWA), AND AS AMENDED BY THE CITY OF SPOKANE SUPPLEMENTAL SPECIFICATIONS.

2. CONTRACTOR SHALL REFER TO CITY SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

3. A PLUG SHALL BE INSTALLED AT THE END OF ALL SERVICE LINES UNTIL SUCH TIME THAT SERVICE IS EXTENDED TO BUILDING FOR CONNECTION.

4. WATER LINES AND APPURTENANCES SHALL MEET THE CITY OF SPOKANE WATER DEPARTMENT AND FIRE DEPARTMENT REQUIREMENTS UNLESS NOTED OTHERWISE. WATER LINES SHALL BE INSTALLED WITH MINIMUM COVER OF 60 INCHES FROM TOP OF PIPE.

5. MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL CLEARANCE BETWEEN WATER PIPE AND PIPE CARRYING NON-POTABLE WATER. AT CROSSINGS, THERE SHALL BE A MINIMUM VERTICAL CLEARANCE OF 18 INCHES BETWEEN WATER PIPE (ABOVE) AND PIPE CARRYING NON-POTABLE WATER (BELOW). INSTALLATIONS FOR UTILITIES OTHER THAN POTABLE WATER MAY BE INSTALLED AT A CLEARANCE LESS THAN THOSE STATED ABOVE IF THE NON-POTABLE LINE IS SLEEVED PER CITY OF SPOKANE SPECIFICATIONS. THE SLEEVE PIPE SHALL BE ONE SIZE LARGER THAN THE CONSTRUCTION PIPE. THE SLEEVE SHALL BE AT LEAST 20 FEET IN LENGTH AND CENTERED ON THE CROSSING TO PROVIDE FOR A MINIMUM HORIZONTAL SEPARATION OF 10 FEET EACH SIDE OF THE CROSSING, MEASURED PERPENDICULAR TO THE CROSSED LINE. EACH END OF THE SLEEVE SHALL BE SEALED WITH A FERNCO RUBBER COUPLER.

6. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES.

7. LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES. CONTRACTOR TO PERFORM NECESSARY FIELD VERIFICATION, INCLUDING SUBSURFACE EXPLORATION, FOR ALL EXISTING CONDITIONS TO BE INCLUDED IN CONTRACTOR BID (AT NO ADDITIONAL COST TO THE OWNER). ANY CONFLICTING UTILITIES SHALL BE RELOCATED PRIOR TO CONSTRUCTION OF PROPOSED IMPROVEMENTS.

8. PRIOR TO CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE FOR LOCATING UNDERGROUND UTILITIES. CALL THE UNDERGROUND UTILITY LOCATION SERVICE AT 456-8000 BEFORE YOU DIG.

9. IF THE CONTRACTOR DISCOVERS ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER.

10. UTILITY TRENCHING SHALL BE DONE IN ACCORDANCE WITH CITY OF SPOKANE STANDARD PLANS A-1 AND A-2.

11. THE CONTRACTOR SHALL HAVE A COMPLETE SET OF APPROVED PLANS ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.

12. THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL REPORT FOR THE SUBJECT SITE PRIOR TO STARTING CONSTRUCTION. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE GEOTECHNICAL REPORT SHALL BE REPORTED TO THE ENGINEER. CONSTRUCTION SHALL COMPLY WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.

13. CONSTRUCTION SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG).

14. IF FIELD GRADE ADJUSTMENTS ARE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.

15. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITY AND SHALL BE RESPONSIBLE FOR PROTECTING THE EXISTING STORM WATER MANAGEMENT SYSTEM FROM SEDIMENTATION. THE CONTRACTOR SHALL TAKE THE NECESSARY MEASURES TO PROTECT EXISTING IMPROVEMENTS BY USING EROSION AND SEDIMENT CONTROLS, INCLUDING BUT NOT LIMITED TO, STABILIZED CONSTRUCTION ENTRANCES, SEDIMENT BARRIERS, SILT FENCES, AND INLET PROTECTION.

16. UNLESS ELEVATIONS AND/OR CONTOURS ARE OTHERWISE SHOWN, NEW FINISH GRADE SURFACES SHALL BE PLACED TO ALLOW FOR POSITIVE DRAINAGE TO CURB, GUTTER, OR OTHER RUNOFF COLLECTION DEVICES. MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING.

17. THE CITY OF SPOKANE SHALL INSPECT AND CERTIFY CONSTRUCTION OF ALL SEWER LINES, SEWER SERVICES, AND BUILDING CONNECTIONS.

18. GEOTEXTILE FABRIC SHALL BE PLACED ON THE RIMS OF DRYWELLS, CATCH BASINS, INLETS, AND AREA DRAINS UNTIL SUCH TIME THE VEGETATION ON SITE IS ESTABLISHED AND THE THREAT OF SEDIMENT DEPOSITION INTO THE DRAINAGE SYSTEM IS MITIGATED.

19. EROSION AND SEDIMENT CONTROL MEASURES SHALL CONFORM TO SPOKANE COUNTY ESC BEST MANAGEMENT PRACTICES (BMPs) AS NOTED IN THE SPOKANE REGIONAL STORM WATER MANUAL (SRSM).

20. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR ALL REQUIREMENTS AND TO CONFIRM THAT AN ADEQUATE DEPTH OF COVER IS MAINTAINED OVER THE UTILITIES.

21. AREAS DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE CONSTRUCTED OR REPAIRED TO ORIGINAL CONDITIONS OR BETTER.

22. EXISTING PROPERTY CORNERS AND SURVEY MONUMENTS SHALL BE PROTECTED DURING CONSTRUCTION. ANY DAMAGED OR OBLITERATED CORNERS OR MONUMENTS SHALL BE RE-ESTABLISHED BY A PROFESSIONAL SURVEYOR.

23. APPROVALS AND PERMITS REQUIRED BY THE GOVERNING REGULATORY AGENCIES SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION, INCLUDING A CONSTRUCTION GENERAL STORM WATER PERMIT IF REQUIRED. THE CONTRACTOR SHALL COORDINATE WITH THE GOVERNING REGULATORY AGENCIES TO DETERMINE IF A PRE-CONSTRUCTION MEETING IS REQUIRED.

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL IN ACCORDANCE WITH MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS. COORDINATE REQUIREMENTS WITH THE GOVERNING REGULATORY AGENCY.

25. SAFETY STANDARDS AND REQUIREMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND COMPLIED WITH AS SET FORTH BY OSHA.

26. THE CONTRACTOR SHALL COORDINATE WITH THE GOVERNING REGULATORY AGENCY REGARDING INSPECTION AND TESTING REQUIREMENTS. INSPECTION, TESTING, COMPACTION, AND DISINFECTION REQUIREMENTS SHALL CONFORM WITH WSDOT, AWWA, AND APWA SPECIFICATIONS.

27. COORDINATE THE INSTALLATION OF STREET NAME AND REGULATORY SIGNS WITH THE GOVERNING REGULATORY AGENCY.

28. UTILITY PIPES AND CONDUITS SHALL BE INSTALLED WITH CONTINUOUS TRACER TAPE ABOVE THE PIPE AND BELOW THE FINISHED SURFACE GRADE AT DEPTHS THAT COMPLY WITH WSDOT AND THE STANDARDS OF THE GOVERNING REGULATORY AGENCY.

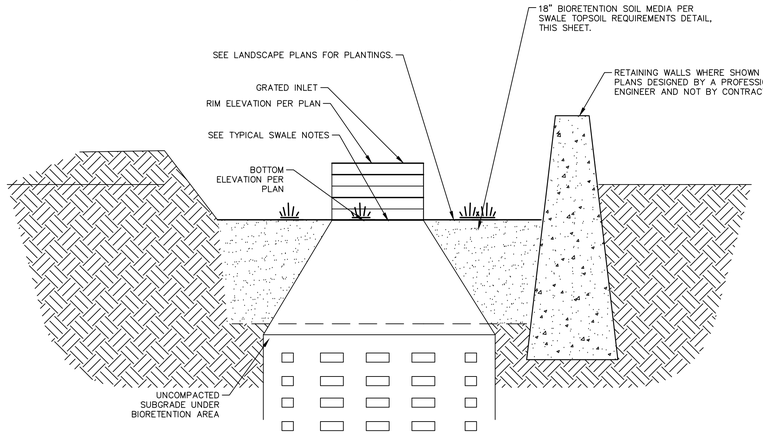
29. WHERE NEW ASPHALT JOINS EXISTING ASPHALT, THE EXISTING ASPHALT SHALL BE SAWCUT TO A NEAT, VERTICAL EDGE AND TACKED WITH ASPHALT EMULSION IN ACCORDANCE WITH WSDOT SPECIFICATIONS. THE NEW ASPHALT SHALL BE FEATHERED BACK OVER THE EXISTING ASPHALT TO PROVIDE FOR A SEAL AT THE SAWCUT LOCATION.

30. SANITARY SEWER MAINS AND SERVICES SHALL BE PVC, ASTM D 3034, SDR 35 WITH FLEXIBLE GASKET JOINTS. SEWER SERVICE CONNECTIONS SHALL BE MADE BY A TAP TO AN EXISTING MAIN, OR A TEE BRANCH FROM A NEW MAIN CONNECTED ABOVE THE SPRING LINE FO THE PIPE. SERVICE CONNECTIONS TO MANHOLES ARE PROHIBITED. SEWER SERVICES SHALL BE AT RIGHT ANGLES TO THE SEWER MAIN.

31. GROUNDWATER OR UNANTICIPATED GEOLOGIC CONDITIONS SHALL BE REPORTED TO THE GEOTECHNICAL ENGINEER FOR ASSESSMENT AND RECOMMENDATIONS.

32. ALL COMPACTION EFFORTS SHALL BE MONITORED AND TESTED BY AN EXPERIENCED SOILS TECHNICIAN, UNDER THE SUPERVISION OF A LICENSED GEOTECHNICAL ENGINEER REPRESENTING THE OWNER. ALL MASS GRADING SHALL BE MONITORED, TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER (GEOTECHNICAL ENGINEER).

GENERAL NOTES



NOTES

1. SEED OR SOD PER LANDSCAPE PLAN.
2. DRYWELL OR INLET SHALL BE RAISED 6" ABOVE THE FLOWLINE OF THE DRAINAGE SWALE UNLESS OTHERWISE SHOWN ON THE PLANS.
3. DRYWELL TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARDS.
4. SWALE SIDE SLOPES TO BE 3:1 MAX (H:V).
5. FOR CONSTRUCTION OF DRYWELLS, INSTALL FILTER FABRIC (AMOCO 4545 OR APPROVED EQUIVALENT).
6. THE SWALE BOTTOM SHALL BE FLAT..
7. UTILIZE 18" BIORETENTION SOIL MEDIA MADE FROM IMPORTED 50% HIGHLY PERMEABLE SANDY MINERAL AGGREGATE MIXED WITH 50% COMPOST, PER CHAPTER 4 OF THE EASTERN WASHINGTON LOW IMPACT DEVELOPMENT GUIDANCE MANUAL, JUNE 2013

L.I.D. SWALE WITH WALL

NTS

1) ALL WORK AND MATERIALS SHALL BE IN CONFORMANCE WITH THE "CITY OF SPOKANE DESIGN STANDARDS".

2) LOCATIONS OF EXISTING UTILITIES SHOWN IN THE PLANS ARE APPROXIMATE. PRIOR TO SITE CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND AND OVERHEAD UTILITIES. ANY CONFLICTING UTILITIES SHALL BE RELOCATED PRIOR TO CONSTRUCTION OF ROAD AND DRAINAGE FACILITIES. CALL THE UNDERGROUND UTILITY LOCATION SERVICE AT 456-8000 BEFORE YOU DIG.

3) THE CONTRACTOR IS REQUIRED TO HAVE A COMPLETE SET OF THE APPROVED ROAD AND DRAINAGE PLANS ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS. COORDINATE WITH CITY OF SPOKANE AND DESIGN ENGINEER PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS PRIOR TO BEGINNING CONSTRUCTION AND COORDINATE WITH THE GOVERNING REGULATORY AGENCIES REGARDING CONSTRUCTION AND INSPECTION REQUIREMENTS.

4) IF THE CONTRACTOR DISCOVERS ANY DISCREPANCIES BETWEEN THE PLANS AND EXISTING CONDITIONS ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER.

5) FOR CONSTRUCTION OF DRYWELLS, INSTALL FILTER FABRIC (AMOCO 4545 OR APPROVED EQUIVALENT) BETWEEN THE WASHED DRAIN ROCK AND THE NATIVE SOILS.

6) FOR ANY CURB GRADES LESS THAN 0.8% (0.008 FT/FT), A WASHINGTON STATE LICENSED PROFESSIONAL LAND SURVEYOR SHALL VERIFY THAT THE CURB FORMS ARE AT THE GRADES NOTED ON THE APPROVED PLANS, PRIOR TO PLACEMENT OF CURB MATERIAL. THE CONTRACTOR IS RESPONSIBLE FOR ARRANGING AND COORDINATING WORK WITH THE PROFESSIONAL LAND SURVEYOR.

7) THE CONTRACTOR SHALL EMPLOY A LICENSED SURVEYOR TO VERIFY THAT THE CROSS GUTTER FORMS ARE AT THE CORRECT PLANE GRADE PRIOR TO CONCRETE PLACEMENT. THE CROSS GUTTERS SHALL BE CONSTRUCTED PRIOR TO PAVING, AND THE PAVEMENT SHALL THEN MATCH THE EDGE OF CONCRETE GUTTER.

8) THE CONTRACTOR SHALL REVIEW ALL GEOTECHNICAL RECOMMENDATIONS AND INVESTIGATION REPORTS ASSOCIATED WITH THE SUBJECT DEVELOPMENT PRIOR TO STARTING CONSTRUCTION. ANY DISCREPANCIES BETWEEN DESIGN PLANS AND GEOTECHNICAL REPORT SHALL BE REPORTED TO THE DESIGN ENGINEER. CONSTRUCTION SHALL COMPLY WITH RECOMMENDATIONS OF THE GEOTECHNICAL REPORTS.

9) THE CONTRACTOR SHALL DEMOLISH AND REMOVE EXISTING STRUCTURES AND ASSOCIATED IMPROVEMENTS ON THE SUBJECT SITE PRIOR TO STARTING CONSTRUCTION. CONTRACTOR SHALL COORDINATE DEMOLITION ACTIVITIES WITH OWNER FOR FURTHER DIRECTION AND EXTENT OF WORK.

10) THE FLOOR OF A GRASSED PERCOLATION AREA (GPA) SWALE INCLUDES THE LEVEL PORTION OF THE FLOOR OF THE SWALE, AND THE SIDESLOPES OF THE SWALE UP TO THE GPA OVERFLOW ELEVATION OR TOP OF DRYWELL. THE SOIL LOCATED IN THE FLOOR OF THE GPA SWALE SHALL BE A MEDIUM TO WELL-DRAINING MATERIAL, WITH A MINIMUM INFILTRATION RATE OF 0.5 INCHES PER HOUR. THE ENGINEER SHALL PROVIDE A WRITTEN STATEMENT WHICH VERIFIES THAT ALL GPA SWALES CONFORM TO THIS REQUIREMENT. THIS WRITTEN STATEMENT SHALL BE SUBMITTED TO THE CITY OF SPOKANE ENGINEER'S OFFICE PRIOR TO INSTALLING FINISHED LANDSCAPING/SOD AND PRIOR TO FINAL ACCEPTANCE. THE SWALE FLOOR MATERIAL SHALL BE INSTALLED TO A NATIVE SOIL STRATUM WHICH ALSO MEETS OR EXCEEDS THIS MINIMUM PERCOLATION RATE OF 0.5 INCHES PER HOUR.

11) IRRIGATION SYSTEM FOR STORM WATER MANAGEMENT PONDS SHALL BE PROVIDED BY CONTRACTOR/DEVELOPER. IRRIGATION SYSTEM SHALL BE DESIGN/BUILD.

12) CPEP STORM DRAIN PIPES, WHEN IDENTIFIED ON THE PLANS, SHALL BE POLYETHYLENE (CPEP) SMOOTH WALL PIPE PER ADVANCED DRAINAGE SYSTEM (ADS) N12, CONSTRUCTED PER W.S.D.O.T./A.P.W.A STANDARD SPECIFICATION. ALL CPEP PIPE SHALL SATISIFY THE ADDITIONAL REQUIREMENTS OF THE CITY OF SPOKANE "LETTER OF INSTRUCTION" DATED APRIL 1, 2006.

13) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL IN ACCORDANCE WITH M.U.T.C.D. AND CITY OF SPOKANE STANDARDS PRIOR TO DISRUPTION OF ANY TRAFFIC. NO WORK SHALL COMMENCE UNTIL ALL APPROVED TRAFFIC CONTROL IS IN PLACE AND THE APPROPRIATE AGENCY NOTIFICATION HAS TAKEN PLACE.

14) WHERE NEW ASPHALT JOINTS EXIST, THE EXISTING ASPHALT SHALL BE CUT TO A NEAT VERTICAL EDGE AND TACKED WITH ASPHALT EMULSION TYPE CSS-1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE NEW ASPHALT SHALL BE FEATHERED BACK OVER EXISTING TO PROVIDE FOR A SEAL AT THE SAW CUT LOCATION AND THE JOINT SEALED WITH GRADE AR-4000W PAVING ASPHALT.

15) COMPACTION OF SUB GRADE, ROCK AND ASPHALT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

16) COORDINATE WITH THE CITY OF SPOKANE STREET MAINTENANCE DEPARTMENT – SIGNS AND MARKINGS DIVISION REGARDING CONSTRUCTION / INSTALLATION OF STREET NAME AND REGULATORY SIGNS.

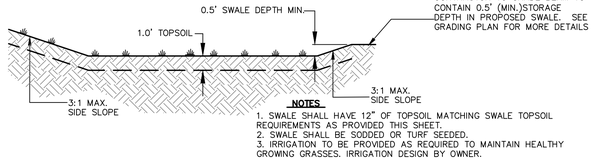
17) MAINTAIN MINIMUM HORIZONTAL CLEARANCE AS SHOWN ON CITY OF SPOKANE STANDARD PLANS W-111 BETWEEN WATER PIPE AND PIPE CARRYING NON-POTABLE WATER. AT CROSSINGS, THERE SHALL BE A MINIMUM VERTICAL CLEARANCE OF 18 INCHES BETWEEN WATER PIPE (ABOVE) AND PIPE CARRYING NON-POTABLE WATER (BELOW). INSTALLATIONS FOR UTILITIES OTHER THAN POTABLE WATER MAY BE INSTALLED AT A CLEARANCE LESS THAN THOSE STATED ABOVE IF THE NON-POTABLE LINE IS SLEEVED PER CITY OF SPOKANE STANDARD PLAN W-111.

18) DRYWELL INSTALLATION SHALL BE PER CITY OF SPOKANE STANDARD PLANS.

19) THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITY.

20) UNLESS ELEVATIONS AND/OR CONTOURS ARE OTHERWISE SHOWN, NEW FINISH GRADE SURFACES SHALL BE PLACED TO ALLOW FOR POSITIVE DRAINAGE TO CURB, GUTTER, OR OTHER RUNOFF COLLECTION DEVICES. MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS.

CONSTRUCTION SPECIFICATIONS



NOTES

1. SWALE SHALL HAVE 12" OF TOPSOIL MATCHING SWALE TOPSOIL REQUIREMENTS AS PROVIDED THIS SHEET.
2. SWALE SHALL BE SODDED OR TURF SEEDED.
3. IRRIGATION TO BE PROVIDED AS REQUIRED TO MAINTAIN HEALTHY GROWING GRASSES. IRRIGATION DESIGN BY OWNER.

STANDARD SWALE DETAIL

NTS

PROVIDE FRESH, CLEAN NEW CROP SEED COMPLYING WITH TOLERANCE FOR PURITY AND GERMINATION ESTABLISHED BY OFFICIAL SEED ANALYSTS OF NORTH AMERICA. PROVIDE SEED MIXTURE COMPOSED OF GRASS SPECIES AND PERCENTAGES AS FOLLOWS:

20 PERCENT ELKA PERENNIAL RYE
20 PERCENT DURAR HARD FESCUE
45 PERCENT COVAR SHEEP /FESCUE
15 PERCENT REUBENS CANADIAN BLUEGRASS

PROVIDE MIXTURE COMPOSED OF GRASS SEED AND FERTILIZER IN PERCENTAGES AS FOLLOWS:

GRASS SEED MIXTURE: 90 LBS. PER ACRE
FERTILIZER: 16:16:16 TIMED RELEASE COMPOSITION, 300 LBS. PER ACRE

ALL SEEDING OF SLOPES SHALL BE DONE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS.

CONTRACTOR SHALL IRRIGATE SEEDED AREAS UNTILL SEED HAS GERMINATED AND HAS BEEN ACCEPTED BY CITY OF SPOKANE.

SEEDING SPECIFICATIONS

UNLESS RECOMMENDED OTHERWISE BY A GEOTECHNICAL ENGINEER, BIO-INFILTRATION SWALES SHALL BE CONSTRUCTED WITH A TREATMENT ZONE OF MEDIUM-TO WELL-DRAINING SOIL (TESTED FOR INFILTRATIVE AND TREATMENT CRITERIA) AT LEAST 12 INCHES THICK, UNDERLAIN BY A SUBGRADE INFILTRATIVE LAYER AT LEAST 48 INCHES THICK. ALL SOILS, INCLUDING AMMENDED NATIVE SOILS, SHALL MEET THE INFILTRATIVE CRITERIA INDICATED IN TABLE 6-1.

CRITERIA	DESIGN REQUIREMENT
TREATMENT ZONE INFILTRATION RATE (VEGETATED COVER AND TREATEMENT LAYER) [1]	BETWEEN 0.25 AND .050 INCHES/HOUR
SUBGRADE INFILTRATION RATE[23]	AT LEAST 0.15 INCHES/HOUR AND FACILITY MUST COMPLETELY DRAIN WITHIN 72 HOURS
AVERAGE CATION EXCHANGE CAPACITY	AT LEAST 15 MILLIEQUIVALENTS/100GRAMS
ORGANIC MATTER CONTENT	AT LEAST 2% BY WEIGHT

[1] SAND AND COARSER SOILS ARE NOT SUITABLE TO BE USED AS TOP SOILS WHEN TREATMENT IS REQUIRED.

[2] AN INFILTRATION TEST (FOR EXAMPLE, A SINGLE-RING INFILTROMETER TEST) DEMONSTRATING THE FACILITY'S CONFORMANCE TO THE INFILTRATION RATE CRITERIA MAY BE REQUIRED PRIOR TO CONSTRUCTION CERTIFICATION.

[3] THE 48-INCH LAYER OF INFILTRATIVE SUBGRADE SOILS MUST BE MEET THE GEOTECHNICAL RECOMMENDATIONS AS PER THE REQUIREMENTS FOUND IN CHAPTER 4 OF THE SPOKANE REGIONAL STORMWATER MANUAL (SRSM).

NOTE:

1. THE SWALE TOPSOIL REQUIREMENTS SHALL MEET THE DESIGN REQUIREMENTS FOR EITHER THE AVERAGE CATION EXCHANGE CAPACITY OR THE ORGANIC MATTER CONTENT.

SWALE TOPSOIL REQUIREMENTS

NTS

PRELIMINARY
NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DATE: 6/11/24

19
22

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: NOTES

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

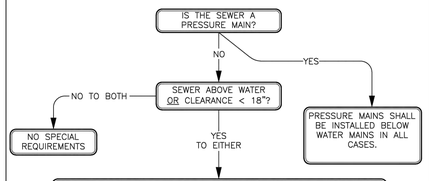
storhäug
civil engineering | planning
landscape architecture | surveying
SE#19-342
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

CALL BEFORE YOU DIG 1-800-424-5555

SEC. 36, T. 25 N., R. 42 E., WM

WATER/SEWER CROSSINGS



CASE WATER OR WASTEWATER PIPE W/PIPE MEETING THE REQUIREMENTS FOR SANITARY SEWERS FOR A MIN. 10' MEASURED PERPENDICULAR ON EITHER SIDE OF CROSSING.

EXCEPTIONS:
WHEN INSTALLING A WATER MAIN:

- THE CASING LENGTH FOR CROSSING SIDE SEWERS MAY BE REDUCED TO A MIN. 5' MEASURED PERPENDICULAR ON EITHER SIDE OF CROSSING PROVIDED THAT THE CASING IS PLUGGED AT BOTH ENDS WITH AN 18" LENGTH OF NON-SHRINK GROUT;
- STORM SEWER PIPE TO/FROM CATCH BASINS/INLETS NEED NOT BE CASED IF THE EXISTING PIPE IS DI FOR ENTIRE LENGTH OR, IF THE EXISTING STORM SEWER PIPE IS NOT DI, THEN AN 18' SEGMENT OF THE EXISTING STORM SEWER PIPE IS REPLACED WITH A SINGLE PIECE OF DI PIPE, CENTERED ON THE WATER MAIN.

NOTES:

1. CROSSING WATER/SEWER LINES OR THEIR CASINGS SHALL HAVE A 6" MIN VERTICAL SEPARATION.
2. FLOW CHART APPLIES TO BOTH EXISTING & NEW SERVICES & MAINS.
3. DISTANCES GIVEN ABOVE ARE MEASURED FROM OUTSIDE OF PIPES OR OTHER CASINGS.
4. DESIGNER/INSTALLER SHALL MAKE ALL REASONABLE ATTEMPTS TO MEET THE FOLLOWING:
   - SEWER BENEATH WATER BY AT LEAST 18"
   - CROSSINGS AS CLOSE TO 90° AS POSSIBLE

APPROVED BY — DIRECTOR, ENGINEERING SERVICES: TERRY M. TAYLOR, P.E. — PRINCIPAL ENGINEER, DESIGN: GARY S. NELSON, P.E.

ADOPTED: 3/92 | REVISED: 01/2009 | SUPERSEDES: 01/2008 | CHECKED BY: JAG | SCALE: NTS | DWG/REV. BY: MDH/TSS

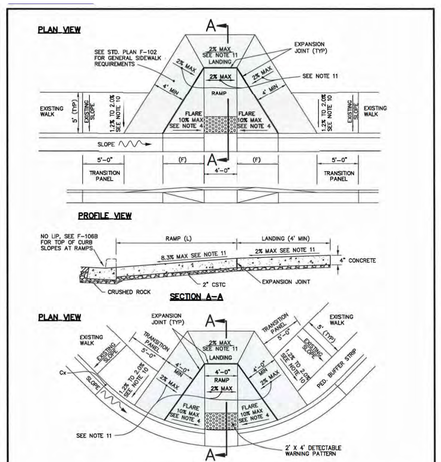
WATER AND SEWER CROSSINGS — ENGINEERING SERVICES, CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. A-5

1. CURB RAMPS SHALL BE CONSTRUCTED USING AIR-ENTRAINED 6-SACK COMMERCIAL CONCRETE.
2. MAXIMUM RAMP RUNNING SLOPE SHALL BE 8.3%
3. MAXIMUM CROSS SLOPE AND RUNNING SLOPE ON LANDING SHALL BE 2%
4. MAXIMUM FLARE SLOPE SHALL BE 10% MEASURED PARALLEL TO THE CURB, HOWEVER FLARE LENGTH (F) IS NOT REQUIRED TO EXCEED RAMP LENGTH (L).
5. BOTH FLARES SHALL BE THE SAME LENGTH FOR RAMP SYMMETRY.
6. DO NOT PLACE DRAINAGE STRUCTURES, JUNCTION BOXES, OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS OR ON ANY PART OF LANDING.
7. SEE CITY OF SPOKANE SPECIFICATIONS FOR DETECTABLE WARNING SURFACE PRODUCT & COLOR REQUIREMENTS.
8. TRANSITION PANELS REQUIRED WHEN CROSS SLOPE OF EXISTING SIDEWALK EXCEEDS 2%
9. SEE STANDARD PLANS F-102, F-102A, F-106, F-106C, & G-107 FOR ADDITIONAL CONSTRUCTION REQUIREMENTS.
10. 1.2% MINIMUM CROSS SLOPE AND 2.0% MAXIMUM CROSS SLOPE. NO ADDITIONAL CONSTRUCTION TOLERANCE IS ALLOWED.
11. NO ADDITIONAL CONSTRUCTION TOLERANCE IS ALLOWED.

APPROVED BY — DIRECTOR, ENGINEERING SERVICES: TERRY M. TAYLOR, P.E. — PRINCIPAL ENGINEER, CONST.: KENNETH M. BROWN, P.E.

ADOPTED: 08/1991 | REVISED: 04/2013 | SUPERSEDES: 04/2012 | CHECKED BY: JTG | SCALE: NTS | REVISED BY: LWK

F-105 NOTES — ENGINEERING SERVICES, CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. F-105



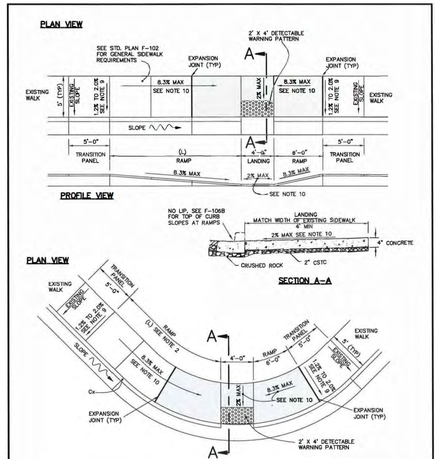
L = Cx / .063	F = Cx / .1=S	Cx	L	Fmin	S	Fmax	S
L = RAMP LENGTH (FT)		.3'	4.8'	3.0'	0	4.8'	.037
F = FLARE LENGTH (FT)		.4'	6.4'	4.0'	0	6.4'	.037
Cx = CURB EXPOSURE (FT)		.5'	8.0'	5.0'	0	8.0'	.037
S = GUTTER SLOPE							

THIS TABLE PROVIDES APPROXIMATE DIMENSIONS NECESSARY TO MEET ADA SLOPE REQUIREMENTS. ADJUSTMENTS TO FIT EACH LOCATION WILL BE NECESSARY. FIELD LAYOUT AND SLOPE VERIFICATION IS REQUIRED.

APPROVED BY — DIRECTOR, ENGINEERING SERVICES: TERRY M. TAYLOR, P.E. — PRINCIPAL ENGINEER, CONST.: KENNETH M. BROWN, P.E.

ADOPTED: 08/1991 | REVISED: 04/2013 | SUPERSEDES: 04/2012 | CHECKED BY: JTG | SCALE: NTS | REVISED BY: LWK

CURB RAMP TYPE-1 — ENGINEERING SERVICES, CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. F-105

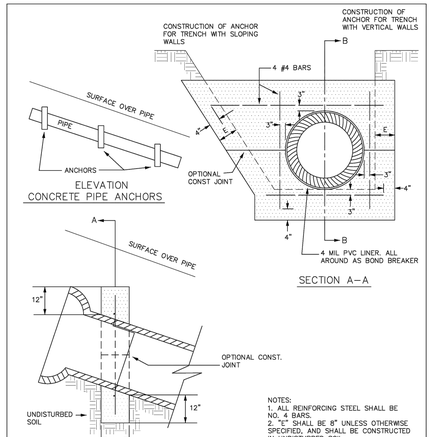


L = Cx / .083 = S	W/ .5' CURB EXPOSURE	THIS TABLE PROVIDES APPROXIMATE DIMENSIONS NECESSARY TO MEET ADA SLOPE REQUIREMENTS. ADJUSTMENTS TO FIT EACH LOCATION WILL BE NECESSARY. FIELD LAYOUT AND SLOPE VERIFICATION IS REQUIRED.
L = RAMP LENGTH (FT)	L = 6' UP TO .000 SLOPE	
Cx = CURB EXPOSURE (FT)	L = 11' UP TO .037 SLOPE	
S = GUTTER SLOPE	L = 15' ABOVE .037 SLOPE	

APPROVED BY — DIRECTOR, ENGINEERING SERVICES: TERRY M. TAYLOR, P.E. — PRINCIPAL ENGINEER, CONST.: KENNETH M. BROWN, P.E.

ADOPTED: 08/1991 | REVISED: 04/2013 | SUPERSEDES: 04/2012 | CHECKED BY: JTG | SCALE: NTS | REVISED BY: LWK

CURB RAMP TYPE-2 RESTRICTED R.O.W. — ENGINEERING SERVICES, CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. F-105B

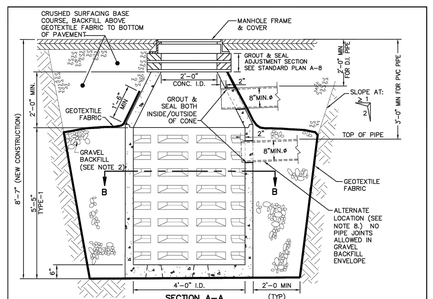


NOTES:
1. ALL REINFORCING STEEL SHALL BE NO. 4 BARS.
2. "E" SHALL BE 8" UNLESS OTHERWISE SPECIFIED, AND SHALL BE CONSTRUCTED IN UNDISTURBED SOIL.
3. CONCRETE SHALL BE CLASS 3000 OR BETTER.

APPROVED BY — CITY ENGR.: — SUPV. DES. ENGR.:

SCALE: NONE | ADOPTED: 5/92

PIPE ANCHOR — DEPT. OF PUBLIC WORKS, ENGR. DIVISION SPOKANE, WA — STANDARD PLAN No. A-11



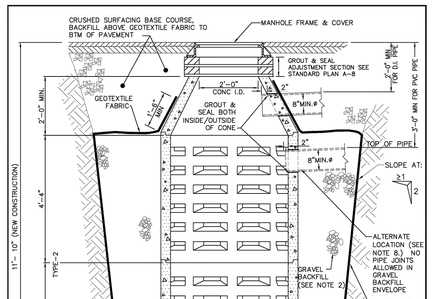
NOTES:

1. SEE SEC 9-12 FOR PRECAST CONCRETE DRYWELLS.
2. SEE SEC 9-03.12(5) FOR GRAVEL BACKFILL FOR DRYWELLS.
3. SEE SEC 9-33 FOR WOVEN GEOTEXTILE FABRIC (MODERATE SURVIVABILITY CLASS A). OVERLAP ALL FABRIC JOINTS 1'-6" MIN. WRAP & SECURE FABRIC AROUND PIPE TO PREVENT MIGRATION OF FINES INTO GRAVEL ENVELOPE.
4. SEE STD PLANS A-12 & A-13 FOR MANHOLE FRAME & COVER.
5. SEE STD PLAN Z-118 FOR BASE & FOUNDATION DETAILS.
6. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
7. ADJUSTMENT SECTION, CONE & BARREL JOINTS TO BE SEALED PER SEC 7-05.
8. USE ALTERNATE PIPE LOCATION ONLY IF PIPE REQUIRES ADDITIONAL DEPTH FOR SLOPING, DEPTH OF COVER, OR OTHER RESTRICTIVE FIELD CONDITION.
9. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
10. SEE STANDARD PLAN W-103 FOR CRUSHED ROCK REQUIREMENTS.

APPROVED BY — ENGINEERING SERVICES MANAGER: KYLE TWOMEY — CITY ENGINEER: DAN BULLER, P.E.

ADOPTED: | REVISED: 10/2019 | SUPERSEDES: 01/2017 | CHECKED BY: JAG | SCALE: NTS | DWG/REV. BY: SRM/MLD

DRYWELL – TYPE 1 — ENGINEERING SERVICES, CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. B-102C



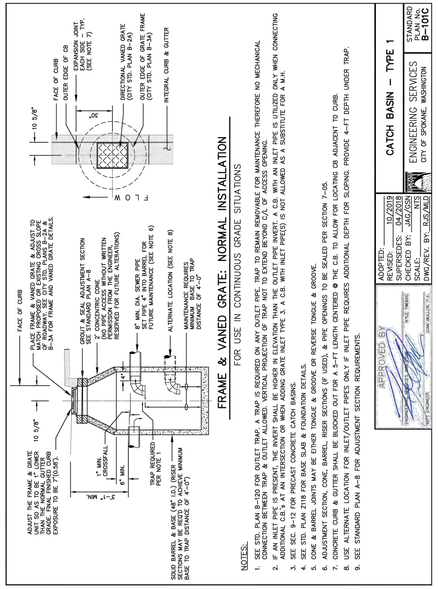
NOTES:

1. SEE SEC 9-12 FOR PRECAST CONCRETE DRYWELLS.
2. SEE SEC 9-03.12(5) FOR GRAVEL BACKFILL FOR DRYWELLS.
3. SEE SEC 9-33 FOR WOVEN GEOTEXTILE FABRIC (MODERATE SURVIVABILITY, CLASS A). OVERLAP ALL FABRIC JOINTS 1'-6" MIN. WRAP & SECURE FABRIC AROUND PIPE TO PREVENT MIGRATION OF FINES INTO GRAVEL ENVELOPE..
4. SEE STD PLANS A-12 & A-13 FOR MANHOLE FRAME & COVER.
5. SEE STD PLANS B-102C & Z-118 FOR BASE & FOUNDATION DETAILS.
6. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
7. ADJUSTMENT SECTION, CONE & BARREL JOINTS TO BE SEALED PER SEC 7-05.
8. USE ALTERNATE PIPE LOCATION ONLY IF PIPE REQUIRES ADDITIONAL DEPTH FOR SLOPING, DEPTH OF COVER, OR OTHER RESTRICTIVE FIELD CONDITION.
9. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.
10. SEE STANDARD PLAN W-102 FOR CRUSHED ROCK REQUIREMENTS.

APPROVED BY — ENGINEERING SERVICES MANAGER: KYLE TWOMEY — CITY ENGINEER: DAN BULLER, P.E.

ADOPTED: | REVISED: 10/2019 | SUPERSEDES: 01/2017 | CHECKED BY: JAG | SCALE: NTS | DWG/REV. BY: SRM/BDF

DRYWELL – TYPE 2 — ENGINEERING SERVICES, CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. B-102D



FRAME & VANED GRATE: NORMAL INSTALLATION
FOR USE IN CONTINUOUS GRADE SITUATIONS

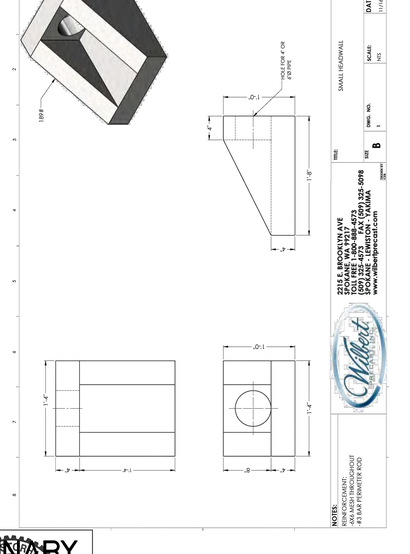
NOTES:

1. SEE STD. PLAN B-120 FOR OUTLET TRAP. A TRAP IS REQUIRED ON ANY OUTLET PIPE. TRAP TO REMAIN REMOVABLE FOR MAINTENANCE THEREFORE NO MECHANICAL JOINTS ARE ALLOWED WITHIN THE TRAP. ALL JOINTS SHALL BE WATERTIGHT. TRAP SHALL BE CONSTRUCTED IN PLACE.
2. IF AN INLET PIPE IS PRESENT, THE INVERT SHALL BE HIGHER IN ELEVATION THAN THE OUTLET PIPE INVERT. A C.B. WITH AN INLET PIPE IS UTILIZED ONLY WHEN CONNECTING ADDITIONAL C.B.'S AT AN INTERSECTION OR WHEN ADDING GRATE INLET TYPE 3 A C.B. WITH INLET PIPE(S) IS NOT ALLOWED AS A SUBSTITUTE FOR A M.H.
3. SEE STD. PLAN B-24 FOR GRATE DETAILS.
4. SEE STD. PLAN B-25 FOR FRAME DETAILS.
5. SEE STD. PLAN Z-118 FOR BASE & FOUNDATION DETAILS.
6. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
7. ADJUSTMENT SECTION, CONE, BARREL, RISER SECTIONS (IF USED), & PIPE OPENINGS TO BE SEALED PER SECTION 7-05.
8. CONCRETE COLLAR & OUTTER SHALL BE BLOCKED OUT FOR A 5-FT LENGTH CENTERED @ THE C.B. TO ALLOW FOR LOCATING OR ADJACENT TO CURB.
9. USE ALTERNATE PIPE LOCATION ONLY IF PIPE REQUIRES ADDITIONAL DEPTH FOR SLOPING, PROVIDE 4-FT DEPTH UNDER TRAP.
10. SEE STANDARD PLAN A-8 FOR ADJUSTMENT SECTION REQUIREMENTS.

APPROVED BY — KYLE TWOMEY

ADOPTED: 10/2015 | REVISED: | SUPERSEDES: 04/2018 | CHECKED BY: JAG/SRM | SCALE: NTS | DWG/REV. BY: SRM/MLD

CATCH BASIN – TYPE 1 — ENGINEERING SERVICES, CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. B-101C



NOTES:
REINFORCEMENT:
#4X4 MESH THROUGHOUT
#4 HAIRPIN AROUND

SMALL HEADWALL

DWG. NO.	SCALE:	DATE:
B	NTS	11/14/2017

2315 E. BROOKLYN AVE
SPOKANE, WA 99207
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SPOKANE - LEWISTON - YAKIMA
www.wilbertprecast.com

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FOR REGULATORY REVIEW ONLY

DATE: 6/11/24

20
22

REVISIONS				NAVD88 = ESTABLISHED FROM GPS				
5/14/25	LC	19-342	GENERAL REVISION 3	NAVD88 ELEV. :1843.87	25' 0' 25' 50'	BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER	BY	DATES
10/10/24	LC	19-342	GENERAL REVISION 2	CBM NO. :	SCALE IN FEET	SCALE: HORIZONTAL SCALE (22 x 34)	DRAWN: LMC	3/3/2023
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS 1	NAVD88 DATUM		VERTICAL SCALE (22 x 34)	APPROVED: JDS	01/19/2024
DATE	BY	PROJECT	DESCRIPTION					

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civil engineering | planning
landscape architecture | surveying
SE#19-342
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: STANDARD DETAILS

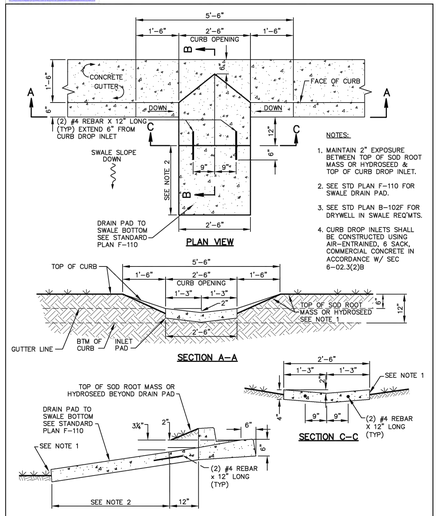
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

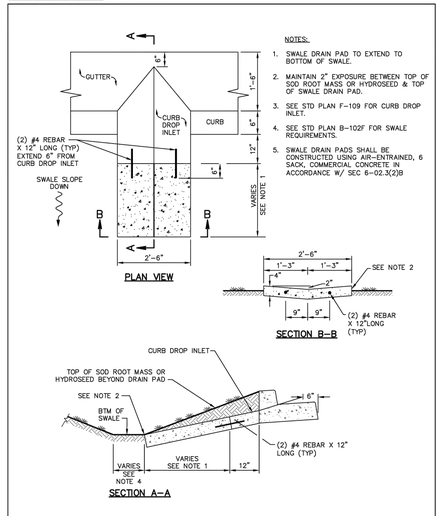
CALL BEFORE YOU DIG 1-800-424-5555

Back to Section F - TOC

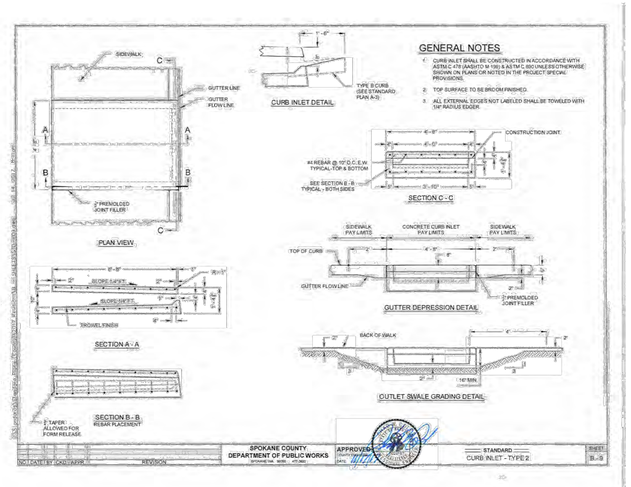


APPROVED BY			
DIRECTOR OF ENGINEERING SERVICES: KYLE TWOHIG	ADOPTED:	CURB DROP INLET	
CITY ENGINEER: DAN WALLER, P.E.	REVISED: 04/2022	ENGINEERING SERVICES	STANDARD PLAN No. F-109
	SUPERSEDES: 04/2012	CITY OF SPOKANE, WASHINGTON	
	CHECKED BY: SJS		
	SCALE: NTS		
	REVISED BY: DSH/MLD		

Back to Section F - TOC



APPROVED BY			
DIRECTOR OF ENGINEERING SERVICES: KYLE TWOHIG	ADOPTED:	SWALE DRAIN PAD	
CITY ENGINEER: DAN WALLER, P.E.	REVISED: 04/2022	ENGINEERING SERVICES	STANDARD PLAN No. F-110
	SUPERSEDES: 04/2012	CITY OF SPOKANE, WASHINGTON	
	CHECKED BY: SJS		
	SCALE: NTS		
	REVISED BY: DSH/MLD		



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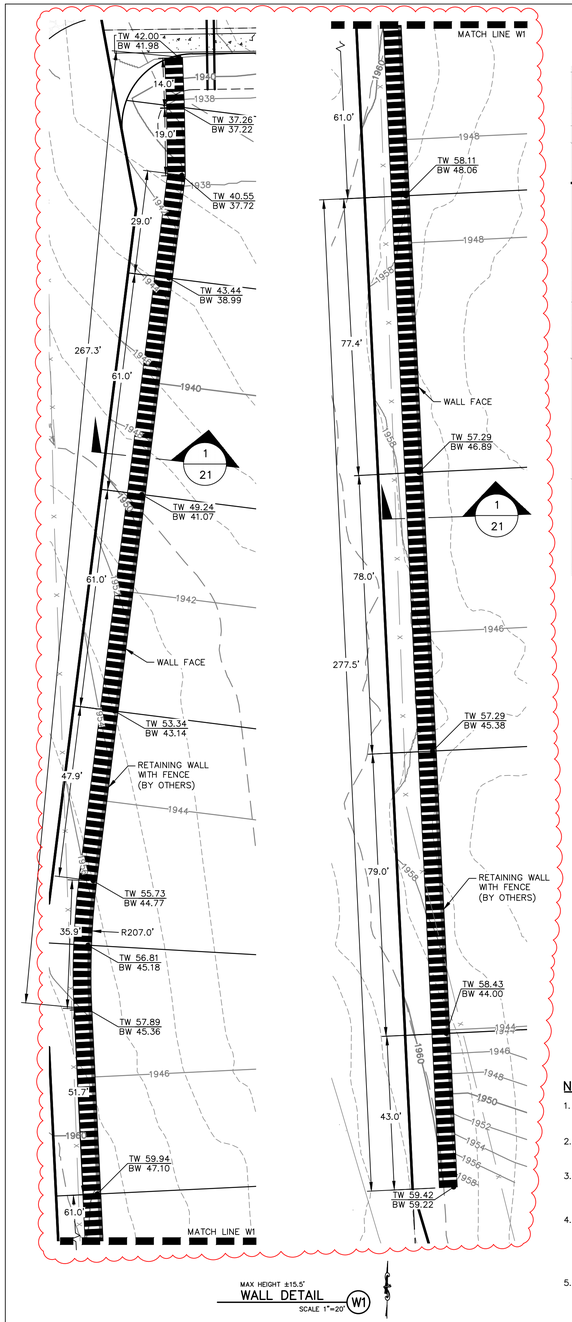
20A
22

REVISIONS				NAVD88 = ESTABLISHED FROM GPS					
				NAVD88 ELEV. :1843.87	25' 0' 25' 50'	BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER		BY	DATES
5/14/25	LC	19-342	GENERAL REVISION 3	CBM NO. :					
10/10/24	LC	19-342	GENERAL REVISION 2	NAVD88 DATUM	SCALE IN FEET	SCALE	HORIZONTAL SCALE (22 x 34)	DRAWN: LMC	3/3/2023
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS 1				VERTICAL SCALE (22 x 34)	APPROVED: JDS	01/19/2024
DATE	BY	PROJECT	DESCRIPTION						

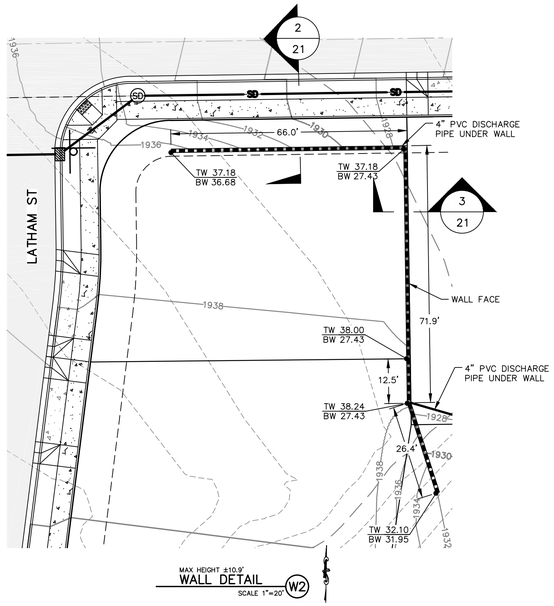
CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS: STANDARD DETAILS
PROJECT LIMITS: LATAH GLEN RESIDENTIAL
TYPE OF IMPROVEMENT: SITE/DRAINAGE
PROJECT NO.: 2023519/2023520
PLAN NO.: 36-25N-42E

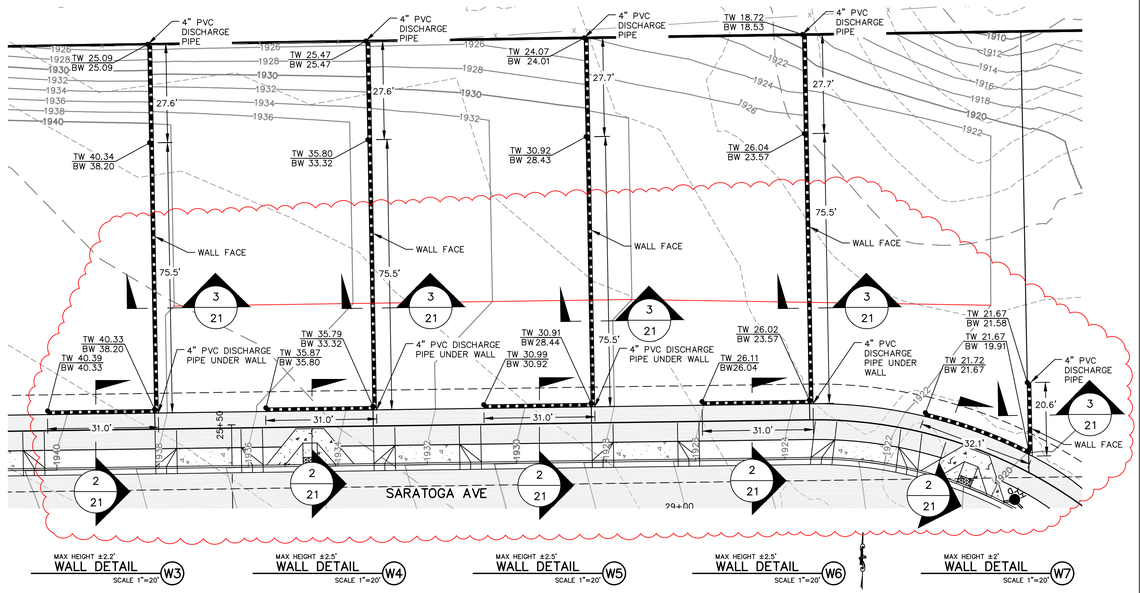
CALL BEFORE YOU DIG 1-800-424-5555



MAX HEIGHT ±15.5'
WALL DETAIL W1
SCALE 1"=20'



MAX HEIGHT ±10.9'
WALL DETAIL W2
SCALE 1"=20'



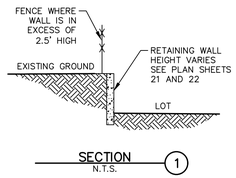
MAX HEIGHT ±2.2'
WALL DETAIL W3
SCALE 1"=20'

MAX HEIGHT ±2.5'
WALL DETAIL W4
SCALE 1"=20'

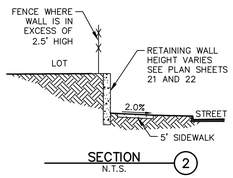
MAX HEIGHT ±2.5'
WALL DETAIL W5
SCALE 1"=20'

MAX HEIGHT ±2.5'
WALL DETAIL W6
SCALE 1"=20'

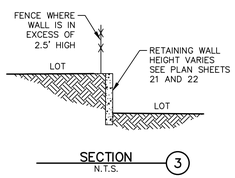
MAX HEIGHT ±2'
WALL DETAIL W7
SCALE 1"=20'



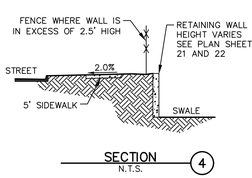
SECTION 1
N.T.S.



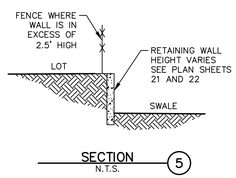
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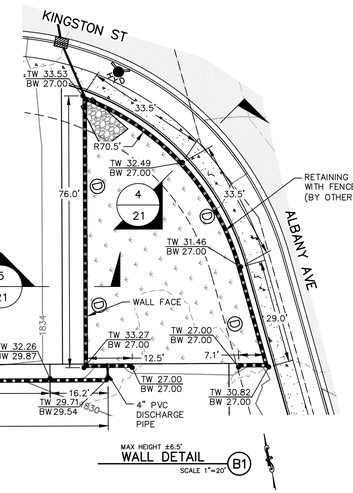
SECTION 3
N.T.S.



SECTION 4
N.T.S.

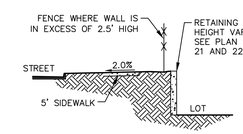


SECTION 5
N.T.S.

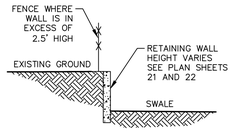


MAX HEIGHT ±2.8'
WALL DETAIL B2
SCALE 1"=20'

MAX HEIGHT ±6.5'
WALL DETAIL B1
SCALE 1"=20'



SECTION 6
N.T.S.



SECTION 7
N.T.S.

NOTES:

1. RETAINING WALLS OVER 2.5' IN HEIGHT SHALL HAVE A FENCE ALONG THE TOP OF THE WALL.
2. WALLS THAT EXCEED 4' IN HEIGHT SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER.
3. RETAINING WALLS IN L.I.D SWALES MUST BE DESIGNED BY A PROFESSIONAL ENGINEER AND NOT BY CONTRACTOR.
4. CONTRACTOR TO COORDINATE WITH GEOTECHNICAL ENGINEER AND CITY OF SPOKANE INSPECTOR PRIOR TO CONSTRUCTION TO DETERMINE TYPE OF WALL TO BE INSTALLED AT EACH LOCATION.
5. WALL DRAIN PIPES DAYLIGHTING TO FINISHED GRADE REQUIRE REINFORCED CONCRETE HEADWALL PER DETAIL ON SHEET 20. DISCHARGE POINTS ON PLAN ARE APPROXIMATE. CONTRACTOR TO FIELD FIT DRAINAGE DISCHARGE MAINTAINING A POSITIVE GRADE TO ALLOW DRAINAGE TO FLOW.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

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DATE: 6/11/24

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21
22

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: RETAINING WALL DETAILS

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

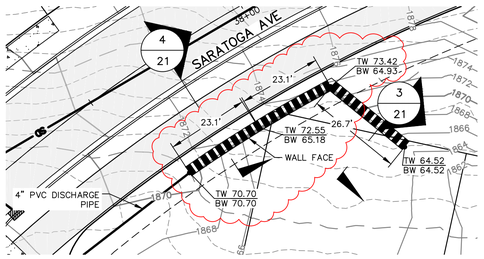
10' 0' 10' 20'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

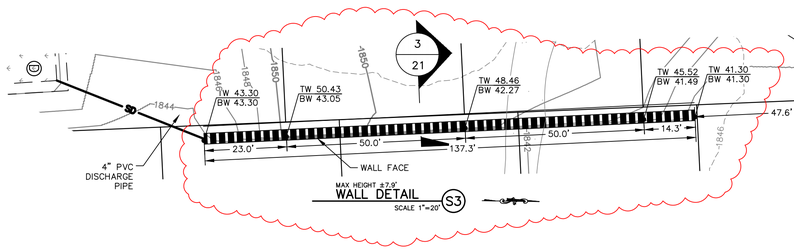
SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=20'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CALL BEFORE YOU DIG 1-800-424-5555

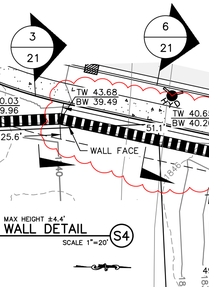
3



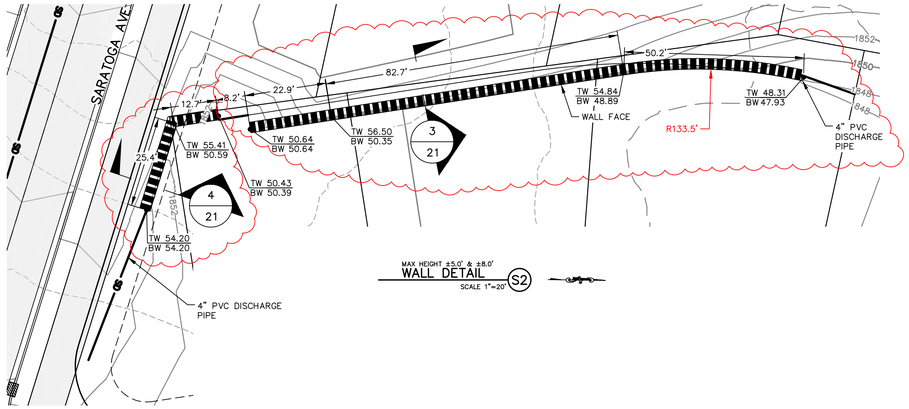
MAX HEIGHT ±8.5'
WALL DETAIL (S1)
SCALE 1"=20'



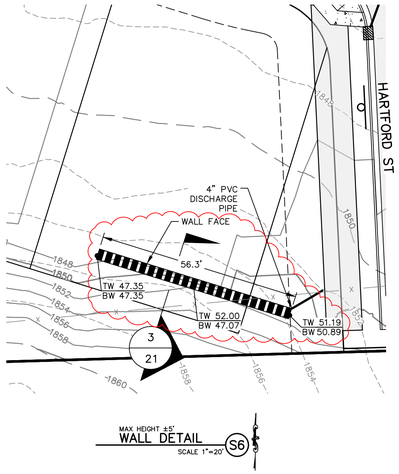
MAX HEIGHT ±7.9'
WALL DETAIL (S3)
SCALE 1"=20'



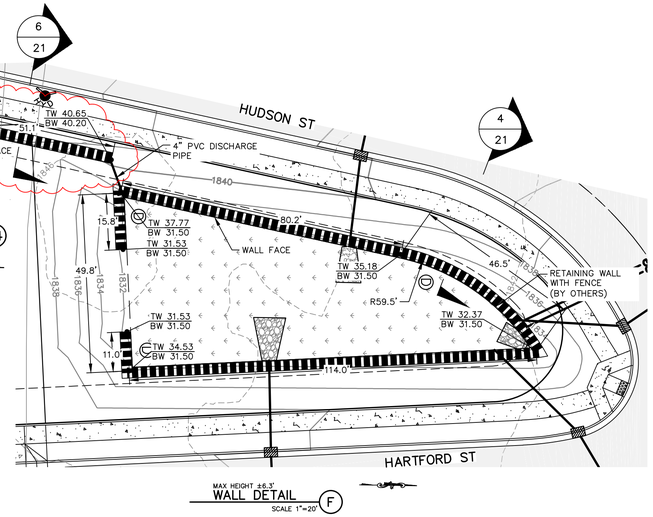
MAX HEIGHT ±4.4'
WALL DETAIL (S4)
SCALE 1"=20'



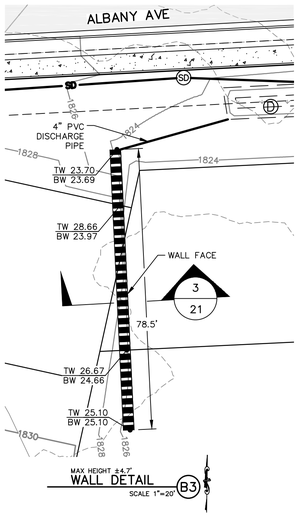
MAX HEIGHT ±5.0' & ±8.0'
WALL DETAIL (S2)
SCALE 1"=20'



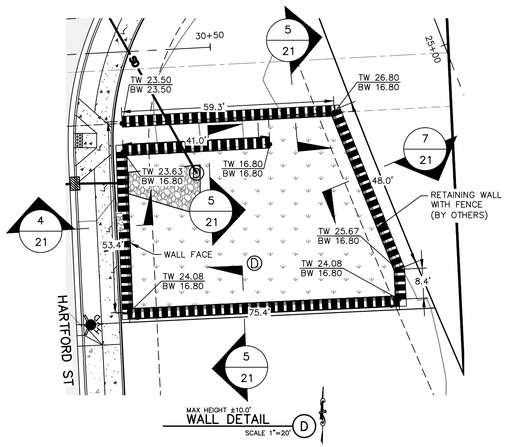
MAX HEIGHT ±5'
WALL DETAIL (S6)
SCALE 1"=20'



MAX HEIGHT ±6.3'
WALL DETAIL (F)
SCALE 1"=20'



MAX HEIGHT ±4.7'
WALL DETAIL (B3)
SCALE 1"=20'



MAX HEIGHT ±10.0'
WALL DETAIL (D)
SCALE 1"=20'

NOTES:

1. RETAINING WALLS OVER 2.5' IN HEIGHT SHALL HAVE A FENCE ALONG THE TOP OF THE WALL.
2. WALLS THAT EXCEED 4' IN HEIGHT SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER.
3. RETAINING WALLS IN L.I.D SWALES MUST BE DESIGNED BY A PROFESSIONAL ENGINEER AND NOT BY CONTRACTOR.
4. CONTRACTOR TO COORDINATE WITH GEOTECHNICAL ENGINEER AND CITY OF SPOKANE INSPECTOR PRIOR TO CONSTRUCTION TO DETERMINE TYPE OF WALL TO BE INSTALLED AT EACH LOCATION.
5. WALL DRAIN PIPES DAYLIGHTING TO FINISHED GRADE REQUIRE REINFORCED CONCRETE HEADWALL PER DETAIL ON SHEET 20. DISCHARGE POINTS ON PLAN ARE APPROXIMATE. CONTRACTOR TO FIELD FIT DRAINAGE DISCHARGE MAINTAINING A POSITIVE GRADE TO ALLOW DRAINAGE TO FLOW.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

22
22

PRELIMINARY
NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DATE: 6/11/24

storhäug
civil engineering | planning
landscape architecture | surveying
SE#19-342
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

10' 0' 10' 20'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=20'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: RETAINING WALL DETAILS

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

SANITARY SEWER IMPROVEMENTS

LATAH GLEN RESIDENTIAL COMMUNITY

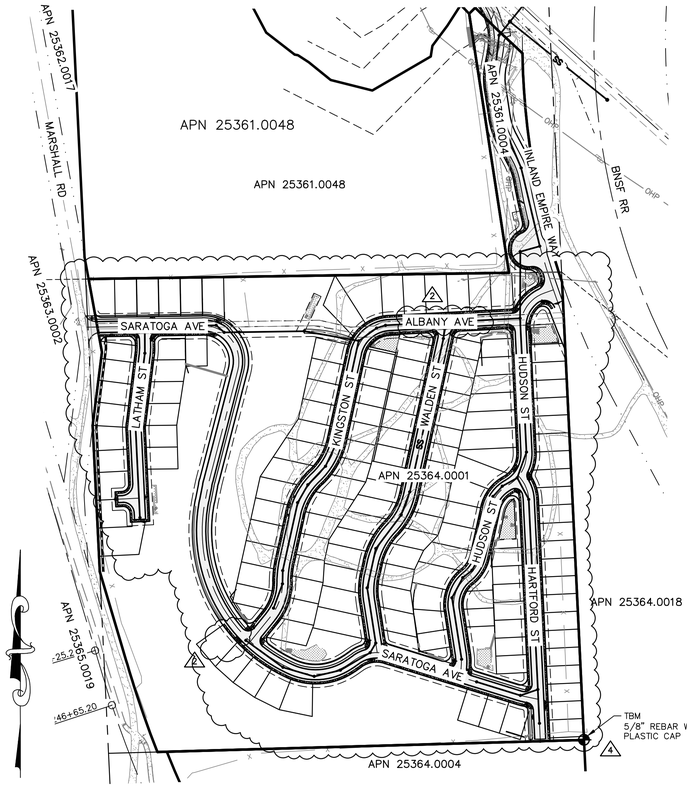
SECTION 36, TOWNSHIP 25 NORTH, RANGE 42 EAST, W.M.,
CITY OF SPOKANE, SPOKANE COUNTY, WASHINGTON

GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL NOTIFY THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT LEAST 48 HOURS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITY, OR CONSTRUCTION ON ANY AND ALL SEWER AND WATER IMPROVEMENTS.
2. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE CITY OF SPOKANE, SPOKANE COUNTY AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
3. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB ON-SITE AT ALL TIMES.
4. IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED BY THE CONTRACTOR, HIS SUBCONTRACTORS, OR OTHER AFFECTED PARTIES, WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY.
5. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH M.U.T.C.D. TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY (CITY, COUNTY, OR STATE) FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING, THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT AT THE CONSTRUCTION SITE, AND MADE AVAILABLE TO THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT ALL TIMES.
8. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION, PRIOR TO ANY OTHER GROUND-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREAS ARE STABILIZED WITH HARD SURFACE OR LANDSCAPING.
9. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY IS SUBJECT TO THE JURISDICTION OF SPOKANE COUNTY.
10. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT, CONSTRUCTION EQUIPMENT AND ANY OTHER ASSOCIATED EQUIPMENT SHALL GENERALLY BE LIMITED TO THE PERIOD BETWEEN 7:00 A.M. AND 10:00 P.M. WEEKDAYS, 9:00AM AND 10:00PM WEEKENDS, UNLESS OTHERWISE APPROVED BY THE COUNTY.
11. NO REVISIONS SHALL BE MADE TO THESE PLANS WITHOUT THE APPROVAL OF THE CITY ENGINEER AND NOTIFICATION OF THE ENGINEER OF RECORD.
12. STATIONING AND OFFSET IS BASED ON STATIONING FOR THE REFERENCED STREET ALIGNMENT.
13. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEED PRIOR TO CONSTRUCTION. COORDINATE WITH APPLICABLE UTILITY COMPANY.
14. RESTRAINTS SHALL BE INSTALLED ON ALL PRESSURE PIPELINES IN ACCORDANCE WITH CITY OF SPOKANE STANDARDS. REFER TO RESTRAINED JOINT TABLE ON THESE PLANS.

GENERAL SEWER NOTES

1. UNLESS SPECIFICALLY EXCEPTED IN THE PLANS OR CONTRACT DOCUMENTS ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT STANDARD SPECIFICATIONS AND STANDARD PLANS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION PROMULGATED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND THE WASHINGTON CHAPTER OF THE AMERICAN PUBLIC WORKS ASSOCIATION, (LATEST EDITION) & CITY OF SPOKANE SUPPLEMENTAL SPECIFICATIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT TO CONSTRUCT AND INSTALL TO PROPER WORKING ORDER ALL IMPROVEMENTS AS DETAILED OR CALLED OUT IN THESE PLANS
3. THE PLANS ARE SCHEMATIC AND ARE NOT INTENDED TO DEPICT ALL DETAILS OF THE WORK REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE TO FAMILIARIZE HIMSELF WITH ACTUAL SITE CONDITIONS REQUIREMENTS AND FACTORS AFFECTING THE WORK. WHERE LACK OF DETAIL OR CONFLICTS EXISTS BETWEEN THESE AND OTHER PLANS, THE CONTRACTOR SHALL NOTIFY THE OWNER TO RESOLVE THE ISSUE PRIOR TO PROCEEDING.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS SHOWN ON THESE DRAWINGS OR DESIGNATED TO BE PROVIDED, INSTALLED OR CONSTRUCTED UNLESS SPECIFICALLY NOTED OTHERWISE.
5. EXCAVATION AND EMBANKMENT SHALL BE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF SECTION 2-03 OF THE WSDOT STANDARD SPECIFICATIONS. ALL COMPACTION SHALL BE IN ACCORDANCE WITH SECTION 2-03.3(14)C, METHOD B, OF THE STANDARD SPECIFICATION.
6. THESE PLANS MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
7. SHORING AND CRIBBING FOR UTILITY CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF SECTION 2-09 OF THE STANDARD SPECIFICATIONS.
8. ALL PIPE BEDDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF CONSTRUCTION SPECIFICATIONS FOR SEWER LINES AS ADOPTED BY THE CITY OF SPOKANE.
9. ALL BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF CONSTRUCTION SPECIFICATIONS FOR SEWER LINES AS ADOPTED BY THE CITY OF SPOKANE.
10. MARKING TAPE WILL BE PLACED IN THE EXCAVATION TRENCH AT MID-DEPTH LOCATION FOR ALL UNDERGROUND SEWER PIPE INSTALLATIONS FOR THE PURPOSE OF ALERTING ANY FUTURE EXCAVATION IN THE SPECIFIC AREA.
11. AREAS WHICH REQUIRE THE PLACEMENT OF EMBANKMENT IN ORDER TO INSTALL SEWER, (I.E; PIPELINE INVERTS ARE ABOVE EXISTING GROUND ELEVATIONS) SHALL BE CONSTRUCTED PER THESE SPECIFICATIONS TO AN ELEVATION THREE (3) FEET ABOVE THE TOP OF PROPOSED PIPE. AT THIS POINT, TRENCHING AND BACKFILL FOR PLACEMENT OF WATER AND SEWER MAY BEGIN.
12. ALL SLEEVING OF SEWER LINES, IF NECESSARY, SHALL BE PER THE CITY OF SPOKANE STANDARD A-5.
13. MANHOLE FABRICATION IS TO BE PER CITY OF SPOKANE STD. PLAN Z-111.
14. CONTRACTOR TO CONSTRUCT CUT-OFF WALLS WHERE DETERMINED BY THE CITY FIELD ENGINEER PER PLAN NO. B-19.



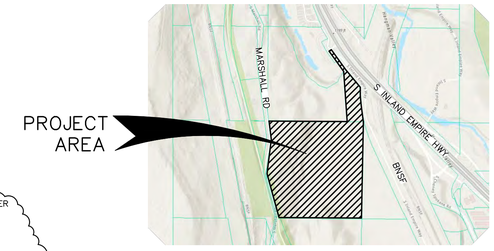
GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.

SANITARY SEWER SHEET INDEX

SHEET NO. 1 – SANITARY SEWER COVER
SHEET NO. 2 – INLAND EMPIRE WAY SANITARY SEWER PLAN & PROFILE
SHEET NO. 3 – SARATOGA AVE SANITARY SEWER PLAN AND PROFILE STA 26+00 TO STA 30+50
SHEET NO. 4 – SARATOGA AVE SANITARY SEWER PLAN AND PROFILE STA 38+00 TO STA 47+92
SHEET NO. 5 – LATHAM ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 6 – KINGSTON ST & ALBANY AVE SANITARY SEWER PLAN & PROFILE
SHEET NO. 7 – WALDEN ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 8 – HUDSON ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 9 – HARTFORD ST SANITARY SEWER PLAN & PROFILE
SHEET NO. 10 – NORTH SEWER MAIN CONNECTION PLAN & PROFILE
SHEET NO. 11 – SEWER DETAILS



VICINITY MAP

LEGEND

EXISTING FEATURES

ASPHALT SURFACING
CURB
GRAVEL
SIDEWALK OR CONCRETE
DRYWELL
STORM MANHOLE
CATCH BASIN
POWER POLE/TELEPHONE POLE
TELEPHONE ENCLOSURE
WATER VALVE
FIRE HYDRANT
SANITARY SEWER MANHOLE
LIGHT POLE
SIGN
UTILITY VAULT
ELECTRICAL TRANSFORMER
W WATER LINE
SS SANITARY SEWER LINE
SD STORM DRAIN LINE / CULVERT
OHP POWER LINE (OHP OR BP)
BT TELEPHONE LINE (OHT OR BT)
G GAS LINE
2434 CONTOURS
X FENCE
BFO FIBER OPTIC LINE

LEGEND

PROPOSED IMPROVEMENTS

ASPHALT SURFACING
CURB
CONCRETE OR SIDEWALK
DRYWELL
STORM MANHOLE
CONCRETE INLET OR
CURB INLET
POWER POLE
SIGN
WATER VALVE
WATER METER
FIRE HYDRANT
WATER SHUTOFF / WATER VAULT
SANITARY SEWER MANHOLE
INACTIVE/COMPLETED PHASE
CO CLEANOUT (CO)
GM GAS METER
8"WA WATER LINE (AS SIZED)
SLEEVE FOR WATER / SEWER CROSSING
SS SANITARY SEWER LINE
SD STORM DRAIN LINE / CULVERT
1924 CONTOURS
STORM WATER SWALE / POND
DIRECTION OF SURFACE STORM WATER DRAINAGE
1924.50 / 1924.00 TOP OF CURB ELEVATION / FLOWLINE ELEVATION
CURB INLET 1924.00 CURB INLET / INLET ELEVATION AT FLOWLINE
1924.00 FINISHED GRADE ELEVATION

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HENRY D. STORHAUG — STATE OF WASHINGTON — 21558 — REGISTERED PROFESSIONAL ENGINEER
DATE: 6/11/24

1
11

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
100' 0' 100' 200'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER
SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

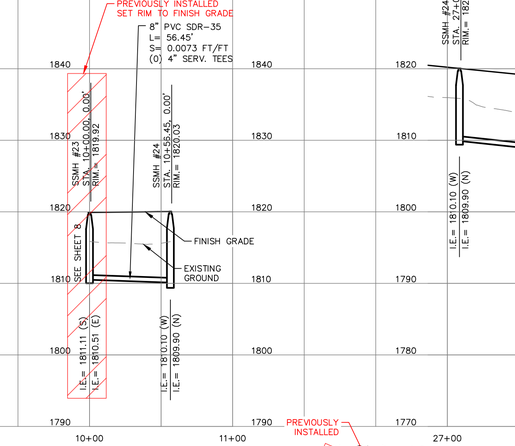
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS: SANITARY SEWER COVER
APN 25361.0001 & 25364.0001
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	36-25N-42E

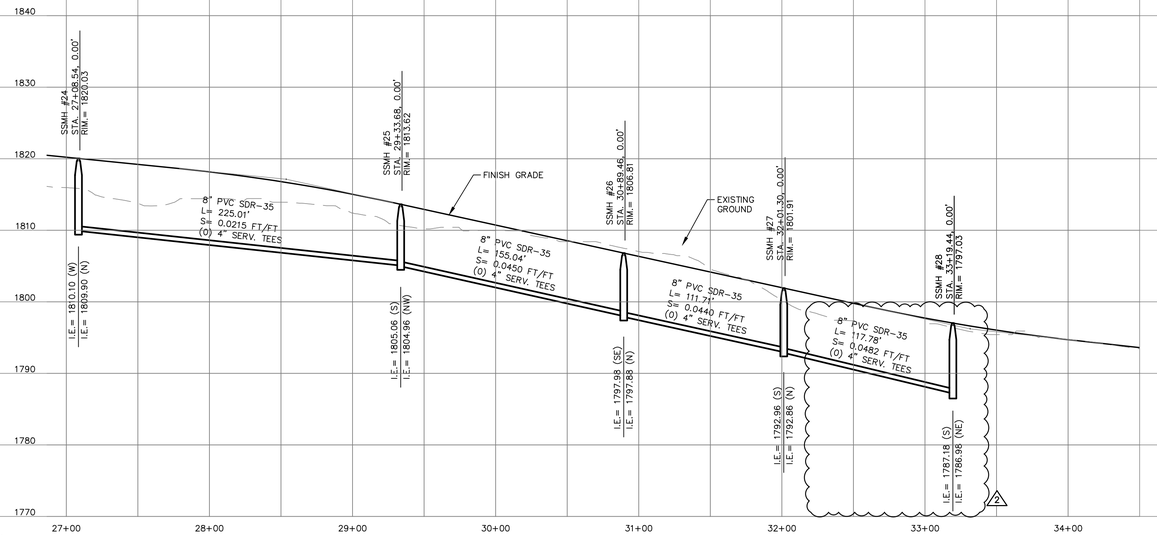
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A

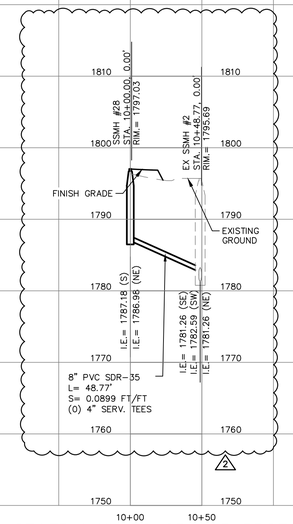
ENTRANCE SEWER MAIN PROFILE

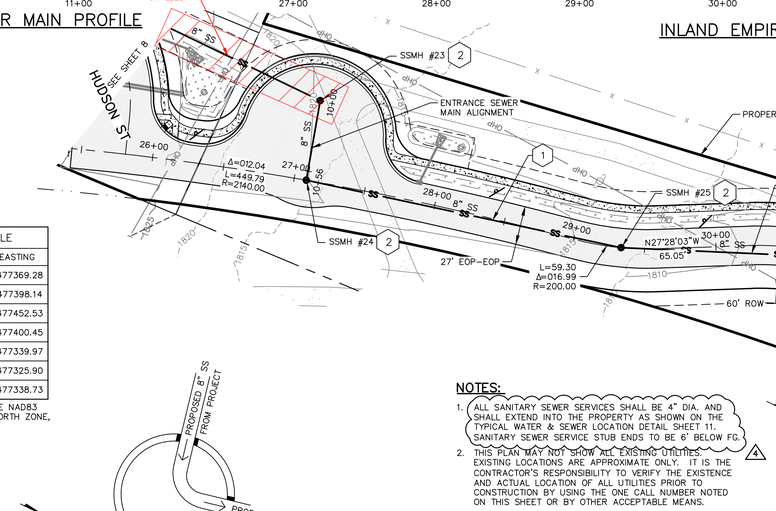


INLAND EMPIRE WAY SEWER PROFILE



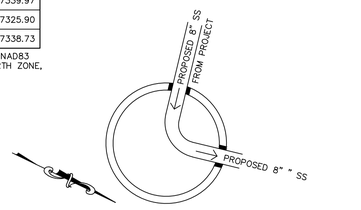
SEWER MAIN TO SR 195 PROFILE





MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
EX SSMH #2	245663.32	2477369.28
SSMH #23	245020.65	2477398.14
SSMH #24	245035.75	2477452.53
SSMH #25	245254.65	2477400.45
SSMH #26	245397.40	2477339.97
SSMH #27	245508.22	2477325.90
SSMH #28	245625.30	2477338.73

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.



SSMH #24 DETAIL

NTS

TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
4. CONNECT TO EXISTING SANITARY SEWER MANHOLE AS SHOWN. VERIFY IE AT MANHOLE. CONTACT DESIGN ENGINEER IF AS-BUILT INFORMATION VARIES FROM DESIGN. (2)
6. CORE EXISTING MANHOLE AND FILLET PER CITY OF SPOKANE SPECIFICATIONS.
7. OBTAIN APPROPRIATE PERMITS TO CONSTRUCT SEWER WITHIN WSDOT RIGHT-OF-WAY.

NOTES:

1. ALL SANITARY SEWER SERVICES SHALL BE 4" DIA. AND SHALL EXTEND INTO THE PROPERTY AS SHOWN ON THE TYPICAL WATER & SEWER LOCATION DETAIL SHEET 11. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG. (4)
2. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION BY USING THE ONE CALL NUMBER NOTED ON THIS SHEET OR BY OTHER ACCEPTABLE MEANS.
3. LOCATING WIRE SHALL BE INSTALLED ALONG ALL PIPELINES, BEGINNING AND TERMINATING IN MANHOLES. PIPELINE MARKING TAPE SHALL BE INSTALLED AS SHOWN IN THE STANDARD PLANS, AND AS NOTED IN CITY OF SPOKANE SUPPLEMENTAL SPECIFICATIONS 7-17.3(2)J.
4. ALL SIDE SEWERS LONGER THAN 100' SHALL HAVE CLEANOUTS SPACED EVERY 100'.
5. SANITARY SEWER PIPE SHALL BE ASTM 3034 PVC PIPE.
6. FIRST SIDE SEWER CONNECTIONS DOWNSTREAM OF A START MANHOLE ARE TO BE WYE CONNECTIONS. THE REMAINDER MAY BE EITHER WYE OR TEE CONNECTIONS. (4)

INLAND EMPIRE WAY SEWER PLAN

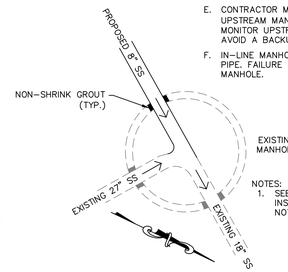
GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

IN-LINE MANHOLE INSTALLATION GENERAL NOTES

A. ALL MATERIALS FOR INSTALLATION SHALL BE ON SITE PRIOR TO CONSTRUCTION.
B. ALL PIPE SHALL BE SAWCUT.
C. THE CONTRACTOR SHALL PROHIBIT ANY DELIRIOUS MATERIAL FROM ENTERING SEWER LINE DURING CONSTRUCTION OF NEW MANHOLE.
D. CITY INSPECTOR SHALL BE ONSITE AT TIME OF MANHOLE CONSTRUCTION. CALL 24 HRS. MIN. IN ADVANCE TO SCHEDULE INSPECTION, PERMIT AND INSPECTION REQUIRED.
E. CONTRACTOR MAY PLUG THE EXISTING 27" LINE AT THE NEXT EXISTING UPSTREAM MANHOLE WHILE THE PROPOSED 8" LINE IS INSTALLED BUT MUST MONITOR UPSTREAM MANHOLES AND HAVE SUFFICIENT EQUIPMENT AVAILABLE TO AVOID A BACKUP OF SEWAGE INTO HOMES.
F. IN-LINE MANHOLE CHANNEL MUST CLOSELY MATCH THE SLOPE OF THE EXISTING PIPE. FAILURE TO MATCH SLOPES WILL RESULT IN THE REJECTION OF THE MANHOLE.



NOTES:
1. SEE IN-LINE MANHOLE INSTALLATION GENERAL NOTES

EX SSMH #2 DETAIL

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SE#19-342

JERRY D. STORHAUG
STATE OF WASHINGTON
22559
REGISTERED
PROFESSIONAL ENGINEER

DATE: 6/11/24

2
11

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
	HORIZONTAL SCALE (22 x 34)	1"=50'
	VERTICAL SCALE (22 x 34)	1"=10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

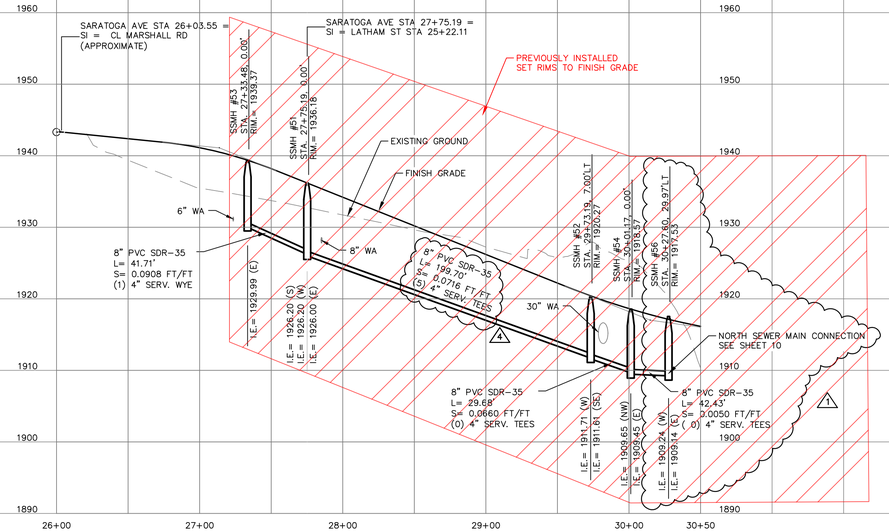
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
INLAND EMPIRE WAY SANITARY SEWER
PLAN & PROFILE: STA 25+43 TO STA 38+45

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	INLAN W (03) 1 36-25N-42E

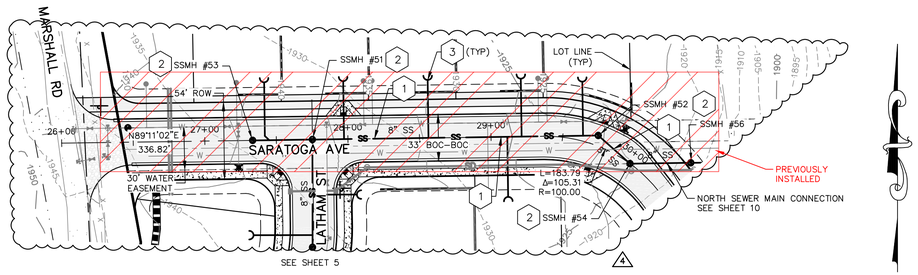
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SARATOGA AVE SEWER PROFILE
STA 26+00 TO 30+50

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #51	244811.85	2476348.66
SSMH #52	244814.70	2476548.34
SSMH #53	244811.26	2476306.95
SSMH #54	244795.01	2476570.55

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.



SARATOGA AVE SEWER PLAN
STA 26+00 TO 30+50

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
3. 4" SANITARY SEWER SERVICE PER THE CITY OF SPOKANE STD. PLAN NO. Z-116. EXTEND 10' PAST UTILITY EASEMENT. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG. (1) (4)

NOTES:

1. ALL SANITARY SEWER SERVICES SHALL BE 4" DIA. AND SHALL EXTEND INTO THE PROPERTY AS SHOWN ON THE TYPICAL WATER & SEWER LOCATION DETAIL SHEET 11. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG. (4)
2. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION BY USING THE ONE CALL NUMBER NOTED ON THIS SHEET OR BY OTHER ACCEPTABLE MEANS.
3. LOCATING WIRE SHALL BE INSTALLED ALONG ALL PIPELINES, BEGINNING AND TERMINATING IN MANHOLES. PIPELINE MARKING TAPE SHALL BE INSTALLED AS SHOWN IN THE STANDARD PLANS, AND AS NOTED IN CITY OF SPOKANE SUPPLEMENTAL SPECIFICATIONS 7-17.3(2)a.
4. ALL SIDE SEWERS LONGER THAN 100' SHALL HAVE CLEANOUTS SPACED EVERY 100'.
5. SANITARY SEWER PIPE SHALL BE ASTM 3034 PVC PIPE.
6. FIRST SIDE SEWER CONNECTIONS DOWNSTREAM OF A STAR7 MANHOLE ARE TO BE WYE CONNECTIONS. THE REMAINDER MAY BE EITHER WYE OR TEE CONNECTIONS. (4)

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JERRY D. STORHAUG STATE OF WASHINGTON 20559 REGISTERED PROFESSIONAL ENGINEER
6-11-24

DATE: 6/11/24

3
11

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

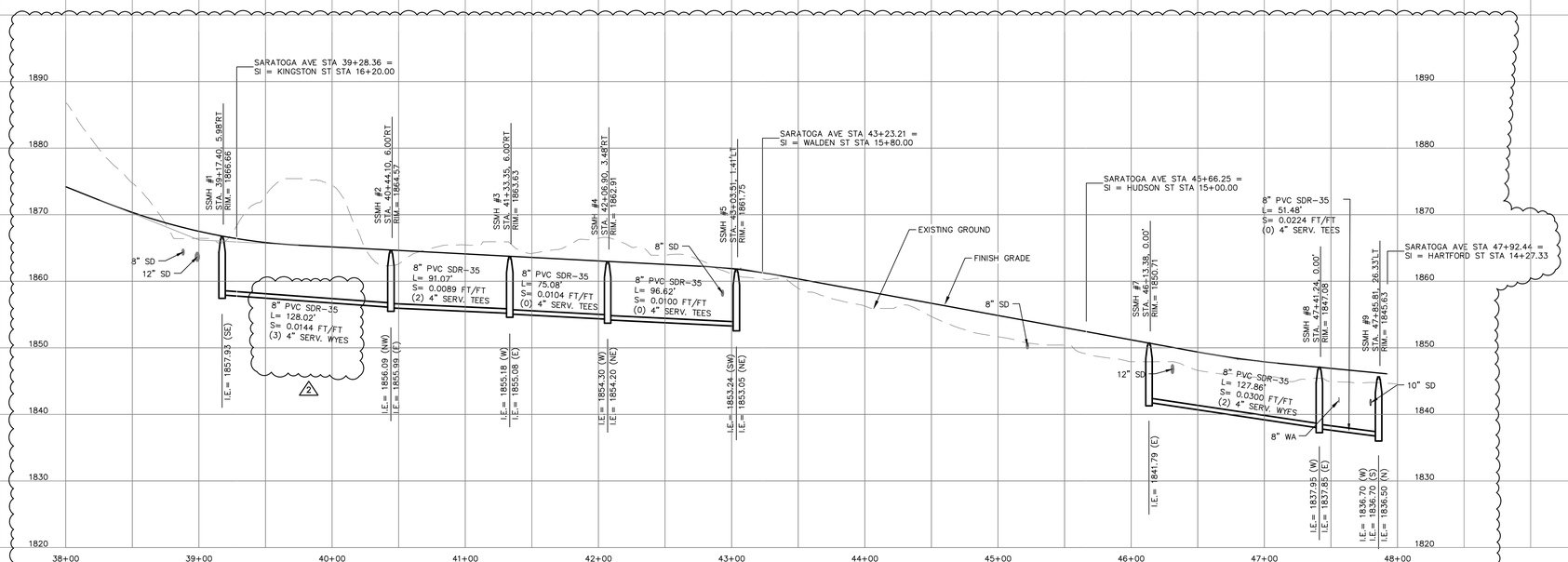
CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
SARATOGA AVE SANITARY SEWER
PLAN & PROFILE STA 26+00 TO STA 30+50
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	SARAT A (03) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



SARATOGA AVE SEWER PROFILE
STA 38+00 TO STA 47+92

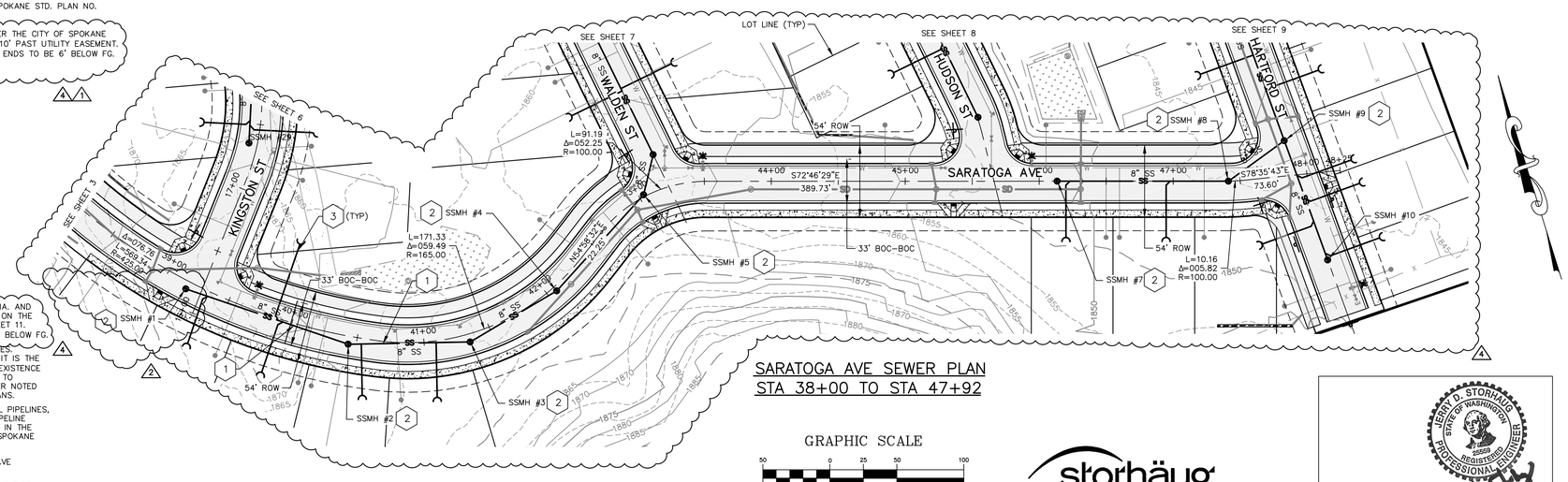
TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
3. 4" SANITARY SEWER SERVICE PER THE CITY OF SPOKANE STD. PLAN NO. Z-116. EXTEND 10' PAST UTILITY EASEMENT. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG.
5. NOT USED.

4 1

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #1	243934.12	2476631.28
SSMH #2	243858.75	2476734.76
SSMH #3	243833.38	2476822.22
SSMH #4	243850.66	2476895.28
SSMH #5	243899.87	2476978.43
SSMH #7	243818.06	2477276.26
SSMH #8	243780.20	2477398.39
SSMH #9	243796.69	2477447.16

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.



SARATOGA AVE SEWER PLAN
STA 38+00 TO STA 47+92

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

NOTES:

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6. FIRST SIDE SEWER CONNECTIONS DOWNSTREAM OF A STAR MANHOLE ARE TO BE WYE CONNECTIONS. THE REMAINDER MAY BE EITHER WYE OR TEE CONNECTIONS. 4

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JERRY D. STORHAUG STATE OF WASHINGTON 20559 REGISTERED PROFESSIONAL ENGINEER

DATE: 6/11/24

4
11

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"-10'	APPROVED: JDS	01/19/2024

SPOKANE

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

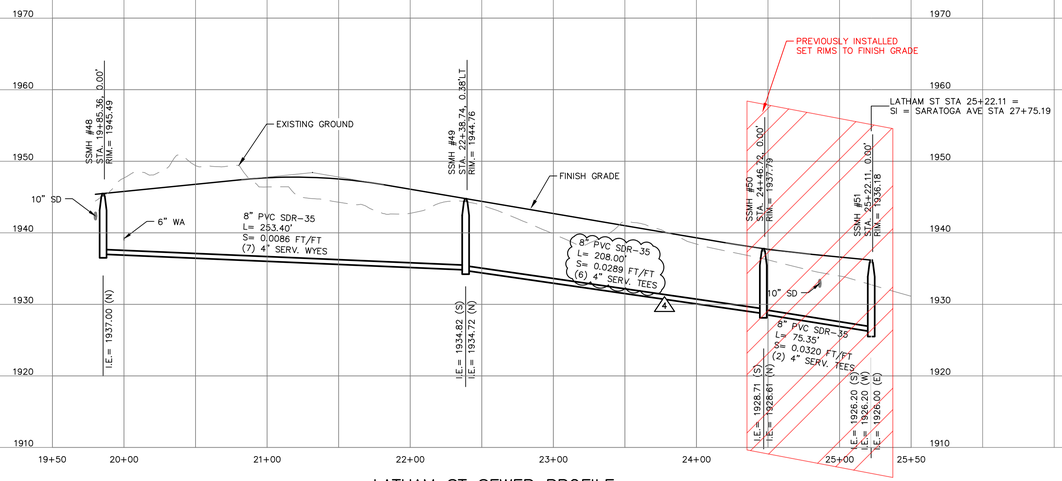
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
SARATOGA AVE SANITARY SEWER
PLAN & PROFILE STA 38+00 TO 47+92

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	SARAT A (04) 4 36-25N-42E

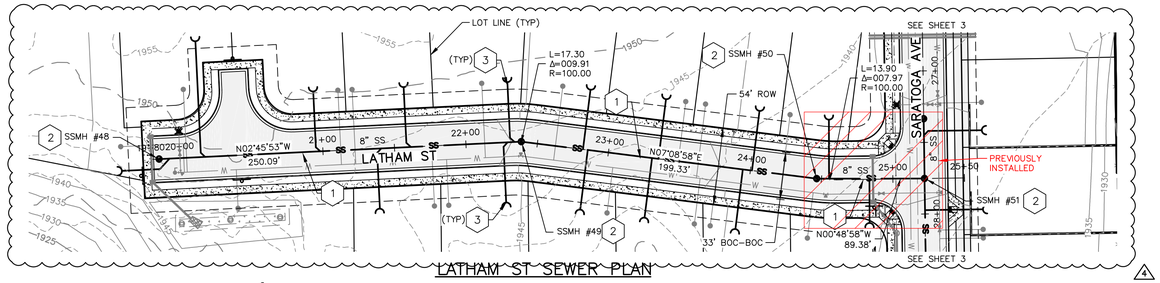
CALL BEFORE YOU DIG 1-800-424-5555



LATHAM ST SEWER PROFILE

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #48	244277.01	2476335.10
SSMH #49	244530.12	2476322.88
SSMH #50	244736.50	2476348.77
SSMH #51	244811.85	2476348.66

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.



LATHAM ST SEWER PLAN

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
3. 4" SANITARY SEWER SERVICE PER THE CITY OF SPOKANE STD. PLAN NO. Z-116. EXTEND 10' PAST UTILITY EASEMENT. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG. 1 4

NOTES:

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JERRY D. STORHAUG STATE OF WASHINGTON 20559 REGISTERED PROFESSIONAL ENGINEER
DATE: 6/11/24

5
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REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

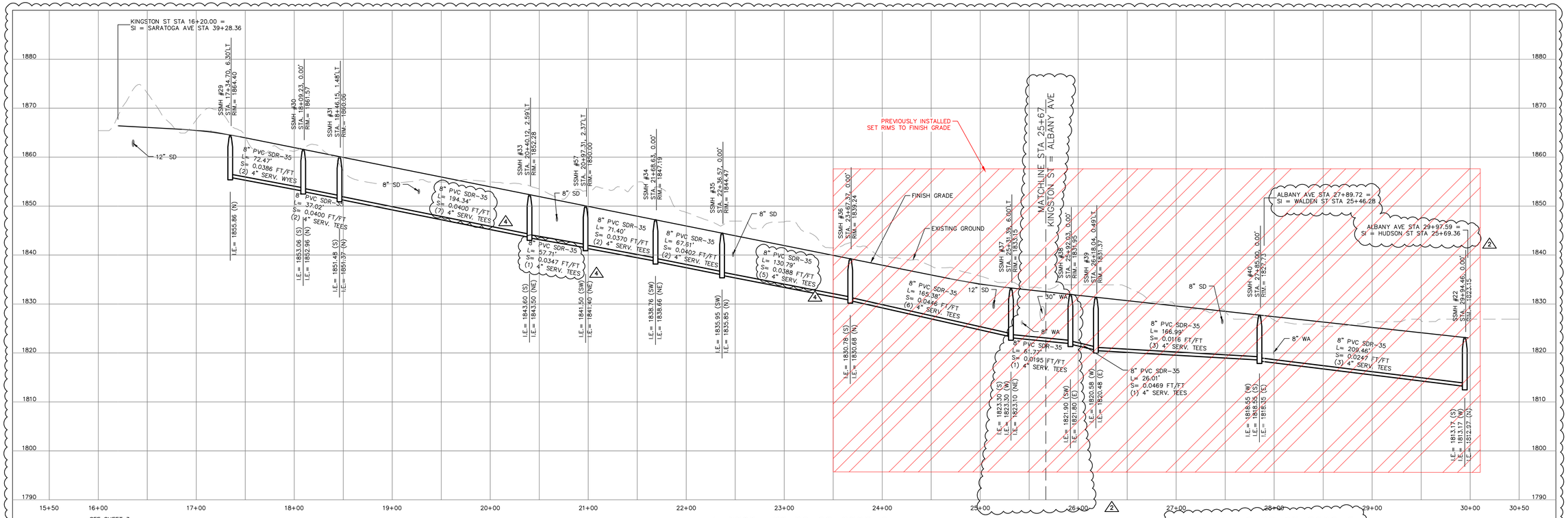
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
LATHAM ST SANITARY SEWER
PLAN & PROFILE

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

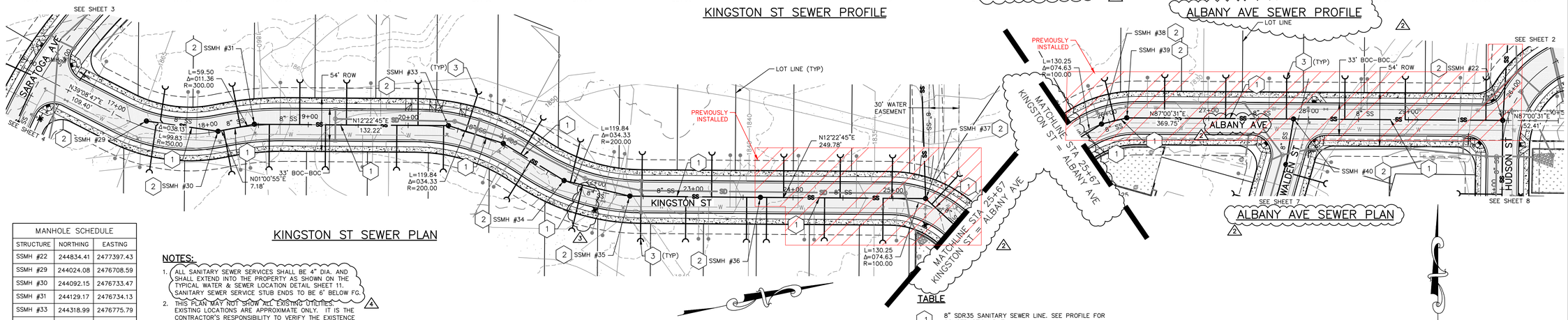
TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	LATHA S (02) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



KINGSTON ST SEWER PROFILE

ALBANY AVE SEWER PROFILE



KINGSTON ST SEWER PLAN

ALBANY AVE SEWER PLAN

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #22	244834.41	2477397.43
SSMH #29	244024.08	2476708.59
SSMH #30	244092.15	2476733.47
SSMH #31	244129.17	2476734.13
SSMH #33	244318.99	2476775.79
SSMH #34	244420.87	2476853.66
SSMH #35	244481.98	2476882.59
SSMH #36	244609.66	2476910.93
SSMH #37	244771.19	2476946.38
SSMH #38	244807.12	2476996.63
SSMH #39	244814.77	2477021.49
SSMH #40	244823.48	2477188.25
SSMH #57	244368.99	2476804.60

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.

NOTES:

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TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
3. 4" SANITARY SEWER SERVICE PER THE CITY OF SPOKANE STD. PLAN NO. Z-116. EXTEND 10' PAST UTILITY EASEMENT. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG. 1 4

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)

HORZ: 1 inch = 50 ft.
VERT: 1 inch = 10 ft.

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HENRY D. STORHAUG — STATE OF WASHINGTON — 21559 — REGISTERED PROFESSIONAL ENGINEER
6-11-24

DATE: 6/11/24

6
11

REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

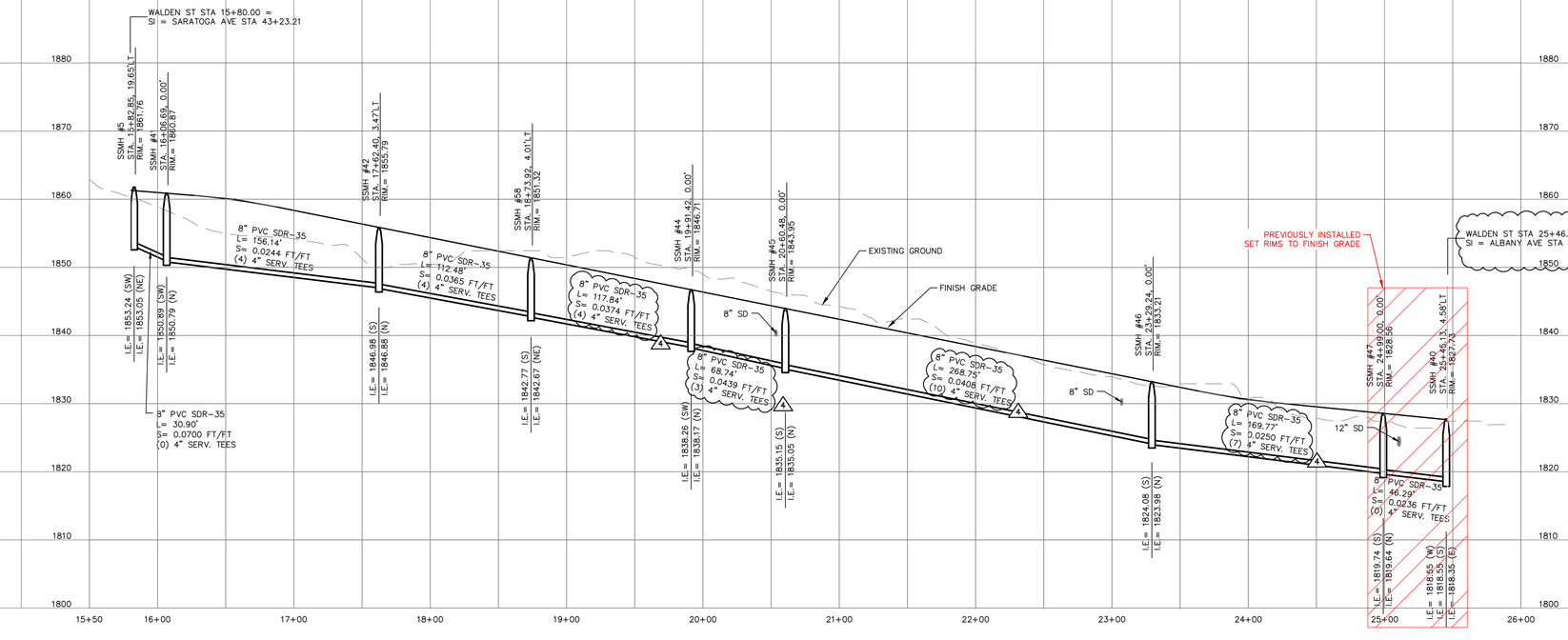
SEGMENT LIMITS: KINGSTON ST & ALBANY AVE SANITARY SEWER

PLAN & PROFILE

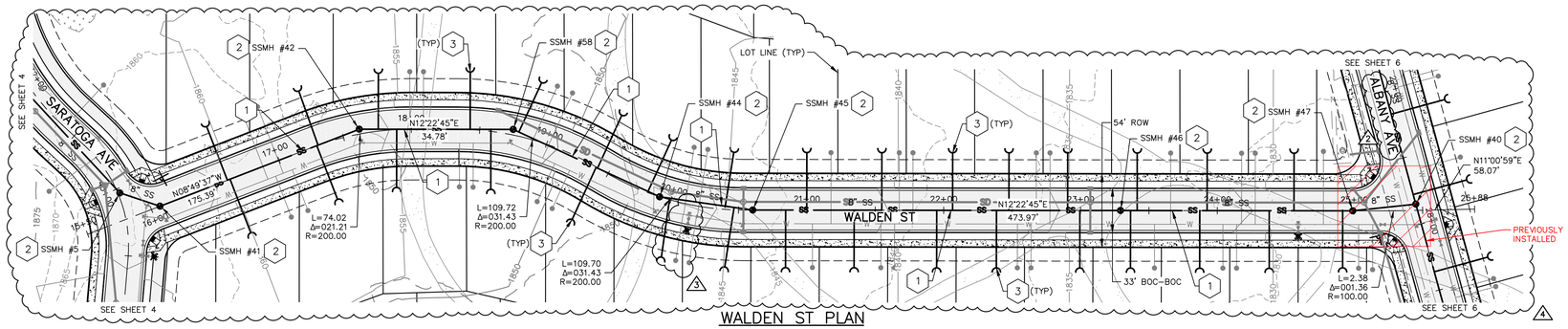
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	KINGS S (02) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



WALDEN ST PROFILE



WALDEN ST PLAN

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #40	244823.48	2477188.25
SSMH #41	243926.45	2476994.19
SSMH #42	244080.74	2476970.23
SSMH #44	244284.71	2477065.27
SSMH #45	244349.14	2477089.23
SSMH #46	244611.65	2477146.84
SSMH #47	244777.47	2477183.23
SSMH #58	244190.60	2476994.35

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.

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TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
3. 4" SANITARY SEWER SERVICE PER THE CITY OF SPOKANE STD. PLAN NO. Z-116. EXTEND 10' PAST UTILITY EASEMENT. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG. 1 4

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

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JERRY D. STORHAUG STATE OF WASHINGTON 16559 REGISTERED PROFESSIONAL ENGINEER

DATE: 6/11/24

7
11

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

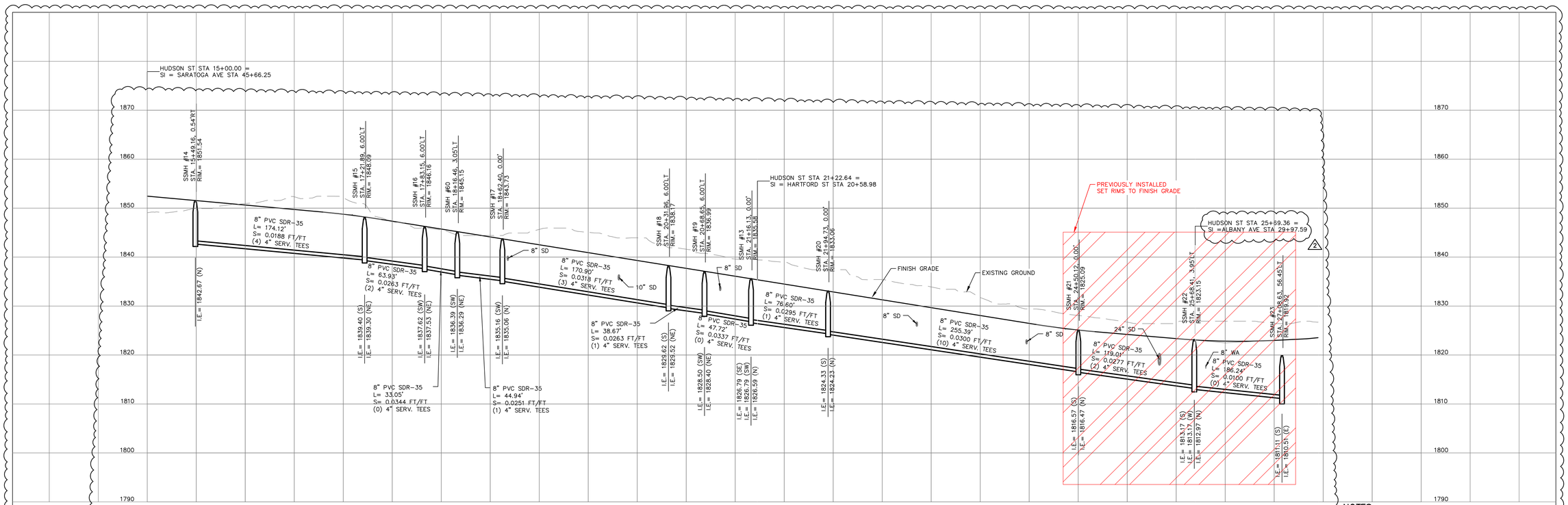
SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

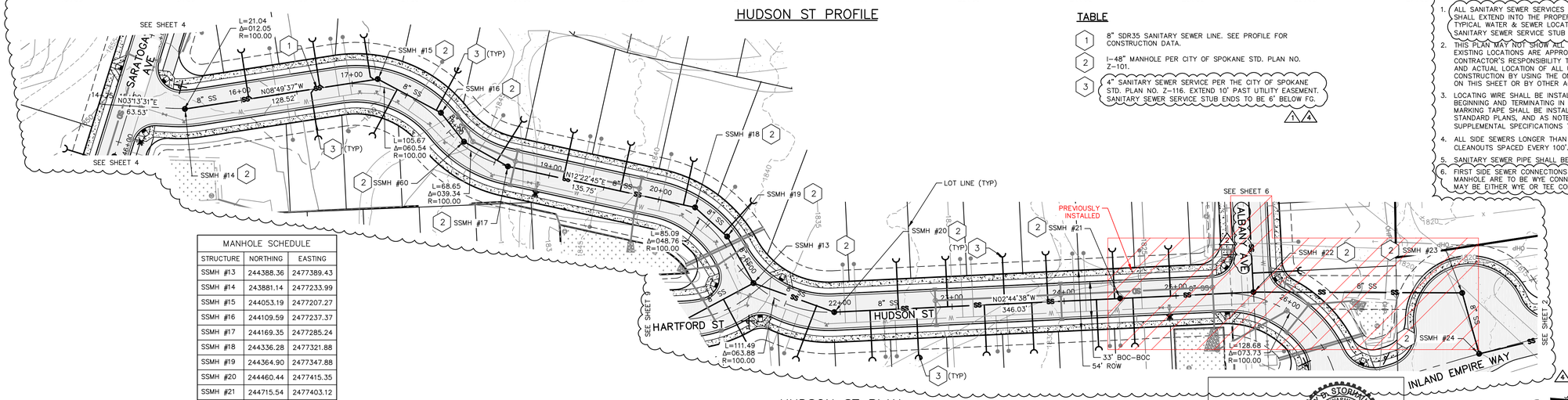
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS: WALDEN ST SANITARY SEWER
PLAN & PROFILE
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	WALDE S (02) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



HUDSON ST PROFILE



TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
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5. SANITARY SEWER PIPE SHALL BE ASTM 3034 PVC PIPE.
6. FIRST SIDE SEWER CONNECTIONS DOWNSTREAM OF A START MANHOLE ARE TO BE WYE CONNECTIONS. THE REMAINDER MAY BE EITHER WYE OR TEE CONNECTIONS. (4)

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #13	244388.36	2477389.43
SSMH #14	243881.14	2477233.99
SSMH #15	244053.19	2477207.27
SSMH #16	244109.59	2477237.37
SSMH #17	244169.35	2477285.24
SSMH #18	244336.28	2477321.88
SSMH #19	244364.90	2477347.88
SSMH #20	244460.44	2477415.35
SSMH #21	244715.54	2477403.12
SSMH #22	244834.41	2477397.43
SSMH #23	245020.65	2477398.14
SSMH #60	244130.17	2477263.23

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.

HUDSON ST PLAN

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

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SE#19-342

REVISIONS				
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5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

JEREMY D. STORHAUG
STATE OF WASHINGTON
23559
REGISTERED
PROFESSIONAL ENGINEER
11-24

DATE: 6/11/24

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

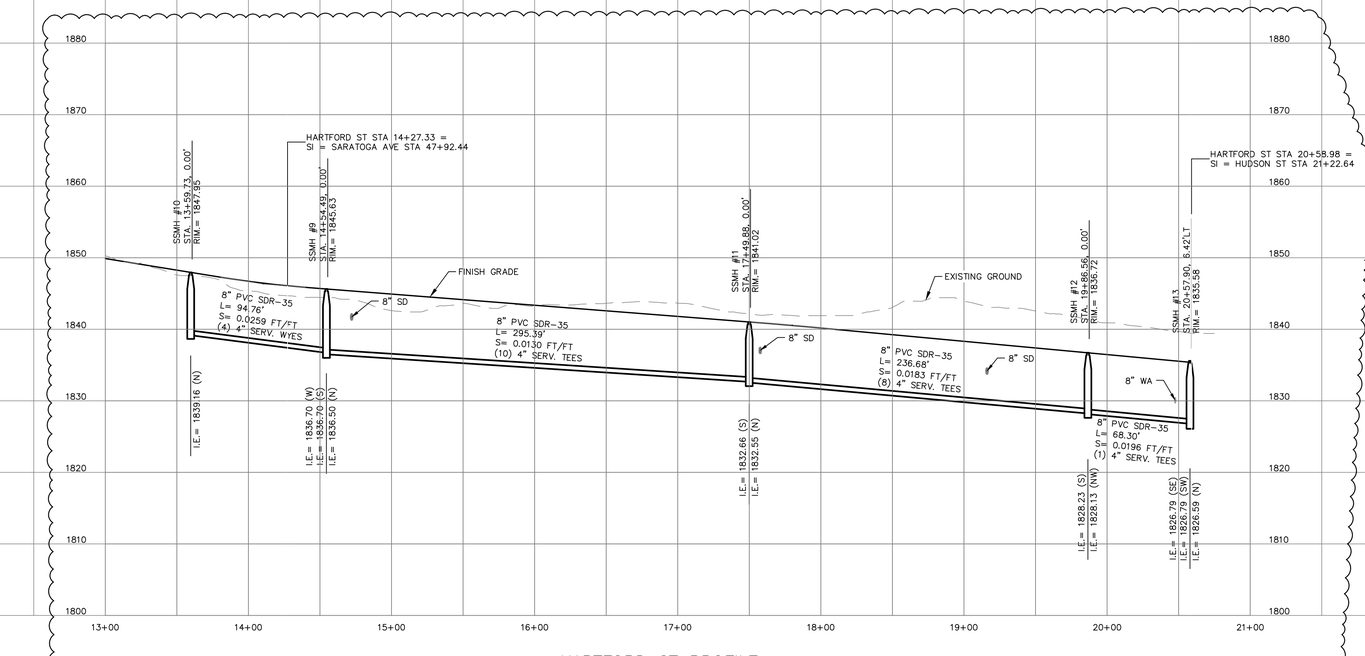
SEGMENT LIMITS:
HUDSON ST SANITARY SEWER
PLAN & PROFILE

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

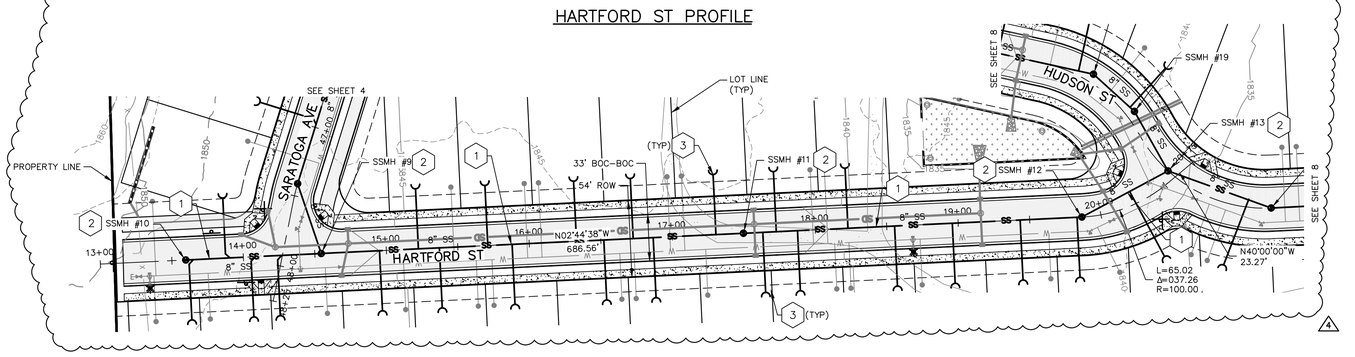
TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	HUDSO S (02) 4 36-29N-42E

8
11

CALL BEFORE YOU DIG 1-800-424-5555



HARTFORD ST PROFILE



HARTFORD ST PLAN

TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I-48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z-101.
3. 4" SANITARY SEWER SERVICE PER THE CITY OF SPOKANE STD. PLAN NO. Z-116. EXTEND 10' PAST UTILITY EASEMENT. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG. 1 4

NOTES:

1. ALL SANITARY SEWER SERVICES SHALL BE 4" DIA. AND SHALL EXTEND INTO THE PROPERTY AS SHOWN ON THE TYPICAL WATER & SEWER LOCATION DETAIL SHEET 11. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG.
2. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION BY USING THE ONE CALL NUMBER NOTED ON THIS SHEET OR BY OTHER ACCEPTABLE MEANS. 4
3. LOCATING WIRE SHALL BE INSTALLED ALONG ALL PIPELINES, BEGINNING AND TERMINATING IN MANHOLES. PIPELINE MARKING TAPE SHALL BE INSTALLED AS SHOWN IN THE STANDARD PLANS, AND AS NOTED IN CITY OF SPOKANE SUPPLEMENTAL SPECIFICATIONS 7-17.3(2)J.
4. ALL SIDE SEWERS LONGER THAN 100' SHALL HAVE CLEANOUTS SPACED EVERY 100'.
5. SANITARY SEWER PIPE SHALL BE ASTM 3034 PVC PIPE
6. FIRST SIDE SEWER CONNECTIONS DOWNSTREAM OF A STAR3 MANHOLE ARE TO BE WYE CONNECTIONS. THE REMAINDER MAY BE EITHER WYE OR TEE CONNECTIONS. 4

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #9	243796.69	2477447.16
SSMH #10	243702.05	2477451.70
SSMH #11	244091.75	2477433.02
SSMH #12	244328.16	2477421.69
SSMH #13	244388.36	2477389.43

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

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civil engineering | planning
landscape architecture | surveying
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001
SE#19-342

JERRY D. STORHAUG STATE OF WASHINGTON 16558 REGISTERED PROFESSIONAL ENGINEER

DATE: 6/11/24

9
11

REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

			BY	DATES
SCALE	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN:	LMC 3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED:	JDS 01/19/2024

SPOKANE

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

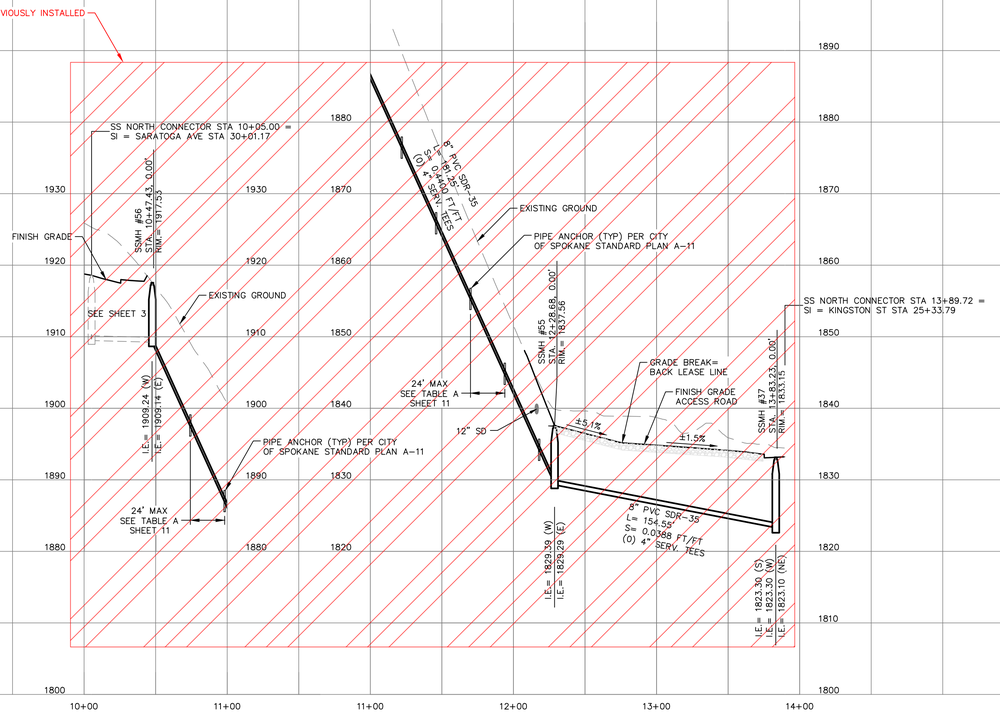
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
HARTFORD ST SANITARY SEWER
PLAN & PROFILE

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	HARTF S (02) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



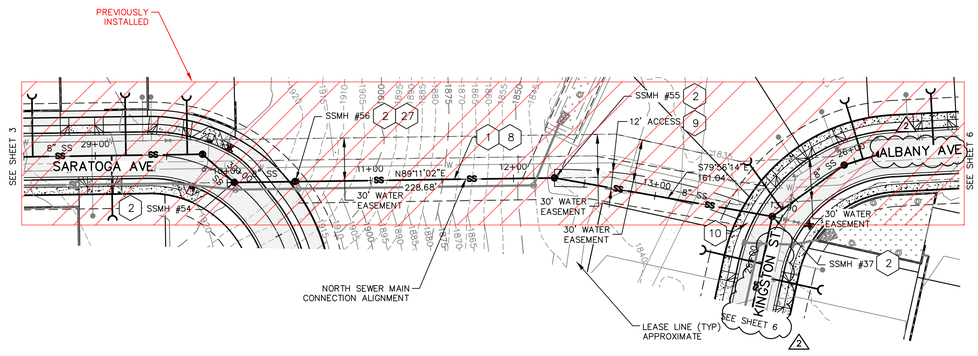
NORTH SEWER MAIN CONNECTION PROFILE

TABLE

1. 8" SDR35 SANITARY SEWER LINE. SEE PROFILE FOR CONSTRUCTION DATA.
2. I–48" MANHOLE PER CITY OF SPOKANE STD. PLAN NO. Z–101.
8. WHERE SEWER EXCEEDS 20% SLOPE, CONSTRUCT PIPE ANCHORS PER CITY OF SPOKANE STANDARD PLAN A–11 AND HORIZONTAL SPACING PER TABLE "A" ON SHEET 11.
9. 12' WIDE ACCESS ROAD TO SSMH #55. CONSTRUCT WITH 12" CRUSHED ROCK ON COMPACTED NATIVE SOIL.
10. DRIVEWAY TO ACCESS ROAD. SEE STREET PLANS.
27. INTERIOR INVERT DROP IN SSMH #56:
    PIPE INLET INVERT @ MANHOLE O.D. = 1909.25
    PIPE OUTLET INVERT @ MANHOLE O.D. = 1908.07
    INVERT DROP THROUGH MANHOLE = 1.18'
    SEE PROFILE FOR INVERTS IN MANHOLE. SEE CITY OF SPOKANE STANDARD PLANS Z–110 AND Z–113 FOR 48" MANHOLE MAXIMUM INTERIOR INVERT DROP.

NOTES:

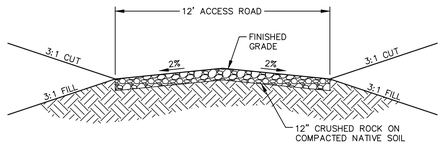
1. ALL SANITARY SEWER SERVICES SHALL BE 4" DIA. AND SHALL EXTEND INTO THE PROPERTY AS SHOWN ON THE TYPICAL WATER & SEWER LOCATION DETAIL SHEET 11. SANITARY SEWER SERVICE STUB ENDS TO BE 6' BELOW FG.
2. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION BY USING THE ONE CALL NUMBER NOTED ON THIS SHEET OR BY OTHER ACCEPTABLE MEANS. (4)
3. LOCATING WIRE SHALL BE INSTALLED ALONG ALL PIPELINES, BEGINNING AND TERMINATING IN MANHOLES. PIPELINE MARKING TAPE SHALL BE INSTALLED AS SHOWN IN THE STANDARD PLANS, AND AS NOTED IN CITY OF SPOKANE SUPPLEMENTAL SPECIFICATIONS 7–17.3(2)J.
4. ALL SIDE SEWERS LONGER THAN 100' SHALL HAVE CLEANOUTS SPACED EVERY 100'.
5. SANITARY SEWER PIPE SHALL BE ASTM 3034 PVC PIPE
6. FIRST SIDE SEWER CONNECTIONS DOWNSTREAM OF A START MANHOLE ARE TO BE WYE CONNECTIONS. THE REMAINDER MAY BE EITHER WYE OR TEE CONNECTIONS. (4)



NORTH SEWER MAIN CONNECTION PLAN

MANHOLE SCHEDULE		
STRUCTURE	NORTHING	EASTING
SSMH #37	244771.19	2476946.38
SSMH #55	244798.20	2476794.21
SSMH #56	244795.62	2476612.98

NORTHINGS AND EASTINGS ARE NAD83 WASHINGTON STATE PLANE, NORTH ZONE, COORDINATES.



ACCESS ROAD SECTION
NTS

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

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510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001
SE#19–342

LARRY D. STORHAUG STATE OF WASHINGTON 20559 REGISTERED PROFESSIONAL ENGINEER
DATE: 6/11/24

10
11

REVISIONS				
5/14/25	LC	19–342	GENERAL REVISION	3
10/10/24	LC	19–342	GENERAL REVISION	2
4/10/24	LC	19–342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
NORTH SEWER MAIN CONNECTION
PLAN & PROFILE

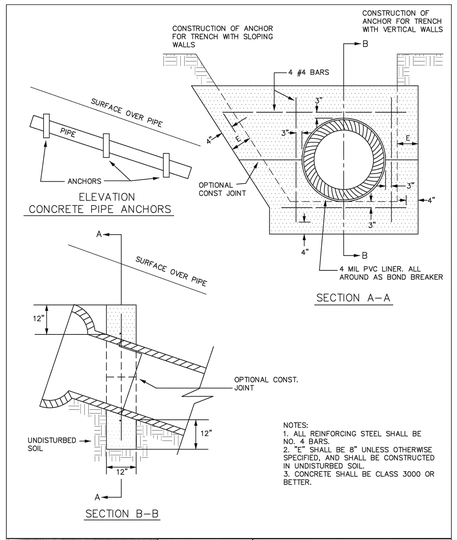
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

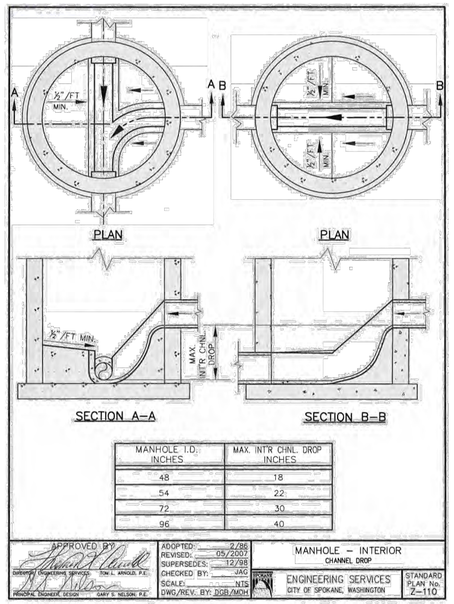
TABLE "A"		
SLOPE %		MAXIMUM ALLOWABLE SPACING (FT.) (MEASURED ON SLOPE)
OVER	TO	
20	35	36'
35	50	24'
50	100	16'

NOTE: TABLE CRITERIA BASED ON STATE OF WASHINGTON CRITERIA FOR SEWAGE WORKS DESIGN, WATER QUALITY PROGRAM, AUGUST 2008 EDITION, SECTION C1-4.4.



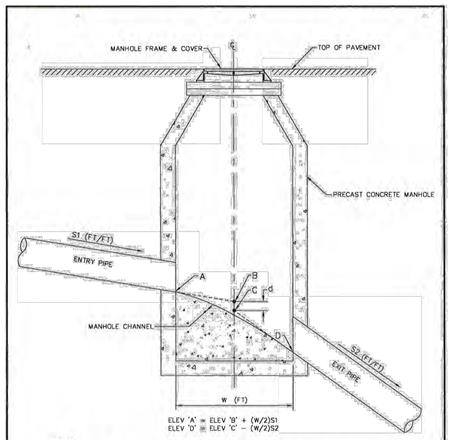
NOTES:
1. ALL REINFORCING STEEL SHALL BE NO. 4 BARS.
2. "E" SHALL BE 8" UNLESS OTHERWISE SPECIFIED, AND SHALL BE CONSTRUCTED IN UNDISTURBED SOIL.
3. CONCRETE SHALL BE CLASS 3000 OR BETTER.

APPROVED BY	SCALE NONE	PIPE ANCHOR	
CITY ENGR.	ADOPTED 5/92		
SUPV. DES. ENGR.	REVISED	DEPT. OF PUBLIC WORKS ENGR. DIVISION SPOKANE, WA	STANDARD PLAN No. A-11
	SUPERSEDES		



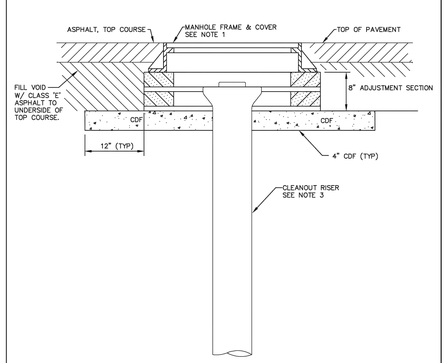
MANHOLE I.D. INCHES	MAX. INTR CHNL. DROP INCHES
48	18
54	22
72	30
96	40

APPROVED BY	ADOPTED: 2/86	MANHOLE - INTERIOR CHANNEL DROP	
DIRECTOR, ENGINEERING SERVICES TOM L. ARNOLD, P.E.	REVISED: 05/2007		
PRINCIPAL ENGINEER, DESIGN GARY S. NELSON, P.E.	SUPERSEDES: 12/98		
	CHECKED BY: JAG	ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON	STANDARD PLAN No. Z-110
	SCALE: NTS		
	DWG/REV. BY: DGB/MDH		



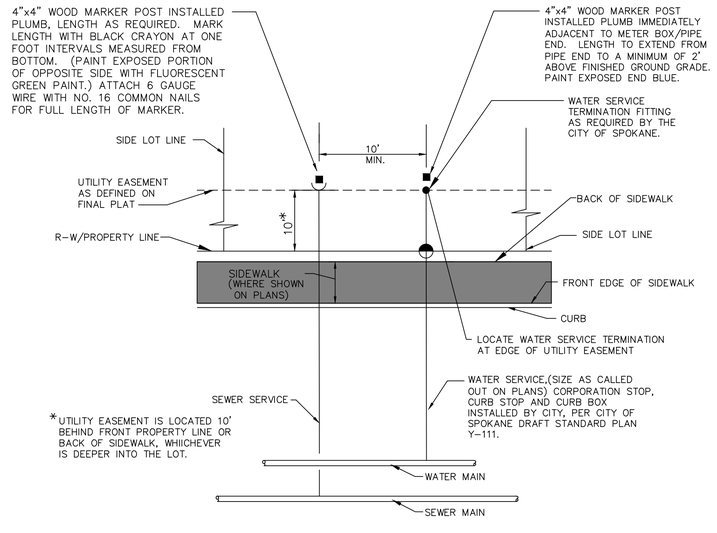
NOTES:
1. ELEV 'A' IS THE INVERT ELEVATION OF THE ENTRY PIPE @ THE MANHOLE WALL ON GRADE S1.
2. ELEV'S 'B' & 'C' ARE THE DESIGN INVERT ELEVATIONS OF THE ENTRY/EXIT PIPES @ THE MANHOLE C/L.
3. ELEV 'D' IS THE INVERT ELEVATION OF THE EXIT PIPE @ THE MANHOLE WALL ON GRADE S2.
4. DIMENSION 'd' IS THE REQ'D MIN CHANNEL DROP PER DESIGN STD 4.2-6.
5. SEE STD PLANS Z-110, Z-111, & Z-112 FOR CHANNEL DROPS IN EXCESS OF THE MIN DROP.

APPROVED BY	ADOPTED: 4/2004	MANHOLE - PIPE INVERT ELEVATIONS	
DIRECTOR, ENGINEERING SERVICES TOM L. ARNOLD, P.E.	REVISED:		
PRINCIPAL ENGINEER, DESIGN KEN W. BROWN, P.E.	SUPERSEDES: Z-111 12/98		
	SCALE: NTS	ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON	STANDARD PLAN No. Z-113
	DWG/REV. BY: MDH/TSS		

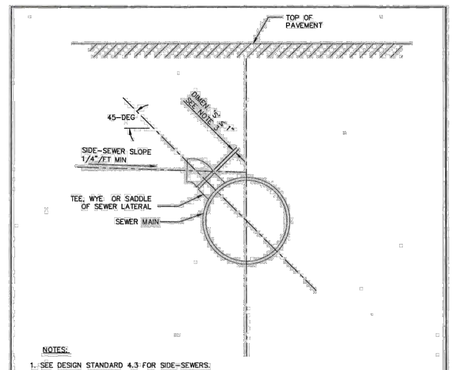


NOTES:
1. SEE STD PLANS A-12 & A-13 FOR MANHOLE FRAME & COVER.
2. ACCESS HOLE TO BE CENTERED OVER CLEANOUT.
3. TOP OF CLEANOUT SHALL EXTEND TO A POINT NOT LESS THAT 6" NOR MORE THAN 12" BELOW TOP OF MANHOLE COVER. CLEANOUTS SHALL BE PLUGGED W/ A REMOVABLE STOPPER WHICH SHALL PREVENT PASSAGE OF DIRT OR WATER.

APPROVED BY	ADOPTED:	SEWER CLEANOUT	
ENGINEERING SERVICES OPERATIONS MANAGER KYLE TWOMEY	REVISED: 10/2019		
CITY ENGINEER GINO BAGLIO, P.E.	SUPERSEDES: 4/2004		
	SCALE: NTS	ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON	STANDARD PLAN No. Z-114
	DWG/REV. BY: TSS		



TYPICAL WATER AND SEWER SERVICE LOCATION
NOT TO SCALE



NOTES:
1. SEE DESIGN STANDARD 4.3 FOR SIDE-SEWERS.
2. RESIDENTIAL AREAS REQUIRE A 4" MIN SIDE-SEWER STUB. COMMERCIAL AREAS REQUIRE A 6" MIN SIDE-SEWER STUB.
3. DIMENSION 'S' MAY BE INCREASED TO PROVIDE A DESIRED SIDE-SEWER DEPTH @ PROPERTY LINE, IF APPROVED BY THE CITY ENGINEER.
4. THE FIRST SIDE SEWER CONNECTION OF ANY SIZE (4" OR 6") DOWNSTREAM OF AN END OF RUN MANHOLE SHALL BE A WYE CONNECTION.
5. FOR OTHER 4" SIDE SEWER CONNECTIONS, TEES OR WYES MAY BE USED TO CONSTRUCT SIDE SEWER CONNECTIONS.
6. ONLY WYE CONNECTIONS SHALL BE USED FOR 6" SIDE SEWERS CONNECTING TO SEWER MAINS UP TO AND INCLUDING 21" DIAMETER.
7. TEES OR WYES ARE ALLOWED FOR 6" SIDE SEWER CONNECTIONS TO SEWER MAINS LARGER THAN 21" DIAMETER.

APPROVED BY	ADOPTED: 4/2004	SIDE-SEWER TYPICAL CONNECTION	
ENGINEERING OPERATIONS MANAGER KYLE TWOMEY	REVISED: 01/2017		
CITY ENGINEER DANIEL ALBERT BAGLIO, P.E.	SUPERSEDES: 4/2013		
	SCALE: NTS	ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON	STANDARD PLAN No. Z-116
	DWG/REV. BY: PCF/ALD		

REVISIONS				NAVD88 = ESTABLISHED FROM GPS					
5/14/25	LC	19-342	GENERAL REVISION	3	NAVD88 ELEV. :1843.87	25' 0' 25' 50'	BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER		
10/10/24	LC	19-342	GENERAL REVISION	2	CBM NO. :	SCALE IN FEET	SCALE HORIZONTAL SCALE (22 x 34) NTS	DRAWN: LMC	3/3/2023
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1	NAVD88 DATUM		VERTICAL SCALE (22 x 34) NTS	APPROVED: JDS	01/19/2024
DATE	BY	PROJECT	DESCRIPTION					BY	DATES

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

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510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001
SE#19-342

JERRY D. STORHAUG STATE OF WASHINGTON 20220 REGISTERED PROFESSIONAL ENGINEER

DATE: 6/11/24

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: SEWER DETAILS

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	SEWER
PROJECT NO.	PLAN NO.
2023517	36-25N-42E

11
11

CALL BEFORE YOU DIG 1-800-424-5555

WATER IMPROVEMENTS

LATAH GLEN RESIDENTIAL COMMUNITY

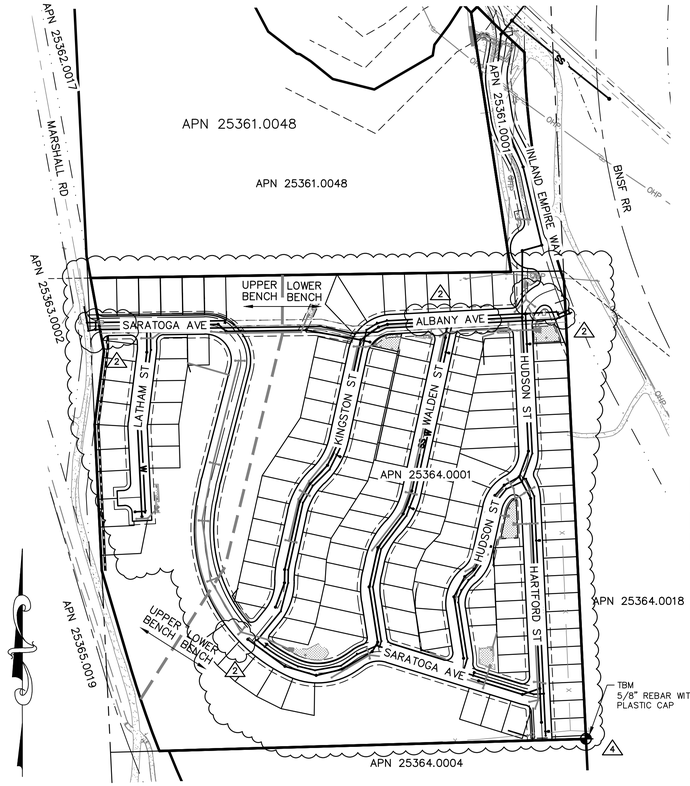
SECTION 36, TOWNSHIP 25 NORTH, RANGE 42 EAST, W.M.,
CITY OF SPOKANE, SPOKANE COUNTY, WASHINGTON

GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL NOTIFY THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT LEAST 48 HOURS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITY, OR CONSTRUCTION ON ANY AND ALL SEWER AND WATER IMPROVEMENTS.
2. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE CITY OF SPOKANE, SPOKANE COUNTY AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
3. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB ON-SITE AT ALL TIMES.
4. IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED BY THE CONTRACTOR, HIS SUBCONTRACTORS, OR OTHER AFFECTED PARTIES, WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY.
5. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH M.U.T.C.D. TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY (CITY, COUNTY, OR STATE) FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING, THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT AT THE CONSTRUCTION SITE, AND MADE AVAILABLE TO THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT ALL TIMES.
8. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION, PRIOR TO ANY OTHER GROUND-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREAS ARE STABILIZED WITH HARD SURFACE OR LANDSCAPING.
9. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY IS SUBJECT TO THE JURISDICTION OF SPOKANE COUNTY.
10. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT, CONSTRUCTION EQUIPMENT AND ANY OTHER ASSOCIATED EQUIPMENT SHALL GENERALLY BE LIMITED TO THE PERIOD BETWEEN 7:00 A.M. AND 10:00 P.M. WEEKDAYS, 9:00AM AND 10:00PM WEEKENDS, UNLESS OTHERWISE APPROVED BY THE COUNTY.
11. NO REVISIONS SHALL BE MADE TO THESE PLANS WITHOUT THE APPROVAL OF THE CITY ENGINEER AND NOTIFICATION OF THE ENGINEER OF RECORD.
12. STATIONING AND OFFSET IS BASED ON STATIONING FOR THE REFERENCED STREET ALIGNMENT.
13. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEED PRIOR TO CONSTRUCTION. COORDINATE WITH APPLICABLE UTILITY COMPANY.
14. RESTRAINTS SHALL BE INSTALLED ON ALL PRESSURE PIPELINES IN ACCORDANCE WITH CITY OF SPOKANE STANDARDS. REFER TO RESTRAINED JOINT TABLE ON THESE PLANS.

CITY OF SPOKANE GENERAL WATER NOTES

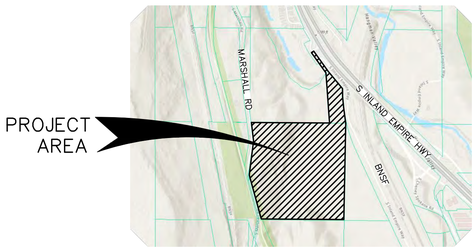
1. UNLESS SPECIFICALLY EXCEPTED IN THE PLANS OR CONTRACT DOCUMENTS, ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND STANDARD PLANS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION PROMULGATED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, THE WASHINGTON CHAPTER OF THE AMERICAN PUBLIC WORKS ASSOCIATION (LATEST EDITION), THE CITY OF SPOKANE SUPPLEMENTAL SPECIFICATIONS AND THE CITY OF SPOKANE GENERAL SPECIAL PROVISIONS FOR PRIVATE CONTRACTS.
2. THESE PLANS ARE SCHEMATIC AND ARE NOT INTENDED TO DEPICT ALL DETAILS OF THE WORK REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE TO FAMILIARIZE HIMSELF WITH ACTUAL SITE CONDITIONS, REQUIREMENTS AND FACTORS AFFECTING THE WORK. WHERE LACK OF DETAIL OR CONFLICT EXISTS BETWEEN THESE AND OTHER PLANS. THE CONTRACTOR SHALL NOTIFY THE OWNER & ENGINEER TO RESOLVE THE ISSUE PRIOR TO PROCEEDING.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS SHOWN ON THESE DRAWINGS OR DESIGNATED TO BE PROVIDED, INSTALLED OR CONSTRUCTED, UNLESS SPECIFICALLY NOTED OTHERWISE.
4. EXCAVATION AND EMBANKMENT SHALL BE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF SECTION 2-03 OF THE STANDARD SPECIFICATIONS. ALL COMPACTION SHALL BE IN ACCORDANCE WITH SECTION 2-03.3(14)C. METHOD B, AND 2-03.3(14)A, FOR ROCK EMBANKMENT.
5. THESE PLANS MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
6. SHORING AND CRIBBING FOR UTILITY CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF SECTION 2.09 OF THE STANDARD SPECIFICATIONS.
7. ALL PIPE BEDDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF CONSTRUCTION SPECIFICATIONS FOR WATER AND SEWER LINES AS ADOPTED BY THE CITY OF SPOKANE.
8. ALL BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF CONSTRUCTION SPECIFICATIONS FOR WATER AND SEWER LINES AS ADOPTED BY THE CITY OF SPOKANE.
9. MARKING TAPE WILL BE PLACED IN THE EXCAVATION TRENCH AT MID-DEPTH LOCATION FOR ALL UNDERGROUND WATER MAIN INSTALLATIONS FOR THE PURPOSE OF ALERTING ANY FUTURE EXCAVATION IN THE SPECIFIC AREA.
10. AREAS WHICH REQUIRE THE PLACEMENT OF EMBANKMENT IN ORDER TO INSTALL WATER AND SEWER, (I.E; PIPELINE INVERTS ARE ABOVE EXISTING GROUND ELEVATIONS) SHALL BE CONSTRUCTED PER THESE SPECIFICATIONS TO AN ELEVATION THREE (3) FEET ABOVE THE TOP OF PROPOSED PIPE. AT THIS POINT, TRENCHING AND BACKFILL FOR PLACEMENT OF WATER AND SEWER MAY BEGIN.
11. ALL SLEEVING OF SEWER AND WATER LINES, IF NECESSARY, SHALL BE PER THE CITY OF SPOKANE STANDARD A-5.
12. CONTRACTOR MUST NOTIFY THE GOVERNING FIRE DISTRICT WHEN FIRE HYDRANTS HAVE BEEN INSTALLED AND REQUEST TESTING OF FIRE HYDRANT FLOW REQUIREMENTS.
13. FIRE HYDRANTS TO BE EQUIPPED WITH STORZ FITIINGS PER THE CITY OF SPOKANE SPECIFICATIONS AND STANDARDS.
14. CONTRACTOR TO CONSTRUCT CUT-OFF WALLS WHERE DETERMINED BY THE CITY FIELD ENGINEER PER PLAN NO. B-19.
15. ALL CONNECTIONS TO THE CITY OF SPOKANE WATER SYSTEM SHALL BE MADE BY THE CITY OF SPOKANE WATER DEPARTMENT AND PAID FOR BY DEVELOPER. THE CITY COMPLETES CONNECTION AND CHLORINATION, CONTRACTOR TO PROVIDE PARTS, EXCAVATION & BEDDING/BACKFILL/RESTORATION. PROVIDE RESTRAINED MJ CAP ON NEW PIPE (OR PLUG ON LAST NEW VALVE) AND 2" THREADED PORT WITH BALL VALVE ASSEMBLY FOR TESTING (SHALL CONSIST OF 2" DIAM. NPT 6-INCH LONG NIPPLE AND 2" NPT VALVE (CURBSTOP OR BALL TYPE) FOR TESTING/DISINFECTION). MINIMUM 48-HOUR NOTICE IS REQUIRED.



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.



VICINITY MAP

WATER SHEET INDEX

SHEET NO. 1	–	WATERLINE COVER
SHEET NO. 2	–	SARATOGA AVE WATERLINE PLAN AND PROFILE STA 26+00 TO STA 38+00
SHEET NO. 3	–	SARATOGA AVE WATERLINE PLAN AND PROFILE STA 38+00 TO STA 47+92
SHEET NO. 4	–	LATHAM ST WATERLINE PLAN & PROFILE
SHEET NO. 5	–	KINGSTON ST & ALBANY AVE WATERLINE PLAN & PROFILE
SHEET NO. 6	–	WALDEN ST WATERLINE PLAN & PROFILE
SHEET NO. 7	–	HUDSON ST WATERLINE PLAN & PROFILE
SHEET NO. 8	–	HARTFORD ST WATERLINE PLAN & PROFILE
SHEET NO. 9	–	WATER METER CONNECTIONS
SHEET NO. 10	–	DOMESTIC WATER DETAILS

LEGEND

EXISTING FEATURES

ASPHALT SURFACING
CURB
GRAVEL
SIDEWALK OR CONCRETE
DRYWELL
STORM MANHOLE
CATCH BASIN
POWER POLE/TELEPHONE POLE
TELEPHONE ENCLOSURE
WATER VALVE
FIRE HYDRANT
SANITARY SEWER MANHOLE
WATER LINE
SANITARY SEWER LINE
STORM DRAIN LINE / CULVERT
POWER LINE (OHP OR BP)
TELEPHONE LINE (OHT OR BT)
GAS LINE
2434 CONTOURS
FENCE
FIBER OPTIC LINE

LEGEND

PROPOSED IMPROVEMENTS

ASPHALT SURFACING
CURB
CONCRETE OR SIDEWALK
DRYWELL
STORM MANHOLE
CONCRETE INLET OR
CURB INLET
POWER POLE
SIGN
WATER VALVE
WATER METER
FIRE HYDRANT
WATER SHUTOFF / WATER VAULT
SANITARY SEWER MANHOLE
INACTIVE/COMPLETED PHASE
CLEANOUT (CO)
GAS METER
8"WA WATER LINE (AS SIZED)
SLEEVE FOR WATER / SEWER CROSSING
SS SANITARY SEWER LINE
SD STORM DRAIN LINE / CULVERT
1924 CONTOURS
STORM WATER SWALE / POND
DIRECTION OF SURFACE STORM WATER DRAINAGE
1924.50 / 1924.00 TOP OF CURB ELEVATION / FLOWLINE ELEVATION
CURB INLET 1924.00 CURB INLET / INLET ELEVATION AT FLOWLINE
1924.00 FINISHED GRADE ELEVATION

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

100' 0' 100' 200'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

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CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

JERRY D. STORHAUG — STATE OF WASHINGTON — 22888 — REGISTERED PROFESSIONAL ENGINEER

6-11-24

DATE: 6/11/24

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: WATERLINE COVER

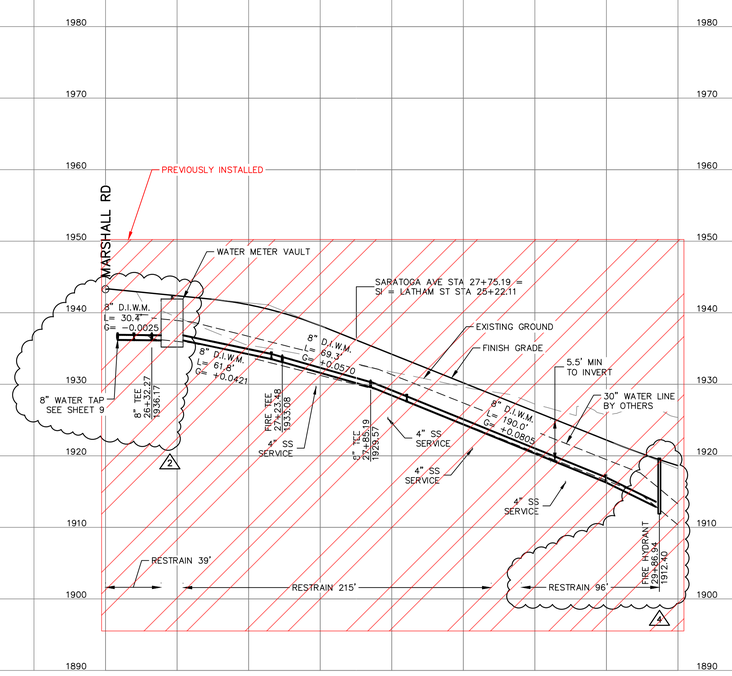
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	36-25N-42E

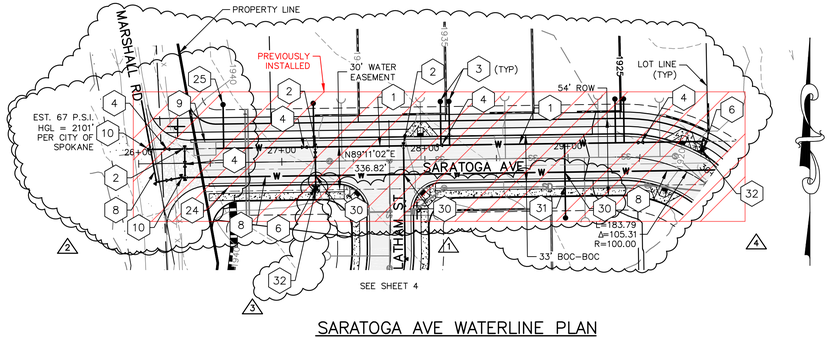
1 / 10

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4



SARATOGA AVE WATERLINE PROFILE



SARATOGA AVE WATERLINE PLAN

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" *	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~10'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~20'~~	6'	~~10'~~	~~8'~~
45° bends	~~40'~~	11'	~~20'~~	~~14'~~

NOTE:
For static system pressures greater than 85 psi, adjust as follows:
- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12" restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

PROJECT RESTRAINED JOINT DATA:

SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://rtc.ebaa.com/calculator.php.

RESTRAINED JOINT TABLE

CALCULATED PRESSURE (UPPER BENCH) = 67 PSI – DESIGN PRESSURE = 175 PSI
CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER CITY OF SPOKANE STANDARD PLAN Y-111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A-4 AND A-5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A-5. SEE DETAILS SHEET 10.

TABLE

1. 8" DUCTILE IRON WATERLINE.
2. 8" TEE ALL MJ WITH RESTRAINT.
3. 1" DOMESTIC WATER SERVICE PER CITY OF SPOKANE STD. PLAN Y-111. SEE SHEET 10.
4. 8" GATE VALVE.
5. SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN A-5. SEE SHEET 10.
6. FIRE HYDRANT ASSEMBLY PER CITY OF SPOKANE STD. PLAN Y-101. SEE SHEET 10.
7. 8" 90° BEND.
8. 30" TRANSMISSION WATER MAIN TO BE INSTALLED BY THE CITY OF SPOKANE.
9. 8"X14' (INTERIOR) TRAFFIC RATED WATER METER VAULT – PIPE STRAIGHT THROUGH
10. 8" WATER TAP TO BE INSTALLED BY THE CITY OF SPOKANE. TAPS TO BE LOCATED ON EITHER SIDE OF 30 VALVE. SEE SHEET 9 FOR DETAIL.
24. (2) 6" PVC CONDUITS FOR IRRIGATION SLEEVES.
25. 2" IRRIGATION SERVICE WITH BACKFLOW PREVENTER. SEE LANDSCAPE PLANS FOR MORE DETAIL.
30. WATER LINE CROSSING, PRIVATE WATERLINE SHALL BE BELOW PUBLIC WATER, PER CITY OF SPOKANE STD. PLAN A-5, SEE SHEET 10.
31. SLEEVE WATER SERVICE UNDER THE STORM LINE, MUST BE WRAPPED WITH SPLIT FOAM PIPE INSULATION. THE END OF THE SLEEVES MUST BE SEALED WITH WATERPROOF FOAM. WATER/SEWER CROSSINGS MUST MEET CITY OF SPOKANE STANDARD PLAN A-5.
32. EXTEND PREVIOUSLY INSTALLED FIRE HYDRANT TO NEW LOCATIONS

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SE#19-342

JERRY D. STORHAUG STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

DATE: 6/11/24

2
10

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		BY	DATES
HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

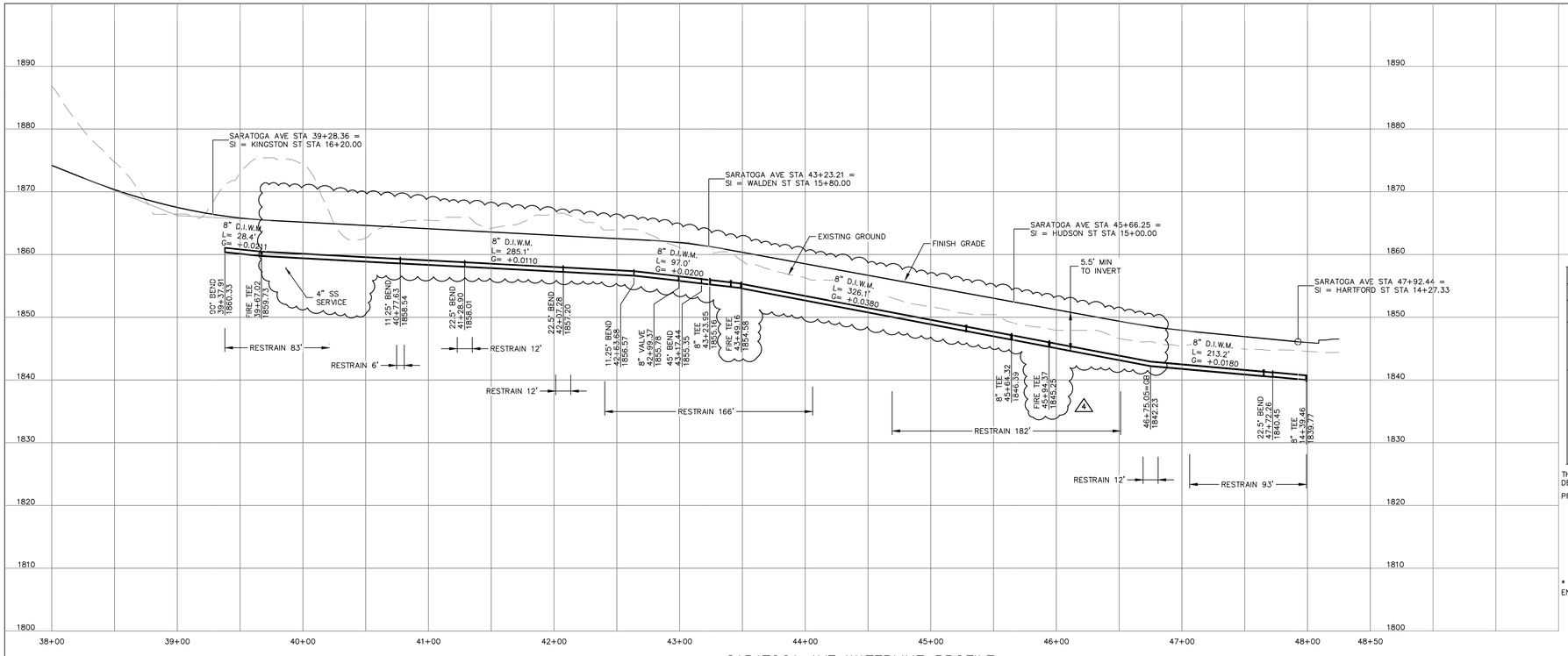
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
SARATOGA AVE WATERLINE
PLAN & PROFILE STA 26+00 TO 38+00

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	SARAT A (03) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



SARATOGA AVE WATERLINE PROFILE

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" *	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~19'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~20'~~	6'	~~10'~~	~~8'~~
45° bends	~~40'~~	11'	~~20'~~	~~14'~~

NOTE:

For static system pressures greater than 85 psi, adjust as follows:

- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12" restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

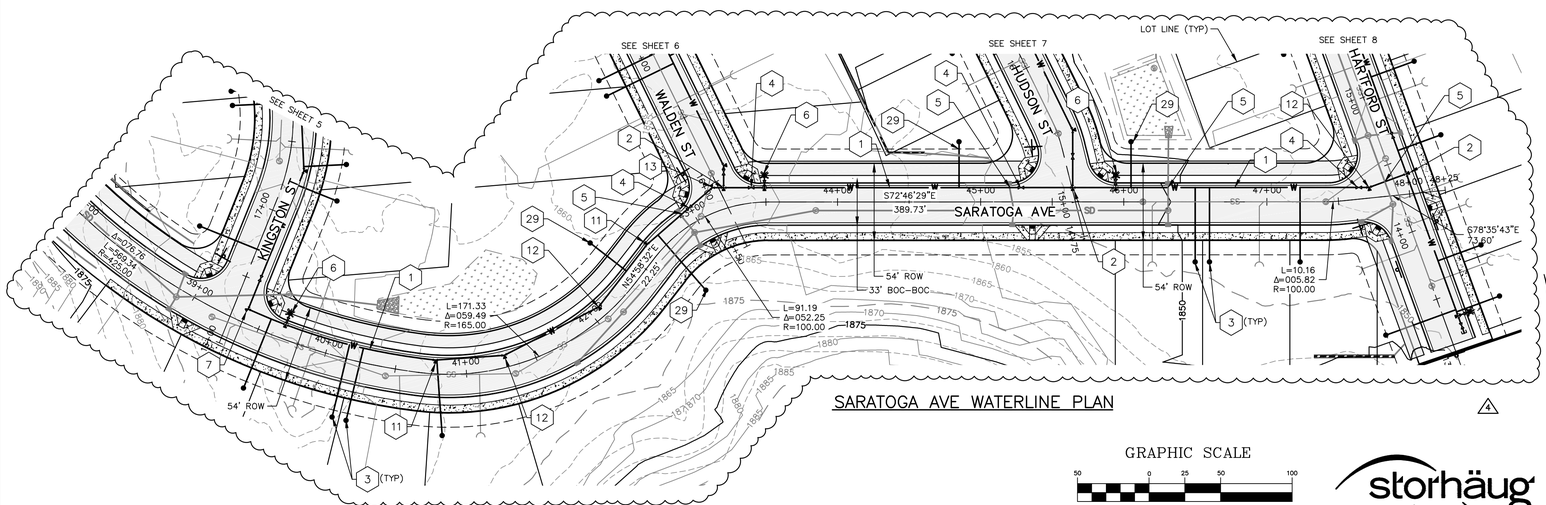
PROJECT RESTRAINED JOINT DATA:

SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://ric.ebaa.com/calculator.php.

RESTRAINED JOINT TABLE

CALCULATED PRESSURE (UPPER BENCH) = 67 PSI – DESIGN PRESSURE = 175 PSI
CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION



SARATOGA AVE WATERLINE PLAN

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER DRAFT CITY OF SPOKANE STANDARD PLAN Y–111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A–4 AND A–5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A–5. SEE DETAILS SHEET 10.

TABLE

1. 8" DUCTILE IRON WATERLINE.
2. 8" TEE ALL MJ WITH RESTRAINT.
3. 1" DOMESTIC WATER SERVICE PER CITY OF SPOKANE STD. PLAN Y–111. SEE SHEET 10.
4. 8" GATE VALVE.
5. SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN A–5. SEE SHEET 10.
6. FIRE HYDRANT ASSEMBLY PER CITY OF SPOKANE STD. PLAN Y–101. SEE SHEET 10.
7. 8" 90° BEND.
11. 8" 11.25° BEND.
12. 8" 22.50° BEND.
13. 8" 45° BEND.
29. 1" IRRIGATION SERVICE WITH BACKFLOW PREVENTER. SEE LANDSCAPE PLANS FOR MORE DETAIL.

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JERRY D. STORHAUG STATE OF WASHINGTON 22558 REGISTERED PROFESSIONAL ENGINEER
6-11-24
DATE: 6/11/24

3
10

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19–342	GENERAL REVISION	3
10/10/24	LC	19–342	GENERAL REVISION	2
4/10/24	LC	19–342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER
SCALE
HORIZONTAL SCALE (22 x 34) 1"=50'
VERTICAL SCALE (22 x 34) 1"-10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

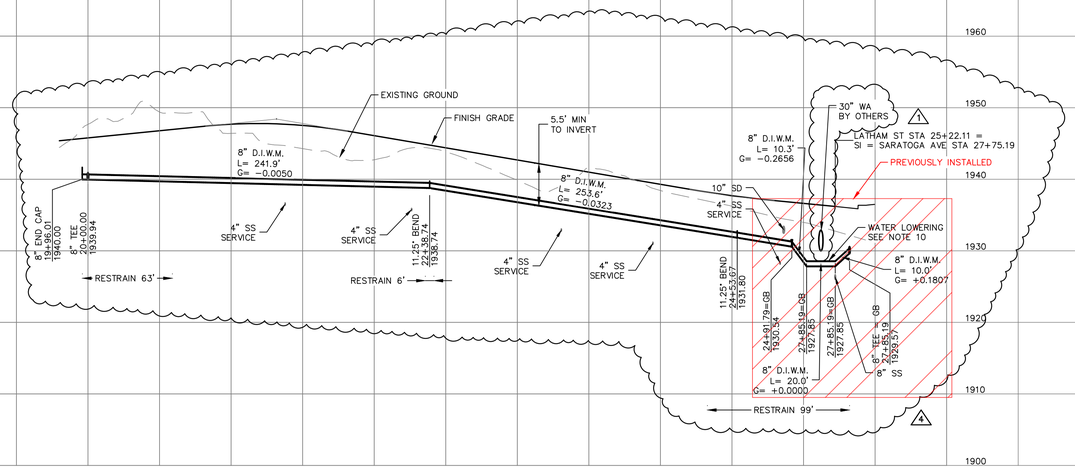
CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS:
SARATOGA AVE WATERLINE
PLAN & PROFILE STA 38+00 TO STA 47+92
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

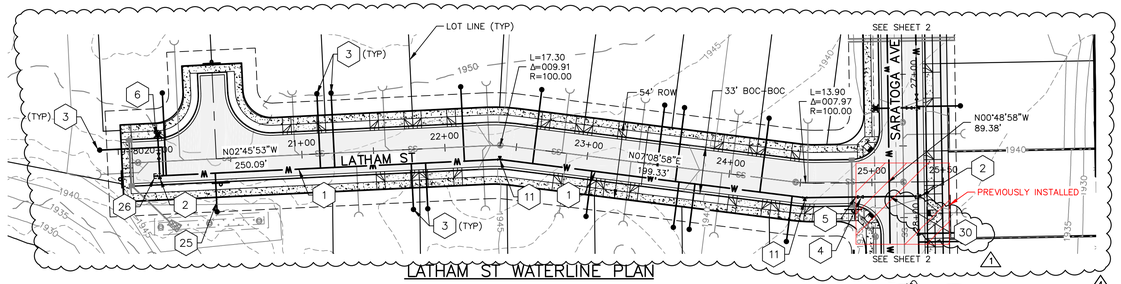
TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	SARAT A (04) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

4



LATHAM ST WATERLINE PROFILE



LATHAM ST WATERLINE PLAN

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" *	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~10'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~20'~~	6'	~~10'~~	~~8'~~
45° bends	~~40'~~	11'	~~20'~~	~~14'~~

NOTE:
For static system pressures greater than 85 psi, adjust as follows:
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- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
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For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

PROJECT RESTRAINED JOINT DATA:

SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://rlc.ebaa.com/calculator.php.

RESTRAINED JOINT TABLE

CALCULATED PRESSURE (UPPER BENCH) = 67 PSI – DESIGN PRESSURE = 175 PSI
CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER DRAFT CITY OF SPOKANE STANDARD PLAN Y-111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A-4 AND A-5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A-5. SEE DETAILS SHEET 10.

TABLE

1	8" DUCTILE IRON WATERLINE.
2	8" TEE ALL MJ WITH RESTRAINT.
3	1" DOMESTIC WATER SERVICE PER CITY OF SPOKANE STD. PLAN Y-111. SEE SHEET 10.
4	8" GATE VALVE.
5	SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN A-5. SEE SHEET 10.
6	FIRE HYDRANT ASSEMBLY PER CITY OF SPOKANE STD. PLAN Y-101. SEE SHEET 10.
7	8" 90° BEND.
11	8" 11.25° BEND.
25	2" IRRIGATION SERVICE WITH BACKFLOW PREVENTER. SEE LANDSCAPE PLANS FOR MORE DETAIL.
26	END CAP WITH 2" PLUG.
30	WATER LINE CROSSING.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

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SE#19-342

JERRY D. STORHAUG STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER
DATE: 6/11/24

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10

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

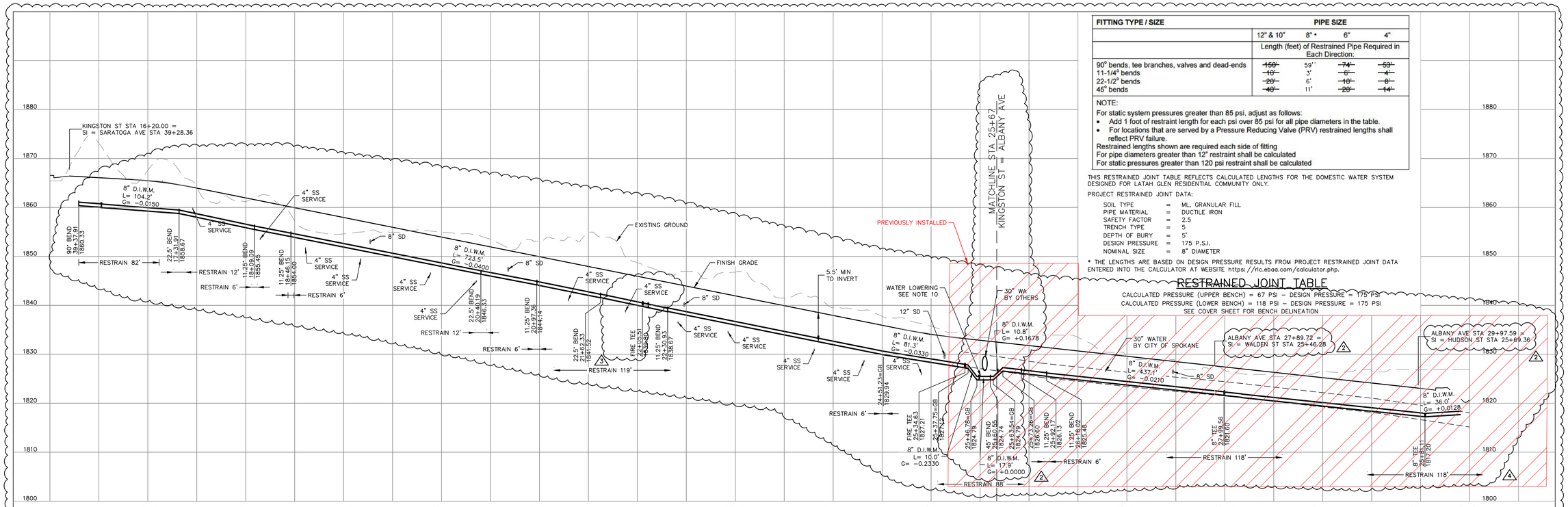
SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS: LATHAM ST WATERLINE
PLAN & PROFILE
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	LATHA S (02) 4 36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555



FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" *	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~10'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~20'~~	6'	~~10'~~	~~8'~~
45° bends	~~40'~~	11'	~~20'~~	~~14'~~

NOTE:

For static system pressures greater than 85 psi, adjust as follows:

- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12" restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

PROJECT RESTRAINED JOINT DATA:

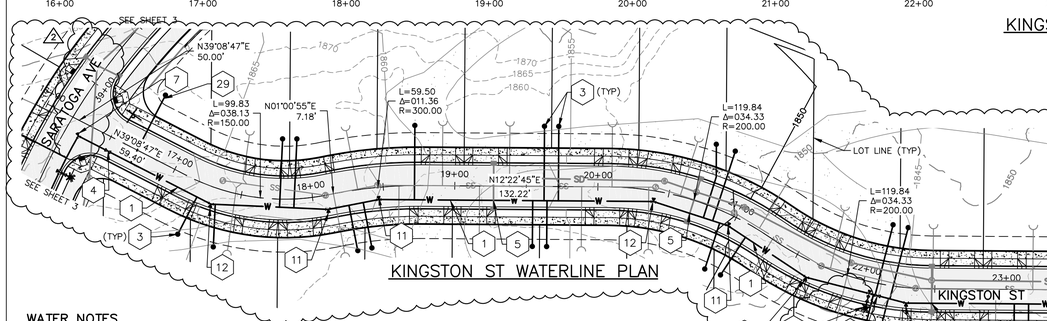
SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://rlc.ebaa.com/calculator.php.

RESTRAINED JOINT TABLE

CALCULATED PRESSURE (UPPER BENCH) = 67 PSI – DESIGN PRESSURE = 175 PSI
CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION

KINGSTON ST WATERLINE PROFILE



KINGSTON ST WATERLINE PLAN

ALBANY AVE SEWER PROFILE

ALBANY AVE WATERLINE PLAN

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER DRAFT CITY OF SPOKANE STANDARD PLAN Y–111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A–4 AND A–5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A–5. SEE DETAILS SHEET 10.

TABLE

1	8" DUCTILE IRON WATERLINE.
2	8" TEE ALL MJ WITH RESTRAINT.
3	1" DOMESTIC WATER SERVICE PER CITY OF SPOKANE STD. PLAN Y–111. SEE SHEET 10.
4	8" GATE VALVE.
5	SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN A–5. SEE SHEET 10.
6	FIRE HYDRANT ASSEMBLY PER CITY OF SPOKANE STD. PLAN Y–101. SEE SHEET 10.
7	8" 90° BEND.

TABLE (CONTINUED)

8	30" WATER MAIN TO BE INSTALLED BY THE CITY OF SPOKANE.
11	8" 11.25° BEND.
12	8" 22.50° BEND.
13	8" 45° BEND.
29	1" IRRIGATION SERVICE WITH BACKFLOW PREVENTER. SEE LANDSCAPE PLANS FOR MORE DETAIL.
30	WATER LINE CROSSING, PRIVATE WATERLINE SHALL BE BELOW PUBLIC WATER, PER CITY OF SPOKANE STD. PLAN A–5, SEE SHEET 10.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

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JERRY D. STORHAUG STATE OF WASHINGTON 16559 REGISTERED PROFESSIONAL ENGINEER

5
10

DATE: 6/11/24

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: KINGSTON ST & ALBANY AVE WATERLINE PLAN & PROFILE 2

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	KINGS S (02) 4 36-25N-42E

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19–342	GENERAL REVISION	3
10/10/24	LC	19–342	GENERAL REVISION	2
4/10/24	LC	19–342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET

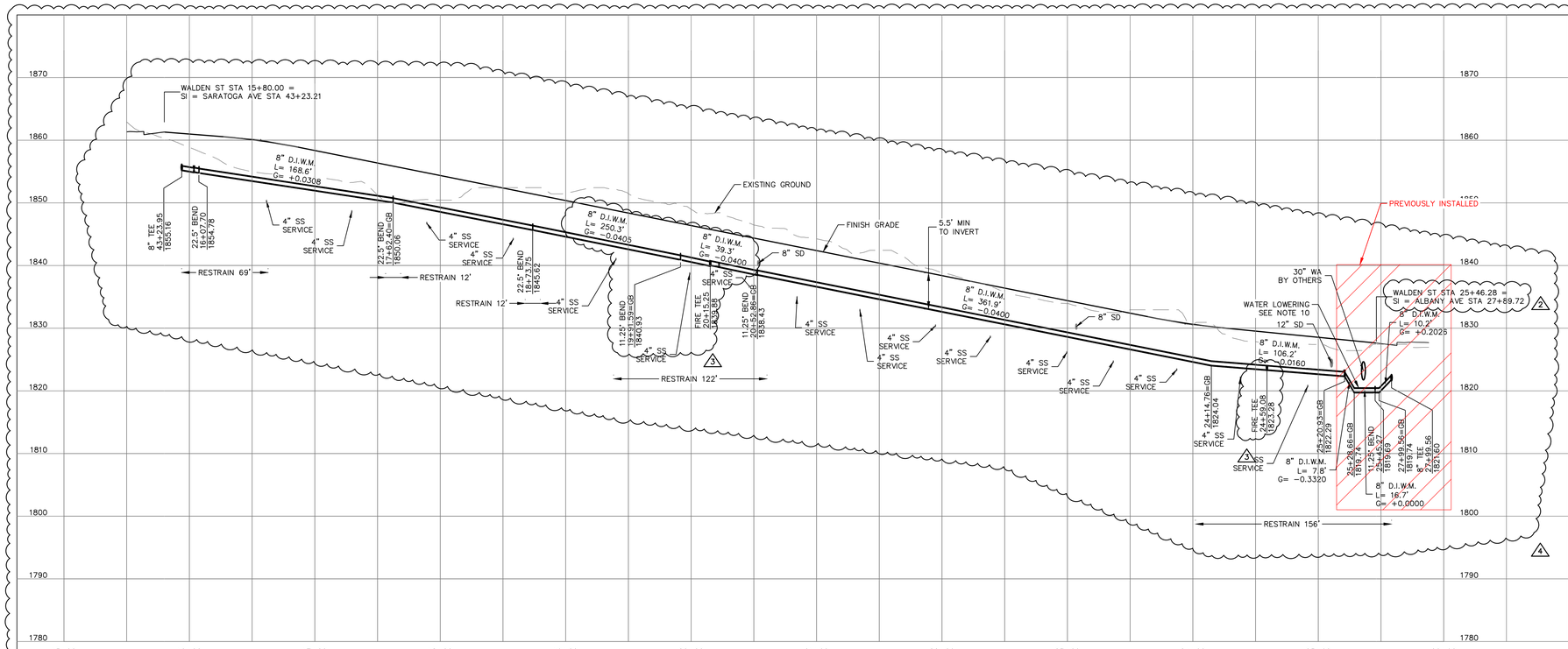
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		
	HORIZONTAL SCALE (22 x 34)	1"=50'
	VERTICAL SCALE (22 x 34)	1"=10'

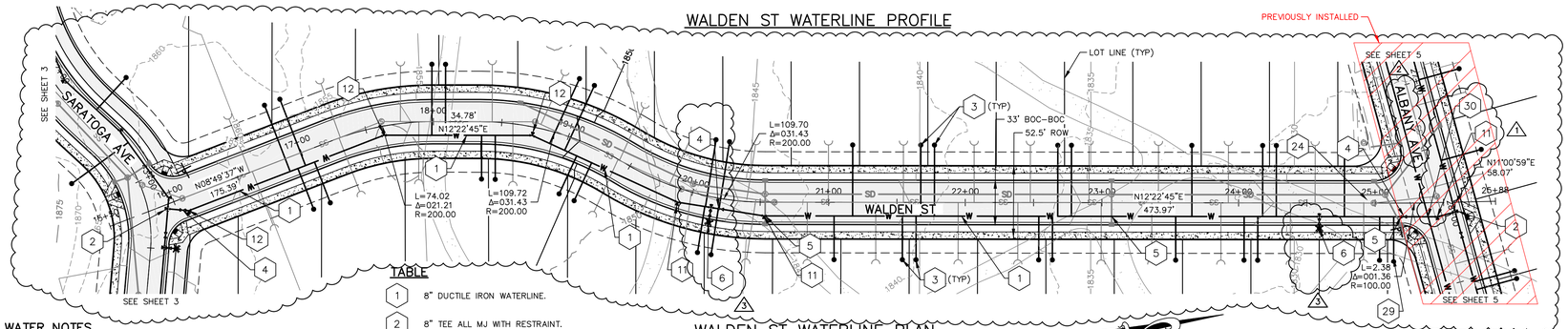
	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
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WASHINGTON 99201-3343 (509) 625-6700

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WALDEN ST WATERLINE PROFILE



WALDEN ST WATERLINE PLAN

TABLE

1. 8" DUCTILE IRON WATERLINE.
2. 8" TEE ALL MJ WITH RESTRAINT.
3. 1" DOMESTIC WATER SERVICE PER CITY OF SPOKANE STD. PLAN Y-111. SEE SHEET 10.
4. 8" GATE VALVE.
5. SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN A-5. SEE SHEET 10.
6. FIRE HYDRANT ASSEMBLY PER CITY OF SPOKANE STD. PLAN Y-101. SEE SHEET 10.
11. 8" 11.25° BEND.
12. 8" 22.50° BEND.
24. (2) 6" PVC CONDUITS FOR IRRIGATION SLEEVES.
29. 1" IRRIGATION SERVICE WITH BACKFLOW PREVENTER. SEE LANDSCAPE PLANS FOR MORE DETAIL.
30. WATER LINE CROSSING.

1 5

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER DRAFT CITY OF SPOKANE STANDARD PLAN Y-111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A-4 AND A-5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A-5. SEE DETAILS SHEET 10.

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" *	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~10'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~20'~~	6'	~~10'~~	~~8'~~
45° bends	~~40'~~	11'	~~20'~~	~~14'~~

NOTE:
For static system pressures greater than 85 psi, adjust as follows:
- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12" restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

PROJECT RESTRAINED JOINT DATA:

SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://rlc.ebaa.com/calculator.php.

RESTRAINED JOINT TABLE

CALCULATED PRESSURE (UPPER BENCH) = 67 PSI – DESIGN PRESSURE = 175 PSI
CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"=10'	APPROVED: JDS	01/19/2024

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CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

JERRY D. STORHAUG STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER 20559

DATE: 6/11/24

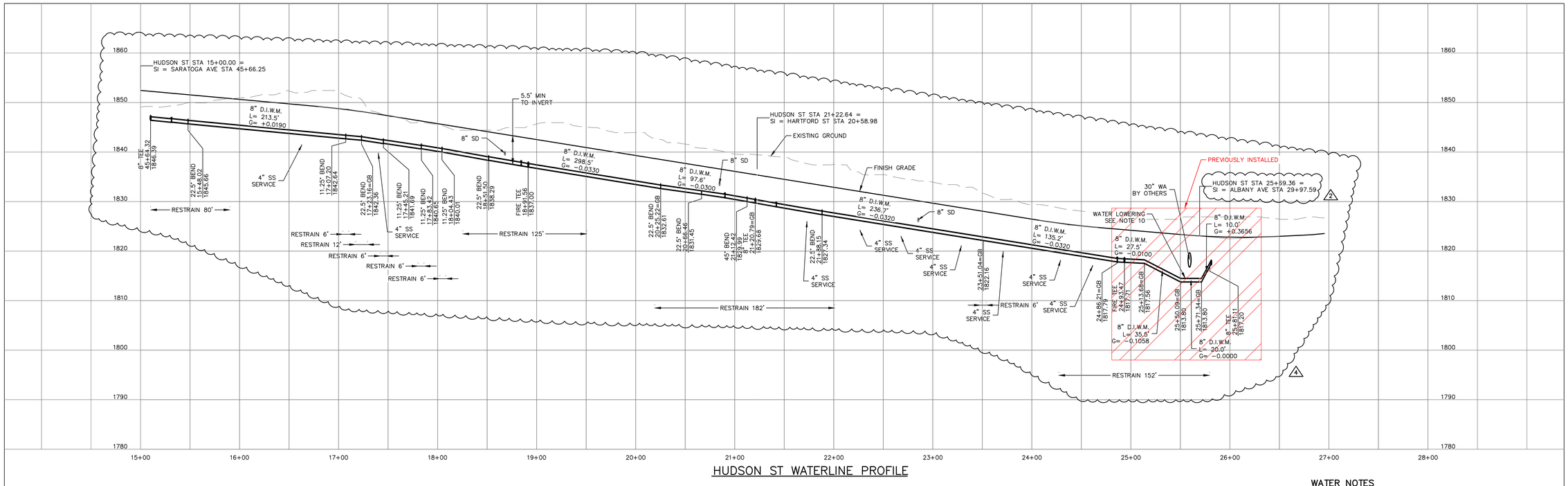
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
WALDEN ST WATERLINE
PLAN & PROFILE
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

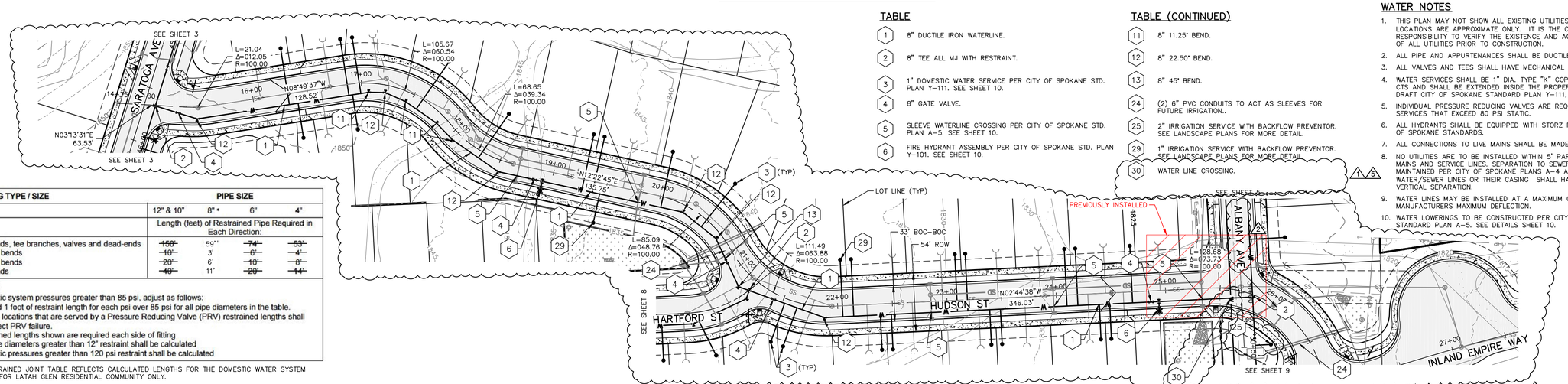
TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	WALDE S (02) 4 36-25N-42E

6
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HUDSON ST WATERLINE PROFILE



HUDSON ST WATERLINE PLAN

TABLE

1. 8" DUCTILE IRON WATERLINE.
2. 8" TEE ALL MJ WITH RESTRAINT.
3. 1" DOMESTIC WATER SERVICE PER CITY OF SPOKANE STD. PLAN Y-111. SEE SHEET 10.
4. 8" GATE VALVE.
5. SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN A-5. SEE SHEET 10.
6. FIRE HYDRANT ASSEMBLY PER CITY OF SPOKANE STD. PLAN Y-101. SEE SHEET 10.

TABLE (CONTINUED)

11. 8" 11.25° BEND.
12. 8" 22.50° BEND.
13. 8" 45° BEND.
24. (2) 6" PVC CONDUITS TO ACT AS SLEEVES FOR FUTURE IRRIGATION..
25. 2" IRRIGATION SERVICE WITH BACKFLOW PREVENTOR. SEE LANDSCAPE PLANS FOR MORE DETAIL.
29. 1" IRRIGATION SERVICE WITH BACKFLOW PREVENTOR. SEE LANDSCAPE PLANS FOR MORE DETAIL.
30. WATER LINE CROSSING.

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER DRAFT CITY OF SPOKANE STANDARD PLAN Y-111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A-4 AND A-5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A-5. SEE DETAILS SHEET 10.

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" •	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~19'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~29'~~	6'	~~10'~~	~~8'~~
45° bends	~~46'~~	11'	~~20'~~	~~14'~~

NOTE:
For static system pressures greater than 85 psi, adjust as follows:
- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12" restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

PROJECT RESTRAINED JOINT DATA:

SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://ric.ebaa.com/calculator.php.

RESTRAINED JOINT TABLE

CALCULATED PRESSURE (UPPER BENCH) = 67 PSI – DESIGN PRESSURE = 175 PSI
CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION

GRAPHIC SCALE

50 0 25 50 100
(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

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JERRY D. STORHAUG STATE OF WASHINGTON 22559 REGISTERED PROFESSIONAL ENGINEER
6-11-24

DATE: 6/11/24

7
10

REVISIONS				
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER
SCALE
HORIZONTAL SCALE (22 x 34) 1"=50'
VERTICAL SCALE (22 x 34) 1"-10'

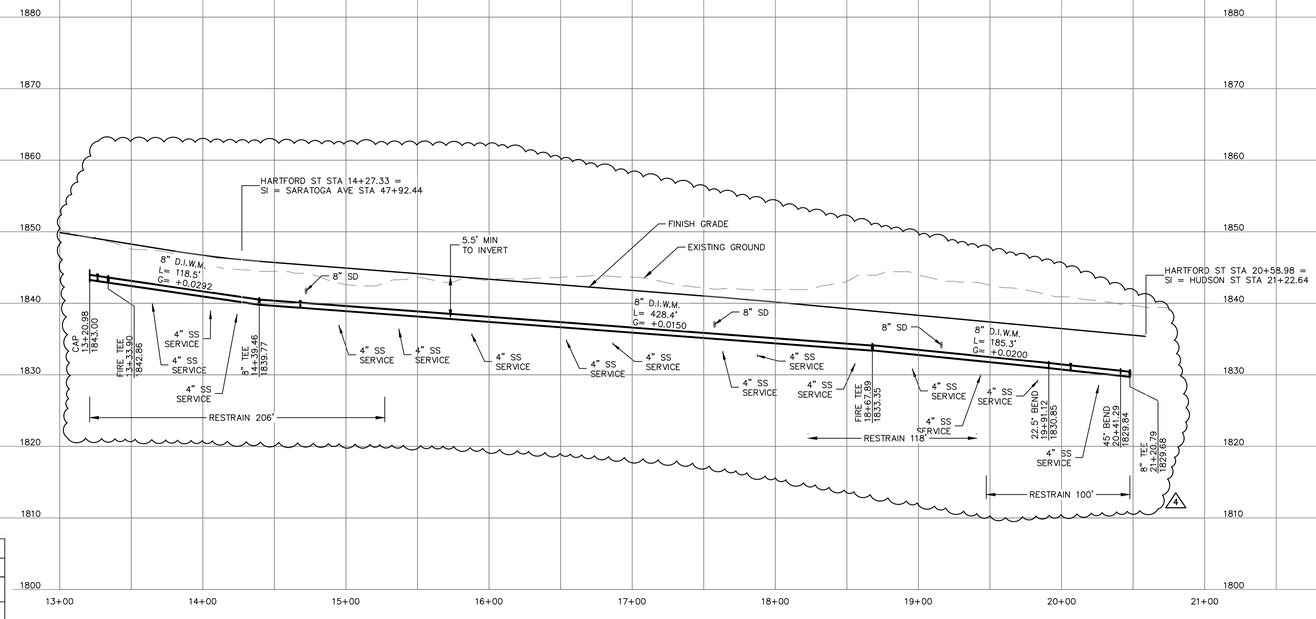
	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

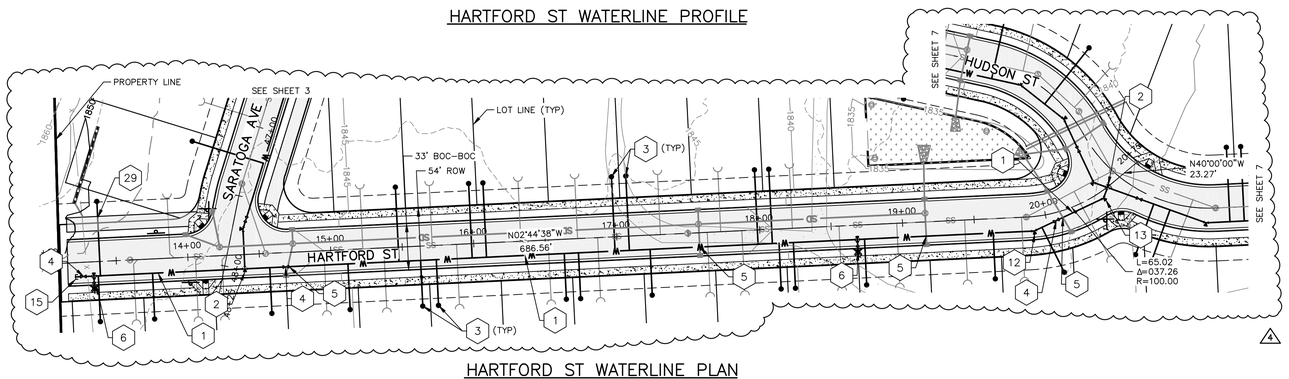
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY
SEGMENT LIMITS: HUDSON ST WATERLINE
PLAN & PROFILE
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	HUDSO S (02) 4 36-25N-42E

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HARTFORD ST WATERLINE PROFILE



HARTFORD ST WATERLINE PLAN

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" *	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~10'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~20'~~	6'	~~10'~~	~~8'~~
45° bends	~~40'~~	11'	~~20'~~	~~14'~~

NOTE:
For static system pressures greater than 85 psi, adjust as follows:
- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12" restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

PROJECT RESTRAINED JOINT DATA:

SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://rlc.ebaa.com/calculator.php.

RESTRAINED JOINT TABLE

CALCULATED PRESSURE (UPPER BENCH) = 67 PSI – DESIGN PRESSURE = 175 PSI
CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER DRAFT CITY OF SPOKANE STANDARD PLAN Y–111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A–4 AND A–5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A–5. SEE DETAILS SHEET 10.

TABLE

1	8" DUCTILE IRON WATERLINE.
2	8" TEE ALL MJ WITH RESTRAINT.
3	1" DOMESTIC WATER SERVICE PER CITY OF SPOKANE STD. PLAN Y–111. SEE SHEET 10.
4	8" GATE VALVE.
5	SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN A–5. SEE SHEET 10.
6	FIRE HYDRANT ASSEMBLY PER CITY OF SPOKANE STD. PLAN Y–101. SEE SHEET 10.
12	8" 22.50° BEND.
13	8" 45° BEND.
15	CAP AND MARK WATERLINE END WITH 6' PRESSURE TREATED 4"X4" POST PAINTED BLUE BURIED 48" DEEP. POST INSTALLED PLUMB IMMEDIATELY ADJACENT TO PIPE END. LENGTH TO EXTEND FROM PIPE END TO A MINIMUM OF 2' ABOVE FINISHED GROUND GRADE.
29	1" IRRIGATION SERVICE WITH BACKFLOW PREVENTER. SEE LANDSCAPE PLANS FOR MORE DETAIL.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft. HORZ
1 inch = 10 ft. VERT

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19–342	GENERAL REVISION	3
10/10/24	LC	19–342	GENERAL REVISION	2
4/10/24	LC	19–342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER
SCALE
HORIZONTAL SCALE (22 x 34) 1"=50'
VERTICAL SCALE (22 x 34) 1"-10'

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	01/19/2024

storhäug
civil engineering | planning
landscape architecture | surveying
SE#19–342
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

JERRI D. STORHAUG STATE OF WASHINGTON 22552 REGISTERED PROFESSIONAL ENGINEER
6-11-24

DATE: 6/11/24

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

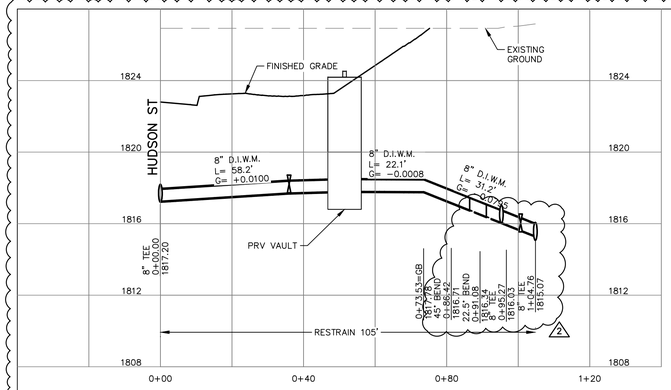
SEGMENT LIMITS:
HARTFORD ST WATERLINE
PLAN & PROFILE

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

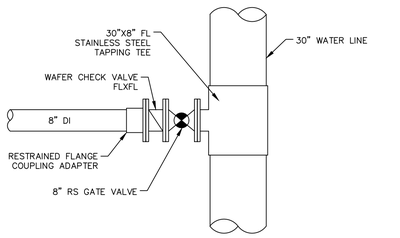
TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	HARTF S (02) 4 36-25N-42E

8
10

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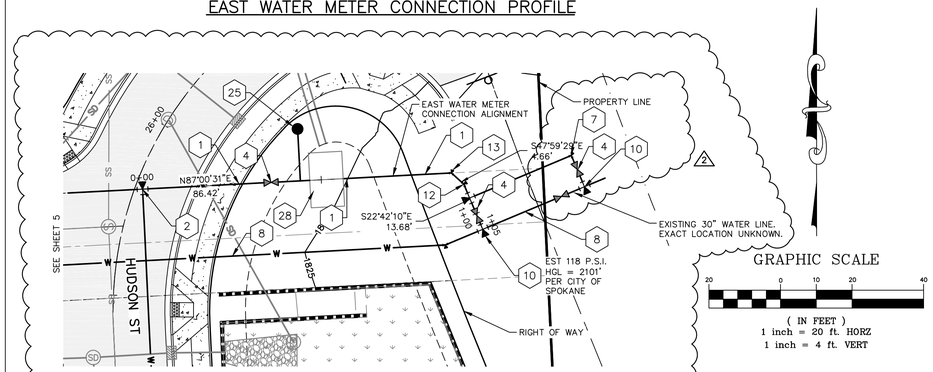


EAST WATER METER CONNECTION PROFILE



8" WATER TAP DETAIL

NTS



EAST WATER METER CONNECTION PLAN

WATER NOTES

1. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING LOCATIONS ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL PIPE AND APPURTENANCES SHALL BE DUCTILE IRON.
3. ALL VALVES AND TEES SHALL HAVE MECHANICAL JOINT FITTINGS.
4. WATER SERVICES SHALL BE 1" DIA. TYPE "K" COPPER OR 2" HDPE CTS AND SHALL BE EXTENDED INSIDE THE PROPERTY LINE PER DRAFT CITY OF SPOKANE STANDARD PLAN Y-111, SEE SHEET 10.
5. INDIVIDUAL PRESSURE REDUCING VALVES ARE REQUIRED ON ALL SERVICES THAT EXCEED 80 PSI STATIC.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ FITTINGS PER CITY OF SPOKANE STANDARDS.
7. ALL CONNECTIONS TO LIVE MAINS SHALL BE MADE BY CITY FORCES.
8. NO UTILITIES ARE TO BE INSTALLED WITHIN 5' PARALLEL TO WATER MAINS AND SERVICE LINES. SEPARATION TO SEWERS MUST BE MAINTAINED PER CITY OF SPOKANE PLANS A-4 AND A-5 CROSSING WATER/SEWER LINES OR THEIR CASING SHALL HAVE 6" MINIMUM VERTICAL SEPARATION.
9. WATER LINES MAY BE INSTALLED AT A MAXIMUM OF 75% OF MANUFACTURERS MAXIMUM DEFLECTION.
10. WATER LOWERINGS TO BE CONSTRUCTED PER CITY OF SPOKANE STANDARD PLAN A-5. SEE DETAILS SHEET 10.

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8" *	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90° bends, tee branches, valves and dead-ends	~~150'~~	59''	~~74'~~	~~53'~~
11-1/4° bends	~~10'~~	3'	~~6'~~	~~4'~~
22-1/2° bends	~~20'~~	6'	~~10'~~	~~8'~~
45° bends	~~40'~~	11'	~~20'~~	~~14'~~

NOTE:
For static system pressures greater than 85 psi, adjust as follows:
- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12" restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

THIS RESTRAINED JOINT TABLE REFLECTS CALCULATED LENGTHS FOR THE DOMESTIC WATER SYSTEM DESIGNED FOR LATAH GLEN RESIDENTIAL COMMUNITY ONLY.

PROJECT RESTRAINED JOINT DATA:

SOIL TYPE	=	ML, GRANULAR FILL
PIPE MATERIAL	=	DUCTILE IRON
SAFETY FACTOR	=	2.5
TRENCH TYPE	=	5
DEPTH OF BURY	=	5'
DESIGN PRESSURE	=	175 P.S.I.
NOMINAL SIZE	=	8" DIAMETER

* THE LENGTHS ARE BASED ON DESIGN PRESSURE RESULTS FROM PROJECT RESTRAINED JOINT DATA ENTERED INTO THE CALCULATOR AT WEBSITE https://rlc.ebaa.com/calculator.php.

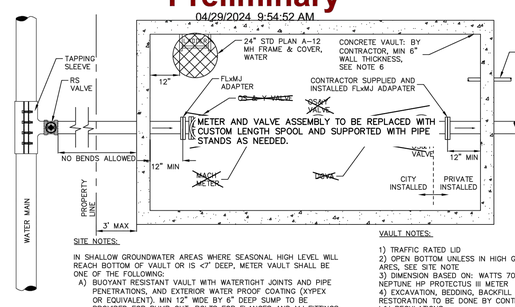
RESTRAINED JOINT TABLE

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CALCULATED PRESSURE (LOWER BENCH) = 118 PSI – DESIGN PRESSURE = 175 PSI
SEE COVER SHEET FOR BENCH DELINEATION

TABLE

1. 8" DUCTILE IRON WATERLINE.
2. 8" TEE ALL MJ WITH RESTRAINT.
4. 8" GATE VALVE.
5. SLEEVE WATERLINE CROSSING PER CITY OF SPOKANE STD. PLAN G-5, SEE SHEET 10.
7. 8" 90° BEND. 2
8. 30" WATER TRANSMISSION MAIN TO BE INSTALLED BY THE CITY OF SPOKANE.
10. 8" WATER TAP TO BE INSTALLED BY THE CITY OF SPOKANE. TAPS TO BE LOCATED ON EITHER SIDE OF 30" VALVE. 2
12. 8" 22.50° BEND.
13. 8" 45° BEND.
17. NOT USED. 4
25. 2" IRRIGATION SERVICE WITH BACKFLOW PREVENTER. SEE LANDSCAPE PLANS FOR MORE DETAIL.
28. PRESSURE REDUCING VALVE VAULT. SEE DETAIL THIS SHEET.

Preliminary
04/29/2024 9:54:52 AM



SITE NOTES:

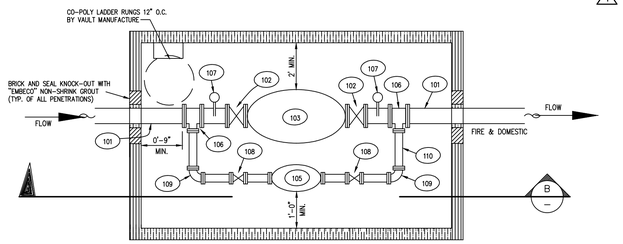
IN SHALLOW GROUNDWATER AREAS WHERE SEASONAL HIGH LEVEL WILL REACH BOTTOM OF VAULT OR IS <7' DEEP, METER VAULT SHALL BE ONE OF THE FOLLOWING:
A) BUOYANT RESISTANT VAULT WITH WATERTIGHT JOINTS AND PIPE PENETRATIONS, AND EXTERIOR WATER PROOF COATING (XYPEX OR EQUIVALENT). MIN 12" WIDE BY 6" DEEP SUMP TO BE PROVIDED FOR PUMP OUT. BOLTS FOR FLANGES AND MJ FITTINGS SHALL BE ASTM 316.
B) BE LOCATED ABOVE GROUND IN THE HEATED AND INSULATED ENCLOSURE SUCH AS HOTBOX MOUNTED ON MIN 6" THICK REINFORCED CONCRETE BASE.

VAULT NOTES:

1) TRAFFIC RATED LID
2) OPEN BOTTOM UNLESS IN HIGH GROUNDWATER ARES, SEE SITE NOTE
3) DIMENSION BASED ON: WATTS 709 DCVA NEPTUNE HP PROTECTUS III METER
4) EXCAVATION, BEDDING, BACKFILL & SURFACE RESTORATION TO BE DONE BY CONTRACTOR PER L&I REGULATIONS
5) 3/4" MIN CONDUIT REQUIRED FOR REMOTE READER, VAULT TO BUILDING OR BOLLARD (36" ABOVE GROUND), ETC
6) VAULT SIZE PER Y-115

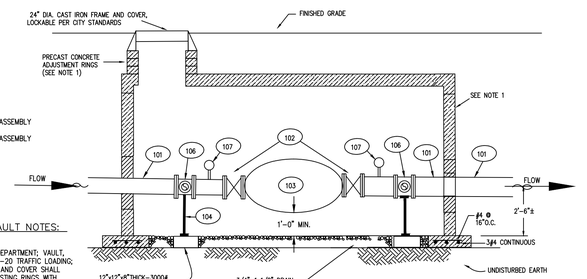
APPROVED BY	ADOPTED:	DOMESTIC/FIRELINE 4"–10" SERVICE DOUBLE CHECK VALVE ASSEMBLY
DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.	REVISED: 04/2025 SUPERSEDES: 04/2021 CHECKED BY: JTG SCALE: NTS DWG/REV. BY: ABM/MLD	ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON — STANDARD PLAN No. Y-118

2
4



PLAN

NTS



MATERIAL LIST

101 8" D.I. MAIN
102 8" OS & Y RSGV
103 8" CLA-VAL PRESSURE REDUCING VALVE ASSEMBLY
104 ADJUSTABLE PIPE SUPPORTS
105 2" CLA-VAL PRESSURE REDUCING VALVE ASSEMBLY
106 8"x 8"x 2" TEE
107 PRESSURE GAUGE ASSEMBLY
108 2" OS & Y RSGV
109 2" ELBOW
110 2" D.I. MAIN (TYP.)

PRESSURE REDUCING VALVE VAULT NOTES:

1) CONCRETE VAULT SHALL:
BE ACCEPTABLE TO CITY OF SPOKANE WATER DEPARTMENT; VAULT, RING(S) AND COVER SHALL BE SUITABLE FOR H-20 TRAFFIC LOADING; VAULT SHALL BE SIZED BY CONTRACTOR; RING AND COVER SHALL BE 24" C.I.; PROVIDE PRECAST CONCRETE ADJUSTING RINGS WITH A HEIGHT BETWEEN 6" TO 1'-4"; COVER OVER TOP OF VAULT SHALL BE A MIN. OF 12".

2) THE CITY OF SPOKANE SHALL PROVIDE AND INSTALL ALL METERS, VALVES, PIPING, FITTINGS, ETC. WITHIN THE VALVE VAULT. THE CONTRACTOR SHALL FURNISH ALL OTHER MATERIALS AND WORK NECESSARY FOR A COMPLETE AND FUNCTIONING SYSTEM.

SECTION

NTS

B

PRESSURE REDUCING VALVE VAULT DETAIL

NOT TO SCALE

storhäug
civil engineering | planning
landscape architecture | surveying
SE#19-342
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

JERRY D. STORHAUG STATE OF WASHINGTON 20559 REGISTERED PROFESSIONAL ENGINEER

DATE: 6/11/24

9
10

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1843.87
CBM NO. :
NAVD88 DATUM
25' 0' 25' 50'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE		BY	DATES
	HORIZONTAL SCALE (22 x 34)	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

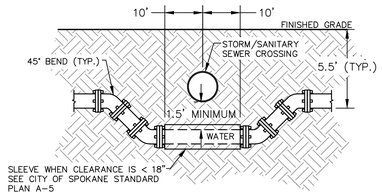
PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
WATER METER CONNECTIONS
PLAN & PROFILE
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

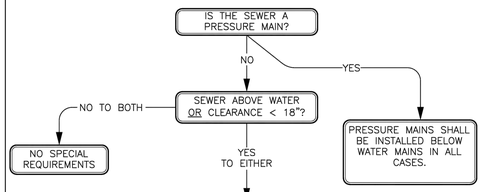
4



WATER LOWERING DETAIL

NTS

WATER/SEWER CROSSINGS



CASE WATER OR WASTEWATER PIPE W/PIPE MEETING THE REQUIREMENTS FOR SANITARY SEWERS FOR A MIN. 10' MEASURED PERPENDICULAR ON EITHER SIDE OF CROSSING.

EXCEPTIONS:
WHEN INSTALLING A WATER MAIN:

- THE CASING LENGTH FOR CROSSING SIDE SEWERS MAY BE REDUCED TO A MIN. 5' MEASURED PERPENDICULAR ON EITHER SIDE OF CROSSING PROVIDED THAT THE CASING IS PLUGGED AT BOTH ENDS WITH AN 18" LENGTH OF NON-SHRINK GROUT;
- STORM SEWER PIPE TO/FROM CATCH BASINS/INLETS NEED NOT BE CASED IF THE EXISTING PIPE IS DI FOR ENTIRE LENGTH OR IF THE EXISTING STORM SEWER PIPE IS NOT DI, THEN AN 18' SEGMENT OF THE EXISTING STORM SEWER PIPE IS REPLACED WITH A SINGLE PIECE OF DI PIPE, CENTERED ON THE WATER MAIN.

NOTES:

1. CROSSING WATER/SEWER LINES OR THEIR CASINGS SHALL HAVE A 6" MIN VERTICAL SEPARATION.
2. FLOW CHART APPLIES TO BOTH EXISTING & NEW SERVICES & MAINS.
3. DISTANCES GIVEN ABOVE ARE MEASURED FROM OUTSIDE OF PIPES OR OTHER CASINGS.
4. DESIGNER/INSTALLER SHALL MAKE ALL REASONABLE ATTEMPTS TO MEET THE FOLLOWING:
   - SEWER BENEATH WATER BY AT LEAST 18"
   - CROSSINGS AS CLOSE TO 90° AS POSSIBLE

APPROVED BY		
DIRECTOR, ENGINEERING SERVICES	P. MIKE TAYLOR, P.E.	
PRINCIPAL ENGINEER, DESIGN	GARY S. NELSON, P.E.	

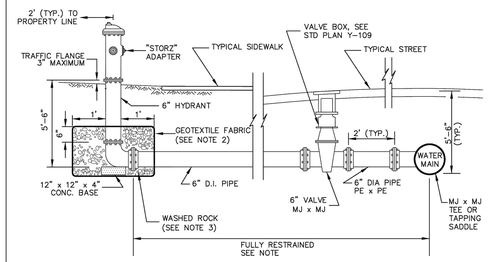
ADOPTED:	3/92
REVISED:	01/2009
SUPERSEDES:	01/2008
CHECKED BY:	JAG
SCALE:	NTS
DWG/REV. BY:	MDH/TSS

WATER AND SEWER CROSSINGS

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. A-5

SEE SEC. 9-30.5 OF STANDARD SPECIFICATIONS



PROFILE

NOTES:

1. WATER DISTRIBUTION MATERIALS AND APPURTENANCES SHALL CONFORM TO SEC 9-30.
2. SEE SECTION 9-33 FOR WOVEN GEOTEXTILE FABRIC (MODERATE SURVIVABILITY, CLASS A). OVERLAP ALL FABRIC JOINTS 1'-6" MIN. WRAP AND SECURE FABRIC AROUND PIPE TO PREVENT MIGRATION OF FINES INTO GRAVEL ENVELOPE.
3. SEE SECTION 9-03.12(5) FOR GRAVEL BACKFILL FOR DRYWELLS.
4. SEE COS GSP SPEC 7-14.3 FOR FIRE HYDRANT PLACEMENT DISTANCE FROM CURB RAMPS AND DRIVEWAYS.
5. MAINTAIN MINIMUM 3' DISTANCE FROM HYDRANT TO TRAVELED ROADWAY OR CURB.
6. MINIMUM 3' CLEAR TO OBSTRUCTIONS REQUIRED FOR OPERATING NUT AND STORZ FITTING.
7. STORZ FITTING REQUIRED ON SITE PRIOR TO INSTALLATION.

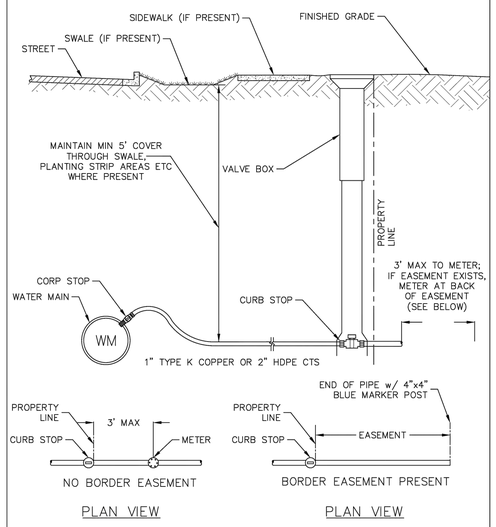
APPROVED BY		
ENGINEERING SERVICES DIRECTOR	KYLE TWOHIG	
CITY ENGINEER	LIAM BULLER, P.E.	

ADOPTED:	
REVISED:	07/2020
SUPERSEDES:	02/2017
SCALE:	NTS
DWG./REV BY:	MB/MLD

HYDRANT SETTING STANDARD

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-101



PLAN VIEW PLAN VIEW

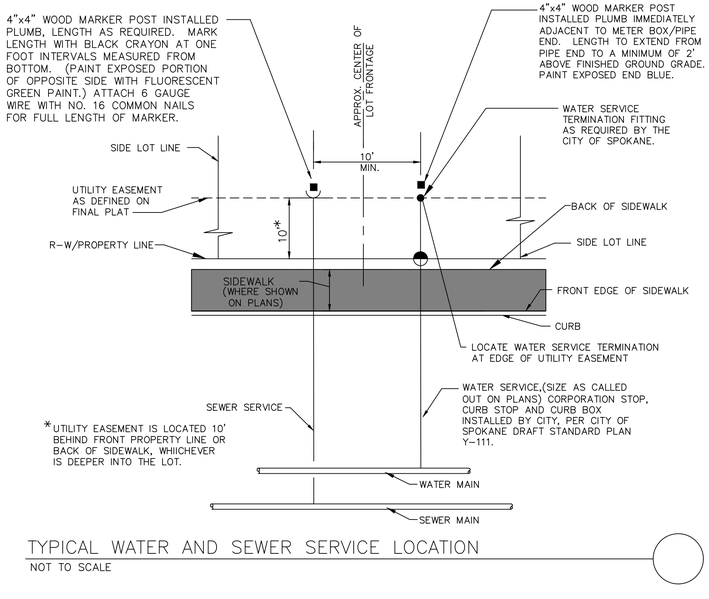
APPROVED BY		
ENGINEERING SERVICES DIRECTOR	KYLE TWOHIG	
CITY ENGINEER	LIAM BULLER, P.E.	

ADOPTED:	
REVISED:	04/2021
SUPERSEDES:	01/2017
CHECKED BY:	JTG
SCALE:	NTS
DWG/REV. BY:	ABM/MLD

TYPICAL 1-2" WATER SERVICE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-111



TYPICAL WATER AND SEWER SERVICE LOCATION

NOT TO SCALE

storhäug
civil engineering | planning
landscape architecture | surveying
SE#19-342
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

JERRY D. STORHAUG — STATE OF WASHINGTON — 21559 — REGISTERED PROFESSIONAL ENGINEER

DATE: 6/11/24

10
10

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: DOMESTIC WATER DETAILS

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT:	WATER
PROJECT NO.	PLAN NO.
2023518	36-25N-42E

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/14/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1843.87

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE			BY	DATES
	HORIZONTAL SCALE (22 x 34)	1"=50'	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	1"-10'	APPROVED: JDS	01/19/2024

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

CALL BEFORE YOU DIG 1-800-424-5555

Exhibit 6.e. - Proposed Construction Improvement Documents (updated sheets May 2025)

GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL NOTIFY THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT LEAST 48 HOURS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITY, OR CONSTRUCTION ON ANY AND ALL SEWER AND WATER IMPROVEMENTS.
2. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE CITY OF SPOKANE AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
3. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB ON-SITE AT ALL TIMES.
4. IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED BY THE CONTRACTOR, HIS SUBCONTRACTORS, OR OTHER AFFECTED PARTIES, WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY.
5. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH M.U.T.C.D. TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY (CITY, COUNTY, OR STATE) FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING, THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT AT THE CONSTRUCTION SITE, AND MADE AVAILABLE TO THE CITY OF SPOKANE PUBLIC WORKS INSPECTOR AT ALL TIMES.
8. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION, PRIOR TO ANY OTHER GROUND-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREAS ARE STABILIZED WITH HARD SURFACE OR LANDSCAPING.
9. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY IS SUBJECT TO THE JURISDICTION OF SPOKANE COUNTY.
10. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT, CONSTRUCTION EQUIPMENT AND ANY OTHER ASSOCIATED EQUIPMENT SHALL GENERALLY BE LIMITED TO THE PERIOD BETWEEN 7:00 A.M. AND 10:00 P.M. WEEKDAYS, 9:00AM AND 10:00PM WEEKENDS, UNLESS OTHERWISE APPROVED BY THE COUNTY.
11. NO REVISIONS SHALL BE MADE TO THESE PLANS WITHOUT THE APPROVAL OF THE CITY ENGINEER AND NOTIFICATION OF THE ENGINEER OF RECORD.
12. STATIONING AND OFFSET IS BASED ON STATIONING FOR THE REFERENCED STREET ALIGNMENT.
13. EXISTING UTILITIES CONFLICTING WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS NEED PRIOR TO CONSTRUCTION. COORDINATE WITH APPLICABLE UTILITY COMPANY.
14. RESTRAINTS SHALL BE INSTALLED ON ALL PRESSURE PIPELINES IN ACCORDANCE WITH CITY OF SPOKANE STANDARDS. REFER TO RESTRAINED JOINT TABLE ON THESE PLANS.
15. INSTALL TREE PROTECTION AT THE WEST EDGE OF THIS PROPERTY TO PROTECT ALL EXISTING TREES IN THE PUBLIC RIGHT OF WAY ALONG MARSHALL ROAD PER CITY OF SPOKANE TREE PROTECTION SPECIFICATIONS AND DETAIL PRIOR TO ANY MORE EXCAVATION WORK FOR THE WALL ALONG THIS AREA. FENCING TO REMAIN INTACT THROUGHOUT ALL PHASES OF DEMOLITION AND CONSTRUCTION.
16. THE GENERAL CONTRACTOR IS RESPONSIBLE TO ENSURE THE ABOVE REQUIREMENTS ARE MET. THE CITY MAY SEEK RESTITUTION AT TREBLE THE APPRAISED TREE VALUE FOR DAMAGES TO ANY TREES IN THE PUBLIC RIGHT OF WAY DUE TO CONSTRUCTION ACTIVITIES/EQUIPMENT AND FOR ANY RIGHT OF WAY TREES THAT ARE REMOVED WITHOUT UF PERMISSION AND/OR THE PROPER PERMITS.

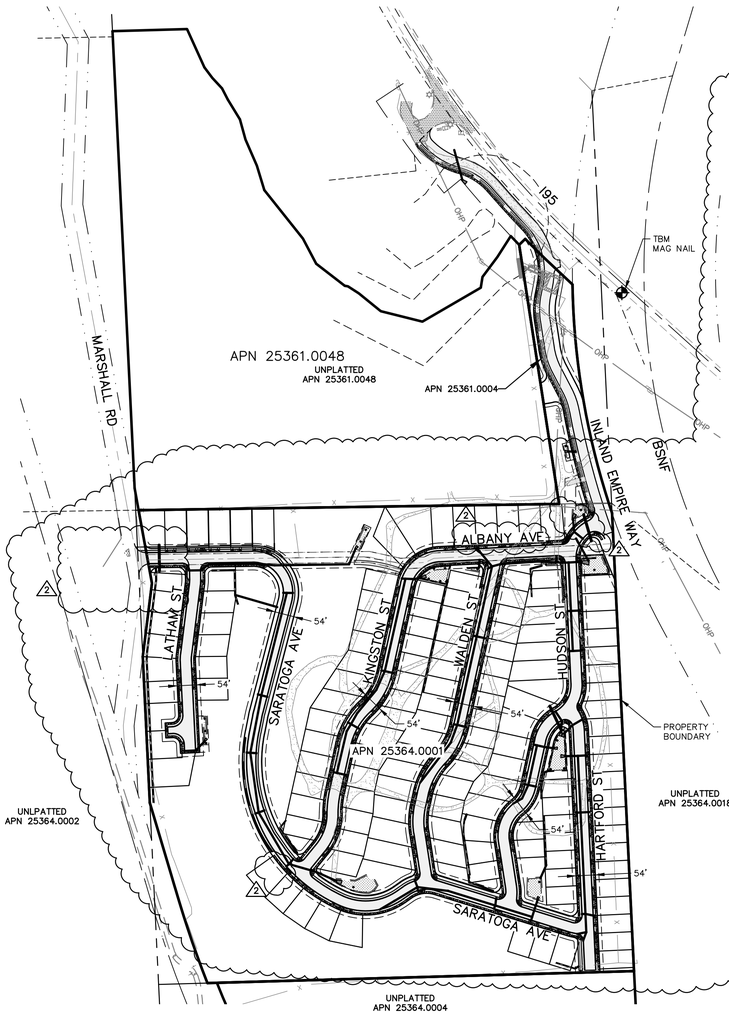
STREET & STORM DRAINAGE NOTES

1. REFER TO CONSTRUCTION NOTES AND DETAILS SHOWN ON DETAIL SHEET.
2. REFER TO LANDSCAPE DOCUMENTS FOR ADDITIONAL INFORMATION REGARDING PLANTINGS, IRRIGATION SYSTEM, SITE FURNITURE, LANDSCAPE BERMS, STEPS, AND LANDSCAPE WALLS.
3. REFER TO ARCHITECTURAL DOCUMENTS FOR ADDITIONAL INFORMATION REGARDING ANY STEPS IN FINISH FLOOR, BASEMENT ELEVATION, AND EXTERIOR DOOR LOCATIONS. COORDINATE ARCHITECTURAL ELEVATIONS WITH SITE GRADING.
4. MAINTAIN AT LEAST 3 FEET OF COVER OVER STORM DRAIN PIPES, UNLESS DUCTILE IRON. FOR DUCTILE IRON MAINTAIN AT LEAST 1 FOOT OF COVER.
5. SPOT ELEVATIONS REPRESENT FINISH SURFACE GRADES.
6. LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES. CONTRACTOR TO PERFORM NECESSARY FIELD VERIFICATION, INCLUDING SUBSURFACE EXPLORATION, FOR ALL EXISTING CONDITIONS TO BE INCLUDED IN CONTRACTOR BID. ANY CONFLICTING UTILITIES SHALL BE RELOCATED PRIOR TO CONSTRUCTION OF PROPOSED IMPROVEMENTS.
7. ADJUST ALL EXISTING UTILITY COVERS TO FINISHED GRADE AS NECESSARY.
8. ALL MATERIALS, WORKMANSHIP, TESTING AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE WASHINGTON STATE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, THE CITY OF SPOKANE STANDARDS, AND THE CITY OF SPOKANE SPECIAL PROVISIONS FOR PRIVATE CONTRACTS.
9. ALL APPROVALS AND PERMITS REQUIRED BY THE CITY OF SPOKANE SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. AN OBSTRUCTION PERMIT IS REQUIRED FOR ALL WORK WITHIN THE CITY RIGHT-OF-WAY. IF APPLICABLE, A TRAFFIC CONTROL PLAN, (INCLUDING PEDESTRIAN TRAFFIC CONTROL FOR SIDEWALK CLOSURES) WILL BE REQUIRED WITH THE OBSTRUCTION PERMIT APPLICATION.
10. THE CONTRACTOR SHALL PLACE MARKING TAPE IN THE EXCAVATION TRENCH AT MID-DEPTH LOCATION FOR ALL UNDERGROUND SIDE SERVICE INSTALLATIONS FOR THE PURPOSE OF ALERTING ANY FUTURE EXCAVATION IN THE SPECIFIC AREA.
11. NO REVISIONS SHALL BE MADE TO THE PLANS WITHOUT APPROVAL FROM THE CITY OF SPOKANE AND THE DESIGN ENGINEER OF RECORD.
12. STORMWATER FACILITIES, INCLUDING DRYWELLS, CB'S, PIPES, AND INFILTRATION GALLERIES, MUST BE CONSTRUCTED UNDER SUPERVISION OF THE WASTEWATER MANAGEMENT DIVISION. STORMWATER TREATMENT FACILITIES (208 SWALES) SHALL BE INSPECTED PRIOR TO PLACEMENT OF TOPSOIL, PLANTINGS, OR GRASS. THE CONTRACTOR SHALL CONTACT THE WASTEWATER MAINTENANCE DIVISION OFFICE AT (509) 625-7905 OR (509) 625-7912 IN ORDER TO ARRANGE A MUTUALLY AGREEABLE INSPECTION SCHEDULE.
13. ALL SIDEWALKS, CURBS, AND DRIVEWAY APPROACHES ADJACENT TO THE PROPERTY WILL BE REVIEWED AT THE END OF THE PROJECT WHEN A CERTIFICATE OF OCCUPANCY IS REQUESTED. IF ANY ARE FOUND TO BE BROKEN, HEAVED, SUNKEN, OR MISSING, THEY MUST BE REPAIRED/REPLACED WHETHER THE DAMAGE WAS EXISTING OR CAUSED BY CONSTRUCTION. IF YOU WOULD LIKE A SIDEWALK INSPECTION PRIOR TO REQUESTING OCCUPANCY, PLEASE CONTACT THE CITY OF SPOKANE AT (509) 625-6300 TO ARRANGE A SITE VISIT.
14. PROPERTY LINES OF SUBJECT PROPERTY HAVE BEEN VERIFIED BY A BOUNDARY SURVEY
15. CONTRACTOR TO REMOVE AND LEGALLY DISPOSE ALL EXISTING TREES THAT CONFLICT WITH PROPOSED IMPROVEMENTS.
16. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES.
17. REFER TO TABLE 6-1 IN THE SPOKANE REGIONAL STORMWATER MANUAL FOR TREATMENT SOIL CRITERIA.
19. ALL PAVEMENT CUTS MUST CONFORM TO THE SPOKANE REGIONAL PAVEMENT CUT POLICY.
20. SEE CITY OF SPOKANE STANDARD PLAN NO. A-5 ON SHEET 20 FOR CITY STANDARDS ON WATER/SEWER CROSSINGS
21. CITY OF SPOKANE HYDRANT PERMIT PROGRAM REQUIRES AN RPBA AND FLOW METER ASSEMBLY FOR ALL FIRE HYDRANT WATER USAGE IF NEEDED FOR CONSTRUCTION PHASE OF THE PROJECT (E.G. DUST CONTROL, ETC.). THIS HYDRANT PROGRAM REQUIRES A PERMIT FEE, CONSUMPTION BILLING, AND DEPOSIT FOR THE RPBA & METER ASSEMBLY. PLEASE CALL 311 OR CITY WATER DEPT. AT 509-625-7800 FOR MORE INFO.

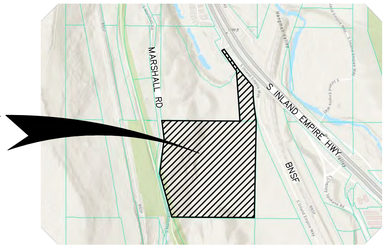
STREET AND DRAINAGE IMPROVEMENTS

LATAH GLEN RESIDENTIAL COMMUNITY

SECTION 36, TOWNSHIP 25 NORTH, RANGE 42 EAST, W.M.,
CITY OF SPOKANE, SPOKANE COUNTY, WASHINGTON



PROJECT AREA



VICINITY MAP

STREET AND DRAINAGE SHEET INDEX

3 2	SHEET NO. 1 –	ROAD & DRAINAGE COVER AND INDEX
3 2	SHEET NO. 1A –	PHASING PLAN
3 2	SHEET NO. 2 –	EROSION & SEDIMENT CONTROL PLAN
3	SHEET NO. 3A –	EROSION & SEDIMENT CONTROL DETAILS
3	SHEET NO. 3B –	EROSION & SEDIMENT CONTROL DETAILS
3	SHEET NO. 4 –	DETAILED GRADING PLAN
3 2	SHEET NO. 5 –	DETAILED GRADING PLAN
3 2	SHEET NO. 6 –	INLAND EMPIRE WAY ROAD & DRAINAGE PLAN AND PROFILE
3	SHEET NO. 6A –	INLAND EMPIRE WAY SIGNING AND STRIPING PLAN
3 2	SHEET NO. 7 –	SARATOGA AVE ROAD & DRAINAGE PLAN AND PROFILE STA 26+00 TO STA 37+00
3	SHEET NO. 7A –	SARATOGA AVE SIGNING AND STRIPING PLAN
3	SHEET NO. 8 –	SARATOGA AVE ROAD & DRAINAGE PLAN AND PROFILE STA 37+00 TO STA 47+92
3	SHEET NO. 8A –	SARATOGA AVE SIGNING AND STRIPING PLAN
3 2	SHEET NO. 9 –	LATHAM ST ROAD & DRAINAGE PLAN AND PROFILE
3	SHEET NO. 9A –	LATHAM ST SIGNING AND STRIPING PLAN
3 2	SHEET NO. 10 –	KINGSTON ST & ALBANY AVE ROAD & DRAINAGE PLAN AND PROFILE
3	SHEET NO. 10A –	KINGSTON ST & ALBANY AVE SIGNING AND STRIPING PLAN
3 2	SHEET NO. 11 –	WALDEN ST ROAD & DRAINAGE PLAN AND PROFILE
3	SHEET NO. 11A –	WALDEN ST SIGNING AND STRIPING PLAN
3 2	SHEET NO. 12 –	HUDSON ST ROAD & DRAINAGE PLAN AND PROFILE
3	SHEET NO. 12A –	HUDSON ST SIGNING AND STRIPING PLAN
3	SHEET NO. 13 –	HARTFORD ST ROAD & DRAINAGE PLAN AND PROFILE
3	SHEET NO. 13A –	HARTFORD ST SIGNING AND STRIPING PLAN
3 2	SHEET NO. 14 –	STREET DETAILS
3 2	SHEET NO. 15 –	INTERSECTION DETAILS
3 2	SHEET NO. 16 –	INTERSECTION DETAILS
3	SHEET NO. 17 –	SWALE DETAILS
3 2	SHEET NO. 18 –	SWALE DETAILS
3	SHEET NO. 19 –	NOTES
3	SHEET NO. 20 –	STANDARD DETAILS
3	SHEET NO. 20A –	STANDARD DETAILS
3	SHEET NO. 21 –	RETAINING WALL DETAILS
3	SHEET NO. 22 –	RETAINING WALL DETAILS

LEGEND

PROPOSED IMPROVEMENTS

- ASPHALT SURFACING
- CURB
- CONCRETE OR SIDEWALK
- DRYWELL
- STORM MANHOLE
- CONCRETE INLET
- CURB INLET
- POWER POLE
- SIGN
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- WATER SHUTOFF / WATER VAULT
- SANITARY SEWER MANHOLE
- INACTIVE/COMPLETED PHASE
- CLEANOUT (CO)
- GAS METER
- 8"WA — WATER LINE (AS SIZED)
- SLEEVE FOR WATER / SEWER CROSSING
- SANITARY SEWER LINE
- STORM DRAIN LINE / CULVERT
- 1924 — CONTOURS
- STORM WATER SWALE / POND
- DIRECTION OF SURFACE STORM WATER DRAINAGE
- 1924.50 / 1924.00 — TOP OF CURB ELEVATION / FLOWLINE ELEVATION
- CURB INLET 1924.00 — INLET ELEVATION AT FLOWLINE
- 1924.00 — FINISHED GRADE ELEVATION

LEGEND

EXISTING FEATURES

- ASPHALT SURFACING
- CURB
- GRAVEL
- SIDEWALK OR CONCRETE
- DRYWELL
- STORM MANHOLE
- CATCH BASIN
- POWER POLE/TELEPHONE POLE
- TELEPHONE ENCLOSURE
- WATER VALVE
- FIRE HYDRANT
- SANITARY SEWER MANHOLE
- W — WATER LINE
- SS — SANITARY SEWER LINE
- SD — STORM DRAIN LINE / CULVERT
- OHP — POWER LINE (OHP OR BP)
- BT — TELEPHONE LINE (OHT OR BT)
- G — GAS LINE
- 2434 — CONTOURS
- X — FENCE
- BFO — FIBER OPTIC LINE

ELEVATION DATUM

NAVD88 ESTABLISHED FROM GPS OBSERVATION ON LOCAL CONTROL POINTS USING THE WASHINGTON STATE REFERENCE NETWORK.

SITE TBM

MAG NAIL SET IN PAVEMENT APPROXIMATELY 600 FEET NE OF NE CORNER OF SUBJECT PARCEL WEST OF GUARD RAIL OF SOUTHBOUND SR 195
ELEVATION: 1800.20

GRAPHIC SCALE

200 0 100 200 400
(IN FEET)
1 inch = 200 ft.

NOTE:

ALL SWALES WITHOUT LABELED STORMWATER EASEMENT, THE ENTIRE TRACT WILL BE DEDICATED WITH A SWALE EASEMENT.

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JERRY D. STORHAUG — STATE OF WASHINGTON — 25258 — REGISTERED PROFESSIONAL ENGINEER
5/27/25

DATE: 5/27/25

REVISIONS				
5/27/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1
DATE	BY	PROJECT	DESCRIPTION	

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1800.20

CBM NO. :

NAVD88 DATUM

100' 0' 100' 200'
SCALE IN FEET

BENCH MARK LOCATION: MAG NAIL SET IN PAVEMENT APPROX. 600 FEET NE OF NE CORNER OF SUBJECT PARCEL WEST OF GUARD RAIL OF SOUTHBOUND SR 195

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	5/27/2025

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
STREET & DRAINAGE COVER AND INDEX
APN 25361.0001 & 25364.0001

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

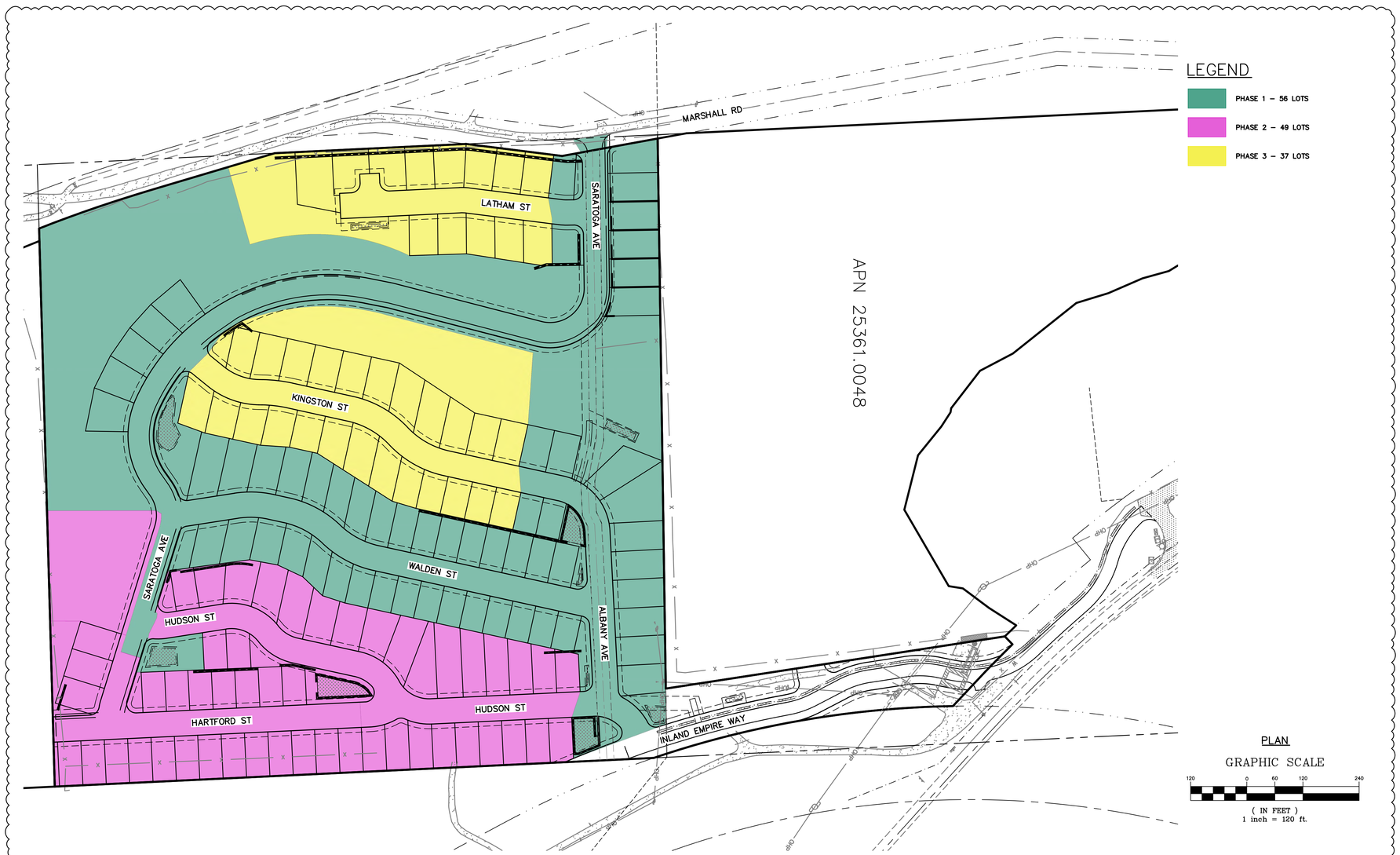
TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

1 / 22

CALL BEFORE YOU DIG 1-800-424-5555

SEC. 36, T. 25 N., R. 42 E., WM



2/3

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/27/25	LC	19–342	GENERAL REVISION	3
10/10/24	LC	19–342	GENERAL REVISION	2
4/10/24	LC	19–342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1800.20

CBM NO. :

NAVD88 DATUM

60' 0' 60' 120'

SCALE IN FEET

BENCH MARK LOCATION: MAG NAIL SET IN PAVEMENT
APPROX. 600 FEET NE OF NE CORNER OF SUBJECT PARCEL
WEST OF GUARD RAIL OF SOUTHBOUND SR 195

SCALE		BY	DATES
	HORIZONTAL SCALE (22 x 34)	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	APPROVED: JDS	5/27/2025

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SE#19–342

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

JERRY D. STORHAUG
STATE OF WASHINGTON
25559
REGISTERED
PROFESSIONAL ENGINEER
5/27/25
DATE: 5/27/25

1A
22

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:

PHASING PLAN

APN 25361.0001 & 25364.0001

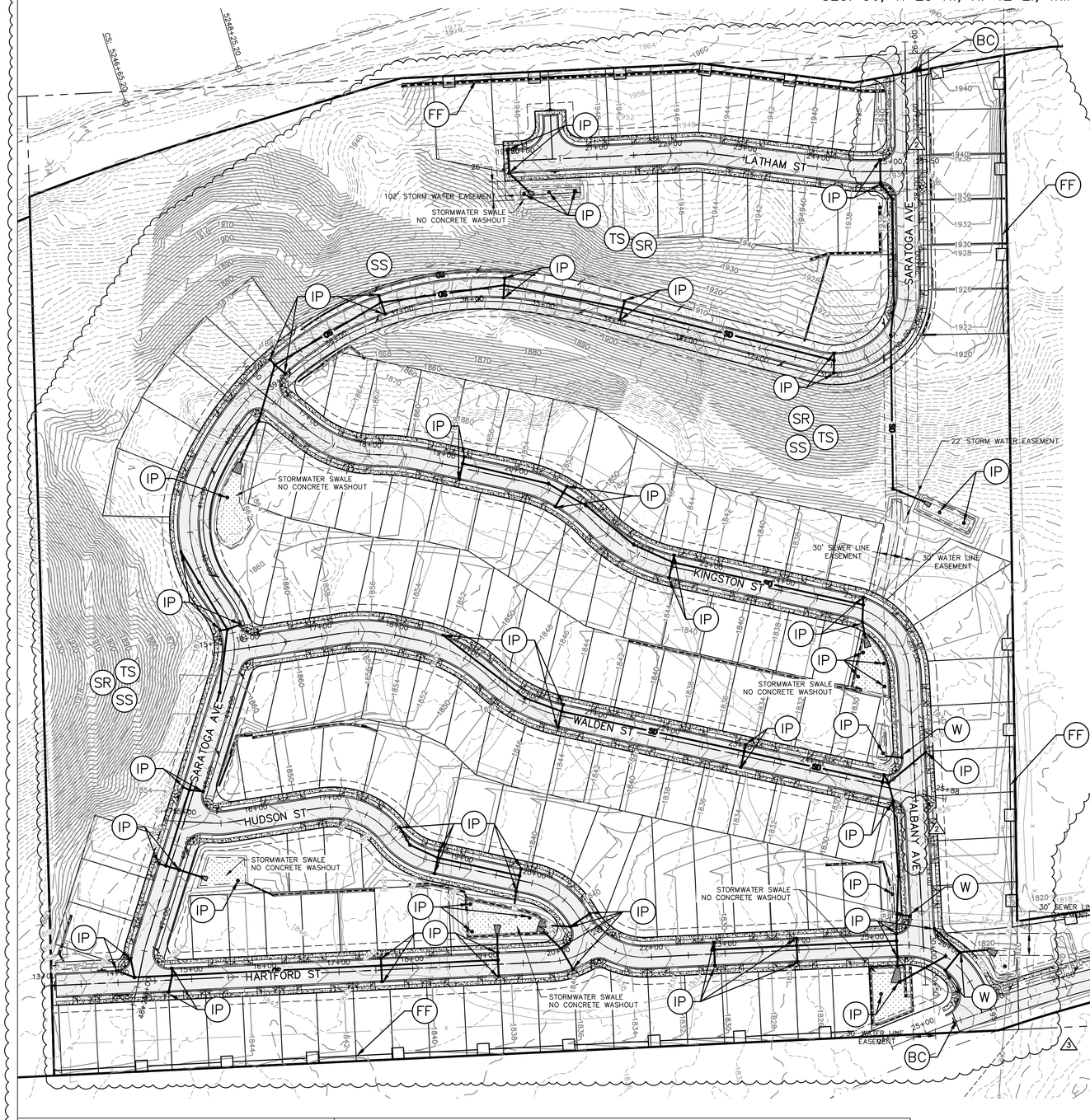
PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

3

SEC. 36, T. 25 N., R. 42 E., WM



GENERAL NOTES:

1. ALL GRADING ACTIVITIES SHALL USE ONSITE HAUL ROUTES.
2. CUT AND FILL SLOPES SHALL BE STABILIZED WITH TERRACING, CAT TRACKING, JUTE MATS, AND/OR HYDROSEEDING.
3. FILL SLOPES WILL NOT BE CONSTRUCTED ON EXISTING SLOPES STEEPER THAN 1.5:1 WITHOUT GEOTECHNICAL ENGINEERING APPROVAL.
4. FILL MATERIAL SHALL BE PLACED IN LIFTS OF NO MORE THAN 12" AND THE FILL MATERIAL WITHIN BUILDING ENVELOPES SHALL BE COMPACTED TO A MINIMUM RELATIVE DRY DENSITY OF 95%, MODIFIED PROCTOR, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER. PROVIDE COMPACTION VERIFICATION FOR ALL FILL THAT WILL SUPPORT A STRUCTURE OR ROADWAY.
5. PROVIDE ENGINEERED KEYS FOR FILL SLOPES 5:1 OR STEEPER WITH FILL HEIGHTS EXCEEDING 5' AND FOR ANY FILL WITH HEIGHTS EXCEEDING 20'.
6. THE CONTRACTOR SHALL DETERMINE WHERE INTERCEPTOR DITCHES ARE NECESSARY TO PREVENT OFFSITE RUNOFF AND TO PREVENT ONSITE EROSION.
7. THE TOE OF A FILL SLOPE AND/OR THE TOP OF A CUT SLOPE SHALL BE SETBACK FROM THE PLAT BOUNDARY 1/5 OF THE FILL/CUT SLOPE HEIGHT.
8. EXISTING AND PROPOSED CONTOURS ARE SHOWN AT 5' INTERVALS.
9. ALL SITE DISTURBANCES ON EXISTING SLOPES STEEPER THAN 30% OR WHERE THE CONSTRUCTION WILL CREATE SLOPES STEEPER THAN 30% SHALL PROVIDE A GEOTECHNICAL EVALUATION AND ENGINEERING PRIOR TO PERMIT ISSUANCE.
10. PROVIDE TERRACE BREAKS FOR FILLS EXCEEDING 20' IN HEIGHT OR 75' IN SLOPE LENGTH.

ESC MEASURES

- (CW) CONCRETE WASHOUT
- (CE) CONSTRUCTION EXIT
- (FF) FILTER FENCE
- (IP) INLET PROTECTION
- (BC) BARRICADE
- (W) WADDLE
- (SR) SURFACE ROUGHENING
- (TS) TERRACED SLOPE
- (SS) SLOPE STABILIZATION

SEE SHEET 3 FOR FURTHER DETAILS

LEGEND

EXISTING FEATURES

- ASPHALT SURFACING
- STORM MANHOLE
- CATCH BASIN
- SD — STORM DRAIN LINE / CULVERT
- 2434 — CONTOURS
- X — X — FENCE

PROPOSED IMPROVEMENTS

- ASPHALT SURFACING
- CURB
- CONCRETE OR SIDEWALK
- DRYWELL
- STORM MANHOLE
- CONCRETE INLET
- CURB INLET
- 1924 — CONTOURS
- STORM WATER SWALE / POND
- FILTER FABRIC
- BARRACADES

GRAPHIC SCALE

80 0 40 80 160

(IN FEET)
1 inch = 80 ft.

JERRY D. STORHAUG
STATE OF WASHINGTON
25559
REGISTERED
PROFESSIONAL ENGINEER
5/27/25

DATE: 5/27/25

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/27/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1800.20

CBM NO. :

NAVD88 DATUM

40' 0' 40' 80'

SCALE IN FEET

BENCH MARK LOCATION: MAG NAIL SET IN PAVEMENT APPROX. 600 FEET NE OF NE CORNER OF SUBJECT PARCEL WEST OF GUARD RAIL OF SOUTHBOUND SR 195

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	5/27/2025

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SE#19-342

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808
WEST SPOKANE FALLS BLVD. SPOKANE,
WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS: EROSION & SEDIMENT CONTROL PLAN

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

TYPE OF IMPROVEMENT: SITE/DRAINAGE	
PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

CALL BEFORE YOU DIG 1-800-424-5555

STANDARD NOTES: A. THE FILTER FABRIC FENCE SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, OVERLAP FILTER CLOTH AND SECURELY FASTEN BOTH ENDS TO THE POST.

B. POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 30 INCHES (WHERE PHYSICALLY POSSIBLE).

C. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 8 INCHES WIDE AND 12 INCHES DEEP ALONG THE LINE OF POSTS AND UP-SLOPE FROM THE BARRIER. THE TRENCH SHALL BE CONSTRUCTED TO FOLLOW THE CONTOURS.

D. WHEN SLIT FILM FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UP-SLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

E. SLIT FILM FILTER FABRIC SHALL BE WIRED TO THE FENCE, AND 20 INCHES OF THE FABRIC SHALL EXTEND INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES. OTHER TYPES OF FABRIC MAY BE STAPLED TO THE FENCE.

F. WHEN EXTRA-STRENGTH OR MONOFILAMENT FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF STANDARD NOTE "E" APPLYING. EXTRA CARE SHOULD BE USED WHEN JOINING OR OVERLAPPING THESE STIFFER FABRICS.

G. LOCAL GOVERNMENTS MAY SPECIFY THE USE OF PROPERLY COMPACTED NATIVE MATERIALS. IN MANY INSTANCES, THIS MAY BE THE PREFERRED ALTERNATIVE BECAUSE THE SOIL FORMS A MORE CONTINUOUS CONTACT WITH THE TRENCH BELOW.

DEFINITION: A TEMPORARY SEDIMENT BARRIER CONSISTING OF A FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED. THE FILTER FENCE IS CONSTRUCTED OF STAKES AND SYNTHETIC FILTER FABRIC WITH A RIGID WIRE FENCE BACKING WHERE NECESSARY FOR SUPPORT.

PURPOSE: 1. TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT UNDER SHEET FLOW CONDITIONS FROM DISTURBED AREAS DURING CONSTRUCTION OPERATIONS IN ORDER TO PREVENT SEDIMENT FROM LEAVING THE SITE.

2. TO DECREASE THE VELOCITY OF SHEET FLOWS.

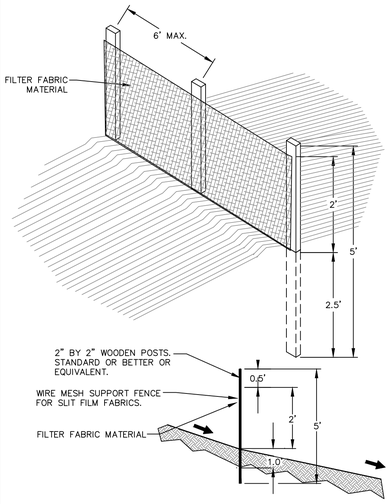
CONDITIONS WHERE PRACTICE APPLIES: FILTER FENCES MUST BE PROVIDED JUST UPSTREAM OF THE POINT(S) OF DISCHARGE OF RUNOFF FROM A SITE, BEFORE THE FLOW BECOMES CONCENTRATED. THEY MAY ALSO BE REQUIRED:

1. BELOW DISTURBED AREAS WHERE RUNOFF MAY OCCUR IN THE FORM OF SHEET AND RILL EROSION; WHEREVER RUNOFF HAS THE POTENTIAL TO IMPACT DOWNSTREAM RESOURCES.

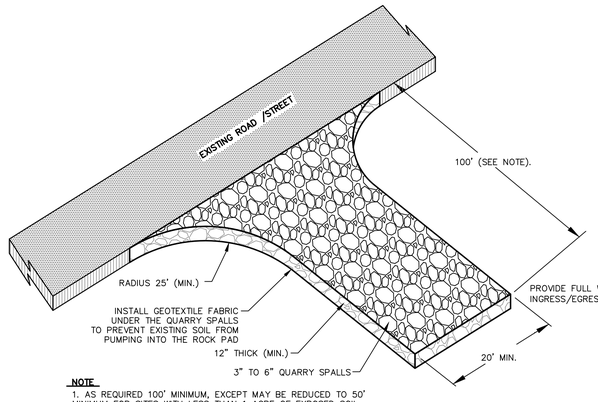
2. PERPENDICULAR TO MINOR SWALES OR DITCH LINES FROM CONTRIBUTING DRAINAGE AREAS UP TO ONE ACRE IN SIZE.

3. CONTRACTOR SHALL COORDINATE WITH DESIGN ENGINEER FOR ACTUAL PLACEMENT LOCATIONS.

MAINTENANCE: THE FILTER FENCE AND INLET PROTECTIONS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD AND SEDIMENT OFF OF THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC CLEANING WHEN SEDIMENT BUILD UP IS SIX INCHES OR ONE-THIRD OF THE FENCE OR INLET PROTECTION'S ORIGINAL HEIGHT.



FILTER FENCE NTS (FF)



NOTE
1. AS REQUIRED 100' MINIMUM, EXCEPT MAY BE REDUCED TO 50' MINIMUM FOR SITES WITH LESS THAN 1 ACRE OF EXPOSED SOIL.

DEFINITION: A TEMPORARY STONE-STABILIZED PAD LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE.

PURPOSE: TO REDUCE THE AMOUNT OF MUD, DIRT, ROCK, ETC. TRANSPORTED ONTO PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF BY CONSTRUCTING A STABILIZED PAD OF ROCK SPALLS AT ENTRANCES TO CONSTRUCTION SITES AND WASHING OF TIRES DURING EGRESS.

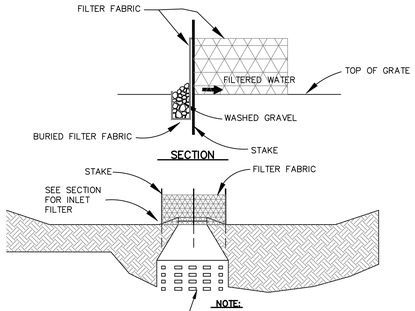
CONDITIONS WHERE PRACTICE APPLIES: WHEREVER TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD OR OTHER PAVED AREAS.

MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2-INCH STONES, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED.

TIRE WASH: TIRE WASH IS RECOMMENDED DUE TO ONSITE SOILS. THE TIRE WASH SHALL BE REQUIRED BY THE CITY IF IT IS FOUND THAT ANY OF THE FOLLOWING ITEMS ARE NOT BEING DONE:
1. THE ROCK CONSTRUCTION EXIT IS NOT BUILT TO THE EASTERN WASHINGTON STORM WATER MANUAL STANDARDS.
2. THE ROCK CONSTRUCTION ENTRANCE IS NOT MAINTAINED PER THE EASTERN WASHINGTON STORM WATER MANUAL STANDARDS.
3. ANY MATERIAL TRACKED OFF THE SITE IN NOT CLEANED UP REGULARLY

THE CITY MAY AT IT'S DISCRETION REQUIRE THE TIRE WASH AREA TO BE INSTALLED IF IT FEELS THAT IT IS IN THE BEST INTEREST OF THE CITY OR THE NEIGHBORS TO REQUIRE IT.

STABILIZED CONSTRUCTION EXIT/ TIRE WASH NTS (CE)



NOTE:
1. ALL DRYWELLS, INLETS, CATCH BASIN AND ANY OTHER STORMDRAIN FIXTURES WITH GRATED INLETS SHALL BE PROTECTED.
2. PROTECTION SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED.
3. SEDIMENT MUST BE REMOVED WHEN IT REACHES 6" OR ¼ OF THE HEIGHT OF THE FENCE.

TEMPORARY INLET PROTECTION NTS (IP)

SEC. 36, T. 25 N., R. 42 E., WM

USE THE FOLLOWING SEEDING SPECIFICATIONS WHEREVER SOIL IS DISTURBED:

PROVIDE FRESH, CLEAN NEW CROP SEED COMPLYING WITH TOLERANCE FOR PURITY AND GERMINATION ESTABLISHED BY OFFICIAL SEED ANALYSTS OF NORTH AMERICA. PROVIDE SEED MIXTURE COMPOSED OF GRASS SPECIES AND PERCENTAGES AS FOLLOWS:

20 PERCENT ELKA PERENNIAL RYE
20 PERCENT DURAR HARD FESCUE
45 PERCENT COVAR SHEEP /FESCUE
15 PERCENT REUBENS CANADIAN BLUEGRASS

PROVIDE MIXTURE COMPOSED OF GRASS SEED AND FERTILIZER IN PERCENTAGES AS FOLLOWS:

GRASS SEED MIXTURE: 90 LBS. PER ACRE
FERTILIZER: 16:16:16 TIMED RELEASE COMPOSITION, 300 LBS. PER ACRE

ALL SEEDING OF SLOPES SHALL BE DONE IN ACCORDANCE WITH CITY OF SPOKANE VALLEY STANDARDS.

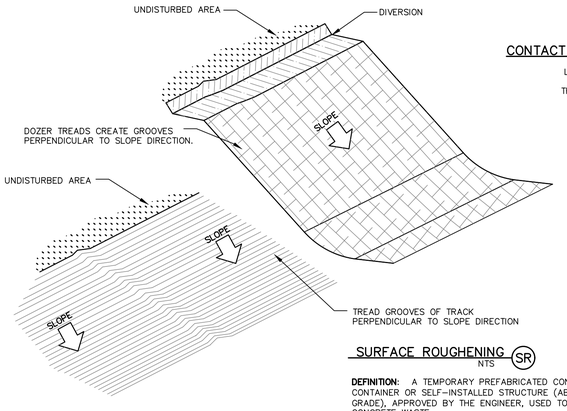
CONTRACTOR SHALL IRRIGATE SEEDED AREAS UNTIL SEED HAS GERMINATED AND HAS BEEN ACCEPTED BY OWNER.

SEEDING SPECIFICATION

DEFINITION:
PROVISION OF A ROUGH SOIL SURFACE WITH HORIZONTAL DEPRESSIONS CREATED BY OPERATING A TILLER OR OTHER SUITABLE EQUIPMENT ON THE CONTOUR OR BY LEAVING SLOPES IN A ROUGHED CONDITION BY NOT FINE GRADING THEM.

PURPOSE:
TO AID IN ESTABLISHMENT OF VEGETATIVE COVER, REDUCE RUNOFF VELOCITY, INCREASE INFILTRATION, AND PROVIDE FOR SEDIMENT TRAPPING.

CONDITIONS WHERE PRACTICE APPLIES:
ALL SLOPES STEEPER THAN 4:1 IN BOTH CUT AND FILL REQUIRE SURFACE ROUGHENING WITH DOZER TRACKING. IN ADDITION SLOPES STEEPER THAN 30:1 IN BOTH CUT AND FILL REQUIRE SURFACE ROUGHENING WITH EITHER STAIR-STEP GRADING, GROOVING, FURROWING, OR TRACKING. COMPLETE SURFACE ROUGHENING PER IDEQ CATALOG OF BEST MANAGEMENT PRACTICES VOLUME 2, BMP 84.



SURFACE ROUGHENING NTS (SR)

DEFINITION: A TEMPORARY PREFABRICATED CONCRETE WASHOUT CONTAINER OR SELF-INSTALLED STRUCTURE (ABOVE OR BELOW GRADE), APPROVED BY THE ENGINEER, USED TO DETAIN CONCRETE WASTE.

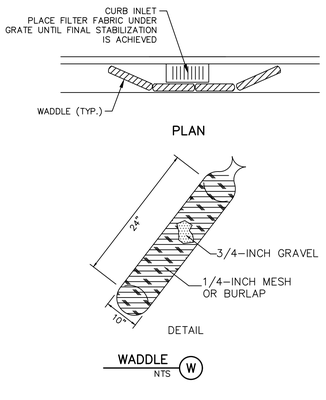
PURPOSE: TO PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORMWATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA TO PREVENT POLLUTANTS FROM ENTERING SURFACE WATERS OR GROUNDWATER.

CONDITIONS WHERE PRACTICE APPLIES: WHENEVER CONCRETE IS USED AS A CONSTRUCTION MATERIAL AND IT IS NOT POSSIBLE TO DISPOSE OF ALL CONCRETE WASTEWATER AND WASHOUT OFFSITE.

MAINTENANCE: THE CONCRETE WASHOUT FACILITY SHALL BE INSPECTED FOR CAPACITY AND LEAKAGE PRIOR TO THE COMMENCEMENT OF CONCRETE WORK AND DAILY THEREAFTER. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES PROVIDED AND READY FOR USE ONCE THE WASHOUT BECOMES 75% FULL.

NOTES:
1. CONCRETE TRUCK CHUTES, PUMPS, AND INTERNALS SHALL BE WASHED OUT ONLY INTO FORMED AREAS AWAITING INSTALLATION OF CONCRETE OR ASPHALT.
2. UN-USED CONCRETE REMAINING IN THE TRUCK AND PUMP SHALL BE RETURNED TO THE ORIGINATING BATCH PLANT FOR RECYCLING.
3. HAND TOOLS INCLUDING, BUT NOT LIMITED TO, SCREEDS, SHOVELS, RAKES, FLOATS, AND TROWELS SHALL BE WASHED OFF ONLY INTO FORMED AREAS AWAITING INSTALLATION OF CONCRETE OR ASPHALT.
4. EQUIPMENT THAT CANNOT BE EASILY MOVED, SUCH AS CONCRETE PAVERS, SHALL ONLY BE WASHED IN AREAS THAT NO NOT DIRECTLY DRAIN TO NATURAL OR CONSTRUCTED STORMWATER CONVEYANCES.
5. WHEN NO FORMED AREAS ARE AVAILABLE, WASHWATER AND LEFTOVER PRODUCT SHALL BE CONTAINED IN A LINED CONTAINER. CONTAINED CONCRETE SHALL BE DISPOSED OF IN A MANNER THAT DOES NOT VIOLATE GROUNDWATER OR SURFACE WATER QUALITY STANDARDS.

CONCRETE WASHOUT NOTES (CW)



WADDLE NTS (W)

CONTACT PERSON/PERMIT APPLICANT

LAGUNA CANYON GROUP L.L.C
10 SYCAMORE CANYON DR.
TRABUCCO CANYON, CA. 92674
PHONE:
CONTACT:

PROJECT / SITE DESCRIPTION

THE PROPOSED PROJECT INCLUDES ROAD AND UTILITY CONSTRUCTION WITH ASSOCIATED STORM DRAINAGE FACILITIES FOR A PROPOSED RESIDENTIAL SUBDIVISION.

ESC MEASURES

PROTECT EXISTING AND PROPOSED STORM WATER MANAGEMENT FACILITIES FROM SEDIMENTATION DURING CONSTRUCTION ACTIVITIES. FILTER FENCES SHALL BE USED TO AID IN CONTAINING ANY SEDIMENT ON THE SITE DURING GRADING AND CONSTRUCTION. STABILIZED CONSTRUCTION EXITS SHALL BE USED AT POINTS OF INGRESS AND EGRESS FOR CONSTRUCTION VEHICLES. INLET PROTECTION SHALL BE USED AT ALL STORM WATER INLETS AND DRYWELLS. PROVIDE DUST CONTROL DURING DRY SEASON.

REFER TO PLAN VIEW ON THIS SHEET FOR APPROXIMATE LOCATION OF THE ABOVE ITEMS.

ALL DISTURBED AREAS SHALL BE SEEDED OR LANDSCAPED PER THE LANDSCAPE PLAN.

NOTES

EROSION AND SEDIMENT CONTROL MEASURES SHALL CONFORM TO THE CITY OF HAYDEN CODE AND THE STATE OF IDAHO CATALOG OF STORM WATER BEST MANAGEMENT PRACTICES FOR IDAHO CITIES AND COUNTIES PREPARED BY THE WATERSHED AND AQUIFER PROTECTION BUREAU OF THE IDAHO DIVISION OF ENVIRONMENTAL QUALITY.

EROSION CONTROL MEASURES IN ADDITION TO THOSE INDICATED AS PART OF THIS PLAN MAY BE REQUIRED IF THE CITY ENGINEER DETERMINES INDICATED MEASURES ARE INADEQUATE.

PERIODIC MAINTENANCE OF EROSION CONTROL MEASURES IS REQUIRED UNTIL PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL AND SUFFICIENT VEGETATION IS ESTABLISHED.

CONTRACTOR SHALL PROVIDE DUST CONTROL DURING CONSTRUCTION.

CONTRACTOR IS RESPONSIBLE FOR PREPARATION OPF STORM WATER POLLUTION PREVENTION PLAN (SWPPP), NOTICE OF INTENT, AND IMPLEMENTATION OF PERMIT.

EXISTING CONDITIONS

THE PROJECT SITE IS AN UNDEVELOPED SITE WITH SOME TREES AND GRAVEL.

1. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE FOLLOWED IN ORDER TO BEST MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENTATION CONTROL PROBLEMS:
   - 1.a. CLEAR AND GRUB SUFFICIENTLY FOR INSTALLATION OF TEMPORARY ESC BMPS;
   - 1.b. INSTALL TEMPORARY ESC BMPS, CONSTRUCTING SEDIMENT TRAPPING BMPS AS ONE OF THE FIRST STEPS PRIOR TO GRADING;
   - 1.c. CLEAR, GRUB AND ROUGH GRADE FOR ROADS, TEMPORARY ACCESS POINTS AND UTILITY LOCATIONS;
   - 1.d. STABILIZE ROADWAY APPROACHES AND TEMPORARY ACCESS POINTS WITH THE APPROPRIATE CONSTRUCTION ENTRY BMP;
   - 1.e. CLEAR, GRUB AND GRADE INDIVIDUAL LOTS OR GROUPS OF LOTS;
   - 1.f. TEMPORARILY STABILIZE, THROUGH RE-VEGETATION OR OTHER APPROPRIATE BMPS, LOTS OR GROUPS OF LOTS IN SITUATIONS WHERE SUBSTANTIAL CUT OR FILL SLOPES ARE A RESULT OF THE SITE GRADING;
   - 1.g. CONSTRUCT ROADS, BUILDINGS, PERMANENT STORMWATER FACILITIES (I.E. INLETS, PONDS, UIC FACILITIES, ETC.);
   - 1.h. PROTECT ALL PERMANENT STORMWATER FACILITIES UTILIZING THE APPROPRIATE BMPS;
   - 1.i. INSTALL PERMANENT ESC CONTROLS, WHEN APPLICABLE; AND,
   - 1.j. REMOVE TEMPORARY ESC CONTROLS WHEN:
     - 1.j.a. PERMANENT ESC CONTROLS, WHEN APPLICABLE, HAVE BEEN COMPLETELY INSTALLED;
     - 1.j.b. ALL LAND-DISTURBING ACTIVITIES THAT HAVE THE POTENTIAL TO CAUSE EROSION OR SEDIMENTATION PROBLEMS HAVE CEASED; AND,
     - 1.j.c. VEGETATION HAD BEEN ESTABLISHED IN THE AREAS NOTED AS REQUIRING VEGETATION ON THE ACCEPTED ESC PLAN ON FILE WITH THE LOCAL JURISDICTION.
2. INSPECT ALL ROADWAYS, AT THE END OF EACH DAY, ADJACENT TO THE CONSTRUCTION ACCESS ROUTE. IF IT IS EVIDENT THAT SEDIMENT HAS BEEN TRACKED OFF SITE AND/OR BEYOND THE ROADWAY APPROACH, CLEANING IS REQUIRED.
3. IF SEDIMENT REMOVAL IS NECESSARY PRIOR TO STREET WASHING, IT SHALL BE REMOVED BY SHOVELING OR PICKUP SWEEPING AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
4. IF STREET WASHING IS REQUIRED TO CLEAN SEDIMENT TRACKED OFF SITE, ONCE SEDIMENT HAS BEEN REMOVED, STREET WASH WASTEWATER SHALL BE CONTROLLED BY PUMPING BACK ON-SITE OR OTHERWISE PREVENTED FROM DISCHARGING INTO SYSTEMS TRIBUTARY TO WATERS OF THE STATE.
5. RESTORE CONSTRUCTION ACCESS ROUTE EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITION.
6. RETAIN THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION IN AN UNDISTURBED STATE TO THE MAXIMUM EXTENT PRACTICAL.
7. INSPECT SEDIMENT CONTROL BMPS WEEKLY AT A MINIMUM, DAILY DURING A STORM EVENT, AND AFTER ANY DISCHARGE FROM THE SITE (STORMWATER OR NON-STORMWATER). THE INSPECTION FREQUENCY MAY BE REDUCED TO ONCE A MONTH IF THE SITE IS STABILIZED AND INACTIVE.
8. CONTROL FUGITIVE DUST FROM CONSTRUCTION ACTIVITY IN ACCORDANCE WITH THE STATE AND/OR LOCAL AIR QUALITY CONTROL AUTHORITIES WITH JURISDICTION OVER THE PROJECT AREA.
9. STABILIZE EXPOSED UNWORKED SOILS (INCLUDING STOCKPILES), WHETHER AT FINAL GRADE OR NOT, WITHIN 10 DAYS DURING THE REGIONAL DRY SEASON (JULY 1 THROUGH SEPTEMBER 30) AND WITHIN 5 DAYS DURING THE REGIONAL WET SEASON (OCTOBER 1 THROUGH JUNE 30). SOILS MUST BE STABILIZED AT THE END OF A SHIFT BEFORE A HOLIDAY WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. THIS TIME LIMIT MAY ONLY BE ADJUSTED BY A LOCAL JURISDICTION WITH A "QUALIFIED LOCAL PROGRAM," IF IT CAN BE DEMONSTRATED THAT THE RECENT PRECIPITATION JUSTIFIES A DIFFERENT STANDARD AND MEETS THE REQUIREMENTS SET FOURTH IN THE CONSTRUCTION STORMWATER GENERAL PERMIT.
10. PROTECT INLETS, DRYWELLS, CATCH BASINS AND OTHER STORMWATER MANAGEMENT FACILITIES FROM SEDIMENT, WHETHER OR NOT FACILITIES ARE OPERABLE.
11. KEEP ROADS ADJACENT TO INLETS CLEAN.
12. INSPECT INLETS WEEKLY AT A MINIMUM AND DAILY DURING STORM EVENTS.
13. CONSTRUCT STORMWATER CONTROL FACILITIES (DETENTION/RETENTION STORAGE POND OR SWALES) BEFORE GRADING BEGINS. THESE FACILITIES SHALL BE OPERATIONAL BEFORE THE CONSTRUCTION OF IMPERVIOUS SITE IMPROVEMENTS.
14. STOCKPILE MATERIALS (SUCH AS TOPSOIL) ON SITE, KEEPING OFF OF ROADWAY AND SIDEWALKS.
15. COVER, CONTAIN AND PROTECT ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCT, AND NONINERT WASTES PRESENT ON SITE FROM VANDALISM (SEE CHAPTER 173-304 WAC FOR THE DEFINITION OF INERT WASTE), USE SECONDARY CONTAINMENT FOR ON-SITE FUELING TANKS.
16. CONDUCT MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES INVOLVING OIL CHANGES, HYDRAULIC SYSTEM REPAIRS, SOLVENT AND DEGREASING OPERATIONS, FUEL TANK DRAIN DOWN AND REMOVAL, AND OTHER ACTIVITIES THAT MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO STORMWATER RUNOFF USING SPILL PREVENTION MEASURES, SUCH AS DRIP PANS. CLEAN ALL CONTAMINATED SURFACES IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT. IF RAINING OVER EQUIPMENT OR VEHICLE, PERFORM EMERGENCY REPAIRS ON SITE USING TEMPORARY PLASTIC BENEATH THE VEHICLE.
17. CONDUCT APPLICATION OF AGRICULTURAL CHEMICALS, INCLUDING FERTILIZERS AND PESTICIDES, IN SUCH A MANNER, AND AT APPLICATION RATES, THAT INHIBITS THE LOSS OF CHEMICALS INTO STORMWATER RUNOFF FACILITIES. AMEND MANUFACTURER'S RECOMMENDED APPLICATION RATES AND PROCEDURES TO MEET THIS REQUIREMENT, IF NECESSARY.
18. INSPECT ON A REGULAR BASIS (AT A MINIMUM WEEKLY, AND DAILY DURING/AFTER A RUNOFF PRODUCING STORM EVENT) AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL BMPS TO ENSURE SUCCESSFUL PERFORMANCE OF THE BMPS. NOTE THAT INLET PROTECTION DEVICES SHALL BE CLEANED OR REMOVED AND REPLACE BEFORE SIX INCHES OF SEDIMENT CAN ACCUMULATE.
19. REMOVE TEMPORARY ESC BMPS WITHIN 30 DAYS AFTER THE TEMPORARY BMPS ARE NO LONGER NEEDED. PERMANENTLY STABILIZE AREAS THAT ARE DISTURBED DURING THE REMOVAL PROCESS.
20. BMP'S SHALL BE IN ACCORDANCE WITH CHAPTER 7 OF THE STORMWATER MANAGEMENT MANUAL FOR EASTERN WASHINGTON.

ESC STANDARD NOTES

JERRY D. STORHAUG — STATE OF WASHINGTON — 28908 — REGISTERED PROFESSIONAL ENGINEER
5/27/25

DATE: 5/27/25

3A
22

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civil engineering | planning
landscape architecture | surveying
510 east third avenue | spokane, wa | 99202
p 509.242.1000 | f 509.242.1001

SE#19-342

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/27/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. :1800.20
CBM NO. :
NAVD88 DATUM

25' 0' 25' 50'
SCALE IN FEET

BENCH MARK LOCATION: MAG NAIL SET IN PAVEMENT APPROX. 600 FEET NE OF NE CORNER OF SUBJECT PARCEL WEST OF GUARD RAIL OF SOUTHBOUND SR 195

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	LMC	3/3/2023
APPROVED:	JDS	5/27/2025

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
EROSION CONTROL NOTES AND DETAILS

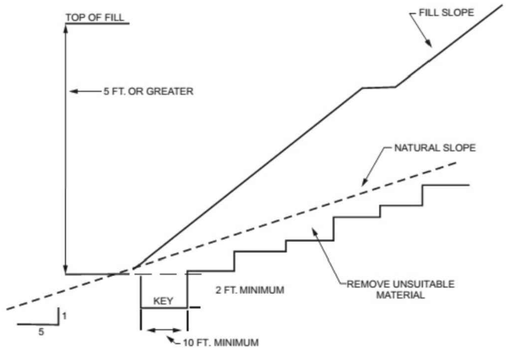
TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

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3



- The terrace should have enough capacity to handle the peak runoff expected from a 2-year, 24-hour design storm without overtopping.
- The terrace cross-section should be proportioned to fit the land slope. The ridge height should include a reasonable settlement factor. The ridge should have a minimum top width of 3 feet at the design height. The minimum cross-sectional area of the terrace channel should be 8 square feet for land slopes of 5 percent or less, 7 square feet for slopes from 5 to 8 percent, and 6 square feet for slopes steeper than 8 percent. The terrace can be constructed wide enough to be maintained using a small cat.

Maintenance Standards

- Maintenance should be performed as needed. Terraces should be inspected regularly; at least once a year, and after large storm events.

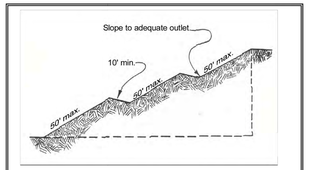


Figure 7.3.8 - Gradient Terraces

TERRACED SLOPE
NTS (TS)

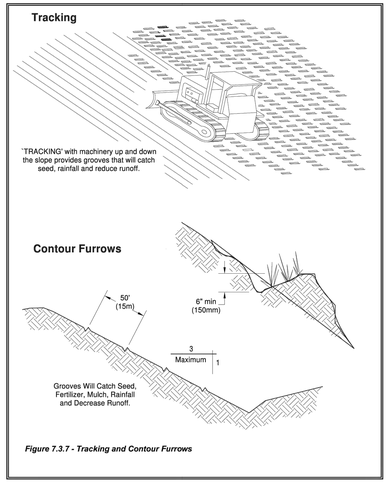
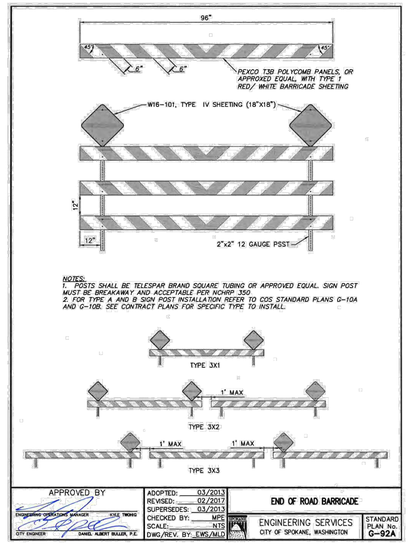


Figure 7.3.7 - Tracking and Contour Furrows

SLOPE STABILIZATION
NTS (SS)



TERMINUS BARRICADE DETAIL (BC)

REVISIONS				
DATE	BY	PROJECT	DESCRIPTION	
5/27/25	LC	19-342	GENERAL REVISION	3
10/10/24	LC	19-342	GENERAL REVISION	2
4/10/24	LC	19-342	ASI #1 CONTRACTOR QUESTIONS	1

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. :1800.20

CBM NO. :

NAVD88 DATUM

25' 0' 25' 50'

SCALE IN FEET

BENCH MARK LOCATION: MAG NAIL SET IN PAVEMENT APPROX. 600 FEET NE OF NE CORNER OF SUBJECT PARCEL WEST OF GUARD RAIL OF SOUTHBOUND SR 195

SCALE		BY	DATES
	HORIZONTAL SCALE (22 x 34)	DRAWN: LMC	3/3/2023
	VERTICAL SCALE (22 x 34)	APPROVED: JDS	5/27/2025

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civil engineering | planning
landscape architecture | surveying
SE#19-342
510 east third avenue | spokane, wa | 99202
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CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

JERRY D. STORHAUG
STATE OF WASHINGTON
29659
REGISTERED
PROFESSIONAL ENGINEER
5/27/25
DATE: 5/27/25

3B
22

PROJECT NAME: LATAH GLEN RESIDENTIAL COMMUNITY

SEGMENT LIMITS:
EROSION CONTROL NOTES AND DETAILS

TYPE OF IMPROVEMENT: SITE/DRAINAGE

PROJECT NO.	PLAN NO.
2023519/2023520	36-25N-42E

PROJECT LIMITS: LATAH GLEN RESIDENTIAL

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Exhibit 6.f. - Drainage Report

LATAH GLEN

DRAINAGE REPORT



April 2025

The staff of Storhaug Engineering under the direction of the undersigned professional engineer whose seal and signature appear hereon has prepared this report.

Storhaug Engineering
Project No. 20230520
SE# 19-342

STORHAUG ENGINEERING
510 East Third, Spokane, Washington
509-242-1000 Storhaug.com

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CHAPTER 2 – BASIN MAP

CHAPTER 3 – CALCULATIONS

CHAPTER 4 – GEOTECHNICAL REPORT

Chapter 1

DRAINAGE SUMMARY

STORHAUG ENGINEERING
510 East Third, Spokane, Washington
509-242-1000 Storhaug.com

DRAINAGE SUMMARY

Latah Glen

PROJECT LOCATION AND DESCRIPTION

This drainage report and all associated documents are intended to provide design details for the drainage infrastructure proposed for the Latah Glen project. It is the purpose of this report to demonstrate there is no negative impact to the adjacent properties with the proposed improvements to the project site with associated paving, utilities, and drainage infrastructure. The project is located 3504 S Inland Empire Way, Spokane, WA, 99224 (Parcels 25364.0001 & 25361.0004). Please refer to the grading and drainage plans for further information on project location and layout.

SITE CHARACTERISTICS

The site was formerly used as a quarry, with large portions disturbed but undeveloped and currently covered with wild grasses and trees with slopes between 0% and 15%. Table 1 contains a comparison of site runoff 'C' values before and after the completion of proposed improvements.

Table 1: Site Runoff Conditions

	C	Area (Acres)	
Surface	Value	Existing	Proposed
Paved	0.9	0	5.5
Driveway	0.9	0	2.5
Sidewalk	0.9	0	1.6
Building	0.9	0	7.6
Landscape	0.3	39.7	22.5
	Total Area	39.7	39.7
	Composite C	0.3	0.6

SUBSURFACE CHARACTERISTICS

The NRCS has identified the soils on this site as Marble loamy sand. These soils fall in hydrologic soil group A. A Geotechnical Report and Addendum (see chapter 4) were prepared for the site. Recommended infiltration rates have been used for calculations.

METHODOLOGY

The basin areas associated with the project were analyzed for the 10-year storm event utilizing the Rational Method. Swales were sized to meet treatment requirements using the 1133 method for storm storage as outlined in the SRSM. Home sites were assumed to include 2200 sf of non-polluting roof and 450 sf of polluting driveway. Pipe sizing was verified using the Storm and Sanitary Analysis plugin for Civil 3D. Riprap pads were sized using the method outlined in SRSM Ch. 8.

WATER QUALITY TREATMENT

Post-development basins are designed to meet the SRSM requirements for stormwater treatment. The proposed swales have been adequately sized to provide treatment for all contributing and planned pollution generating impervious surfaces (PGIS) and impervious surfaces hydraulically connected to PGIS within each respective basin. (See Chapter 3: Calculations)

PROPOSED DEVELOPMENT BASIN INFORMATION

All runoff will be captured, treated, and stored in the proposed onsite swales. Stormwater runoff within each basin will be directed to respective drainage swales via overland flow, concrete gutters and storm sewers.

Table 2 summarizes the proposed and existing impervious/pervious areas within each drainage basin as can be seen in the calculations section of this report.

Table 2: Proposed Basin Surface Area Totals (SF)

Basin	Paved PGIS	Driveway	Sidewalk	Building	Landscape	Total
A	5850	1350	1954	6600	22327	38081
B	14281	5400	4143	26400	75037	125261
C	38279	2700	6942	13200	160084	221205
D	0	0	0	0	0	0
E	21902	1800	6172	8800	229167	267841
F	48177	16200	13957	79200	80853	238387
G	29856	13050	8745	63800	181364	296815
H	3668	0	972	0	3334	7974
I	4538	0	970	0	5337	10845
J	52360	22950	14680	112200	177699	379889
K	9641	1800	2377	8800	18653	41271
L	8859	0	1101	0	1434	11394
M	19844	0	5282	0	12277	37403

PERPETUAL MAINTENANCE OF FACILITIES

All stormwater maintenance within the plat will be the responsibility of the Latah Glen Homeowners Association.

REGIONAL FACILITIES

The improvements do not require the need for a regional facility nor is it designed to act as a regional facility for other neighboring properties. Offsite areas currently naturally disperse stormwater, no significant runoff is expected.

In an extreme storm event, stormwater will overflow off the site along natural channels to the north along Inland Empire Way.

CONCLUSIONS

Table 3 shows the treatment and storage volume required to accommodate the proposed site improvements as well as contributing existing areas, and the respective volumes provided by the proposed drainage improvements.

Table 3: Treatment and Storage Volumes

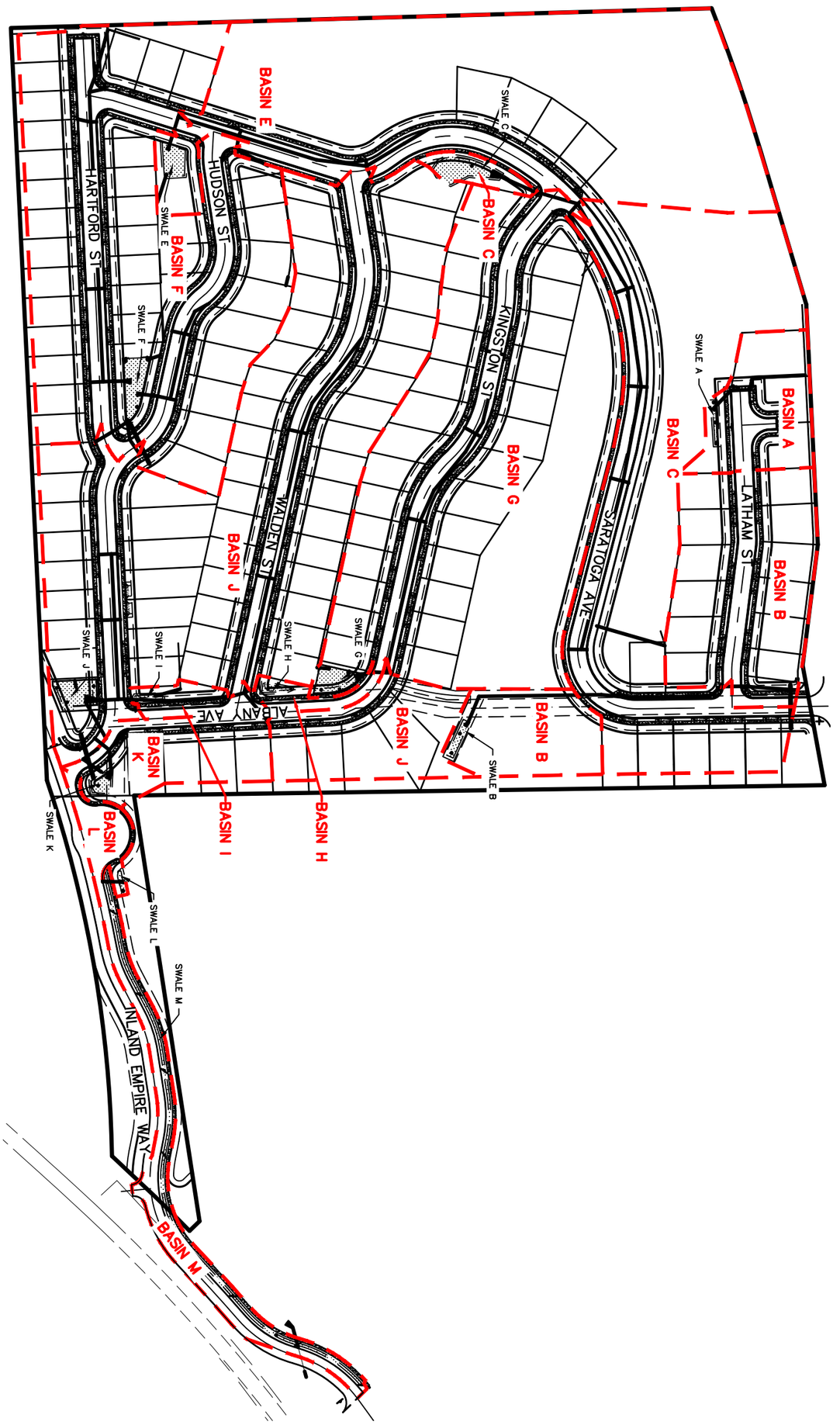
	Treatment Volume		Storm Storage	
Basin	Required	Provided	Required	Provided
A	187	649	917	1184
B	512	1060	1351	1802
C	1066	3610	3923	5744
E	616	2140	3320	3444
F	1674	3495	5083	5288
G	1116	2587	3380	3932
H	95	695	71	1208
I	118	506	97	908
J	1959	3084	4516	4634
K	298	1149	646	1900
L	230	360	180	660
M	516	2731	703	2371

As proposed, the improvements to the Latah Glen project will meet or exceed the design requirements outlined in the SRSM.

Chapter 2

BASIN MAP

Basin Map.dwg BASIN MAP (1)



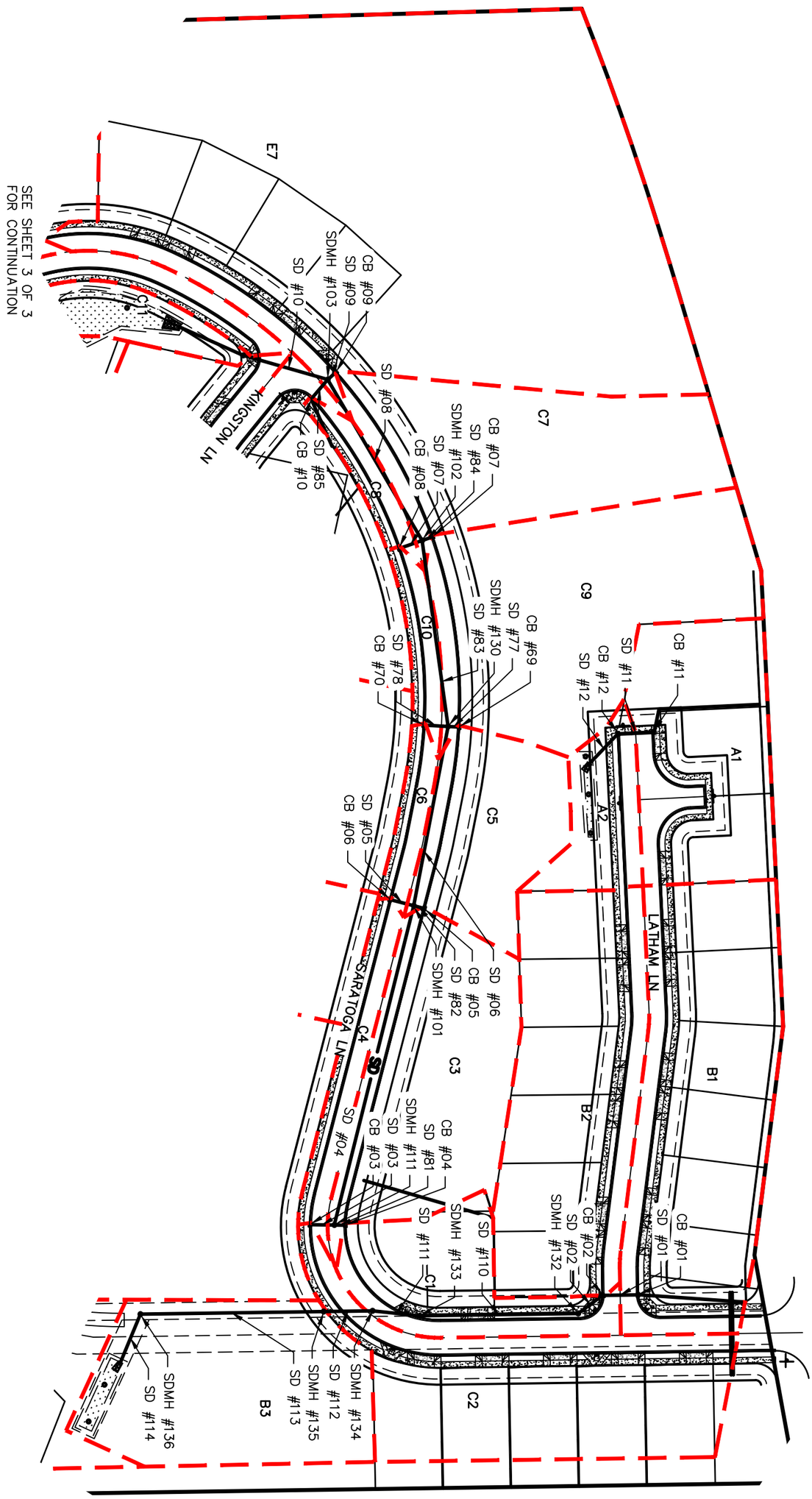
CALL BEFORE YOU DIG 811

DRAWN	SCE	DATE 4/14/2025
CHECKED	EFZ	SCALE 1" = 200'
1 OF 3		
PROJECT NUMBER	19–342	

BASIN MAP
LATAH GLEN
SPOKANE, WA.

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landscape architecture | surveying
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509.242.1000 | www.storhauginc.com

Basin Map.dwg PIPE MAP (2)



CALL BEFORE YOU DIG 811

DRAWN	SCE	DATE 4/14/2025
CHECKED	EFZ	SCALE 1" = 100'
2 OF 3		
PROJECT NUMBER	19–342	

INLET BASIN MAP (1/2)
LATAH GLEN
SPOKANE, WA.

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SEE SHEET 2 OF 3
FOR CONTINUATION

SARATOGA LN
KINGSTON LN
HUDSON LN
WALDEN LN
HARTFORD LN
INLAND EMPIRE WAY

SD #10
CB #62
SD #79
SDMH #131
SD #80
CB #63
SD #95
SD #105
SDMH #123
SD #58
SD #57
SDMH #125
SD #104
CB #71
SDMH #120
SD #34
CB #35
CB #38
SD #97
SDMH #121
SD #40
CB #41
SD #37
CB #39
SD #38
SDMH #122
SD #96
CB #40
SD #39
SDMH #124
SD #35
CB #59
SD #62
SDMH #126
SDMH #104
SD #13
CB #13
SD #108
CB #60
SD #60
CB #14
SD #86
SD #14
CB #30
SD #92
SDMH #119
SD #30
SDMH #105
SDMH #127
SD #106
SD #29
CB #29
CB #31
SD #94
SDMH #118
CB #32
SD #87
SDMH #106
SD #88
CB #18
SD #33
CB #34
SD #31
SD #32
SD #17
CB #17
SD #18
SD #19
CB #19
SD #63
SDMH #137
SD #46
SD #50
CB #50
CB #51
SD #100
SDMH #112
SD #51
CB #27
SD #27
SDMH #113
SD #26
CB #26
SD #25
CB #25
SD #55
SD #91
CB #28
SD #28
SD #24
CB #24
SD #23
CB #20
SD #20
SDMH #107
SD #89
CB #45
SD #99
CB #56
SD #109
SDMH #115
SD #45
SD #41
SD #93
CB #33
CB #42
SD #42
SDMH #116
SD #56
CB #49
SD #49
CB #76
SD #115
CB #75
SD #116
SD #48
CB #48
CB #67
SD #74
SDMH #128
SD #21
CB #21
CB #22
SD #101
CB #23
SD #102
SDMH #109
SD #22
SD #64
CB #55
SD #98
CB #43
SD #43
SDMH #114
SD #44
CB #44
CB #74
SD #47
CB #73
SD #90
SDMH #108
SD #52
CB #52
CB #53
SD #53
SDMH #110
SD #54
CB #54
SD #103
INLET H1
CB #65
SD #65
INLET I1

E1 E2 E3 E4 E5 E6 E7
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16 F17
G1 G2 G3 G4 G5 G6 G7 G8
J1 J2 J3 J4 J5 J6 J7 J8 J9 J10 J11 J13 J14 J15
K1 K2 K3 L1
C11

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Basin Map.dwg PIPE MAP (3)

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INLET BASIN MAP (2/2)
LATAH GLEN
SPOKANE, WA.

DRAWN	SCE	DATE	4/14/2025
CHECKED	EFZ	SCALE	1" = 100'
3	OF 3		
PROJECT NUMBER		19-342	

Chapter 3

CALCULATIONS

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **A**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	3	0.008
Type 2 (Double)	NA	0
	Total	0.02

Storage	"208" (cf)	Storm (cf)
Required	**187**	**917**
Provided	**649**	**1184**

Time of Concentration	5.00	min
Site Area	0.87	acre
Polutant Area (208)	0.17	acre
Runoff Coefficient	0.46	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	1.05	424	7.2	416
	20	1.13	0.45	590	28.8	561
	25	0.98	0.40	634	36	598
	30	0.88	0.35	673	43.2	630
	35	0.80	0.32	710	50.4	659
	40	0.74	0.30	743	57.6	686
	45	0.69	0.28	775	64.8	710
	50	0.64	0.26	804	72	732
	55	0.61	0.24	832	79.2	753
	60	0.58	0.23	859	86.4	773
	65	0.55	0.22	885	93.6	791
	70	0.53	0.21	909	100.8	808
	75	0.50	0.20	932	108	824
	80	0.48	0.19	955	115.2	840
	85	0.47	0.19	976	122.4	854
	90	0.45	0.18	997	129.6	868
	95	0.44	0.18	1018	136.8	881
	100	0.42	0.17	1037	144	893
	105	0.41	0.17	1057	151.2	905
	110	0.40	0.16	1075	158.4	917
t=72hrs	4320	0.04	0.02	4449	6220.8	-1772

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	5850
Driveway	Y	0.90	1350
Sidewalk	N	0.90	1954
Building	N	0.90	6600
Landscape	N	0.15	22327
Total Site		0.46	38081
Total Treated		0.9	7200

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
A	393	904	1186	1	1.5	649	1184
					Total	649	1184

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **B**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	0	0.14
Type 2 (Double)	2	0.23
	Total	0.46

Storage	"208" (cf)	Storm (cf)
Required	**512**	**1351**
Provided	**1060**	**1802**

Time of Concentration	5.00	min
Site Area	2.88	acre
Polutant Area (208)	0.45	acre
Runoff Coefficient	0.45	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	3.39	1365	138	1227
	20	1.13	1.46	1900	552	1348
	25	0.98	1.27	2041	690	1351
	30	0.88	1.14	2168	828	1340
	35	0.80	1.04	2285	966	1319
	40	0.74	0.96	2394	1104	1290
	45	0.69	0.89	2495	1242	1253
	50	0.64	0.84	2591	1380	1211
	55	0.61	0.79	2681	1518	1163
	60	0.58	0.75	2767	1656	1111
	65	0.55	0.71	2849	1794	1055
	70	0.53	0.68	2927	1932	995
	75	0.50	0.65	3003	2070	933
	80	0.48	0.63	3075	2208	867
	85	0.47	0.60	3145	2346	799
	90	0.45	0.58	3213	2484	729
	95	0.44	0.57	3278	2622	656
	100	0.42	0.55	3342	2760	582
	105	0.41	0.53	3403	2898	505
	110	0.40	0.52	3463	3036	427
t=72hrs	4320	0.04	0.06	14331	119232	-104901

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	14281
Driveway	Y	0.90	5400
Sidewalk	N	0.90	4143
Building	N	0.90	26400
Landscape	N	0.15	75037
Total Site		0.45	125261
Total Treated		0.9	19681

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
B	805	1315	1597	1	1.5	1060	1802
					Total	1060	1802

Storm Drainage Calculations		Project:	**19-342 Latah Glen**
Per SRSM, 2008		Basin:	**C**
		Designer:	SCE
Storm Design	10 Yr	Reviewer:	LMC
		Date:	4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	1	0.14
Type 2 (Double)	NA	0
	Total	0.14

Storage	"208" (cf)	Storm (cf)
Required	**1066**	**3923**
Provided	**3610**	**5744**

Time of Concentration	5.00	min
Site Area	5.08	acre
Polutant Area (208)	0.94	acre
Runoff Coefficient	0.36	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	4.75	1910	42	1868
	20	1.13	2.04	2659	168	2491
	25	0.98	1.78	2856	210	2646
	30	0.88	1.60	3035	252	2783
	35	0.80	1.45	3199	294	2905
	40	0.74	1.34	3351	336	3015
	45	0.69	1.25	3493	378	3115
	50	0.64	1.17	3626	420	3206
	55	0.61	1.10	3753	462	3291
	60	0.58	1.05	3873	504	3369
	65	0.55	1.00	3988	546	3442
	70	0.53	0.95	4097	588	3509
	75	0.50	0.91	4203	630	3573
	80	0.48	0.88	4304	672	3632
	85	0.47	0.85	4402	714	3688
	90	0.45	0.82	4497	756	3741
	95	0.44	0.79	4588	798	3790
	100	0.42	0.77	4677	840	3837
	105	0.41	0.74	4763	882	3881
	110	0.40	0.72	4847	924	3923
t=72hrs	4320	0.04	0.08	20059	36288	-16229

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	38279
Driveway	Y	0.90	2700
Sidewalk	N	0.90	6942
Building	N	0.90	13200
Landscape	N	0.15	160084
Total Site		0.36	221205
Total Treated		0.9	40979

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
C	3195	4025	4463	1	1.5	3610	5744
					Total	3610	5744

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **E**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	1	0.14
Type 2 (Double)	0	0.23
	Total	0.14

Storage	"208" (cf)	Storm (cf)
Required	**616**	**3320**
Provided	**2140**	**3444**

Time of Concentration	5.00	min
Site Area	6.15	acre
Polutant Area (208)	0.54	acre
Runoff Coefficient	0.26	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	4.16	1672	42	1630
	20	1.13	1.79	2328	168	2160
	25	0.98	1.56	2501	210	2291
	30	0.88	1.40	2657	252	2405
	35	0.80	1.27	2801	294	2507
	40	0.74	1.17	2934	336	2598
	45	0.69	1.09	3058	378	2680
	50	0.64	1.02	3175	420	2755
	55	0.61	0.97	3286	462	2824
	60	0.58	0.92	3391	504	2887
	65	0.55	0.87	3491	546	2945
	70	0.53	0.83	3587	588	2999
	75	0.50	0.80	3680	630	3050
	80	0.48	0.77	3768	672	3096
	85	0.47	0.74	3854	714	3140
	90	0.45	0.72	3937	756	3181
	95	0.44	0.69	4017	798	3219
	100	0.42	0.67	4095	840	3255
	105	0.41	0.65	4170	882	3288
	110	0.40	0.63	4244	924	3320
t=72hrs	4320	0.04	0.07	17561	36288	-18727

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	21902
Driveway	Y	0.90	1800
Sidewalk	N	0.90	6172
Building	N	0.90	8800
Landscape	N	0.15	229167
Total Site		0.26	267841
Total Treated		0.9	23702

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
E	1856	2424	2736	1	1.5	2140	3444
					Total	2140	3444

1 TYPE A- 2 TYPE

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **F**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	0	0.14
Type 2 (Double)	3	0.23
	Total	0.69

Storage	"208" (cf)	Storm (cf)
Required	**1674**	**5083**
Provided	**3495**	**5288**

Time of Concentration	5.00	min
Site Area	5.47	acre
Polutant Area (208)	1.48	acre
Runoff Coefficient	0.65	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	9.25	3720	207	3513
	20	1.13	3.98	5180	828	4352
	25	0.98	3.47	5563	1035	4528
	30	0.88	3.11	5911	1242	4669
	35	0.80	2.83	6230	1449	4781
	40	0.74	2.61	6526	1656	4870
	45	0.69	2.43	6803	1863	4940
	50	0.64	2.28	7063	2070	4993
	55	0.61	2.15	7309	2277	5032
	60	0.58	2.04	7543	2484	5059
	65	0.55	1.94	7767	2691	5076
	70	0.53	1.86	7981	2898	5083
	75	0.50	1.78	8186	3105	5081
	80	0.48	1.71	8383	3312	5071
	85	0.47	1.65	8574	3519	5055
	90	0.45	1.59	8758	3726	5032
	95	0.44	1.54	8937	3933	5004
	100	0.42	1.49	9110	4140	4970
	105	0.41	1.45	9278	4347	4931
	110	0.40	1.41	9441	4554	4887
t=72hrs	4320	0.04	0.15	39068	178848	-139780

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	48177
Driveway	Y	0.90	16200
Sidewalk	N	0.90	13957
Building	N	0.90	79200
Landscape	N	0.15	80853
Total Site		0.65	238387
Total Treated		0.9	64377

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

Swale	Areas (sf) Bottom	Treated	Top	Elevation (ft from bottom) Treated	Top	Volume (cf) Treated	Total
F	3437	3553	3613	1	1.5	3495	5288
					Total	3495	5288

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **G**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	0	0.14
Type 2 (Double)	4	0.23
	Total	0.92

Storage	"208" (cf)	Storm (cf)
Required	**1116**	**3380**
Provided	**2587**	**3932**

Time of Concentration	5.00	min
Site Area	6.81	acre
Polutant Area (208)	0.98	acre
Runoff Coefficient	0.44	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	7.88	3169	276	2893
	20	1.13	3.39	4413	1104	3309
	25	0.98	2.96	4739	1380	3359
	30	0.88	2.65	5036	1656	3380
	35	0.80	2.41	5307	1932	3375
	40	0.74	2.22	5560	2208	3352
	45	0.69	2.07	5795	2484	3311
	50	0.64	1.94	6017	2760	3257
	55	0.61	1.83	6227	3036	3191
	60	0.58	1.74	6426	3312	3114
	65	0.55	1.65	6616	3588	3028
	70	0.53	1.58	6798	3864	2934
	75	0.50	1.52	6973	4140	2833
	80	0.48	1.46	7142	4416	2726
	85	0.47	1.40	7304	4692	2612
	90	0.45	1.36	7461	4968	2493
	95	0.44	1.31	7613	5244	2369
	100	0.42	1.27	7760	5520	2240
	105	0.41	1.23	7903	5796	2107
	110	0.40	1.20	8043	6072	1971
t=72hrs	4320	0.04	0.13	33281	238464	-205183

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	29856
Driveway	Y	0.90	13050
Sidewalk	N	0.90	8745
Building	N	0.90	63800
Landscape	N	0.15	181364
Total Site		0.44	296815
Total Treated		0.9	42906

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

Swale	Areas (sf) Bottom	Treated	Top	Elevation (ft from bottom) Treated	Top	Volume (cf) Treated	Total
G	2515	2658	2728	1	1.5	2587	3932
					Total	2587	3932

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **H**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	1	0.14
Type 2 (Double)	0	0.23
	Total	0.14

Storage	"208" (cf)	Storm (cf)
Required	**95**	**71**
Provided	**695**	**1208**

Time of Concentration	5.00	min
Site Area	0.18	acre
Polutant Area (208)	0.08	acre
Runoff Coefficient	0.59	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	0.28	113	42	71
	20	1.13	0.12	157	168	-11
	25	0.98	0.11	169	210	-41
	30	0.88	0.09	180	252	-72
	35	0.80	0.09	189	294	-105
	40	0.74	0.08	198	336	-138
	45	0.69	0.07	207	378	-171
	50	0.64	0.07	215	420	-205
	55	0.61	0.07	222	462	-240
	60	0.58	0.06	229	504	-275
	65	0.55	0.06	236	546	-310
	70	0.53	0.06	242	588	-346
	75	0.50	0.05	249	630	-381
	80	0.48	0.05	255	672	-417
	85	0.47	0.05	260	714	-454
	90	0.45	0.05	266	756	-490
	95	0.44	0.05	272	798	-526
	100	0.42	0.05	277	840	-563
	105	0.41	0.04	282	882	-600
	110	0.40	0.04	287	924	-637
t=72hrs	4320	0.04	0.00	1187	36288	-35101

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	3668
Driveway	Y	0.90	0
Sidewalk	N	0.90	972
Building	N	0.90	0
Landscape	N	0.15	3334
Total Site		0.59	7974
Total Treated		0.9	3668

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
H	501	889	1109	1	1.5	695	1208
					Total	695	1208

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **I**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	1	0.14
Type 2 (Double)	0	0.23
	Total	0.14

Storage	"208" (cf)	Storm (cf)
Required	**118**	**97**
Provided	**506**	**908**

Time of Concentration	5.00	min
Site Area	0.25	acre
Polutant Area (208)	0.10	acre
Runoff Coefficient	0.53	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	0.35	139	42	97
	20	1.13	0.15	194	168	26
	25	0.98	0.13	208	210	-2
	30	0.88	0.12	221	252	-31
	35	0.80	0.11	233	294	-61
	40	0.74	0.10	244	336	-92
	45	0.69	0.09	254	378	-124
	50	0.64	0.09	264	420	-156
	55	0.61	0.08	273	462	-189
	60	0.58	0.08	282	504	-222
	65	0.55	0.07	291	546	-255
	70	0.53	0.07	299	588	-289
	75	0.50	0.07	306	630	-324
	80	0.48	0.06	314	672	-358
	85	0.47	0.06	321	714	-393
	90	0.45	0.06	328	756	-428
	95	0.44	0.06	334	798	-464
	100	0.42	0.06	341	840	-499
	105	0.41	0.05	347	882	-535
	110	0.40	0.05	353	924	-571
t=72hrs	4320	0.04	0.01	1462	36288	-34826

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	4538
Driveway	Y	0.90	0
Sidewalk	N	0.90	970
Building	N	0.90	0
Landscape	N	0.15	5337
Total Site		0.53	10845
Total Treated		0.9	4538

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

Swale	Areas (sf) Bottom	Treated	Top	Elevation (ft from bottom) Treated	Top	Volume (cf) Treated	Total
I	330	681	881	1	1.5	506	908
					Total	506	908

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **J**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	0	0.14
Type 2 (Double)	9	0.23
	Total	2.09

Storage	"208" (cf)	Storm (cf)
Required	**1959**	**4516**
Provided	**3084**	**4634**

Time of Concentration	5.00	min
Site Area	8.72	acre
Polutant Area (208)	1.73	acre
Runoff Coefficient	0.55	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	12.54	5043	626.4	4417
	20	1.13	5.39	7021	2505.6	4516
	25	0.98	4.71	7541	3132	4409
	30	0.88	4.21	8013	3758.4	4254
	35	0.80	3.84	8445	4384.8	4061
	40	0.74	3.54	8846	5011.2	3835
	45	0.69	3.29	9221	5637.6	3584
	50	0.64	3.09	9574	6264	3310
	55	0.61	2.91	9908	6890.4	3018
	60	0.58	2.76	10225	7516.8	2709
	65	0.55	2.63	10528	8143.2	2385
	70	0.53	2.51	10818	8769.6	2048
	75	0.50	2.41	11096	9396	1700
	80	0.48	2.32	11364	10022.4	1341
	85	0.47	2.23	11622	10648.8	973
	90	0.45	2.16	11872	11275.2	597
	95	0.44	2.09	12114	11901.6	212
	100	0.42	2.02	12348	12528	-180
	105	0.41	1.96	12576	13154.4	-578
	110	0.40	1.91	12798	13780.8	-983
t=72hrs	4320	0.04	0.20	52958	541209.6	-488252

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	52360
Driveway	Y	0.90	22950
Sidewalk	N	0.90	14680
Building	N	0.90	112200
Landscape	N	0.15	177699
Total Site		0.55	379889
Total Treated		0.9	75310

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
J	3073	3094	3105	1	1.5	3084	4634
					Total	3084	4634

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **K**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	1	0.14
Type 2 (Double)	0	0.23
	Total	0.14

Storage	"208" (cf)	Storm (cf)
Required	**298**	**646**
Provided	**1149**	**1900**

Time of Concentration	5.00	min
Site Area	0.95	acre
Polutant Area (208)	0.26	acre
Runoff Coefficient	0.56	(C)

Intensity Factors

m:	6.98
n:	0.609

Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	1.39	560	42	518
	20	1.13	0.60	779	168	611
	25	0.98	0.52	837	210	627
	30	0.88	0.47	889	252	637
	35	0.80	0.43	937	294	643
	40	0.74	0.39	982	336	646
	45	0.69	0.37	1023	378	645
	50	0.64	0.34	1063	420	643
	55	0.61	0.32	1100	462	638
	60	0.58	0.31	1135	504	631
	65	0.55	0.29	1168	546	622
	70	0.53	0.28	1201	588	613
	75	0.50	0.27	1231	630	601
	80	0.48	0.26	1261	672	589
	85	0.47	0.25	1290	714	576
	90	0.45	0.24	1318	756	562
	95	0.44	0.23	1344	798	546
	100	0.42	0.22	1370	840	530
	105	0.41	0.22	1396	882	514
	110	0.40	0.21	1420	924	496
t=72hrs	4320	0.04	0.02	5878	36288	-30410

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	9641
Driveway	Y	0.90	1800
Sidewalk	N	0.90	2377
Building	N	0.90	8800
Landscape	N	0.15	18653
Total Site		0.56	41271
Total Treated		0.9	11441

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
K	940	1357	1593	1	1.5	1149	1900
					Total	1149	1900

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **L**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	1	0.14
Type 2 (Double)	0	0.23
	Total	0.14

Storage	"208" (cf)	Storm (cf)
Required	**230**	**180**
Provided	**360**	**660**

Time of Concentration	5.00	min
Site Area	0.26	acre
Polutant Area (208)	0.20	acre
Runoff Coefficient	0.81	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	0.55	222	42	180
	20	1.13	0.24	309	168	141
	25	0.98	0.21	332	210	122
	30	0.88	0.19	353	252	101
	35	0.80	0.17	372	294	78
	40	0.74	0.16	389	336	53
	45	0.69	0.14	406	378	28
	50	0.64	0.14	421	420	1
	55	0.61	0.13	436	462	-26
	60	0.58	0.12	450	504	-54
	65	0.55	0.12	463	546	-83
	70	0.53	0.11	476	588	-112
	75	0.50	0.11	488	630	-142
	80	0.48	0.10	500	672	-172
	85	0.47	0.10	511	714	-203
	90	0.45	0.09	522	756	-234
	95	0.44	0.09	533	798	-265
	100	0.42	0.09	543	840	-297
	105	0.41	0.09	553	882	-329
	110	0.40	0.08	563	924	-361
t=72hrs	4320	0.04	0.01	2330	36288	-33958

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	8859
Driveway	Y	0.90	0
Sidewalk	N	0.90	1101
Building	N	0.90	0
Landscape	N	0.15	1434
Total Site		0.81	11394
Total Treated		0.9	8859

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

	Areas (sf)			Elevation (ft from bottom)		Volume (cf)	
Swale	Bottom	Treated	Top	Treated	Top	Treated	Total
L	221	499	659	1	1.5	360	660
					Total	360	660

Storm Drainage Calculations
Per SRSM, 2008

Storm Design 10 Yr

Project: **19-342 Latah Glen**
Basin: **M**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

RUNOFF STORAGE

Bowstring Method

Drywells	Qty	Exfil Rate (cfs)
Type 1 (single)	1	0.14
Type 2 (Double)	0	0.23
	Total	0.14

Storage	"208" (cf)	Storm (cf)
Required	**516**	**703**
Provided	**2731**	**2731**

Time of Concentration	5.00	min
Site Area	0.86	acre
Polutant Area (208)	0.46	acre
Runoff Coefficient	0.65	(C)

Intensity Factors

m:	6.98
n:	0.609
Method:	1133

	Time t (min)	Intensity I (in/hr)	Flow Q (cfs)	Volume Vin (cf)	Volume Vout (cf)	Storm Storage (cf)
t=Tc	5	2.62	1.47	591	42	549
	20	1.13	0.63	823	168	655
	25	0.98	0.55	884	210	674
	30	0.88	0.49	939	252	687
	35	0.80	0.45	990	294	696
	40	0.74	0.41	1037	336	701
	45	0.69	0.39	1081	378	703
	50	0.64	0.36	1122	420	702
	55	0.61	0.34	1161	462	699
	60	0.58	0.32	1199	504	695
	65	0.55	0.31	1234	546	688
	70	0.53	0.29	1268	588	680
	75	0.50	0.28	1301	630	671
	80	0.48	0.27	1332	672	660
	85	0.47	0.26	1362	714	648
	90	0.45	0.25	1392	756	636
	95	0.44	0.24	1420	798	622
	100	0.42	0.24	1447	840	607
	105	0.41	0.23	1474	882	592
	110	0.40	0.22	1500	924	576
t=72hrs	4320	0.04	0.02	6208	36288	-30080

SITE CONDITIONS

Rational Method

Surface	Treated	Runoff Coefficient	Area (sf)
Paved PGIS	Y	0.90	19844
Driveway	Y	0.90	0
Sidewalk	N	0.90	5282
Building	N	0.90	0
Landscape	N	0.15	12277
Total Site		0.65	37403
Total Treated		0.9	19844

TIME OF CONCENTRATION

Rational Method

Length L (ft)	Ground Coefficient K (ft/min)	Slope S (ft/ft)	Ground Type	Time of Concentration Tc (min)
	150		Forrest	
	420		Lawn	
	1200		Paved	
			Total	5.00

POND VOLUMES

Swale	Areas (sf) Bottom	Treated	Top	Elevation (ft from bottom) Treated	Top	Volume (cf) Treated	Total	
M	4194	7368	7368	0.5	0.5	2891	2891	
					Total	2731	2731	**

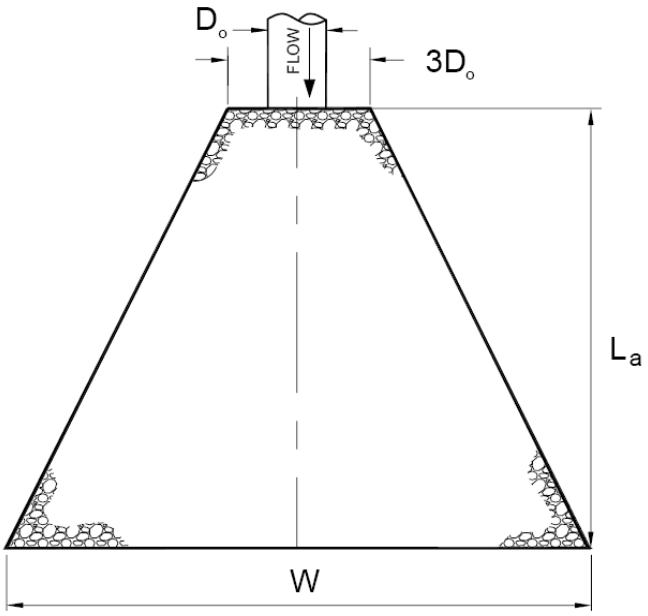
**Volume removed to accound for losses due to berms to account for sloped swale bottom. Assumes 8 cf berm every 50'

Length (ft)	1050
Berms	20
Volume/berm (cf)	8
Volume Lost (cf)	160

Riprap Size Calculations
Per SRSM, 2008

Project: **19-342 Latah Glen**
Basin: **A**
Designer: SCE
Reviewer: LMC
Date: 4/14/2025

Outlet To Basin	Flow Q (cfs)	Pipe Size D_o (in)	Velocity V (ft/s)	Length La (ft)	Width W (ft)	Neck $3*D_o$ (ft)
A	0.68	10	3.08	8	6	4
B	1.22	10	4.22	9	6	4
C	3.34	21	5.97	15	12	6
E	0.84	10	3.05	8	6	4
F (East)	2.18	15	3.57	12	9	4
F (North)	0.65	10	3.06	8	6	4
F (West)	1.48	12	4.37	10	7	4
G	2.63	15	3.87	13	9	4
J	6.05	24	4.73	20	14	6
K	0.81	10	2.93	8	6	4
L	0.59	10	3.71	8	6	4



Inlet Calculations - Sump Condition

Project: Latah Glen
Project #: 19-342
By: SCE
Reviewed: LMC
Date: 4/14/2025

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landscape architecture | surveying
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Grate Inlet (Sump Condition)[1]

Inlet Name	Flow cfs Q	Allowable Spread ft T	Perimeter* ft P	Cross Slope % Sw	Road Cross slope % Sx	Gutter Width ft W	Inlet Depression ft y	Flow Depth ft d	Grate Depth ft d_{avg}	C Per SRSM C	Allowable Flow cfs Q_{All}	Acceptable TRUE
A1	0.34	7.33	2.96	14.6%	2.0%	1.33	0.167	0.31	0.55	3.00	3.63	TRUE
A2	0.16	7.33	2.96	14.6%	2.0%	1.33	0.167	0.31	0.55	3.00	3.63	TRUE
B1	0.75	7.33	2.96	14.6%	2.0%	1.33	0.167	0.31	0.55	3.00	3.63	TRUE
K1	0.34	7.33	3.96	14.6%	2.0%	1.33	0.167	0.31	0.55	4.00	6.48	TRUE
K3	0.22	7.33	4.96	14.6%	2.0%	1.33	0.167	0.31	0.55	5.00	10.14	TRUE
F8	0.37	7.33	2.96	14.6%	2.0%	1.33	0.167	0.31	0.55	3.00	3.63	TRUE
F15	0.46	7.33	2.96	14.6%	2.0%	1.33	0.167	0.31	0.55	3.00	3.63	TRUE
J6	0.75	7.33	2.96	14.6%	2.0%	1.33	0.167	0.31	0.55	3.00	3.63	TRUE
J11	1.50	7.33	2.96	14.6%	2.0%	1.33	0.167	0.31	0.55	3.00	3.63	TRUE

*Perimeter already reduced for 50% clogging factor

[1]Calculations per SRSM Ch 8, all values for composite gutter slopes.

Inlet Calculations - Continuous Grade

Project: Latah Glen
Project #: 19-342
By: SCE
Reviewed: LMC
Date: 4/14/2025

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Curb Inlet (Continuous Grade)[1]

Inlet Name	Flow cfs Q	Gutter Width ft W	Inlet Depression ft a	Inlet Length ft L	Gutter Efficiency % E_0	Longitudinal Slope % S_L	Cross Slope % S_x	Mannings Number n	Clogging Factor % cf	Equivalent Slope % S_e	Full Intercept Length ft L_T	Inlet Efficiency % E	Inlet Flow cfs Q_i	Bypass Flow cfs Q_{BP}	Bypass To Name
H1	0.60	1.33	0.08333	2.00	0.81	2.2%	2.0%	0.016	50%	5.5%	10.52	31.6%	0.09	0.50	I1
I1	0.81	1.33	0.08333	2.00	0.73	2.2%	2.0%	0.016	50%	5.1%	12.45	27.0%	0.11	0.70	J8

Grate Inlet (Continuous Grade)[1]

Inlet Name	Flow cfs Q	Total Spread ft T	Grate Width ft W	Cross Slope % S_w	Cross Slope % S_x	Clogging Factor % cf	Clogged Width	Bypass Flow cfs Q_{BP}	Inlet Flow cfs Q_i	Velocity ft/s V1	Bypass To Name	Velocity ft/s Per HEC-22
B2	0.60	4.27	1.67	8.3%	2.0%	50%	0.84	0.33	0.26	4.08	C1	1.84
C1	0.72	4.10	1.67	8.3%	2.0%	50%	0.84	0.39	0.33	5.34	C3	2.32
C2	0.64	4.10	1.67	8.3%	2.0%	50%	0.84	0.35	0.29	4.71	C4	2.05
C3	0.75	3.71	1.67	8.3%	2.0%	50%	0.84	0.38	0.37	6.68	C5	2.66
C4	0.69	3.54	1.67	8.3%	2.0%	50%	0.84	0.34	0.36	6.80	C6	2.58
C5	0.56	2.57	1.67	8.3%	2.0%	50%	0.84	0.19	0.36	10.07	C9	2.65
C6	0.51	2.35	1.67	8.3%	2.0%	50%	0.84	0.16	0.35	10.92	C10	2.56
C7	0.27	1.94	1.67	8.3%	2.0%	50%	0.84	0.06	0.21	8.37	D1	1.74
C8	0.25	1.75	1.67	8.3%	2.0%	50%	0.84	0.04	0.20	9.15	G1	1.74
C9	0.39	1.99	1.67	8.3%	2.0%	50%	0.84	0.09	0.30	11.37	C7	2.23
C10	0.35	1.94	1.67	8.3%	2.0%	50%	0.84	0.08	0.27	10.63	C8	2.25
E7	0.47	4.47	1.67	8.3%	2.0%	50%	0.84	0.27	0.20	2.93	E6	1.38
E5	0.39	2.61	1.67	8.3%	2.0%	50%	0.84	0.14	0.25	6.83	J1	1.87
E6	0.41	3.32	1.67	8.3%	2.0%	50%	0.84	0.19	0.22	4.50	E1	1.59
E1	0.44	2.83	1.67	8.3%	2.0%	50%	0.84	0.17	0.27	6.59	E3	1.95
E2	0.21	1.79	1.67	8.3%	2.0%	50%	0.84	0.04	0.17	7.30	F1	1.43
E3	0.29	2.20	1.67	8.3%	2.0%	50%	0.84	0.08	0.21	7.11	F8	1.65
E4	0.05	1.65	1.67	8.3%	2.0%	50%	0.84	0.01	0.05	2.23	F10	1.36
F1	0.55	3.44	1.67	8.3%	2.0%	50%	0.84	0.26	0.29	5.66	F3	2.07
F2	0.42	2.89	1.67	8.3%	2.0%	50%	0.84	0.17	0.25	6.13	F4	1.84
F3	0.36	2.54	1.67	8.3%	2.0%	50%	0.84	0.13	0.24	6.72	F5	1.69
F4	0.30	2.32	1.67	8.3%	2.0%	50%	0.84	0.09	0.21	6.54	F6	1.59
F5	0.32	2.32	1.67	8.3%	2.0%	50%	0.84	0.10	0.22	6.92	F7	1.59
F6	0.53	3.50	1.67	8.3%	2.0%	50%	0.84	0.26	0.27	5.33	F15	1.99
F7	0.28	2.30	1.67	8.3%	2.0%	50%	0.84	0.09	0.20	6.28	J8	1.48
F9	0.24	2.55	1.67	8.3%	2.0%	50%	0.84	0.08	0.16	4.50	F11	1.19
F10	0.25	2.56	1.67	8.3%	2.0%	50%	0.84	0.09	0.16	4.48	F12	1.20
F11	0.60	4.51	1.67	8.3%	2.0%	50%	0.84	0.35	0.25	3.70	F13	1.75
F12	0.57	4.36	1.67	8.3%	2.0%	50%	0.84	0.32	0.24	3.72	F14	1.71
F13	0.62	4.35	1.67	8.3%	2.0%	50%	0.84	0.35	0.27	4.07	J9	1.86
F14	0.59	4.24	1.67	8.3%	2.0%	50%	0.84	0.33	0.26	4.09	F6	1.83
F16	0.10	1.48	1.67	14.6%	2.0%	50%	0.84	0.01	0.09	5.25	F10	0.00
F17	0.17	2.14	1.67	8.3%	2.0%	50%	0.84	0.04	0.12	4.25	J15	1.06
G1	0.55	3.21	1.67	8.3%	2.0%	50%	0.84	0.25	0.30	6.53	G2	2.20
G2	0.51	3.03	1.67	8.3%	2.0%	50%	0.84	0.21	0.29	6.68	G4	2.07
G3	0.40	2.51	1.67	8.3%	2.0%	50%	0.84	0.14	0.27	7.58	G5	1.94
G4	0.47	2.83	1.67	8.3%	2.0%	50%	0.84	0.19	0.29	7.13	G6	2.05
G5	0.47	2.91	1.67	8.3%	2.0%	50%	0.84	0.19	0.28	6.65	G7	2.04
G6	0.64	4.09	1.67	8.3%	2.0%	50%	0.84	0.35	0.29	4.76	J13	2.05
G7	0.64	3.99	1.67	8.3%	2.0%	50%	0.84	0.34	0.30	5.03	H1	2.13
G8	0.46	2.83	1.67	8.3%	2.0%	50%	0.84	0.18	0.28	6.88	G3	2.03
J1	0.60	3.46	1.67	8.3%	2.0%	50%	0.84	0.29	0.31	6.13	J3	2.26
J2	0.74	3.92	1.67	8.3%	2.0%	50%	0.84	0.39	0.35	5.95	J4	2.49
J3	0.65	3.57	1.67	8.3%	2.0%	50%	0.84	0.32	0.33	6.29	J5	2.40
J4	0.83	4.18	1.67	8.3%	2.0%	50%	0.84	0.46	0.37	5.93	J7	2.63
J5	0.80	4.10	1.67	8.3%	2.0%	50%	0.84	0.44	0.37	5.95	J6	2.60
J7	0.82	5.03	1.67	8.3%	2.0%	50%	0.84	0.51	0.32	4.11	J11	2.11
J8	1.11	5.17	1.67	8.3%	2.0%	50%	0.84	0.69	0.41	5.23	J11	2.71
J9	0.70	4.02	1.67	8.3%	2.0%	50%	0.84	0.38	0.32	5.37	J10	2.29
J10	0.59	4.38	1.67	8.3%	2.0%	50%	0.84	0.33	0.25	3.83	J12	1.77
K2	0.39	3.15	1.67	8.3%	2.0%	50%	0.84	0.17	0.22	4.84	K1	1.61
J13	0.74	4.63	1.67	8.3%	2.0%	50%	0.84	0.44	0.31	4.35	J12	2.09
J14	0.32	2.32	1.67	8.3%	2.0%	50%	0.84	0.10	0.22	6.94	J8	1.58
J15	0.40	2.83	1.67	8.3%	2.0%	50%	0.84	0.16	0.24	6.06	J9	1.81
L1	0.61	4.08	1.67	8.3%	2.0%	50%	0.84	0.33	0.28	4.53	M1	1.96

[1]Calculations per SRSM Ch 8, all values for composite gutter slopes.

Inlet Calculations - Gutter Condition

Project: Latah Glen
Project #: 19-342
By: SCE
Reviewed: LMC
Date: 4/14/2025

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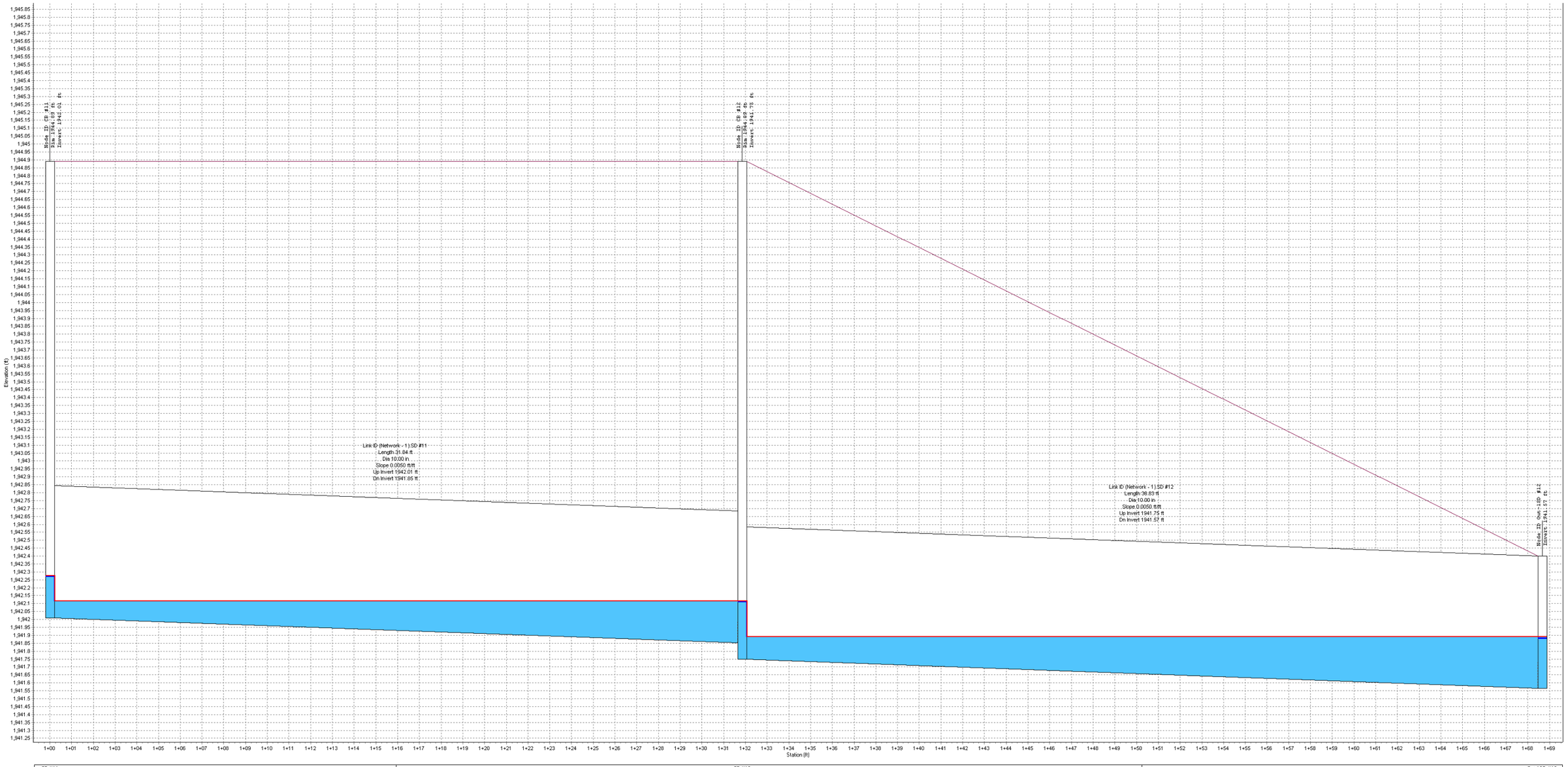
Gutter Calcs[1]

Inlet Name	Source Flow Q_s cfs	Bypass Flow Q_{BP} cfs	Total Flow Q cfs	Gutter Width W ft	Inlet Depression a ft	Mannings n	Cross Slope Sx %	Longitudinal Slope S_L %	Inlet x slope S_w %	Gutter Flow Q_w cfs	Efficiency E_0 %	Sw/Sx A	E0/(1-E0) B	Total Spread T ft	Street Spread T_x ft	Street Flow Q_x cfs	Crown to EOP W_s ft	Unflooded W_u ft	Allowable Spread T_{all} ft
A1	0.34	0.00	0.34	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.34~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
A2	0.16	0.00	0.16	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.16~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
B1	0.75	0.00	0.75	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.75~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
B2	0.60	0.00	0.60	1.33	0.083	0.016	2.0%	1.9%	8.3%	0.47	79.1%	4.13	3.77	4.27	2.94	0.13	12	6	7.33
C1	0.39	0.33	0.72	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.58	80.8%	4.13	4.21	4.10	2.77	0.14	12	6	7.33
C2	0.64	0.00	0.64	1.33	0.083	0.016	2.0%	2.5%	8.3%	0.51	80.8%	4.13	4.22	4.10	2.77	0.12	12	6	7.33
C3	0.35	0.39	0.75	1.33	0.083	0.016	2.0%	4.8%	8.3%	0.63	84.9%	4.13	5.62	3.71	2.38	0.11	12	6	7.33
C4	0.35	0.35	0.69	1.33	0.083	0.016	2.0%	4.8%	8.3%	0.60	86.7%	4.13	6.50	3.54	2.21	0.09	12	6	7.33
C5	0.18	0.38	0.56	1.33	0.083	0.016	2.0%	7.8%	8.3%	0.53	95.6%	4.13	21.98	2.57	1.24	0.03	12	6	7.33
C6	0.17	0.34	0.51	1.33	0.083	0.016	2.0%	8.2%	8.3%	0.50	97.1%	4.13	33.47	2.35	1.02	0.02	12	6	7.33
C7	0.18	0.09	0.27	1.33	0.083	0.016	2.0%	4.9%	8.3%	0.27	99.1%	4.13	113.61	1.94	0.61	0.00	12	6	7.33
C8	0.17	0.08	0.25	1.33	0.083	0.016	2.0%	5.6%	8.3%	0.25	99.6%	4.13	272.09	1.75	0.42	0.00	12	6	7.33
C9	0.19	0.19	0.39	1.33	0.083	0.016	2.0%	7.8%	8.3%	0.39	98.9%	4.13	93.76	1.99	0.66	0.00	12	6	7.33
C10	0.19	0.16	0.35	1.33	0.083	0.016	2.0%	8.2%	8.3%	0.34	99.1%	4.13	113.80	1.94	0.61	0.00	12	6	7.33
E7	0.47	0.00	0.47	1.33	0.083	0.016	2.0%	1.0%	8.3%	0.36	77.1%	4.13	3.36	4.47	3.14	0.11	12	6	7.33
E5	0.39	0.00	0.39	1.33	0.083	0.016	2.0%	3.8%	8.3%	0.37	95.3%	4.13	20.32	2.61	1.28	0.02	12	6	7.33
E6	0.14	0.27	0.41	1.33	0.083	0.016	2.0%	2.0%	8.3%	0.36	88.9%	4.13	8.04	3.32	1.99	0.05	12	6	7.33
E1	0.25	0.19	0.44	1.33	0.083	0.016	2.0%	3.7%	8.3%	0.41	93.5%	4.13	14.48	2.83	1.50	0.03	12	6	7.33
E2	0.21	0.00	0.21	1.33	0.083	0.016	2.0%	3.7%	8.3%	0.21	99.5%	4.13	220.29	1.79	0.46	0.00	12	6	7.33
E3	0.12	0.17	0.29	1.33	0.083	0.016	2.0%	3.7%	8.3%	0.29	98.0%	4.13	48.70	2.20	0.87	0.01	12	6	7.33
E4	0.05	0.00	0.05	1.33	0.083	0.016	2.0%	3.7%	8.3%	0.05	99.8%	4.13	542.96	1.65	0.32	0.00	12	6	7.33
F1	0.51	0.04	0.55	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.48	87.7%	4.13	7.12	3.44	2.11	0.07	12	6	7.33
F2	0.42	0.00	0.42	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.39	93.0%	4.13	13.29	2.89	1.56	0.03	12	6	7.33
F3	0.10	0.26	0.36	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.35	95.8%	4.13	22.90	2.54	1.21	0.02	12	6	7.33
F4	0.13	0.17	0.30	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.29	97.3%	4.13	36.16	2.32	0.99	0.01	12	6	7.33
F5	0.19	0.13	0.32	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.31	97.3%	4.13	35.74	2.32	0.99	0.01	12	6	7.33
F6	0.11	0.42	0.53	1.33	0.083	0.016	2.0%	2.9%	8.3%	0.46	87.2%	4.13	6.78	3.50	2.17	0.07	12	6	7.33
F7	0.19	0.10	0.28	1.33	0.083	0.016	2.0%	2.8%	8.3%	0.28	97.4%	4.13	37.51	2.30	0.97	0.01	12	6	7.33
F8	0.28	0.08	0.37	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.37~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
F9	0.24	0.00	0.24	1.33	0.083	0.016	2.0%	1.6%	8.3%	0.23	95.8%	4.13	22.73	2.55	1.22	0.01	12	6	7.33
F10	0.23	0.02	0.25	1.33	0.083	0.016	2.0%	1.6%	8.3%	0.24	95.7%	4.13	22.28	2.56	1.23	0.01	12	6	7.33
F11	0.51	0.08	0.60	1.33	0.083	0.016	2.0%	1.6%	8.3%	0.46	76.6%	4.13	3.28	4.51	3.18	0.14	12	6	7.33
F12	0.48	0.09	0.57	1.33	0.083	0.016	2.0%	1.6%	8.3%	0.44	78.1%	4.13	3.57	4.36	3.03	0.12	12	6	7.33
F13	0.27	0.35	0.62	1.33	0.083	0.016	2.0%	1.9%	8.3%	0.48	78.3%	4.13	3.60	4.35	3.02	0.13	12	6	7.33
F14	0.27	0.32	0.59	1.33	0.083	0.016	2.0%	1.9%	8.3%	0.47	79.3%	4.13	3.84	4.24	2.91	0.12	12	6	7.33
F15	0.20	0.26	0.46	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.46~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
F16	0.10	0.00	0.10	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.10~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
F17	0.17	0.00	0.17	1.33	0.083	0.016	2.0%	1.6%	8.3%	0.16	98.3%	4.13	56.69	2.14	0.81	0.00	12	6	7.33
G1	0.51	0.04	0.55	1.33	0.083	0.016	2.0%	4.0%	8.3%	0.50	90.0%	4.13	9.02	3.21	1.88	0.05	12	6	7.33
G2	0.26	0.25	0.51	1.33	0.083	0.016	2.0%	3.8%	8.3%	0.46	91.7%	4.13	11.05	3.03	1.70	0.04	12	6	7.33
G3	0.22	0.18	0.40	1.33	0.083	0.016	2.0%	4.3%	8.3%	0.39	96.0%	4.13	24.14	2.51	1.18	0.02	12	6	7.33
G4	0.26	0.21	0.47	1.33	0.083	0.016	2.0%	4.1%	8.3%	0.44	93.5%	4.13	14.42	2.83	1.50	0.03	12	6	7.33
G5	0.33	0.14	0.47	1.33	0.083	0.016	2.0%	3.9%	8.3%	0.43	92.8%	4.13	12.97	2.91	1.58	0.03	12	6	7.33
G6	0.45	0.19	0.64	1.33	0.083	0.016	2.0%	2.5%	8.3%	0.52	81.0%	4.13	4.26	4.09	2.76	0.12	12	6	7.33
G7	0.46	0.19	0.64	1.33	0.083	0.016	2.0%	2.8%	8.3%	0.53	82.1%	4.13	4.57	3.99	2.66	0.12	12	6	7.33
G8	0.46	0.00	0.46	1.33	0.083	0.016	2.0%	4.0%	8.3%	0.43	93.5%	4.13	14.43	2.83	1.50	0.03	12	6	7.33
H1	0.25	0.34	0.60	1.33	0.083	0.016	2.0%	2.2%	8.3%	0.48	81.0%	4.13	4.25	4.09	2.76	0.11	12	6	7.33
I1	0.31	0.50	0.81	1.33	0.083	0.016	2.0%	2.2%	8.3%	0.59	73.1%	4.13	2.72	4.86	3.53	0.22	12	6	7.33
J1	0.46	0.14	0.60	1.33	0.083	0.016	2.0%	3.8%	8.3%	0.52	87.5%	4.13	6.99	3.46	2.13	0.08	12	6	7.33
J2	0.74	0.00	0.74	1.33	0.083	0.016	2.0%	3.9%	8.3%	0.61	82.7%	4.13	4.80	3.92	2.59	0.13	12	6	7.33
J3	0.36	0.29	0.65	1.33	0.083	0.016	2.0%	4.1%	8.3%	0.56	86.4%	4.13	6.35	3.57	2.24	0.09	12	6	7.33
J4	0.44	0.39	0.83	1.33	0.083	0.016	2.0%	4.0%	8.3%	0.66	80.1%	4.13	4.02	4.18	2.85	0.17	12	6	7.33
J5	0.48	0.32	0.80	1.33	0.083	0.016	2.0%	4.0%	8.3%	0.65	80.8%	4.13	4.22	4.10	2.77	0.15	12	6	7.33
J6	0.32	0.44	0.75	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.75~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
J7	0.37	0.46	0.82	1.33	0.083	0.016	2.0%	2.0%	8.3%	0.59	71.5%	4.13	2.50	5.03	3.70	0.24	12	6	7.33
J8	0.22	0.88	1.11	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.78	70.1%	4.13	2.35	5.17	3.84	0.33	12	6	7.33
J9	0.19	0.51	0.70	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.57	81.7%	4.13	4.46	4.02	2.69	0.13	12	6	7.33
J10	0.21	0.38	0.59	1.33	0.083	0.016	2.0%	1.7%	8.3%	0.46	78.0%	4.13	3.54	4.38	3.05	0.13	12	6	7.33
J11	0.30	1.20	1.50	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~1.50~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
K3	0.22	0.00	0.22	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.22~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
J13	0.40	0.35	0.74	1.33	0.083	0.016	2.0%	2.2%	8.3%	0.56	75.4%	4.13	3.06	4.63	3.30	0.18	12	6	7.33
J14	0.32	0.00	0.32	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.31	97.3%	4.13	36.37	2.32	0.99	0.01	12	6	7.33
J15	0.36	0.04	0.40	1.33	0.083	0.016	2.0%	3.2%	8.3%	0.38	93.5%	4.13	14.38	2.83	1.50	0.03	12	6	7.33
K1	0.17	0.17	0.34	1.33	0.167	0.016	2.0%	0.0%	14.6%	~~0.34~~	~~100.0%~~	~~7.28~~	~~9999.00~~	~~1.48~~	~~0.15~~	~~0.00~~	12	6	7.33
K2	0.39	0.00	0.39	1.33	0.083	0.016	2.0%	2.2%	8.3%	0.36	90.6%	4.13	9.65	3.15	1.82	0.04	12	6	7.33
L1	0.61	0.00	0.61	1.33	0.083	0.016	2.0%	2.3%	8.3%	0.49	81.0%	4.13	4.27	4.08	2.75	0.12	12	6	7.33

[1]Calculations per SRSM Ch 8, all values for composite gutter slopes.

BASIN A

CB11 TO SWALE A

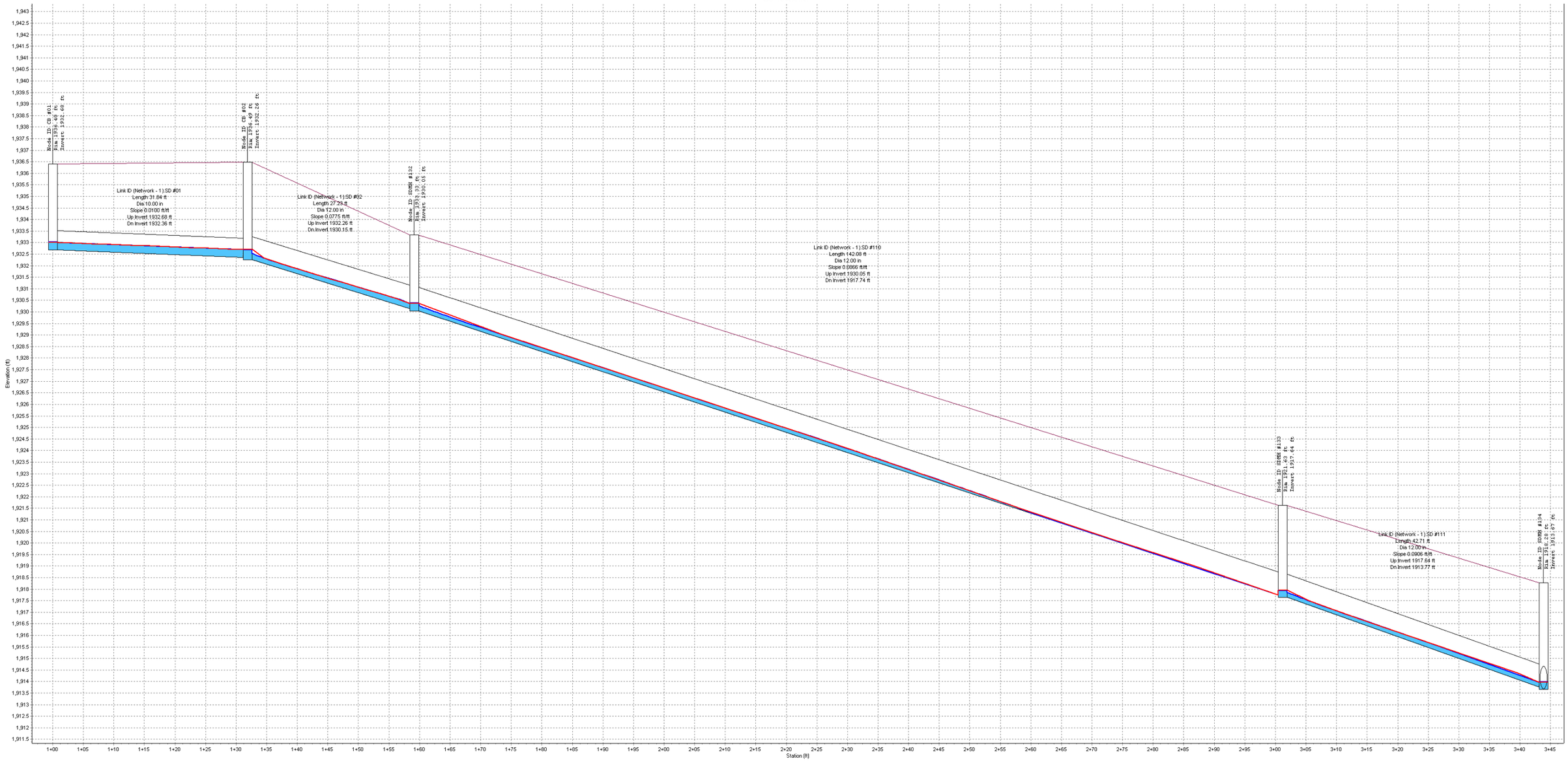


Node ID:	CB #11	CB #12	Out-1SD #12
Rim (ft):	1944.89	1944.89	
Invert (ft):	1942.01	1941.75	1941.57
Min Pipe Cover (ft):	2.05	2.21	
Max HGL (ft):	1942.28	1942.13	1941.90

Link ID:	(Network - 1) SD #11	(Network - 1) SD #12
Length (ft):	31.84	36.83
Dia (in):	10.00	10.00
Slope (ft/ft):	0.0050	0.0050
Up Invert (ft):	1942.01	1941.75
Dn Invert (ft):	1941.85	1941.57
Max Q (cfs):	0.38	0.53
Max Vel (ft/s):	2.45	2.64
Max Depth (ft):	0.27	0.33

BASIN B

CB01 TO SDMH134



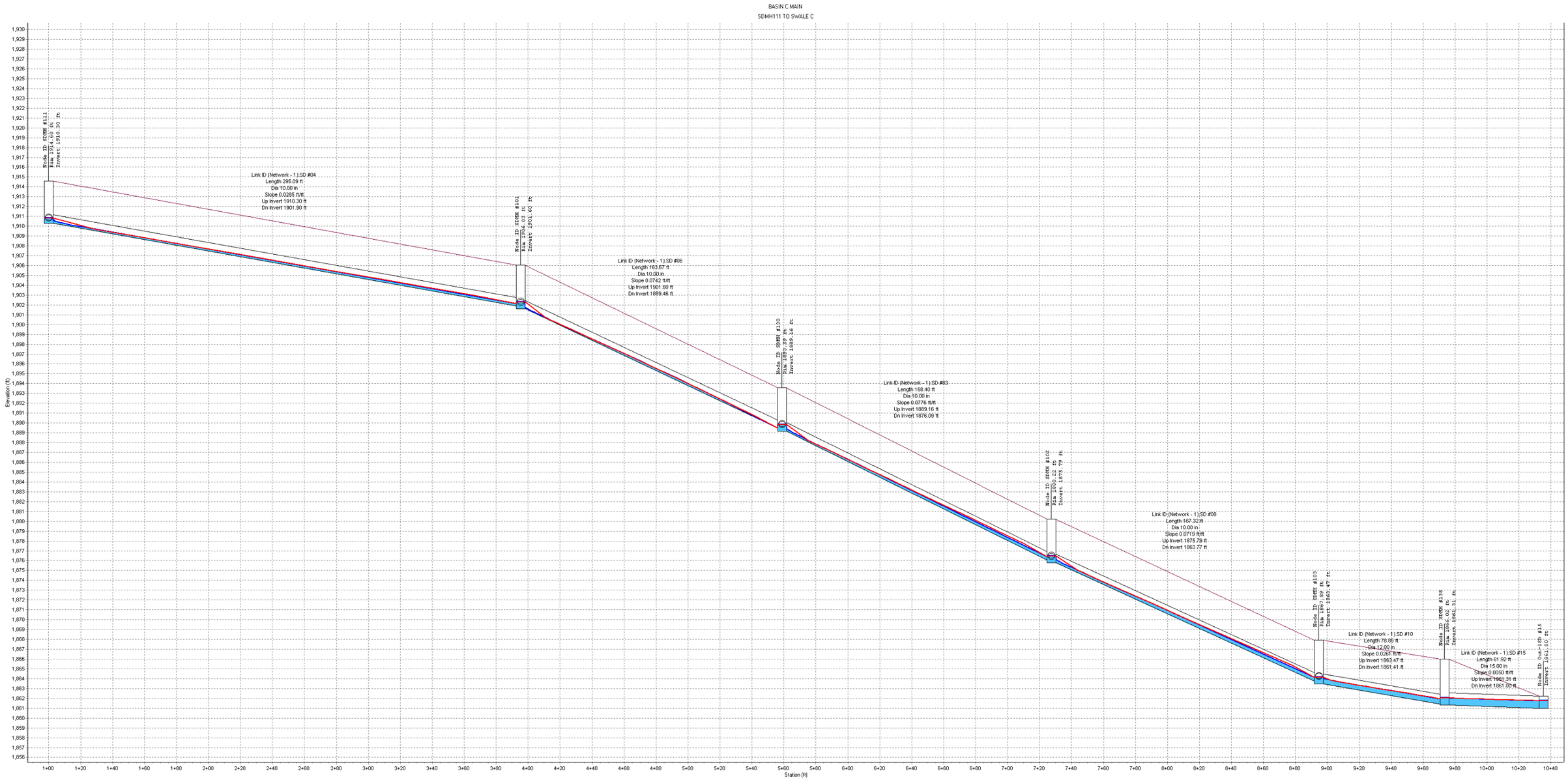
Node ID:	CB #01	CB #02	SDMH #132	SDMH #133	SDMH #134
Rim (ft):	1936.40	1936.49	1933.33	1921.63	1918.28
Invert (ft):	1932.68	1932.26	1930.05	1917.64	1913.67
Min Pipe Cover (ft):	2.88	3.23	2.18	2.89	3.51
Max HGL (ft):	1933.02	1932.72	1930.38	1917.96	1913.99

Link ID:	(Network - 1).SD #01	(Network - 1).SD #02	(Network - 1).SD #110	(Network - 1).SD #111
Length (ft):	31.84	27.23	142.08	42.71
Dia (in):	10.00	12.00	12.00	12.00
Slope (ft/ft):	0.0100	0.0775	0.0866	0.0906
Up Invert (ft):	1932.68	1932.26	1930.05	1917.64
Dn Invert (ft):	1932.36	1930.15	1917.74	1913.77
Max Q (cfs):	0.86	1.14	1.10	1.13
Max Vel (ft/s):	3.96	8.45	9.03	8.94
Max Depth (ft):	0.34	0.22	0.21	0.21



Node ID:	SDMH #134	SDMH #135	SDMH #136	Out-1SD #114
Rim (ft)	1918.28	1916.33	1845.26	
Invert (ft)	1913.67	1911.47	1839.45	1839.00
Min Pipe Cover (ft)	3.51	3.76	4.71	
Max HGL (ft)	1913.99	1911.83	1839.83	1839.39

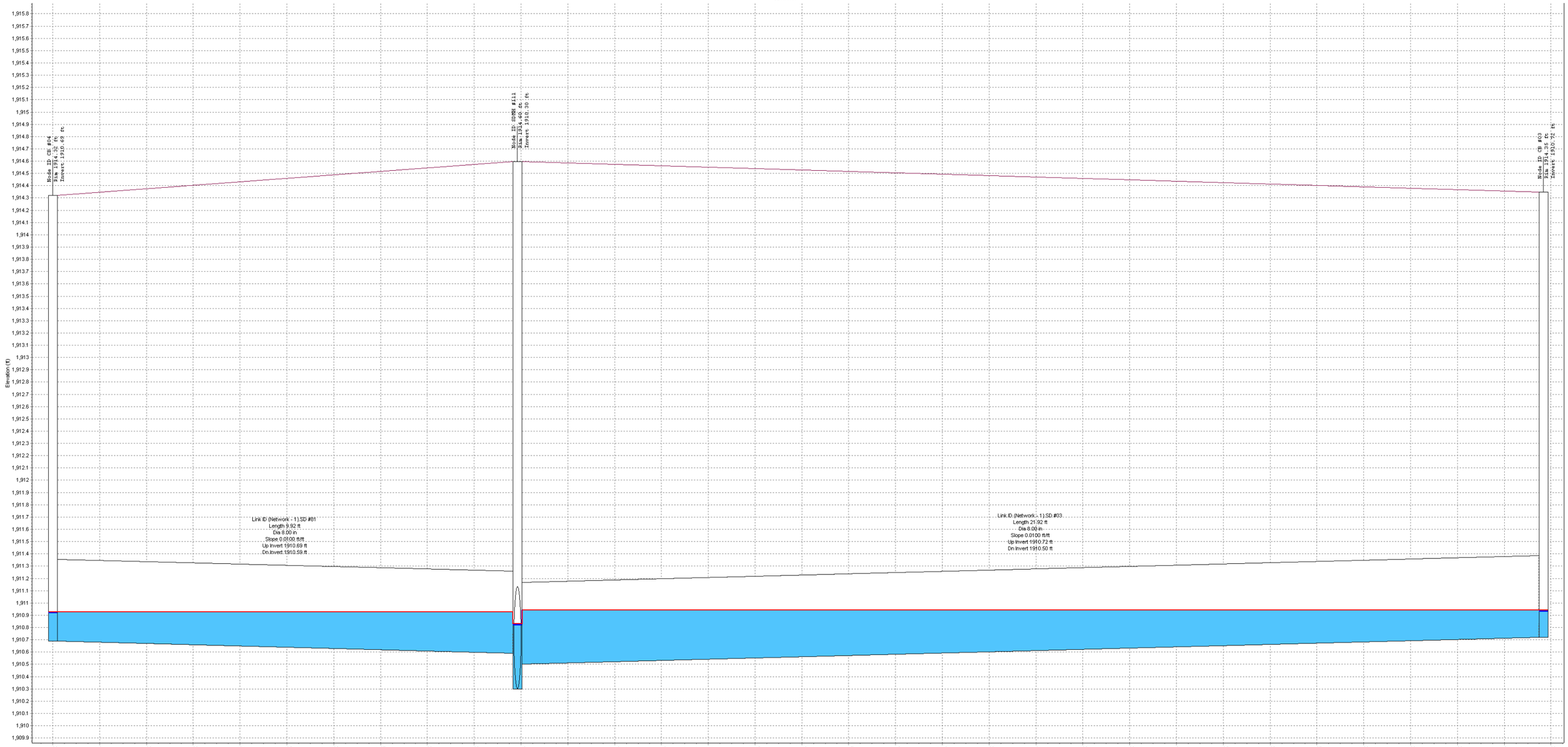
Link ID:	(Network - 1).SD #112	(Network - 1).SD #113	(Network - 1).SD #114
Length (ft)	43.86	164.39	46.63
Dia (in)	12.00	12.00	12.00
Slope (ft/ft)	0.0479	0.4375	0.0097
Up Invert (ft)	1913.67	1911.47	1839.45
Dn Invert (ft)	1911.57	1839.55	1839.00
Max Q (cfs)	1.12	1.08	1.12
Max Vel (ft/s)	7.04	15.61	4.03
Max Depth (ft)	0.24	0.14	0.37



Node ID:	SDMH #111	SDMH #101	SDMH #130	SDMH #102	SDMH #103	SDMH #138	Out-1SD #15
Rim (ft)	1914.60	1906.03	1893.59	1880.22	1867.89	1866.02	
Invert (ft)	1910.30	1901.60	1889.16	1875.79	1863.47	1861.31	1861.00
Min Pipe Cover (ft)	3.34	3.29	3.30	3.30	3.29	3.45	
Max HGL (ft)	1910.84	1902.29	1889.84	1876.46	1864.16	1862.06	1861.74

Link ID:	(Network - 1).SD #04	(Network - 1).SD #06	(Network - 1).SD #83	(Network - 1).SD #08	(Network - 1).SD #10	(Network - 1).SD #15	
Length (ft)	295.09	163.67	168.40	167.32	78.85	61.92	
Dia (in)	10.00	10.00	10.00	10.00	12.00	15.00	
Slope (ft/ft)	0.0285	0.0742	0.0776	0.0719	0.0261	0.0050	
Up Invert (ft)	1910.30	1901.60	1889.16	1875.79	1863.47	1861.31	
Dn Invert (ft)	1901.90	1889.46	1876.09	1863.77	1861.41	1861.00	
Max Q (cfs)	0.62	1.35	2.06	2.63	3.04	3.04	
Max Vel (ft/s)	5.03	8.84	10.10	10.47	7.43	3.99	
Max Depth (ft)	0.23	0.27	0.33	0.39	0.52	0.74	

BASIN C
SDMH111

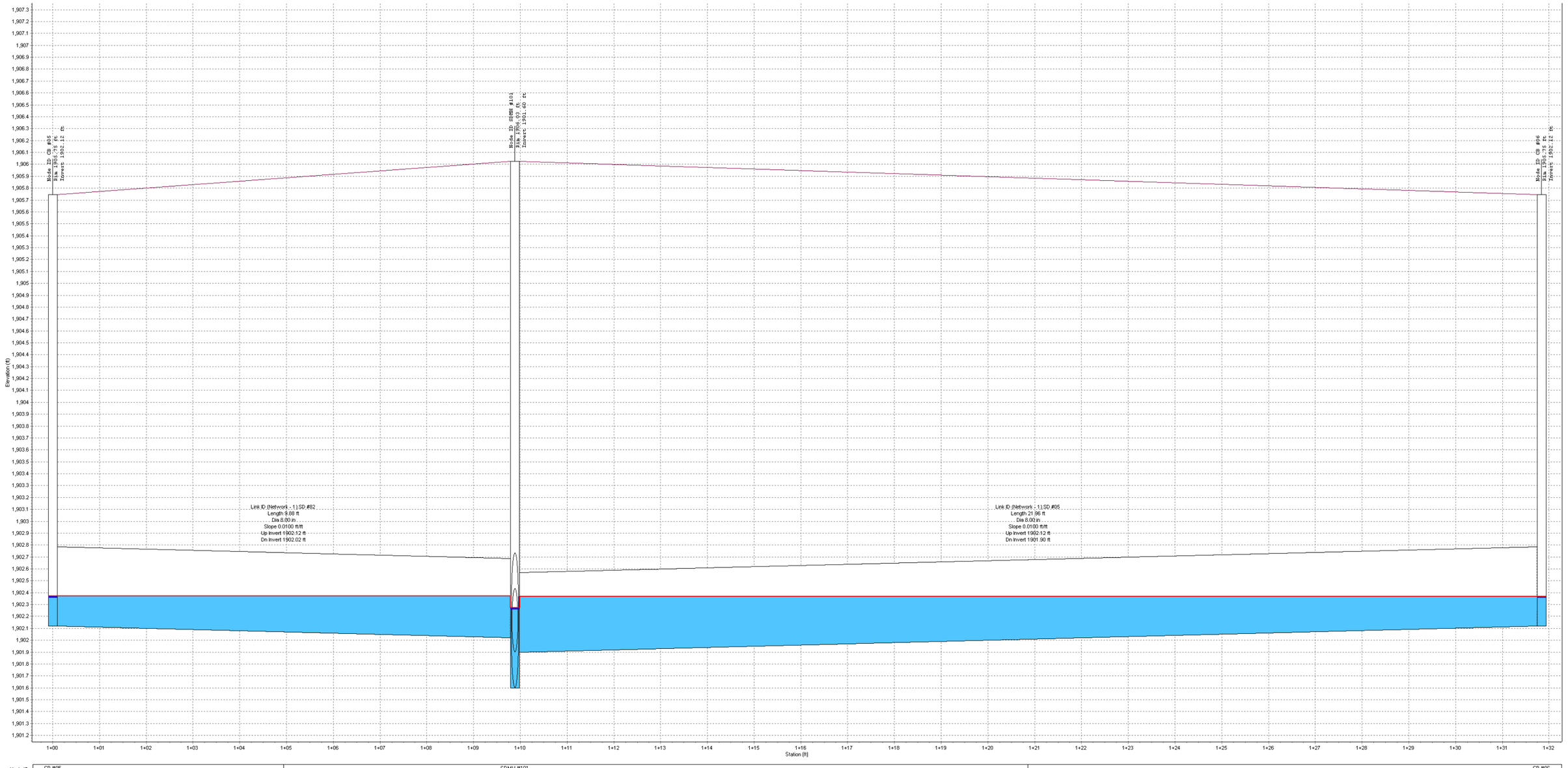


Node ID:	CB #04	SDMH #111	CB #03
Rim (ft):	1914.32	1914.60	1914.35
Invert (ft):	1910.69	1910.30	1910.72
Min Pipe Cover (ft):	2.96	3.34	2.96
Max HGL (ft):	1910.93	1910.84	1910.94

Link ID:	(Network - 1).SD #01	(Network - 1).SD #03
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1910.69	1910.72
Dn Invert (ft):	1910.59	1910.50
Max Q (cfs):	0.36	0.33
Max Vel (ft/s):	3.11	3.09
Max Depth (ft):	0.24	0.22

BASIN C

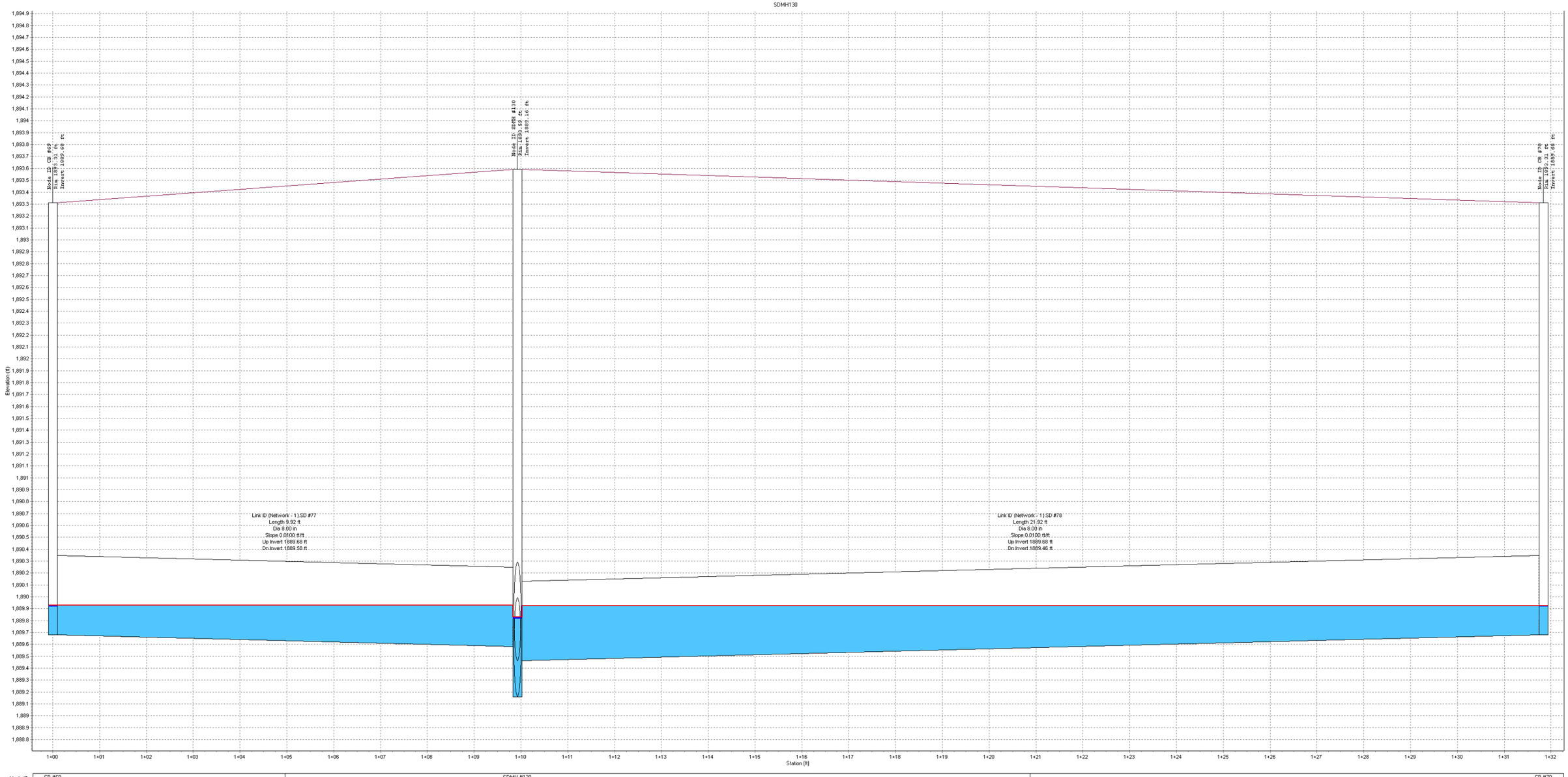
SDMH101



Node ID:	CB #05	SDMH #101	CB #06
Rim (ft):	1905.75	1906.03	1905.75
Invert (ft):	1902.12	1901.60	1902.12
Min Pipe Cover (ft):	2.96	3.29	2.96
Max HGL (ft):	1902.37	1902.29	1902.37

Link ID:	(Network - 1).SD #82	(Network - 1).SD #05
Length (ft):	9.88	21.96
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1902.12	1902.12
Dn Invert (ft):	1902.02	1901.90
Max Q (cfs):	0.40	0.41
Max Vel (ft/s):	3.21	3.28
Max Depth (ft):	0.25	0.25

BASIN C
SDMH130



Node ID:	CB #69	SDMH #130	CB #70
Rim (ft):	1893.31	1893.59	1893.31
Invert (ft):	1889.68	1889.16	1889.68
Min Pipe Cover (ft):	2.96	3.30	2.96
Max HGL (ft):	1889.93	1889.84	1889.93

Link ID:	(Network - 1).SD #77	(Network - 1).SD #78
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1889.68	1889.68
Dn Invert (ft):	1889.58	1889.46
Max Q (cfs):	0.39	0.40
Max Vel (ft/s):	3.19	3.25
Max Depth (ft):	0.25	0.25

Node ID:	CB #07	SDMH #102	CB #08
Rim (ft):	1879.95	1880.22	1879.94
Invert (ft):	1876.32	1875.79	1876.31
Min Pipe Cover (ft):	2.96	3.30	2.96
Max HGL (ft):	1876.55	1876.46	1876.52

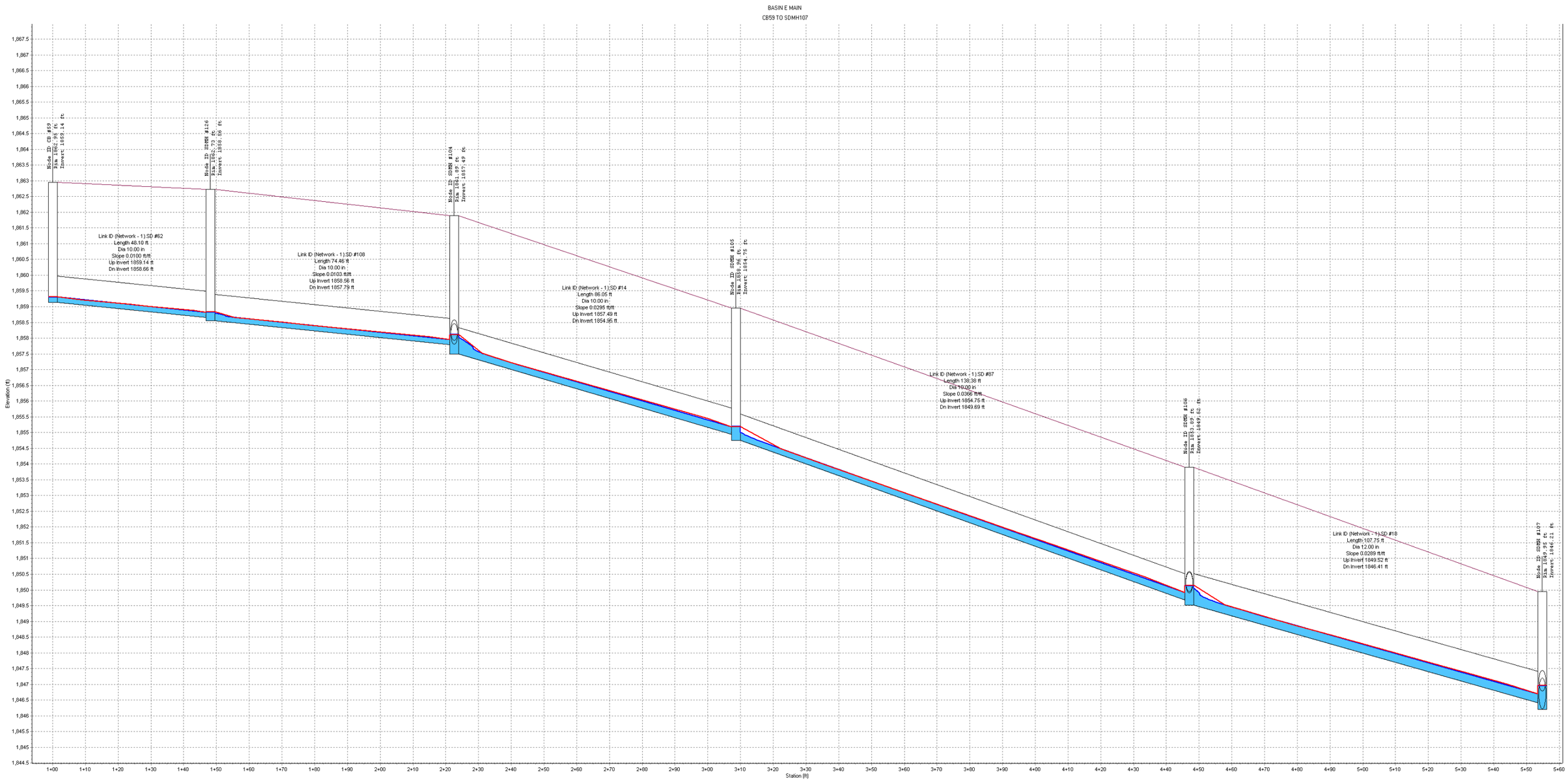
Link ID:	(Network - 1).SD #84	(Network - 1).SD #07
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1876.32	1876.31
Dn Invert (ft):	1876.22	1876.09
Max Q (cfs):	0.33	0.31
Max Vel (ft/s):	3.04	3.03
Max Depth (ft):	0.23	0.21

BASIN C

SDMH103

Node ID:	CB #09	SDMH #103	CB #10
Rim (ft):	1867.62	1867.89	1867.78
Invert (ft):	1863.99	1863.47	1864.15
Min Pipe Cover (ft):	2.96	3.29	2.96
Max HGL (ft):	1864.18	1864.16	1864.33

Link ID:	(Network - 1).SD #09	(Network - 1).SD #85
Length (ft):	9.92	22.15
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1863.99	1864.15
Dn Invert (ft):	1863.89	1863.93
Max Q (cfs):	0.23	0.23
Max Vel (ft/s):	2.76	2.79
Max Depth (ft):	0.19	0.18

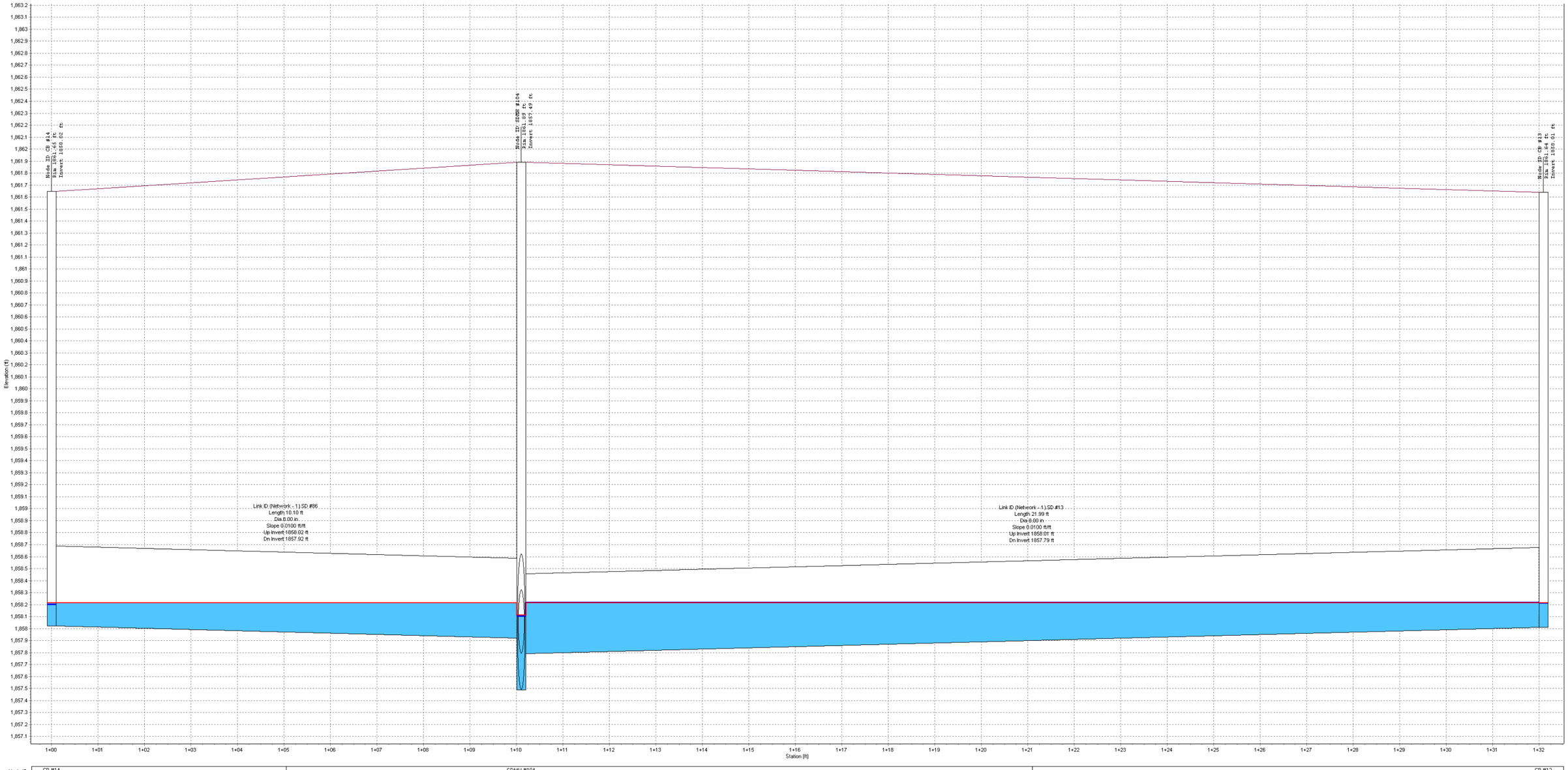


Node ID:	CB #59	SDMH #126	SDMH #104	SDMH #105	SDMH #106	SDMH #107
Rim (ft):	1862.95	1862.73	1861.89	1858.96	1853.89	1843.95
Invert (ft):	1859.14	1858.56	1857.49	1854.75	1849.52	1846.21
Min Pipe Cover (ft):	2.98	3.23	3.27	3.18	3.30	2.51
Max HGL (ft):	1859.31	1858.83	1858.12	1855.19	1850.15	1846.97

Link ID:	(Network - 1).SD #62	(Network - 1).SD #108	(Network - 1).SD #14	(Network - 1).SD #87	(Network - 1).SD #18
Length (ft):	48.10	74.46	86.05	138.38	107.75
Dia (in):	10.00	10.00	10.00	10.00	12.00
Slope (ft/ft):	0.0100	0.0103	0.0295	0.0366	0.0289
Up Invert (ft):	1859.14	1858.56	1857.49	1854.75	1849.52
Dn Invert (ft):	1858.66	1857.79	1854.95	1849.69	1846.41
Max Q (cfs):	0.21	0.20	0.68	0.67	1.11
Max Vel (ft/s):	2.61	2.54	5.25	5.63	5.88
Max Depth (ft):	0.17	0.17	0.24	0.23	0.29

BASIN E

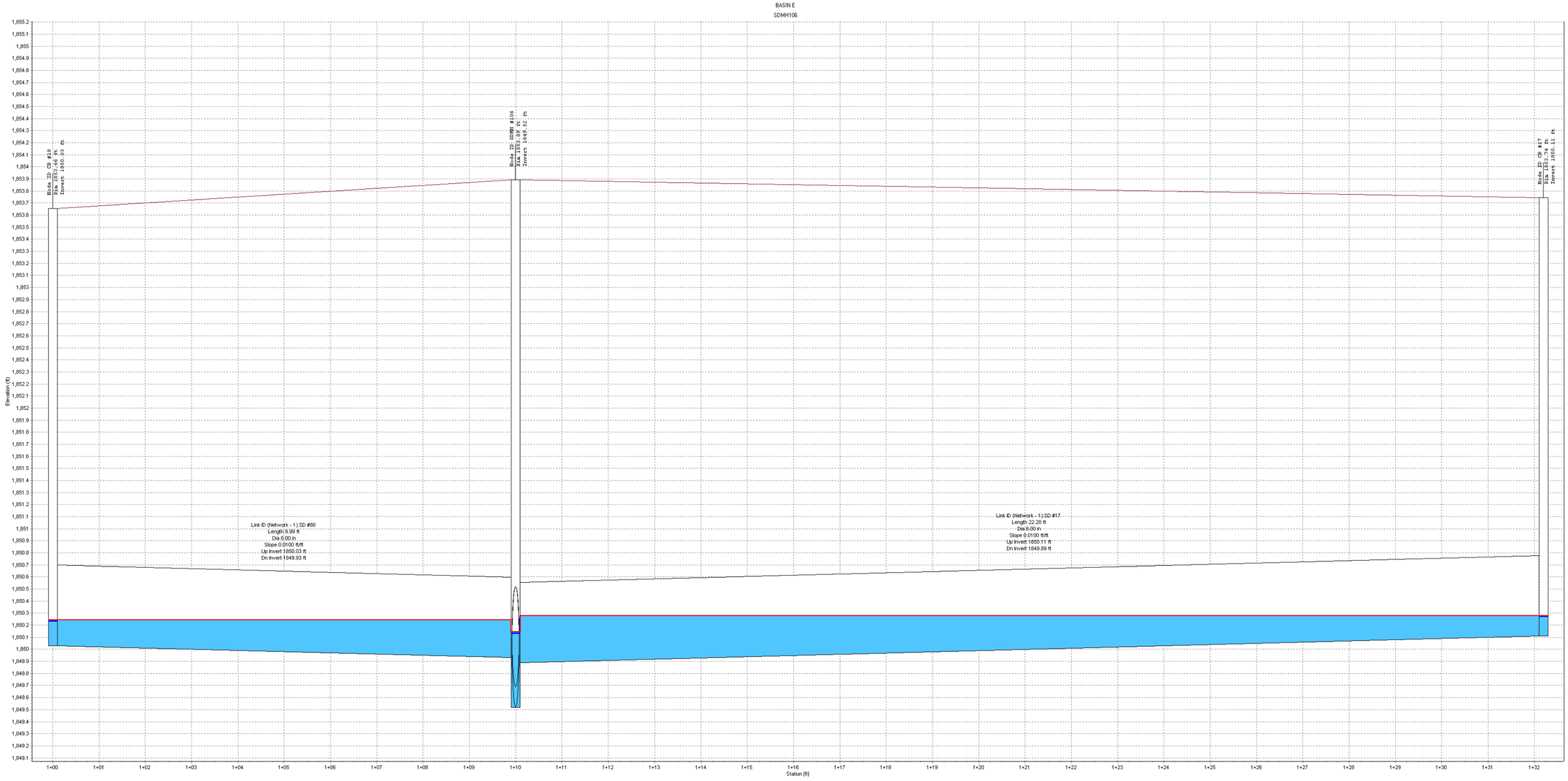
SDMH104



Node ID:	CB #14	SDMH #104	CB #13
Rim (ft):	1861.65	1861.89	1861.64
Invert (ft):	1858.02	1857.49	1858.01
Min Pipe Cover (ft):	2.96	3.27	2.96
Max HGL (ft):	1858.21	1858.12	1858.22

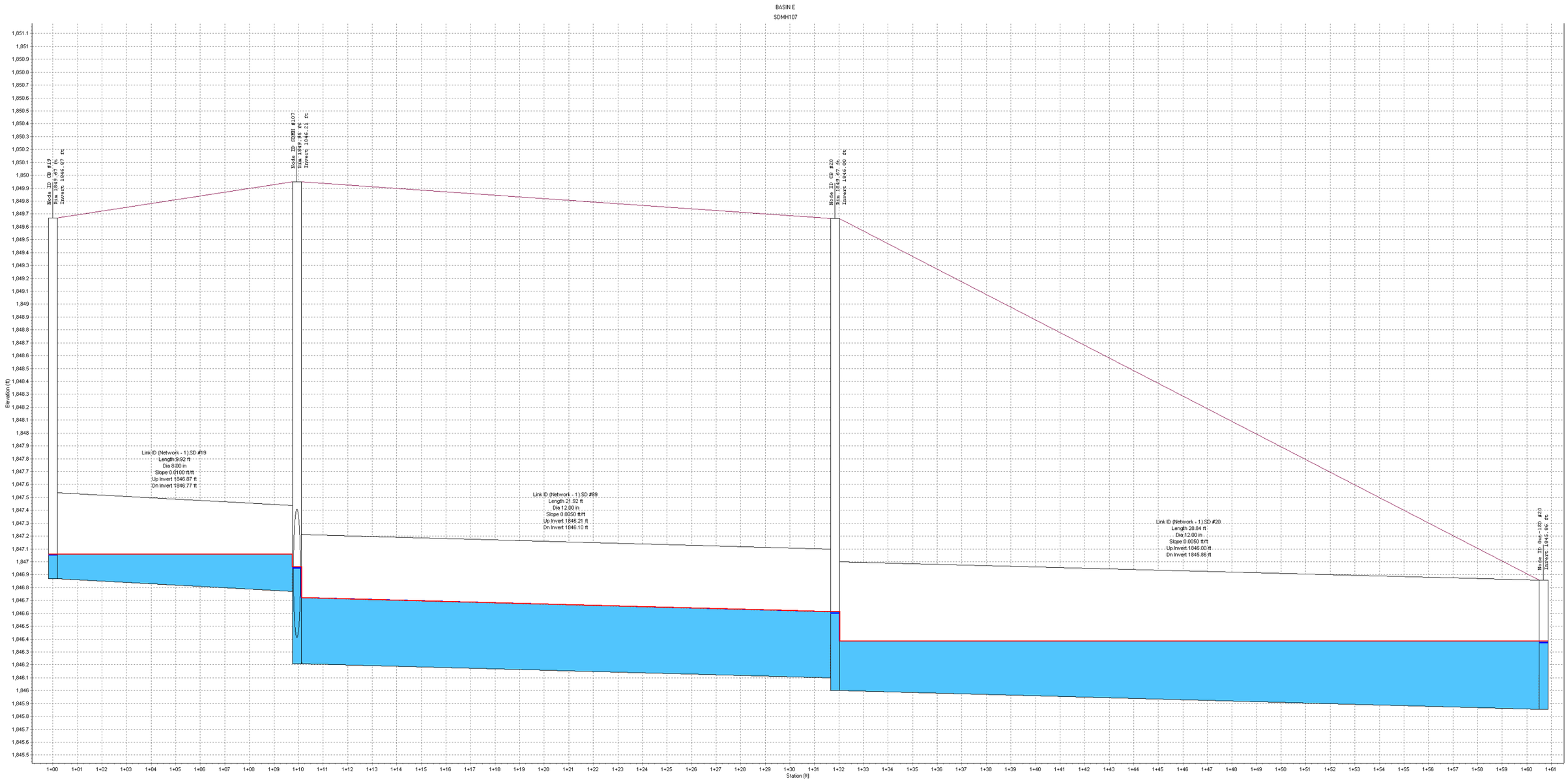
Link ID:	(Network - 1).SD #86	(Network - 1).SD #13
Length (ft):	10.10	21.99
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1858.02	1858.01
Dn Invert (ft):	1857.92	1857.79
Max Q (cfs):	0.24	0.29
Max Vel (ft/s):	2.79	2.97
Max Depth (ft):	0.19	0.21

BASIN E
SDMH106



Node ID:	CB #18	SDMH #106	CB #17
Rim (ft):	1853.66	1853.89	1853.74
Invert (ft):	1850.03	1849.52	1850.11
Min Pipe Cover (ft):	2.96	3.30	2.97
Max HGL (ft):	1850.24	1850.15	1850.28

Link ID:	(Network - 1).SD #88	(Network - 1).SD #17
Length (ft):	9.99	22.20
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1850.03	1850.11
Dn Invert (ft):	1849.93	1849.89
Max Q (cfs):	0.30	0.20
Max Vel (ft/s):	2.96	2.67
Max Depth (ft):	0.21	0.17

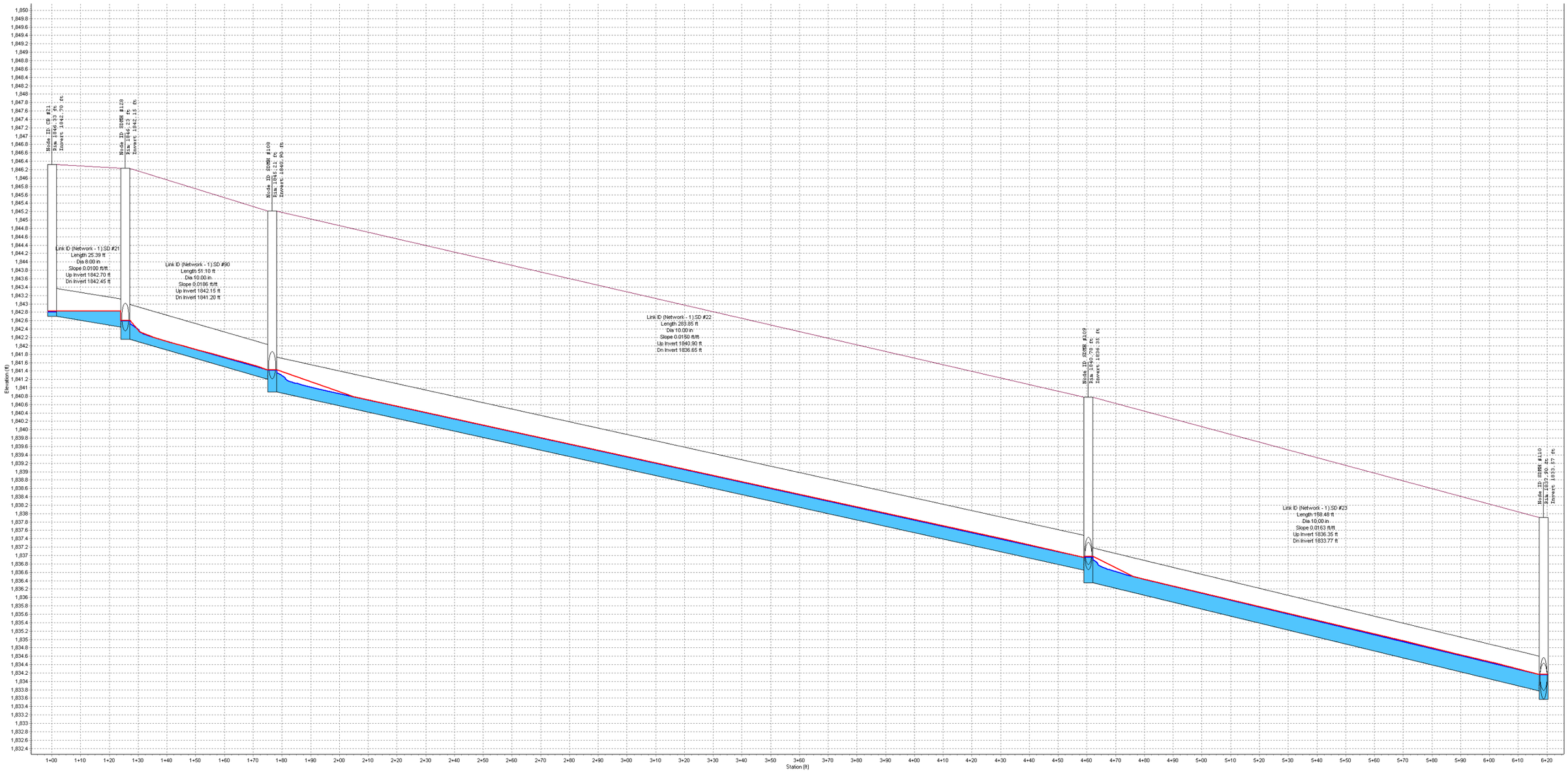


Node ID:	CB #19	SDMH #107	CB #20	Out-1SD #20
Rim (ft):	1849.67	1849.95	1849.67	
Invert (ft):	1846.87	1846.21	1846.00	1845.86
Min Pipe Cover (ft):	2.13	2.51	2.57	
Max HGL (ft):	1847.06	1846.97	1846.61	1846.38

Link ID:	(Network - 1).SD #19	(Network - 1).SD #89	(Network - 1).SD #20
Length (ft):	9.92	21.92	28.84
Dia (in):	8.00	12.00	12.00
Slope (ft/ft):	0.0100	0.0050	0.0050
Up Invert (ft):	1846.87	1846.21	1846.00
Dn Invert (ft):	1846.77	1846.10	1845.86
Max Q (cfs):	0.23	1.32	1.37
Max Vel (ft/s):	2.76	3.26	3.28
Max Depth (ft):	0.19	0.51	0.53

BASIN F MAIN

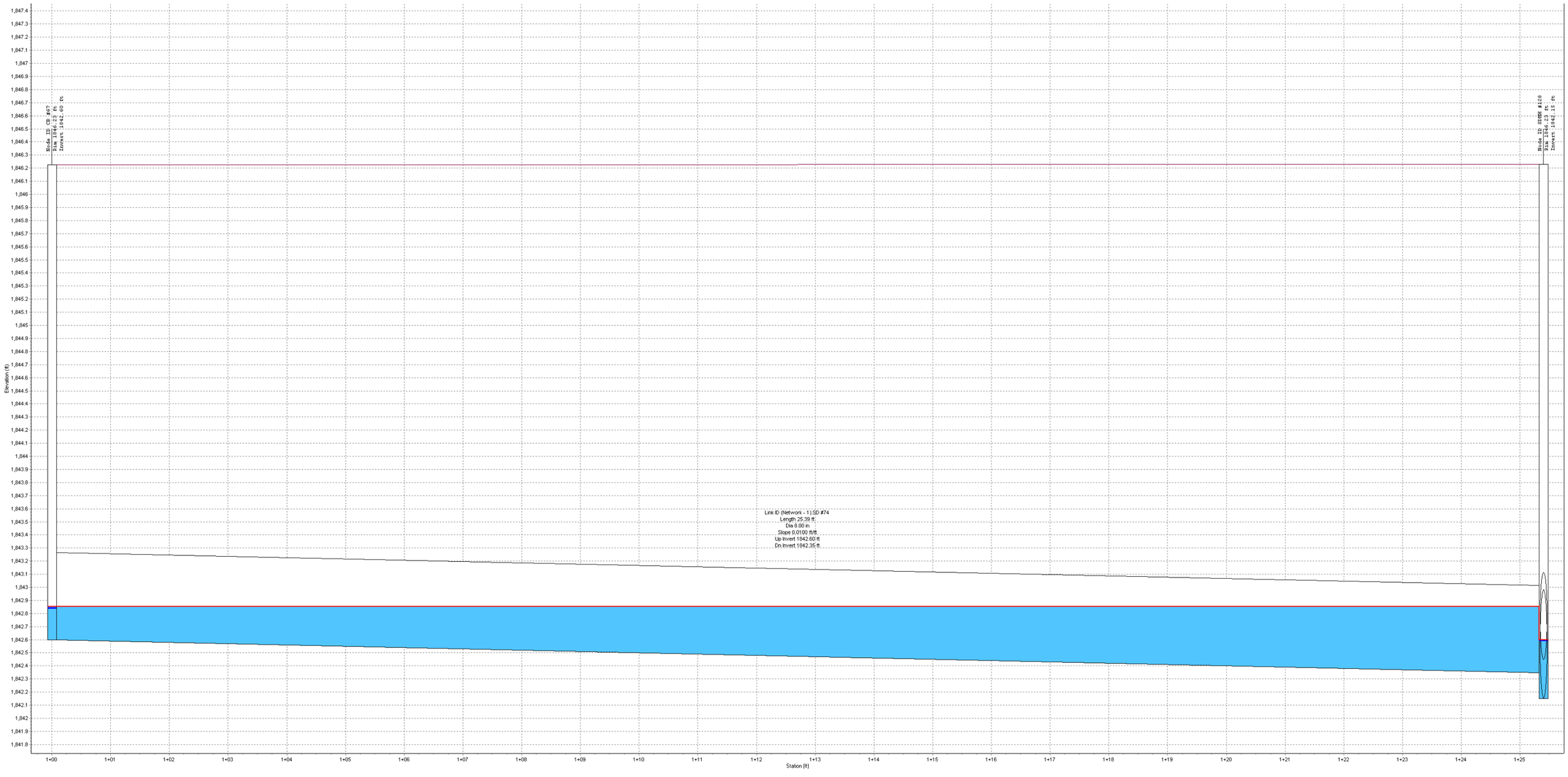
CB21 TO SDMH110



Node ID:	CB #21	SDMH #128	SDMH #108	SDMH #109	SDMH #110
Rim (ft)	1846.33	1846.23	1845.21	1840.78	1837.90
Invert (ft)	1842.70	1842.15	1840.90	1836.35	1833.57
Min Pipe Cover (ft)	2.96	3.12	3.18	3.29	3.30
Max HGL (ft)	1842.82	1842.62	1841.43	1836.98	1834.16

Link ID:	(Network - 1).SD #21	(Network - 1).SD #90	(Network - 1).SD #22	(Network - 1).SD #23
Length (ft)	25.39	51.10	283.85	158.48
Dia (in)	8.00	10.00	10.00	10.00
Slope (ft/ft)	0.0100	0.0186	0.0150	0.0163
Up Invert (ft)	1842.70	1842.15	1840.90	1836.35
Dn Invert (ft)	1842.45	1841.20	1836.65	1833.77
Max Q (cfs)	0.10	0.49	0.78	1.27
Max Vel (ft/s)	2.21	4.21	4.26	5.00
Max Depth (ft)	0.12	0.22	0.31	0.39

BASIN F
SDMH128

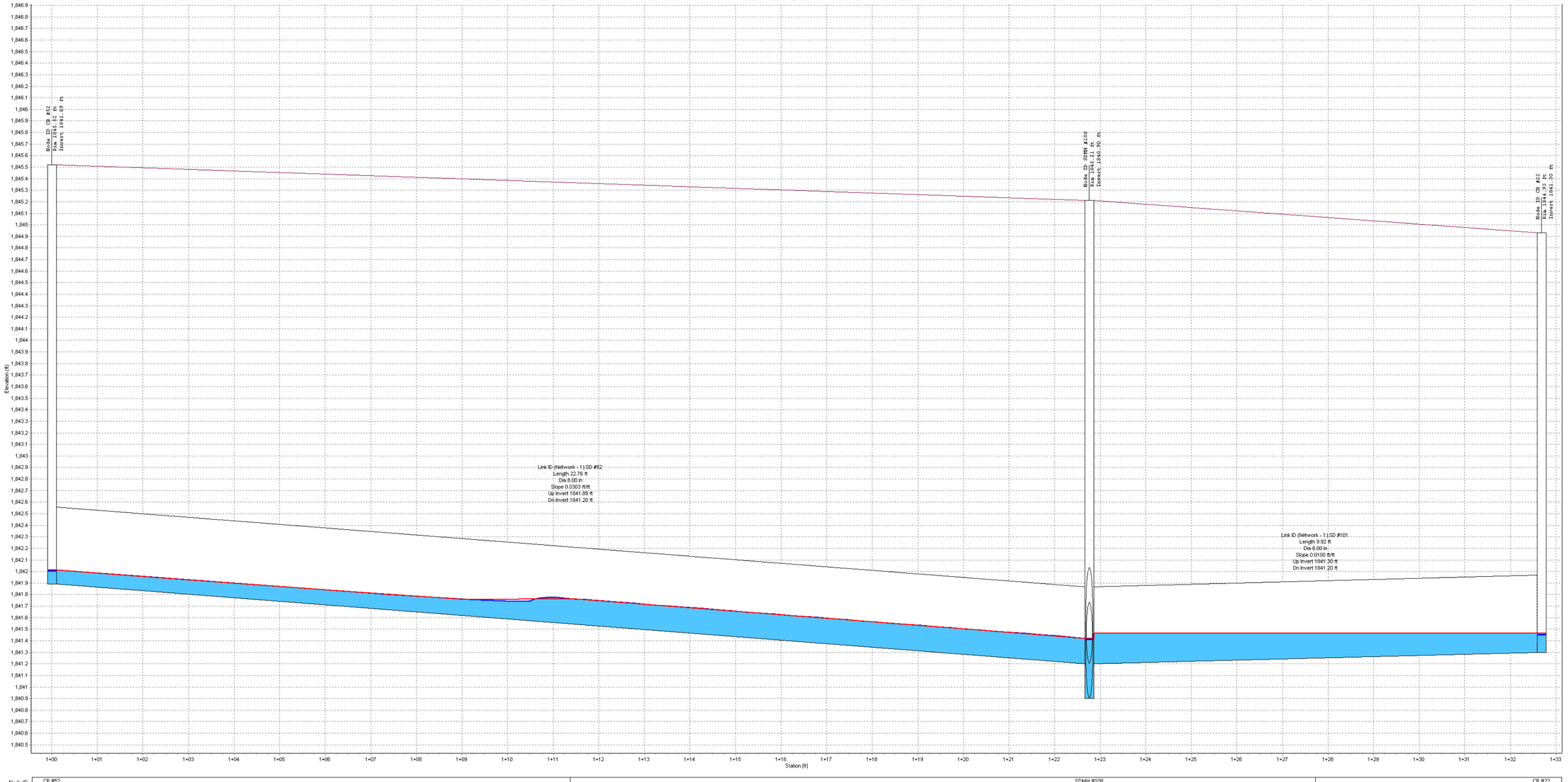


Node ID:	CB #67	SDMH #128
Rim (ft):	1846.23	1846.23
Invert (ft):	1842.60	1842.15
Min Pipe Cover (ft):	2.96	3.12
Max HGL (ft):	1842.85	1842.62

Link ID:	(Network - 1).SD #74
Length (ft):	25.39
Dia (in):	8.00
Slope (ft/ft):	0.0100
Up Invert (ft):	1842.60
Dn Invert (ft):	1842.35
Max Q (cfs):	0.42
Max Vel (ft/s):	3.31
Max Depth (ft):	0.25

BASIN F

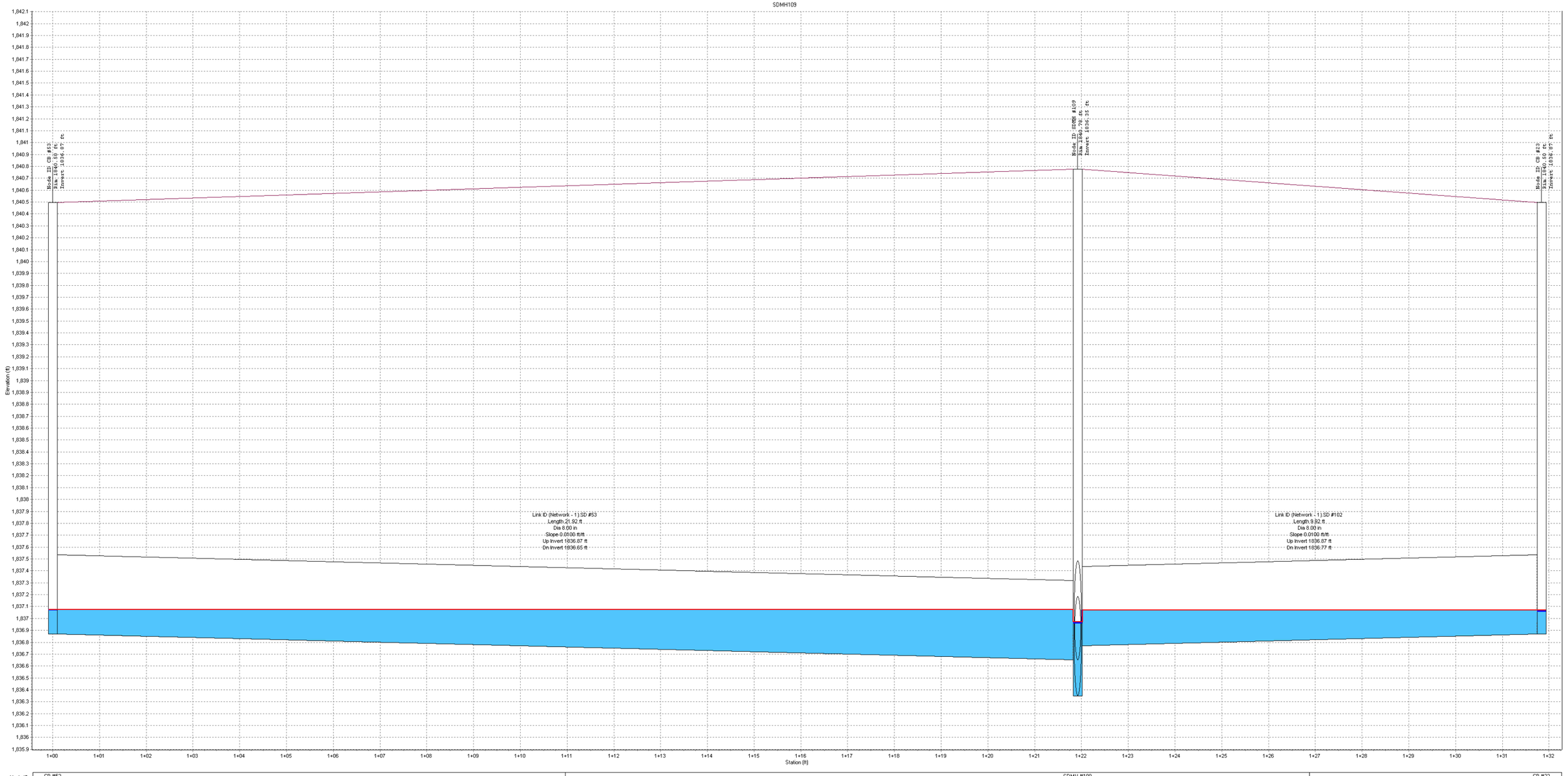
SDMH108



Node ID:	CB #52	SDMH #108	CB #22
Rim (ft):	1845.52	1845.21	1844.93
Invert (ft):	1841.89	1840.90	1841.30
Min Pipe Cover (ft):	2.97	3.19	2.96
Max HGL (ft):	1842.01	1841.43	1841.46

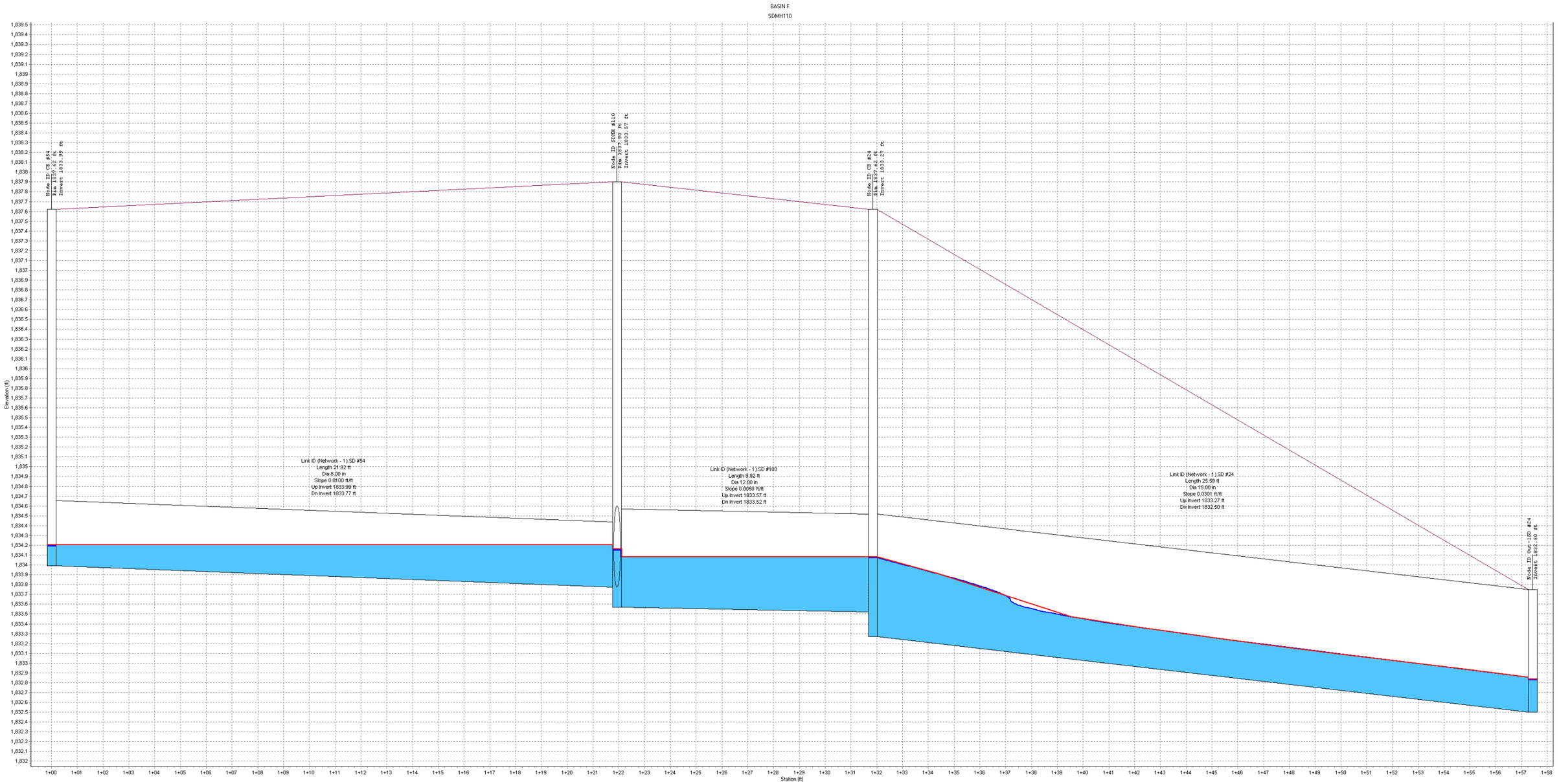
Link ID:	(Network - 1).SD #52	(Network - 1).SD #101
Length (ft):	22.76	9.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0303	0.0100
Up Invert (ft):	1841.89	1841.30
Dn Invert (ft):	1841.20	1841.20
Max Q (cfs):	0.18	0.18
Max Vel (ft/s):	3.85	2.56
Max Depth (ft):	0.12	0.16

BASIN F
SDMH109



Node ID:	CB #53	SDMH #1109	CB #23
Rim (ft):	1840.50	1840.78	1840.50
Invert (ft):	1836.87	1836.35	1836.87
Min Pipe Cover (ft):	2.96	3.29	2.96
Max HGL (ft):	1837.08	1836.98	1837.07

Link ID:	(Network - 1).SD #53	(Network - 1).SD #102
Length (ft):	21.92	9.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1836.87	1836.87
Dn Invert (ft):	1836.65	1836.77
Max Q (cfs):	0.29	0.26
Max Vel (ft/s):	2.97	2.86
Max Depth (ft):	0.21	0.20

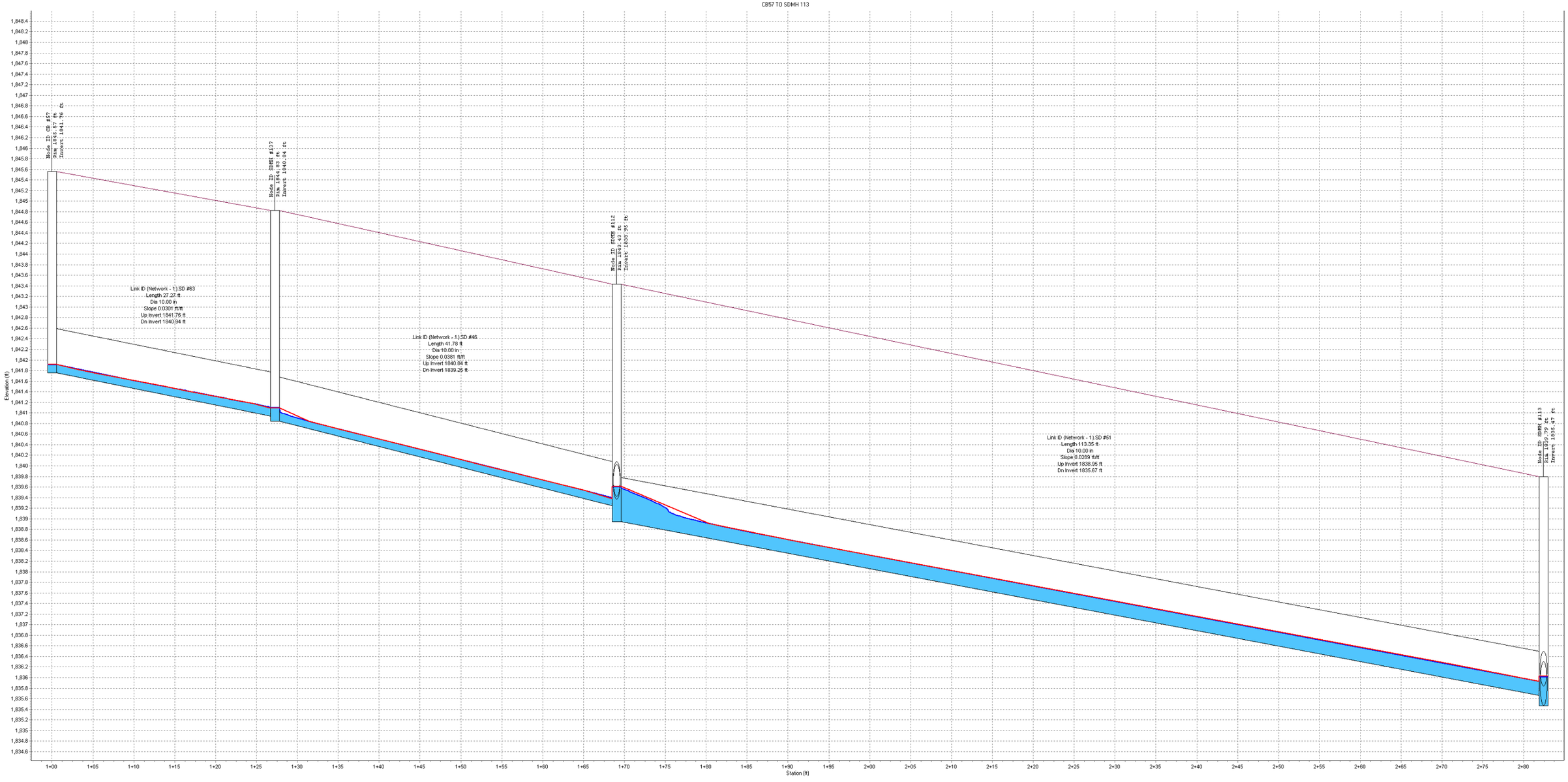


Node ID:	CB #54	SDMH #110	CB #24	Out-1SD #24
Rim (ft)	1837.62	1837.90	1837.62	
Invert (ft)	1833.99	1833.57	1833.27	1832.50
Min Pipe Cover (ft)	2.97	3.30	3.10	
Max HGL (ft)	1834.20	1834.16	1834.08	1832.84

Link ID:	(Network - 1).SD #54	(Network - 1).SD #103	(Network - 1).SD #24
Length (ft)	21.92	9.92	25.59
Dia (in)	8.00	12.00	15.00
Slope (ft/ft)	0.0100	0.0050	0.0301
Up Invert (ft)	1833.99	1833.57	1833.27
Dn Invert (ft)	1833.77	1833.52	1832.50
Max Q (cfs)	0.31	1.54	1.80
Max Vel (ft/s)	3.03	3.38	6.69
Max Depth (ft)	0.21	0.56	0.34

BASIN F MAIN

CB57 TO SDMH 113

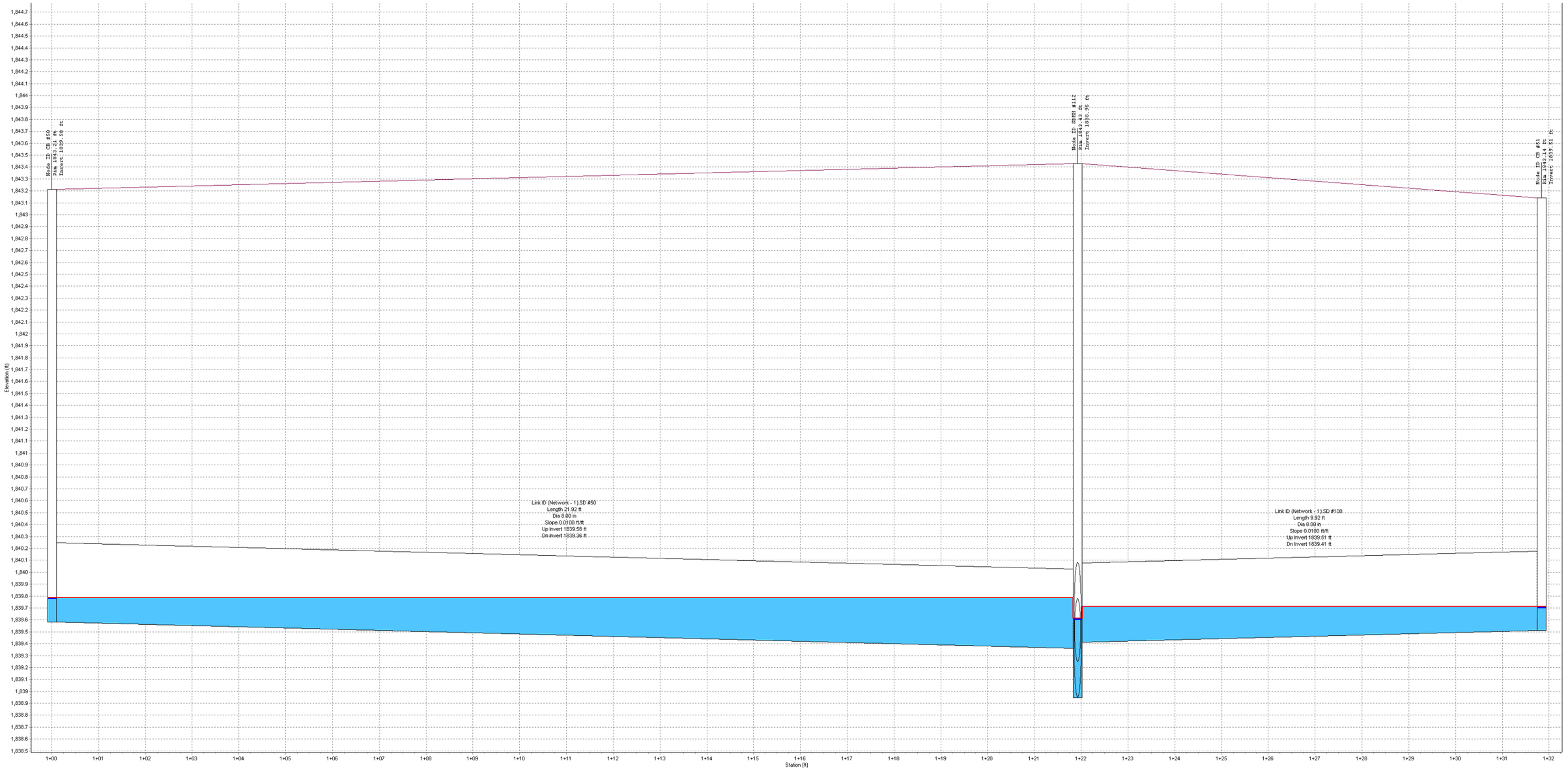


Node ID:	CB #57	SDMH #137	SDMH #112	SDMH #113
Rim (ft)	1845.57	1844.83	1843.43	1839.79
Invert (ft)	1841.76	1840.84	1838.95	1835.47
Min Pipe Cover (ft)	2.97	3.06	3.35	3.29
Max HGL (ft)	1841.92	1841.11	1839.62	1836.03

Link ID:	(Network - 1).SD #63	(Network - 1).SD #46	(Network - 1).SD #51
Length (ft)	27.27	41.78	113.35
Dia (in)	10.00	10.00	10.00
Slope (ft/ft)	0.0301	0.0381	0.0289
Up Invert (ft)	1841.76	1840.84	1838.95
Dn Invert (ft)	1840.94	1839.25	1835.67
Max Q (cfs)	0.33	0.32	0.84
Max Vel (ft/s)	4.46	4.58	5.73
Max Depth (ft)	0.16	0.15	0.26

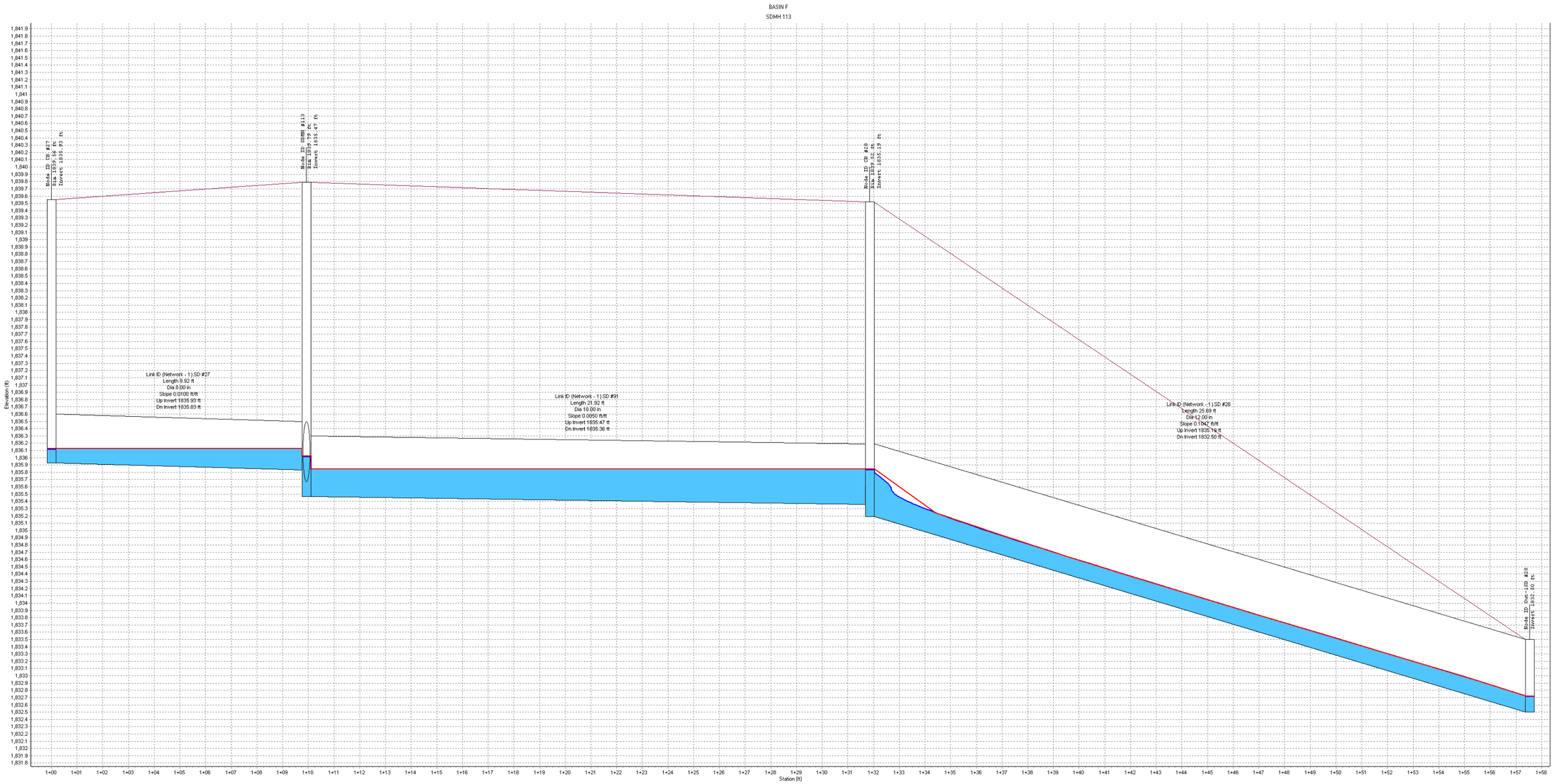
BASIN F

SDMH 112



Node ID:	CB #50	SDMH #112	CB #51
Rim (ft):	1843.21	1843.43	1843.14
Invert (ft):	1839.58	1838.95	1839.51
Min Pipe Cover (ft):	2.97	3.35	2.97
Max HGL (ft):	1839.79	1839.62	1839.71

Link ID:	(Network - 1).SD #50	(Network - 1).SD #100
Length (ft):	21.92	9.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1839.58	1839.51
Dn Invert (ft):	1839.36	1839.41
Max Q (cfs):	0.29	0.26
Max Vel (ft/s):	2.97	2.86
Max Depth (ft):	0.21	0.20

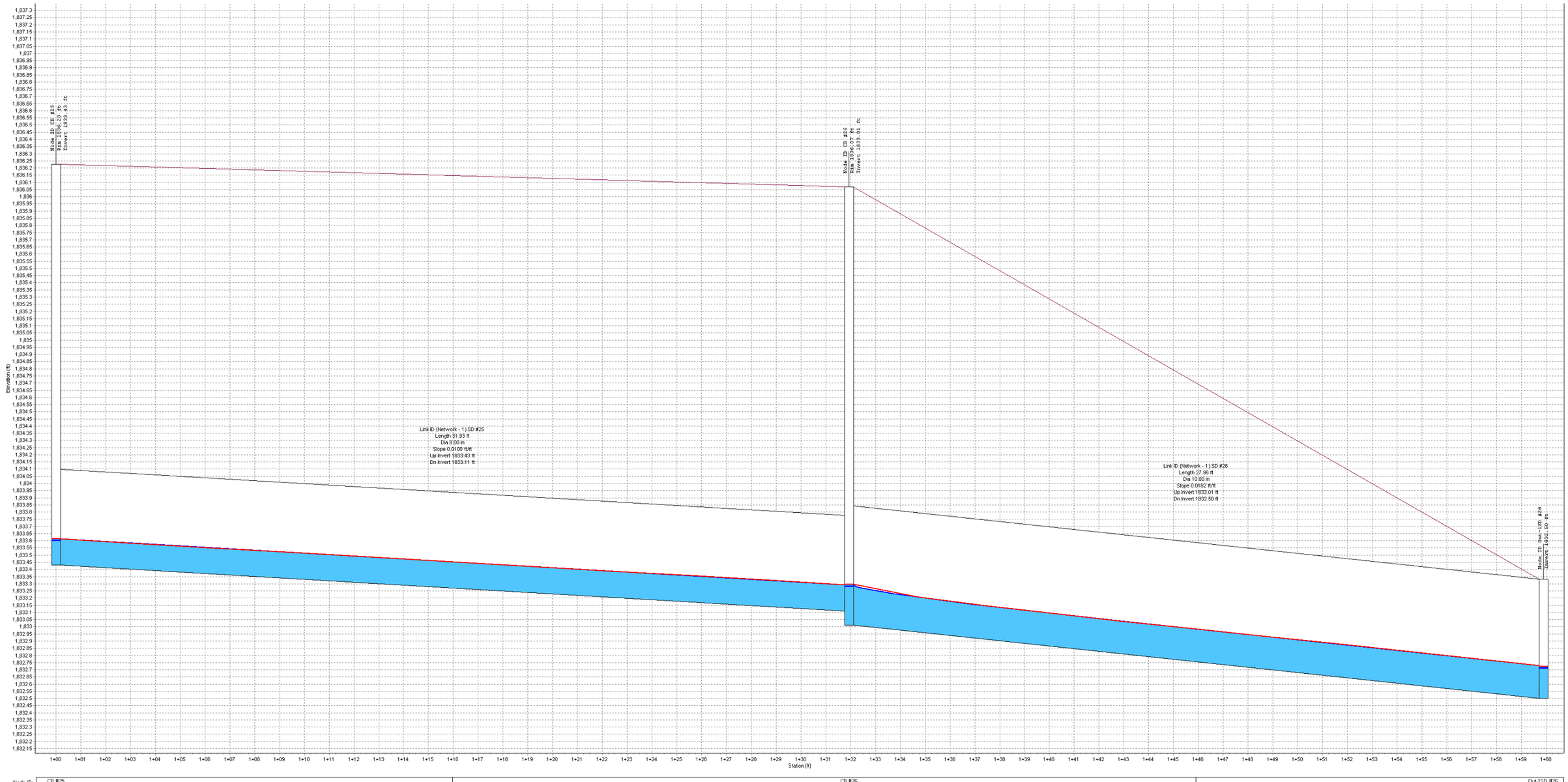


Node ID:	CB #27	SDMH #113	CB #28	Out-1SD #28
Rim (ft)	1839.56	1839.79	1839.52	
Invert (ft)	1835.93	1835.47	1835.19	1832.50
Min Pipe Cover (ft)	2.96	3.29	3.33	
Max HGL (ft)	1836.12	1836.03	1835.86	1832.72

Link ID:	(Network - 1).SD #27	(Network - 1).SD #91	(Network - 1).SD #28
Length (ft)	9.92	21.92	25.69
Dia (in)	8.00	10.00	12.00
Slope (ft/ft)	0.0100	0.0050	0.1047
Up Invert (ft)	1835.93	1835.47	1835.19
Dn Invert (ft)	1835.83	1835.36	1832.50
Max Q (cfs)	0.24	1.05	1.25
Max Vel (ft/s)	2.79	3.06	9.59
Max Depth (ft)	0.19	0.49	0.22

BASIN F

CB25 TO SWALE F

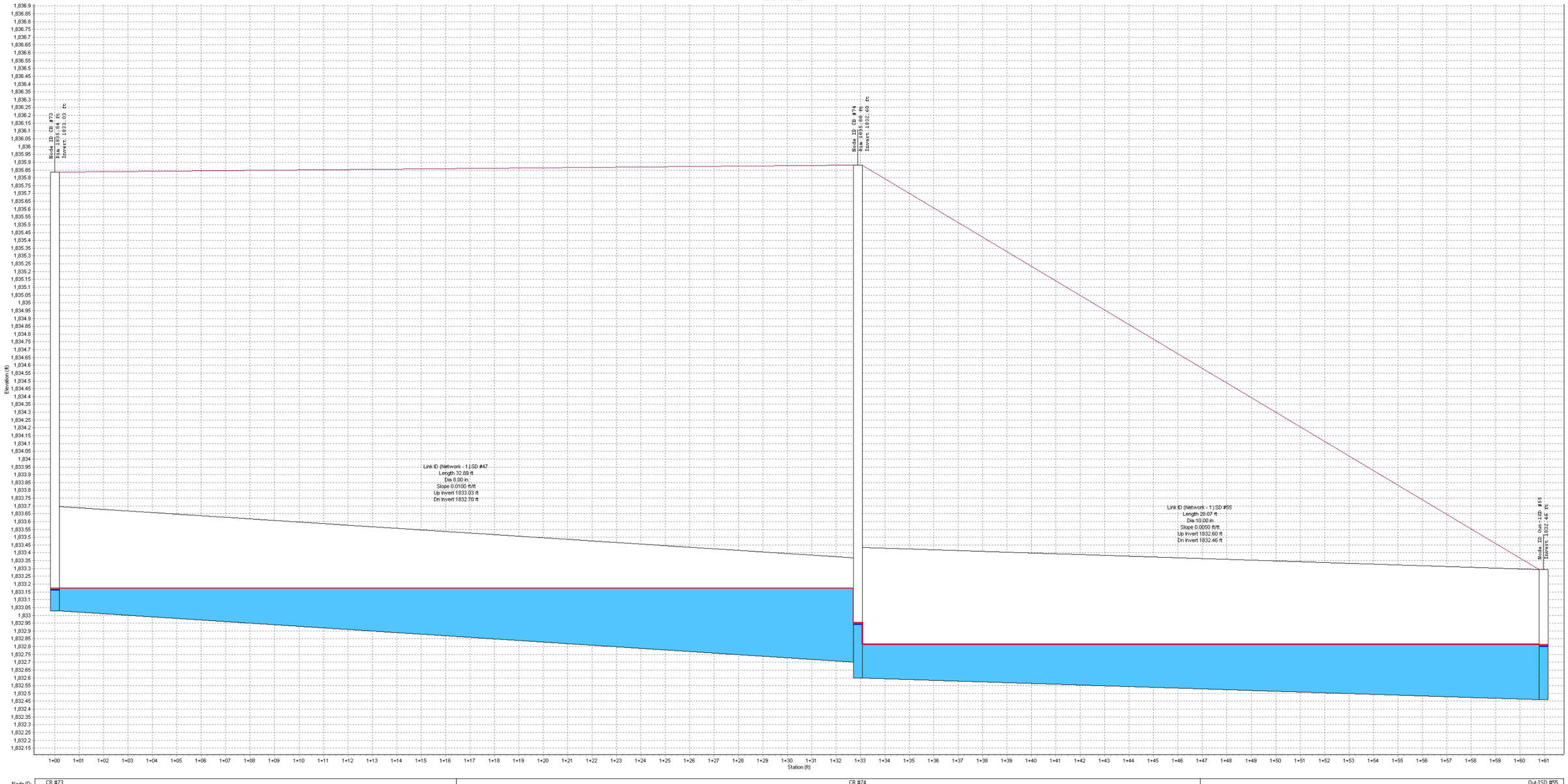


Node ID:	CB #25	CB #26	Out-1SD #26
Rim (ft):	1836.23	1836.07	
Invert (ft):	1833.43	1833.01	1832.50
Min Pipe Cover (ft):	2.13	2.23	
Max HGL (ft):	1833.61	1833.31	1832.74

Link ID:	(Network - 1).SD #25	(Network - 1).SD #26
Length (ft):	31.93	27.96
Dia (in):	8.00	10.00
Slope (ft/ft):	0.0100	0.0182
Up Invert (ft):	1833.43	1833.01
Dn Invert (ft):	1833.11	1832.50
Max Q (cfs):	0.23	0.52
Max Vel (ft/s):	2.78	4.13
Max Depth (ft):	0.18	0.22

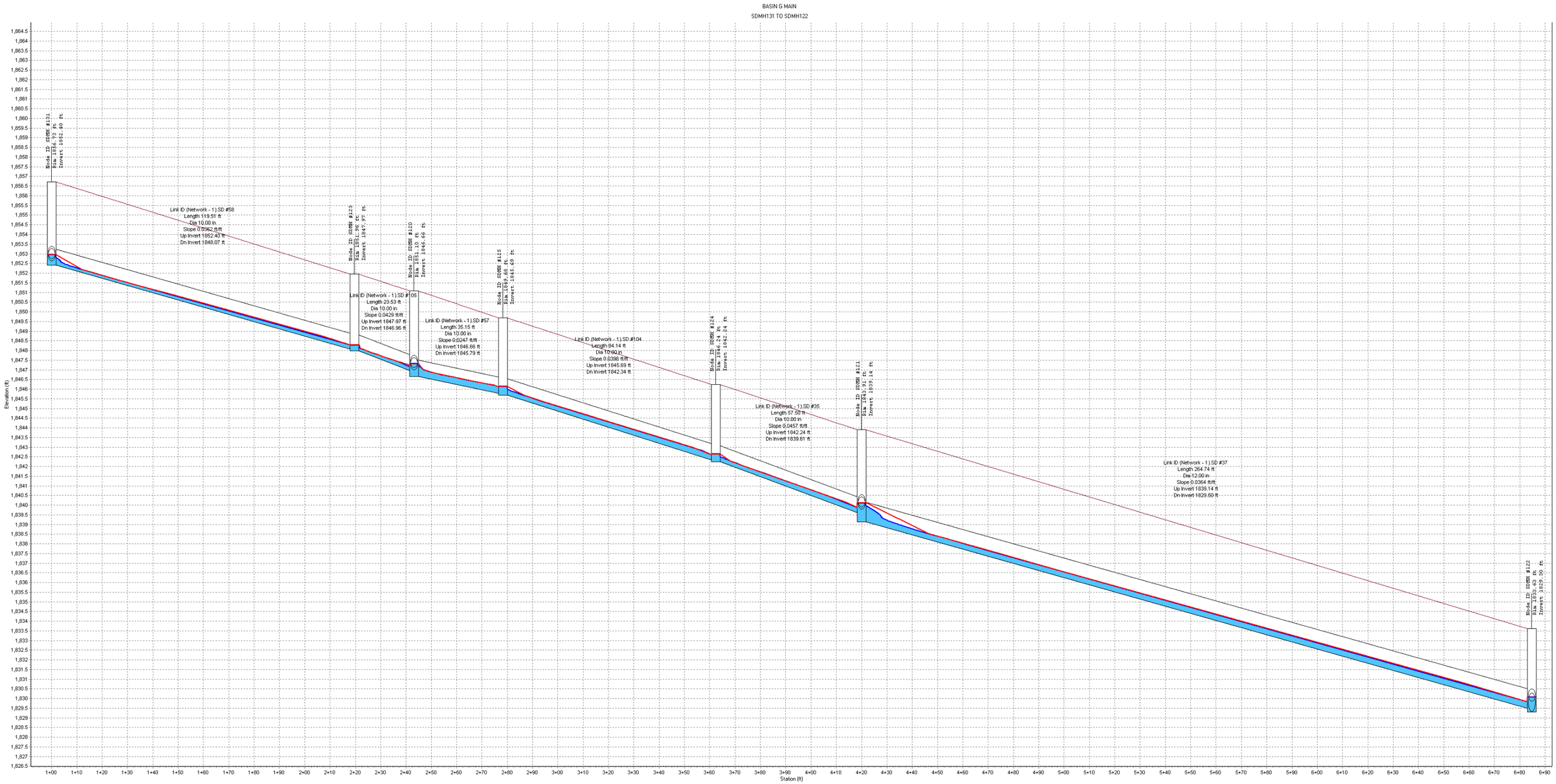
BASIN F

CB73 TO SWALE F



Node ID:	CB #73	CB #74	Out-1SD #55
Rim (ft):	1835.84	1835.88	
Invert (ft):	1833.03	1832.60	1832.46
Min Pipe Cover (ft):	2.14	2.45	
Max HGL (ft):	1833.17	1832.96	1832.83

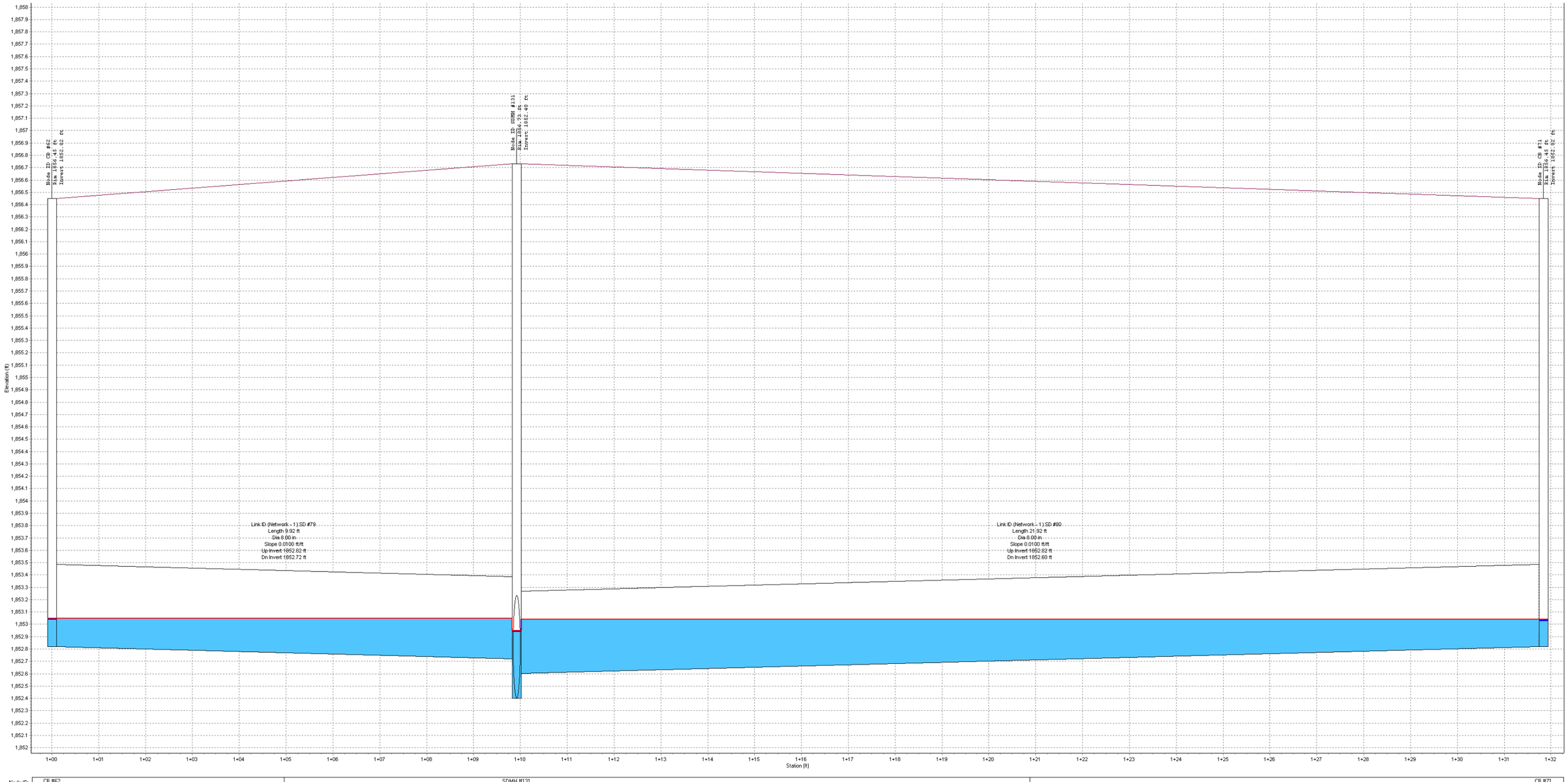
Link ID:	(Network - 1).SD #47	(Network - 1).SD #55
Length (ft):	32.89	28.07
Dia (in):	8.00	10.00
Slope (ft/ft):	0.0100	0.0050
Up Invert (ft):	1833.03	1832.60
Dn Invert (ft):	1832.70	1832.46
Max Q (cfs):	0.13	0.64
Max Vel (ft/s):	2.38	2.77
Max Depth (ft):	0.14	0.35



Node ID:	SDMH #131	SDMH #123	SDMH #120	SDMH #125	SDMH #124	SDMH #121	SDMH #122
Rim (ft):	1856.73	1851.96	1851.10	1849.68	1846.24	1843.91	1833.63
Invert (ft):	1852.40	1847.97	1846.66	1845.69	1842.24	1839.14	1829.30
Min Pipe Cover (ft):	3.35	3.06	3.30	3.06	3.07	3.35	3.12
Max HGL (ft):	1852.96	1848.29	1847.31	1846.13	1842.63	1840.12	1830.07

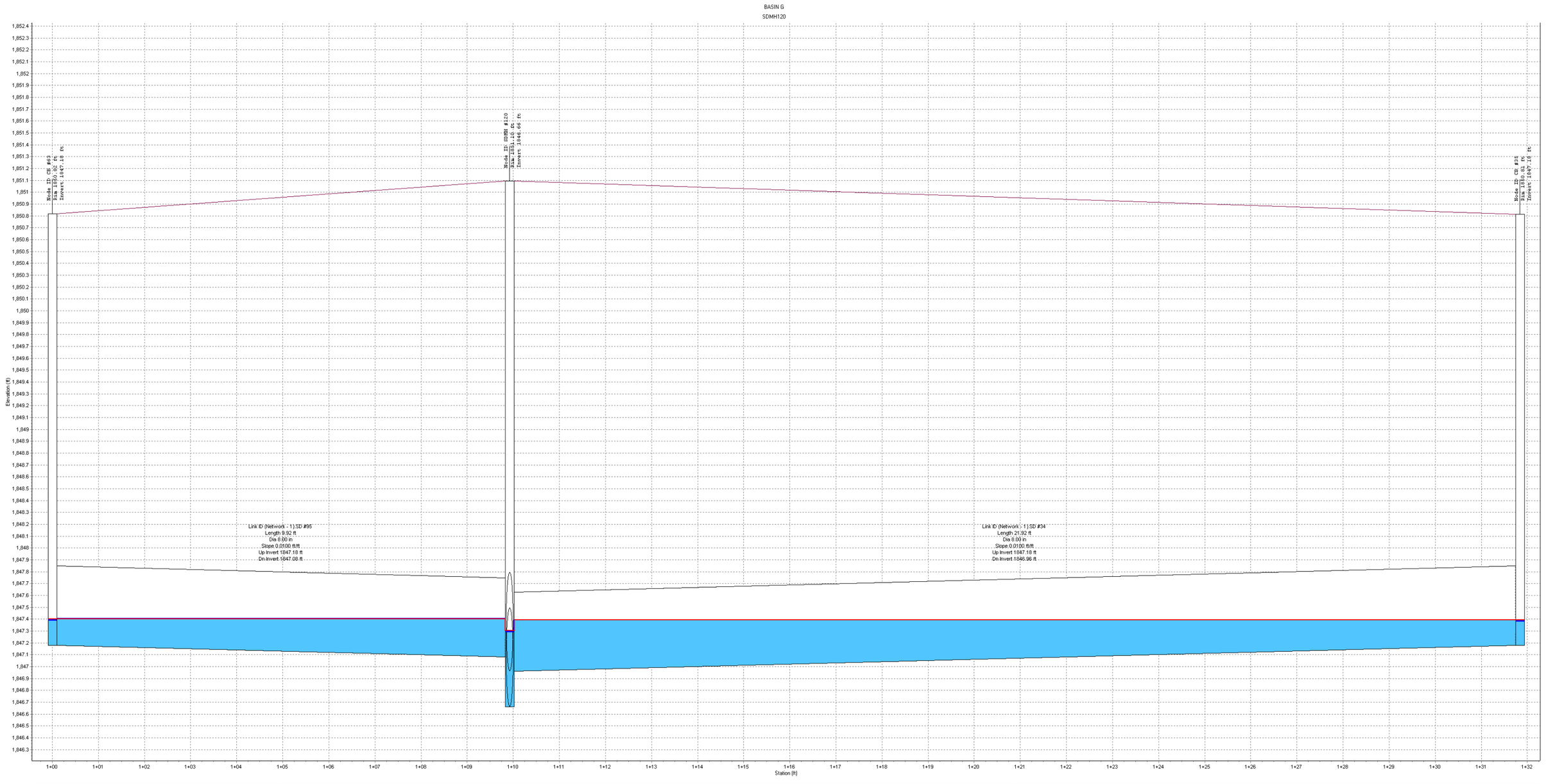
Link ID:	(Network - 1).SD #58	(Network - 1).SD #105	(Network - 1).SD #57	(Network - 1).SD #104	(Network - 1).SD #35	(Network - 1).SD #37
Length (ft):	119.51	23.53	35.15	84.14	57.50	264.74
Dia (in):	10.00	10.00	10.00	10.00	10.00	12.00
Slope (ft/ft):	0.0362	0.0429	0.0247	0.0398	0.0457	0.0364
Up Invert (ft):	1852.40	1847.97	1846.66	1845.69	1842.24	1839.14
Dn Invert (ft):	1848.07	1846.96	1845.79	1842.34	1839.61	1829.50
Max Q (cfs):	0.62	0.64	1.18	1.18	1.18	1.73
Max Vel (ft/s):	5.72	5.94	5.75	6.82	7.23	7.29
Max Depth (ft):	0.21	0.20	0.33	0.29	0.28	0.34

BASIN G
SDMH131



Node ID:	CB #62	SDMH #131	CB #71
Rim (ft):	1856.45	1856.73	1856.45
Invert (ft):	1852.82	1852.40	1852.82
Min Pipe Cover (ft):	2.96	3.35	2.96
Max HGL (ft):	1853.05	1852.96	1853.04

Link ID:	(Network - 1).SD #79	(Network - 1).SD #80
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1852.82	1852.82
Dn Invert (ft):	1852.72	1852.60
Max Q (cfs):	0.33	0.32
Max Vel (ft/s):	3.04	3.06
Max Depth (ft):	0.23	0.22

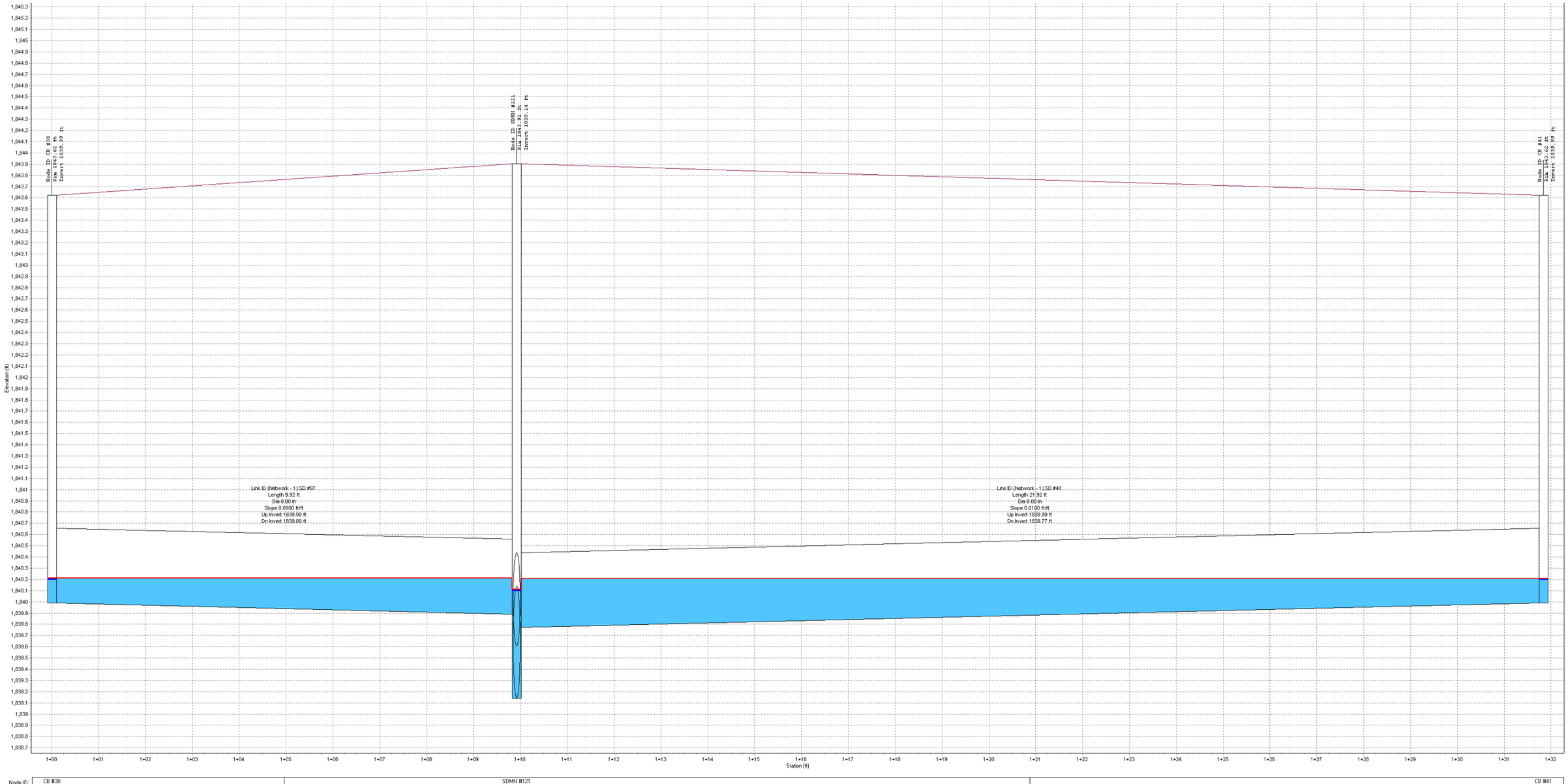


Node ID:	CB #63	SDMH #120	CB #35
Rim (ft):	1850.82	1851.10	1850.81
Invert (ft):	1847.18	1846.66	1847.18
Min Pipe Cover (ft):	2.97	3.30	2.97
Max HGL (ft):	1847.40	1847.31	1847.39

Link ID:	(Network - 1):SD #95	(Network - 1):SD #34
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1847.18	1847.18
Dn Invert (ft):	1847.08	1846.96
Max Q (cfs):	0.32	0.31
Max Vel (ft/s):	3.01	3.03
Max Depth (ft):	0.22	0.21

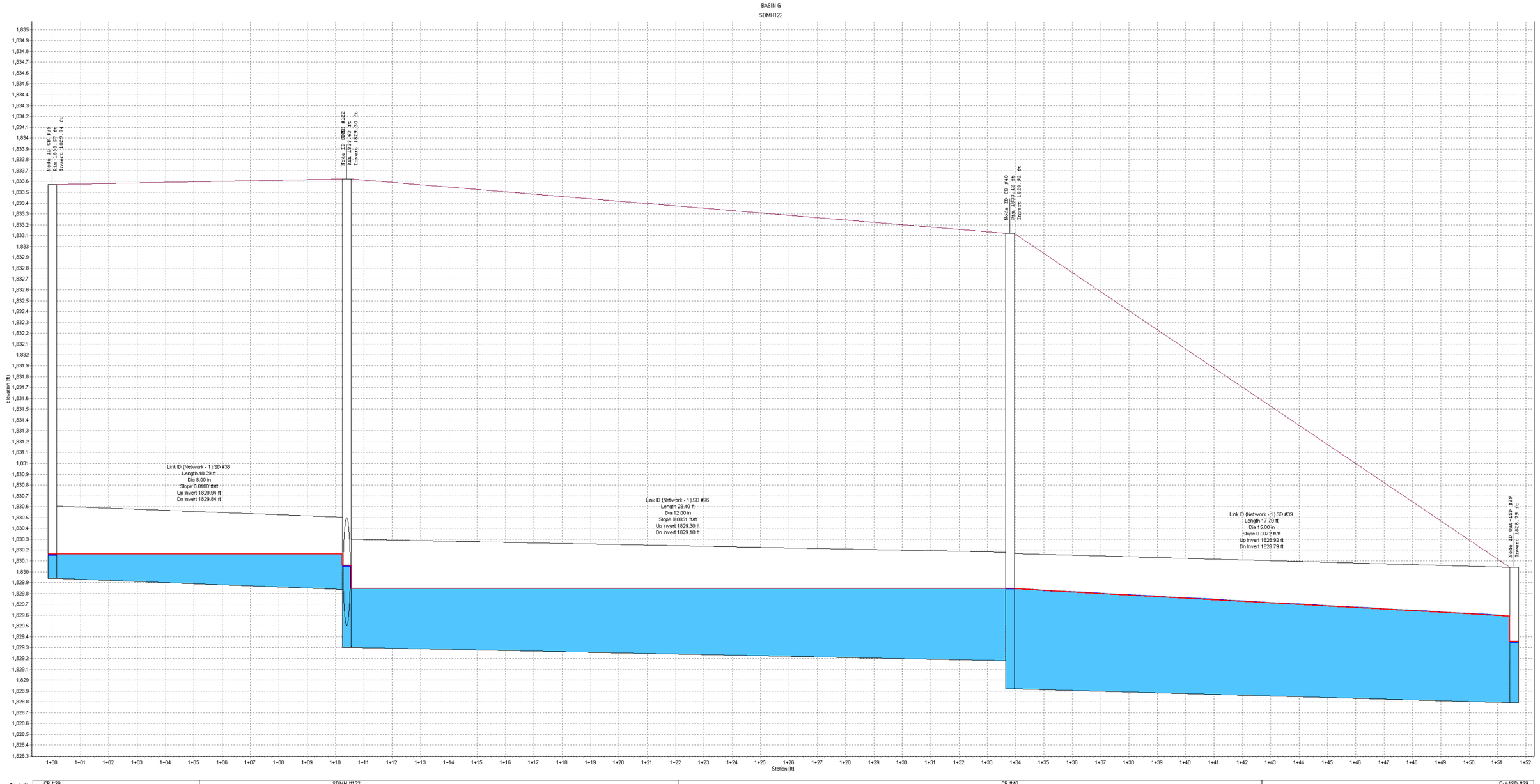
BASIN G

SDMH121



Node ID:	CB #38	SDMH #121	CB #41
Rim (ft):	1843.62	1843.91	1843.62
Invert (ft):	1839.99	1839.14	1839.99
Min Pipe Cover (ft):	2.97	3.35	2.97
Max HGL (ft):	1840.21	1840.12	1840.21

Link ID:	(Network - 1).SD #97	(Network - 1).SD #40
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1839.99	1839.99
Dn Invert (ft):	1839.89	1839.77
Max Q (cfs):	0.32	0.32
Max Vel (ft/s):	3.01	3.06
Max Depth (ft):	0.22	0.22

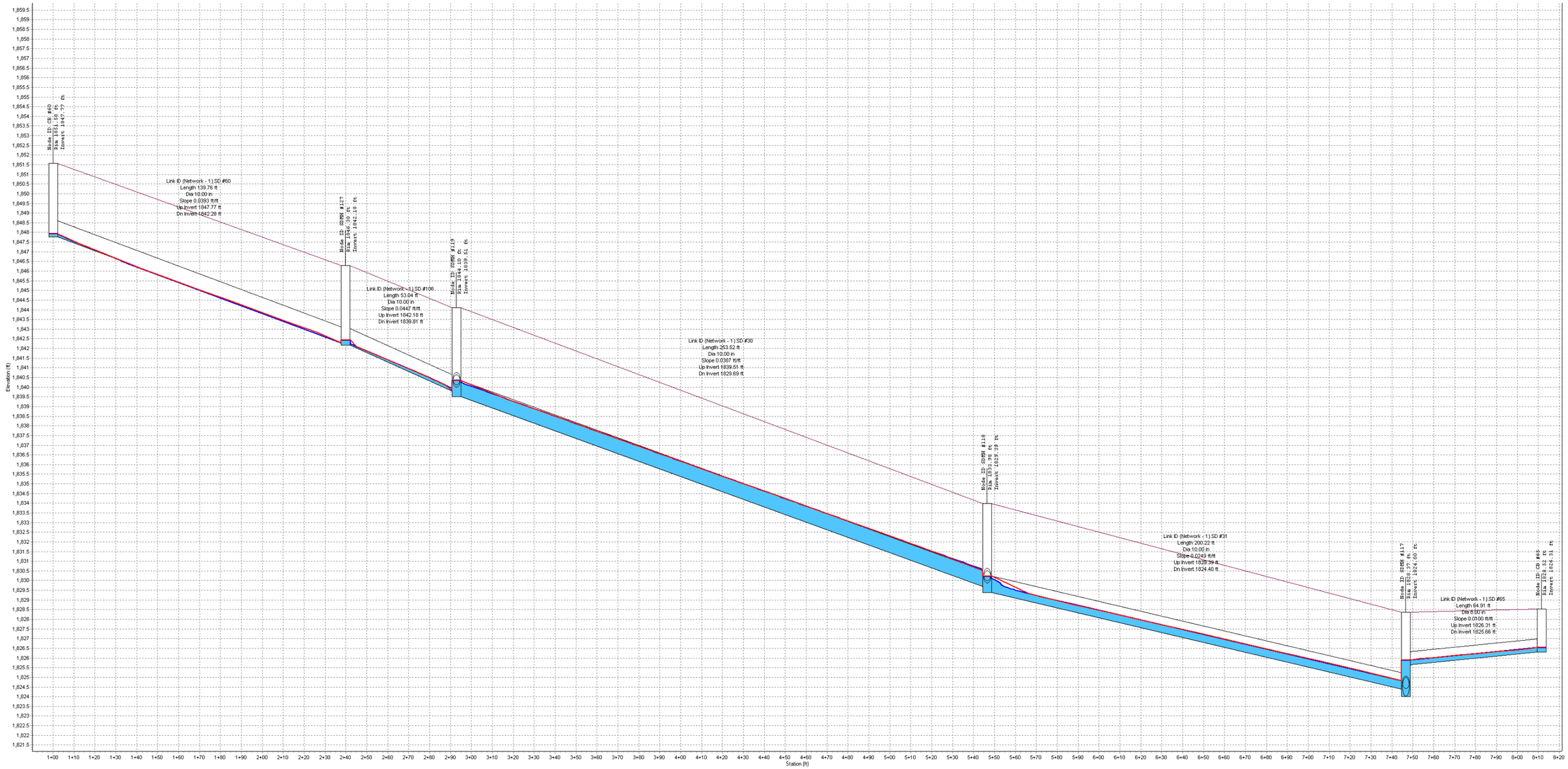


Node ID:	CB #39	SDMH #122	CB #40	Out-1SD #39
Rim (ft):	1833.57	1833.63	1833.12	
Invert (ft):	1829.94	1829.30	1828.92	1828.79
Min Pipe Cover (ft):	2.97	3.12	2.94	
Max HGL (ft):	1830.16	1830.07	1829.85	1829.36

Link ID:	(Network - 1).SD #38	(Network - 1).SD #96	(Network - 1).SD #39
Length (ft)	10.39	23.40	17.79
Dia (in)	8.00	12.00	15.00
Slope (ft/ft)	0.0100	0.0051	0.0072
Up Invert (ft)	1829.94	1829.30	1828.92
Dn Invert (ft)	1829.84	1829.18	1828.79
Max Q (cfs)	0.32	2.02	2.31
Max Vel (ft/s)	3.02	3.61	4.27
Max Depth (ft)	0.22	0.67	0.57

BASIN J MAIN

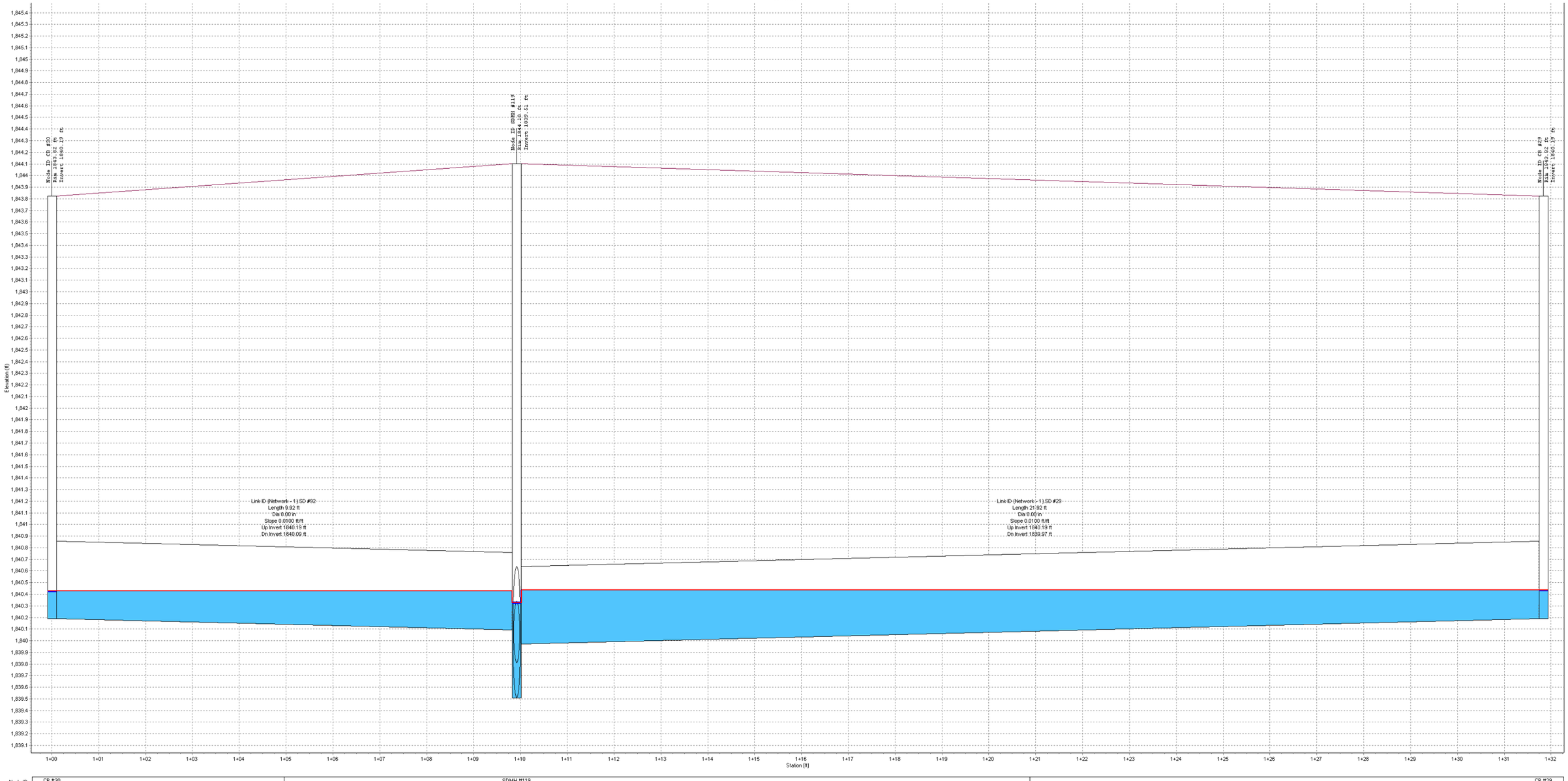
CB60 TO CB65



Node ID:	CB #60	SDMH #127	SDMH #119	SDMH #118	SDMH #117	CB #65
Rim (ft)	1851.58	1846.30	1844.10	1833.98	1828.37	1828.52
Invert (ft)	1847.77	1842.18	1839.51	1829.39	1824.00	1826.31
Min Pipe Cover (ft)	2.98	3.18	3.35	3.34	2.04	1.55
Max HGL (ft)	1847.92	1842.43	1840.34	1830.24	1825.89	1826.54

Link ID:	(Network - 1).SD #60	(Network - 1).SD #106	(Network - 1).SD #30	(Network - 1).SD #31	(Network - 1).SD #65
Length (ft)	139.76	53.04	253.52	200.22	64.91
Dia (in)	10.00	10.00	10.00	10.00	8.00
Slope (ft/ft)	0.0393	0.0447	0.0387	0.0249	0.0100
Up Invert (ft)	1847.77	1842.18	1839.51	1829.39	1826.31
Dn Invert (ft)	1842.28	1839.81	1829.69	1824.40	1825.66
Max Q (cfs)	0.31	0.32	0.99	1.73	0.32
Max Vel (ft/s)	4.62	4.94	6.44	6.34	2.93
Max Depth (ft)	0.15	0.15	0.27	0.42	0.23

BASIN J
SDMH119

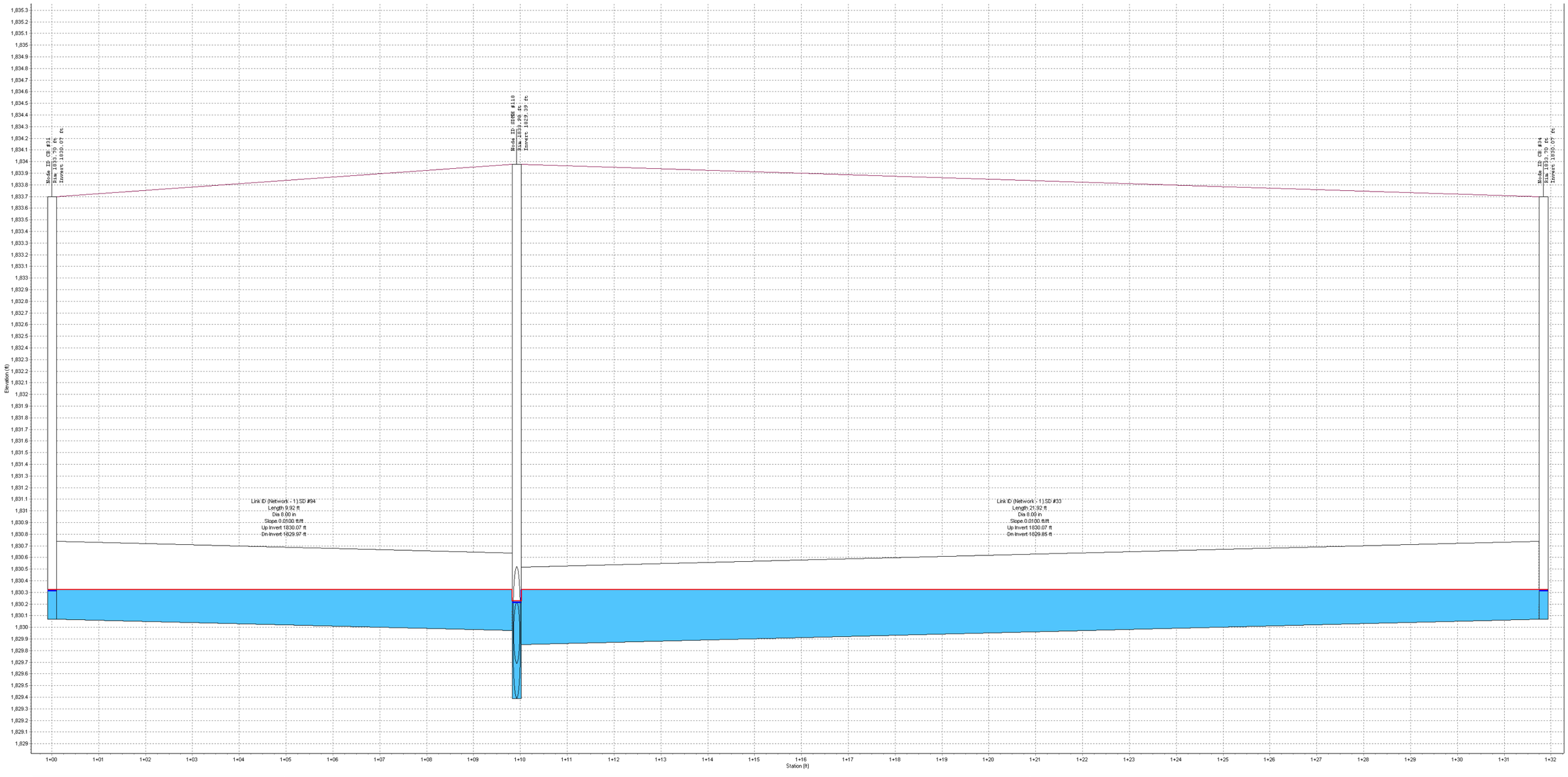


Node ID:	CB #30	SDMH #119	CB #29
Rim (ft):	1843.82	1844.10	1843.82
Invert (ft):	1840.19	1839.51	1840.19
Min Pipe Cover (ft):	2.97	3.35	2.97
Max HGL (ft):	1840.43	1840.34	1840.44

Link ID:	(Network - 1).SD #92	(Network - 1).SD #29
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1840.19	1840.19
Dn Invert (ft):	1840.09	1839.97
Max Q (cfs):	0.36	0.40
Max Vel (ft/s):	3.12	3.26
Max Depth (ft):	0.24	0.25

BASIN J

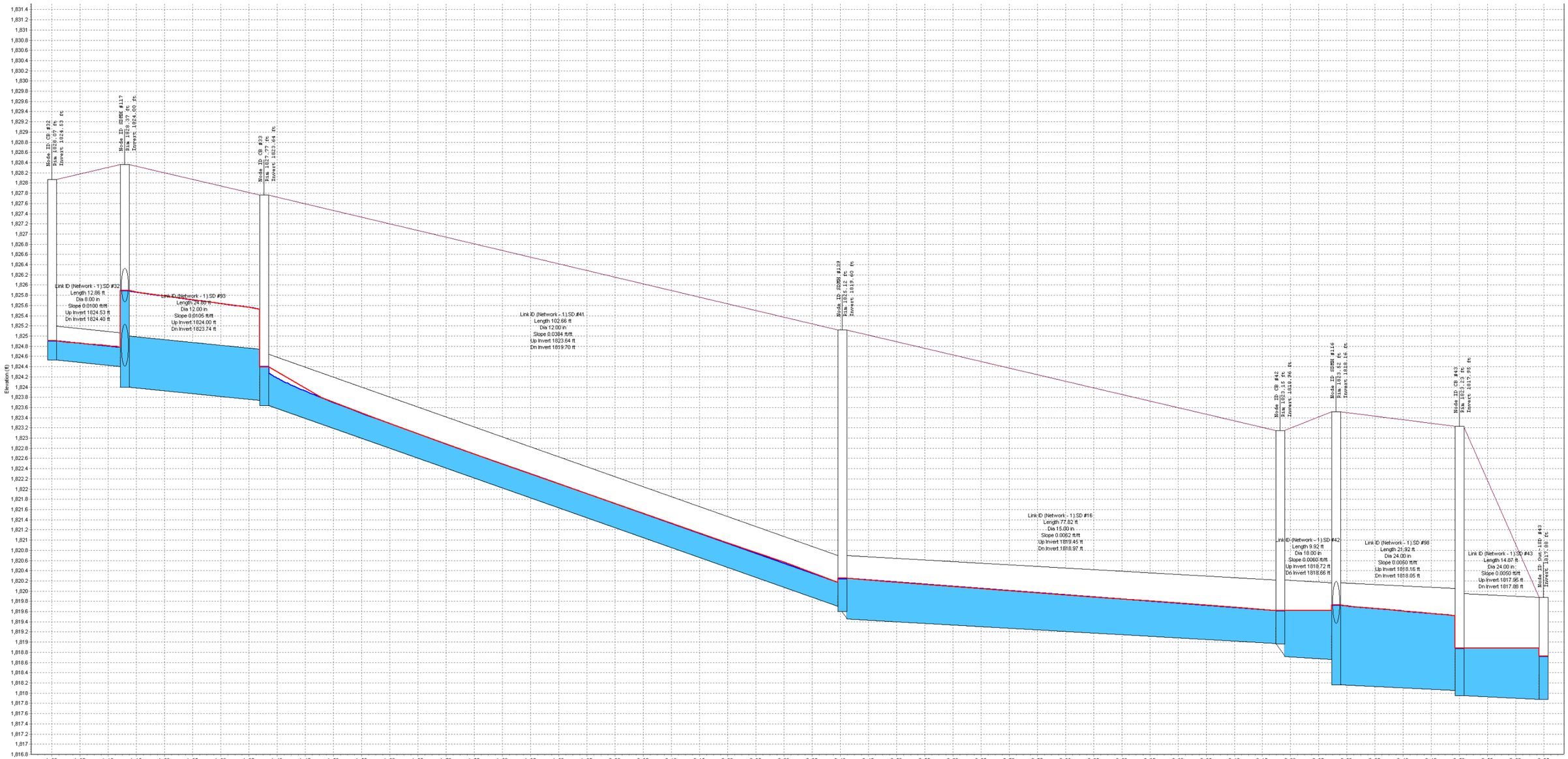
SDMH118



Node ID:	CB #31	SDMH #118	CB #34
Rim (ft)	1833.70	1833.98	1833.70
Invert (ft)	1830.07	1829.39	1830.07
Min Pipe Cover (ft)	2.96	3.34	2.96
Max HGL (ft)	1830.32	1830.24	1830.32

Link ID:	(Network - 1).SD #94	(Network - 1).SD #33
Length (ft)	9.92	21.92
Dia (in)	8.00	8.00
Slope (ft/ft)	0.0100	0.0100
Up Invert (ft)	1830.07	1830.07
Dn Invert (ft)	1829.97	1829.85
Max Q (cfs)	0.40	0.42
Max Vel (ft/s)	3.21	3.30
Max Depth (ft)	0.25	0.25

BASIN J MAIN
CB32 TO SWALE J

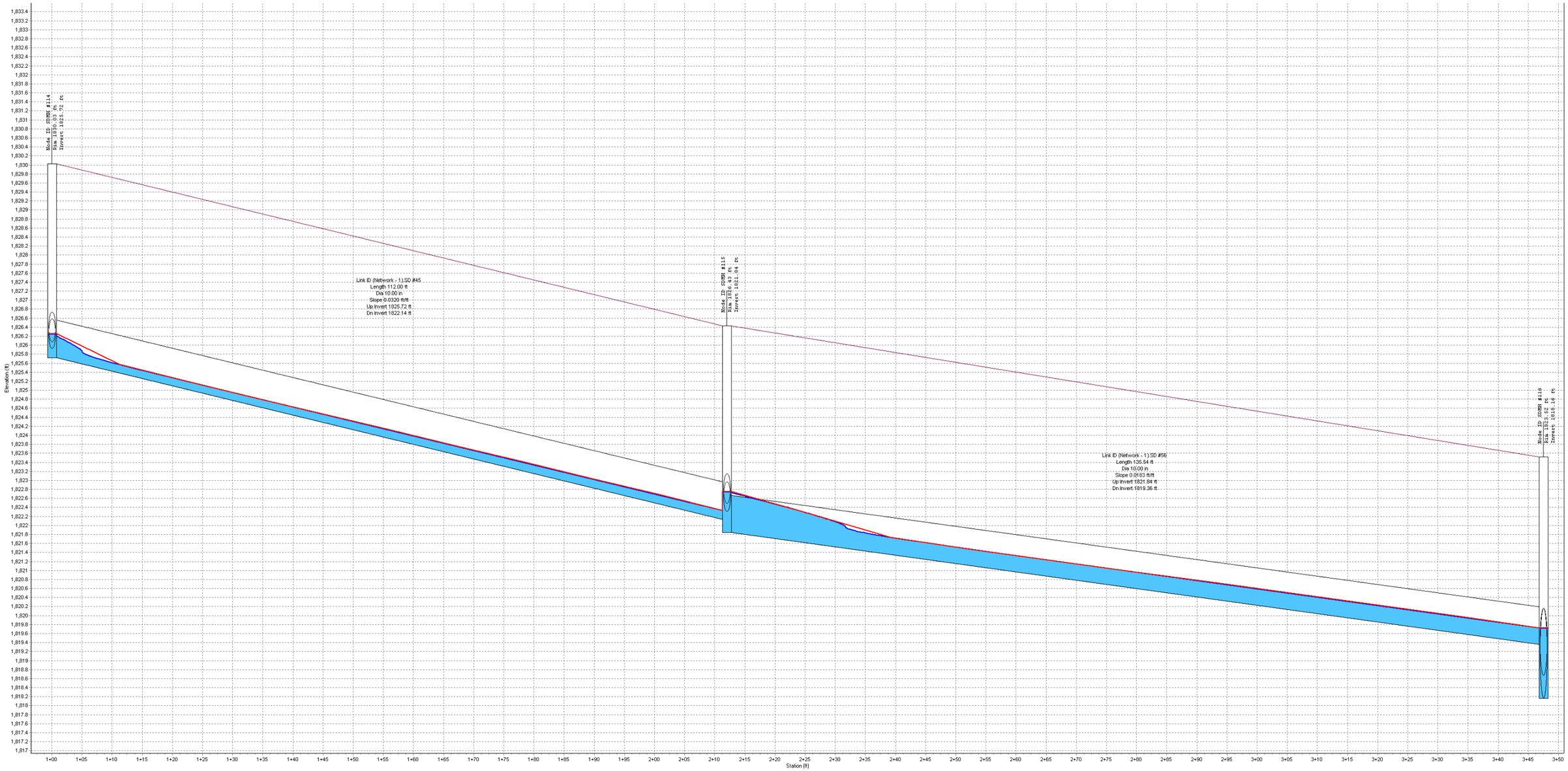


Node ID:	CB #32	SDMH #117	CB #33	SDMH #139	CB #42	SDMH #116	CB #43	Out-1SD #43
Rim (ft):	1829.07	1828.37	1827.77	1825.12	1823.15	1823.52	1823.23	
Invert (ft):	1824.53	1824.00	1823.64	1819.60	1818.96	1818.16	1817.95	1817.88
Min Pipe Cover (ft):	2.87	2.04	3.03	4.42	2.93	3.33	3.18	
Max HGL (ft):	1824.91	1825.89	1824.40	1820.25	1819.62	1819.73	1818.88	1818.73

Link ID:	(Network - 1).SD #32	(Network - 1).SD #93	(Network - 1).SD #41	(Network - 1).SD #16	(Network - 1).SD #42	(Network - 1).SD #98	(Network - 1).SD #43
Length (ft):	12.86	24.80	102.66	77.82	9.92	21.92	14.87
Dia (in):	8.00	12.00	12.00	15.00	18.00	24.00	24.00
Slope (ft/ft):	0.0100	0.0105	0.0384	0.0062	0.0060	0.0050	0.0050
Up Invert (ft):	1824.53	1824.00	1823.64	1819.45	1818.72	1818.16	1817.95
Dn Invert (ft):	1824.40	1823.74	1819.70	1818.97	1818.66	1818.05	1817.88
Max Q (cfs):	0.82	2.79	3.11	3.11	4.61	5.80	6.05
Max Vel (ft/s):	3.85	5.12	8.63	4.81	8.62	4.69	4.73
Max Depth (ft):	0.38	0.66	0.47	0.65	0.51	0.83	0.85

BASIN J MAIN

SDMH114 TO SDMH116

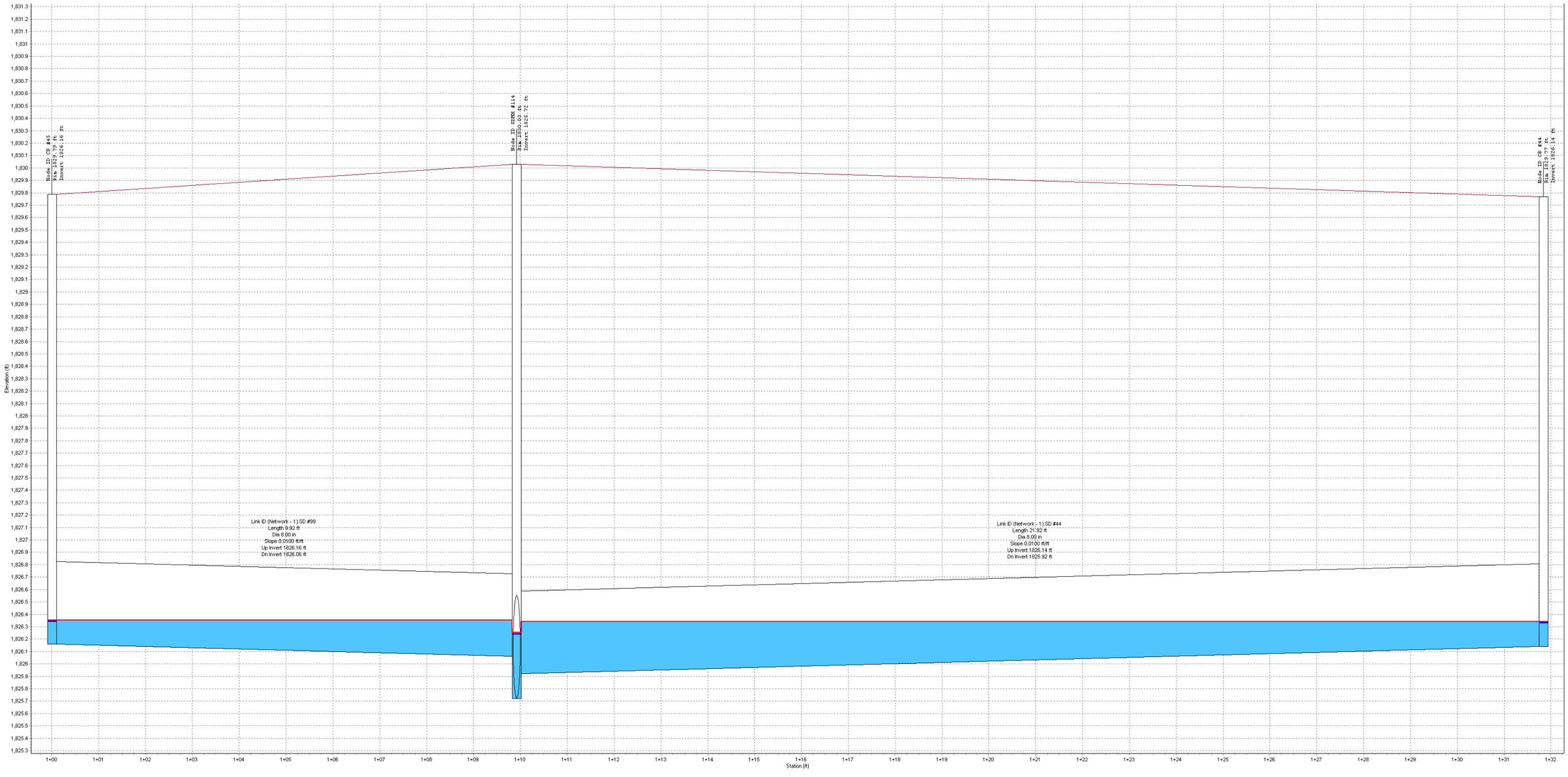


Node ID:	SDMH #114	SDMH #115	SDMH #116
Rim (ft):	1830.03	1826.43	1823.52
Invert (ft):	1825.72	1821.84	1818.16
Min Pipe Cover (ft):	3.30	3.29	3.33
Max HGL (ft):	1826.26	1822.76	1819.73

Link ID:	(Network - 1).SD #45	(Network - 1).SD #56
Length (ft):	112.00	135.54
Dia (in):	10.00	10.00
Slope (ft/ft):	0.0320	0.0183
Up Invert (ft):	1825.72	1821.84
Dn Invert (ft):	1822.14	1819.36
Max Q (cfs):	0.49	1.19
Max Vel (ft/s):	5.12	5.15
Max Depth (ft):	0.19	0.37

BASIN J

SDMH114

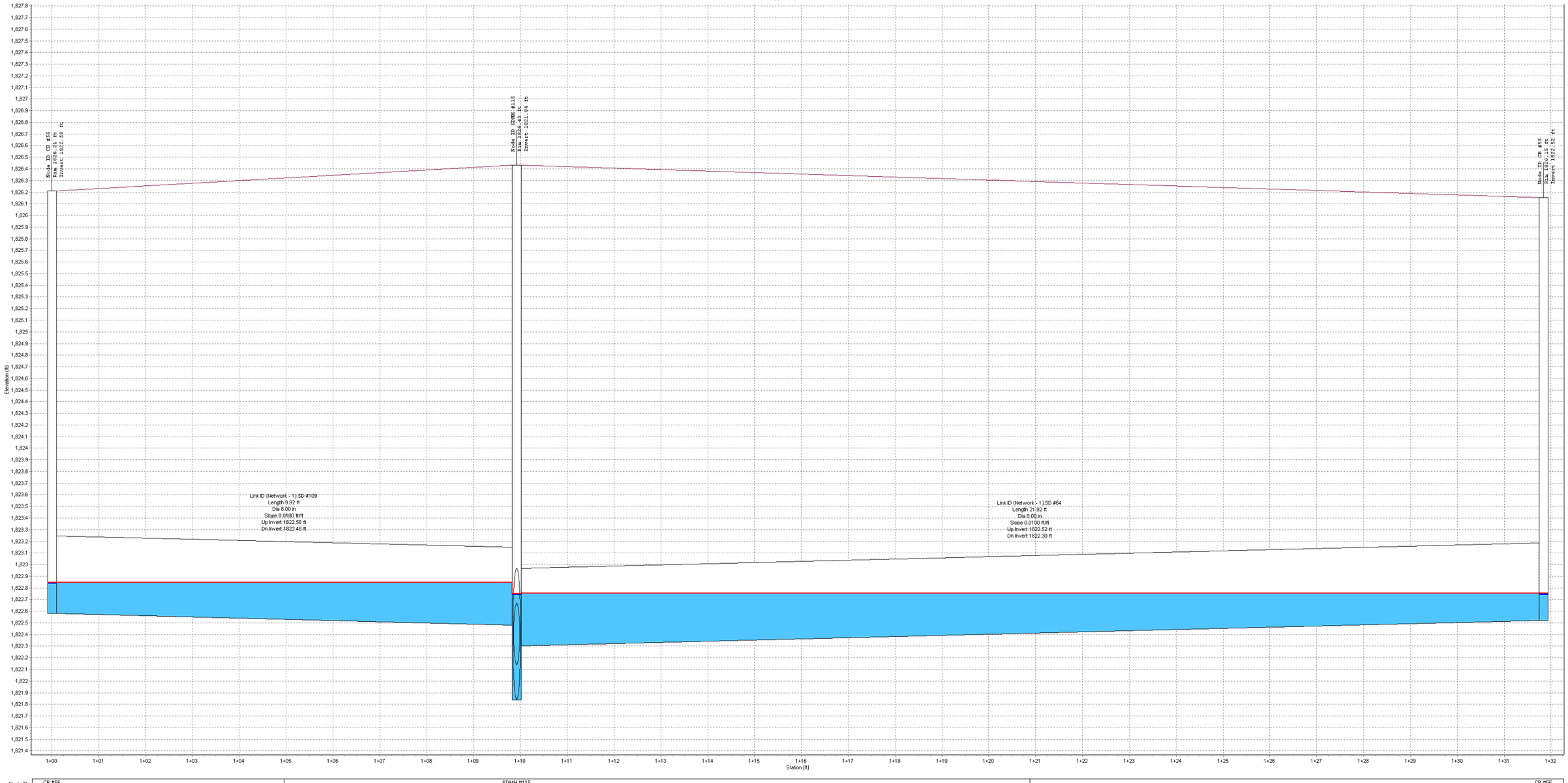


Node ID:	CB #45	SDMH #114	CB #44
Rim (ft):	1829.79	1830.03	1829.77
Invert (ft):	1826.16	1825.72	1826.14
Min Pipe Cover (ft):	2.96	3.30	2.96
Max HGL (ft):	1826.35	1826.26	1826.34

Link ID:	(Network - 1).SD #99	(Network - 1).SD #44
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1826.16	1826.14
Dn Invert (ft):	1826.06	1825.92
Max Q (cfs):	0.24	0.27
Max Vel (ft/s):	2.79	2.94
Max Depth (ft):	0.19	0.20

BASIN J

SDMH115



Node ID:	CB #56	SDMH #115	CB #55
Rim (ft):	1826.21	1826.43	1826.15
Invert (ft):	1822.58	1821.84	1822.52
Min Pipe Cover (ft):	2.96	3.29	2.97
Max HGL (ft):	1822.85	1822.76	1822.75

Link ID:	(Network - 1).SD #109	(Network - 1).SD #64
Length (ft):	9.92	21.92
Dia (in):	8.00	8.00
Slope (ft/ft):	0.0100	0.0100
Up Invert (ft):	1822.58	1822.52
Dn Invert (ft):	1822.48	1822.30
Max Q (cfs):	0.45	0.37
Max Vel (ft/s):	3.30	3.18
Max Depth (ft):	0.27	0.23

Node ID:	CB #49	CB #75	Out-1SD #116
Rim (ft):	1823.18	1822.42	
Invert (ft):	1820.55	1819.16	1818.97
Min Pipe Cover (ft):	1.97	2.43	
Max HGL (ft):	1820.70	1819.59	1819.40

Link ID:	SD #49	SD #116
Length (ft):	46.89	37.61
Dia (in):	8.00	10.00
Slope (ft/ft):	0.0260	0.0050
Up Invert (ft):	1820.55	1819.16
Dn Invert (ft):	1819.33	1818.97
Max Q (cfs):	0.25	0.81
Max Vel (ft/s):	4.02	2.93
Max Depth (ft):	0.15	0.42

BASIN K

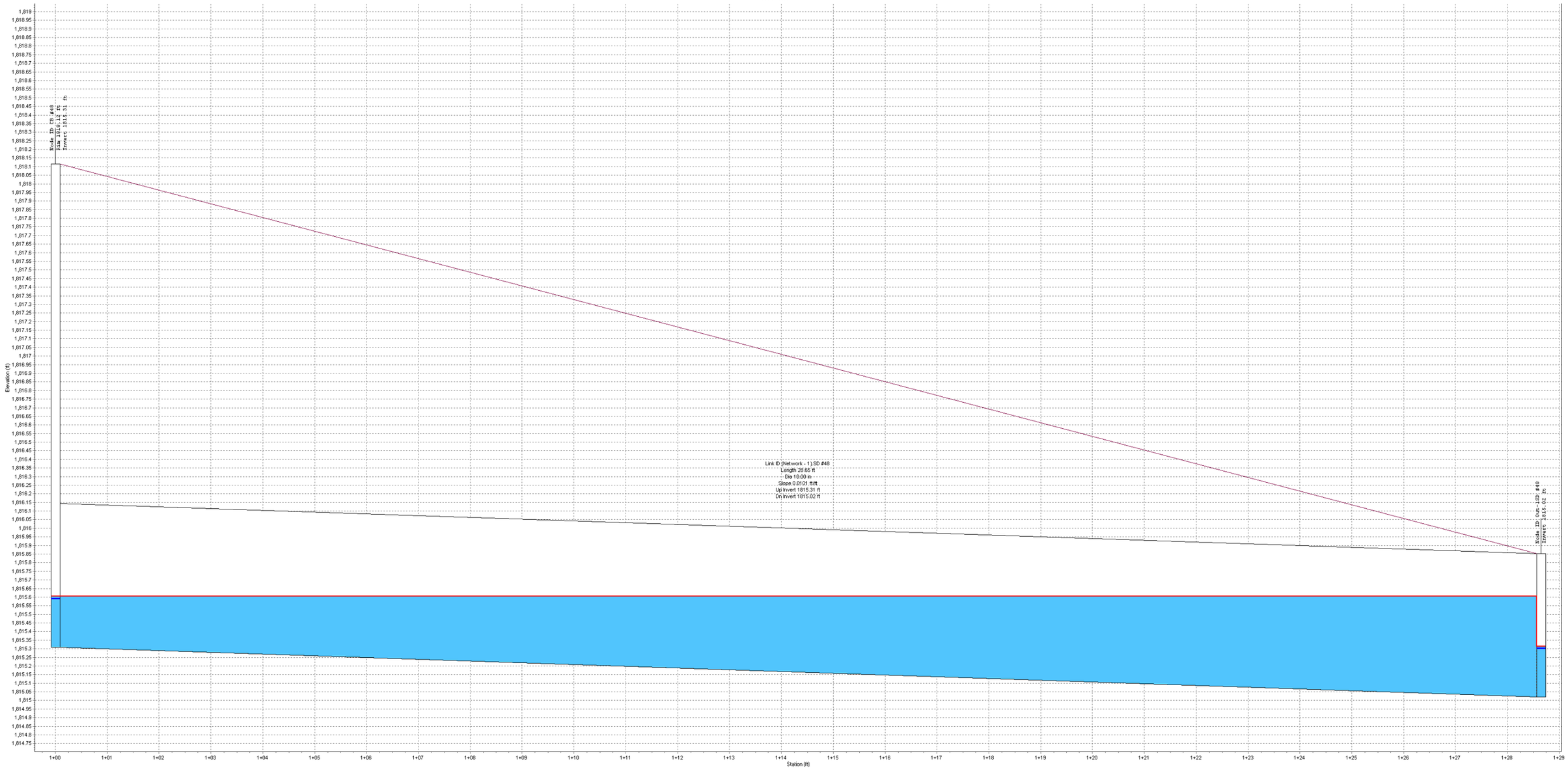
CB76 TO CB75

Node ID:	CB #76	CB #75
Rim (ft):	1822.29	1822.42
Invert (ft):	1819.58	1819.16
Min Pipe Cover (ft):	2.04	2.43
Max HGL (ft):	1819.78	1819.59

Link ID:	SD #115
Length (ft):	31.84
Dia (in):	8.00
Slope (ft/ft):	0.0080
Up Invert (ft):	1819.58
Dn Invert (ft):	1819.33
Max Q (cfs):	0.25
Max Vel (ft/s):	2.63
Max Depth (ft):	0.20

BASIN L

CB48 TO SWALE L



Node ID:	CB #48		Out-1SD #48
Rim (ft):	1818.12		
Invert (ft):	1815.31		1815.02
Min Pipe Cover (ft):	1.97		
Max HGL (ft):	1815.60		1815.34

Link ID:	(Network - 1).SD #48
Length (ft):	28.65
Dia (in):	10.00
Slope (ft/ft):	0.0101
Up Invert (ft):	1815.31
Dn Invert (ft):	1815.02
Max Q (cfs):	0.68
Max Vel (ft/s):	3.73
Max Depth (ft):	0.29

Chapter 4

GEOTECHNICAL REPORT

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Geotechnical Engineering Report
Latah Glen
Parcel Nos: 25364.0001 & 25361.0004
Spokane, Washington

Prepared For:
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Report Date: September 30, 2020
Job Number: 20211

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Appendices

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1.0 EXECUTIVE SUMMARY

The following geotechnical engineering report has been prepared for the Latah Glen development located at the above referenced site in Spokane, Washington. From a geotechnical perspective, the following concepts were identified as favorable for the proposed construction:

- The site is suitable for the proposed construction provided the following report recommendations are implemented.
- Most of the native soils encountered at the site will provide adequate bearing capacity for foundations, support for pavements, and drainage.

The following items have been identified at the project site and proposed construction that should be carefully considered during design and construction:

- Test pits TP-4, TP-7 to TP-10, TP-13, TP-14 and TP-24 encountered refusal due to bedrock at depths ranging from about 2.5-feet to 13-feet below the ground surface. The bedrock is anticipated to be variable across the site. A hydraulic ram or blasting may be required to excavate for utilities, house foundations or other infrastructure improvements.
- Undocumented fill was encountered in test pits TP-3 to TP-8, TP-10 to TP-16, TP-18, TP-20, TP-22 to TP-23 and TP-26 to TP-28 at depths ranging from about ½-feet to 6-feet to below ground surface. Undocumented fill should be removed and replaced with compacted *Structural Fill* below all settlement prone structures.
- Further slope stability evaluation should be performed if house foundations are closer than 30 feet from the crest of a slope steeper than 1.5H:1.0V. The exploration was based on a preliminary plan.
- Limited sub-excavations into native soils will be necessary below foundations if alluvial silts are encountered at foundation subgrade elevations. Recommendations for the sub-excavations are provided below in Section 5.1.1.
- Slope design and construction should incorporate the recommendations provided in the attached *Benching and Slope Fill Requirements* diagram in Appendix E.
- The silty sands and sandy silts at the site are moderately to highly frost-susceptible. Recommendations to help mitigate the potential for frost heave are provided below in Section 5.4.

Liberty Geotech should be involved in the design development and earthwork construction to help ensure that the report recommendations are incorporated into the design and construction Liberty Geotech is available to discuss these items further in-person or via conference call.

2.0 PROPOSED CONSTRUCTION

The project will consist of a residential development at the above referenced site. The development will consist of asphalt paved roadways, underground utilities, and stormwater

management facilities associated with 157 residential homes. Stormwater will be managed using infiltration swales with drywells.

Furthermore, the recommendations included in this report are based on the following plans:

- *Site Plan* prepared by Storhaug, dated July 15, 2020.
- *Design Review Exhibits* (sheets 1 through 4) prepared by Storhaug, dated July 15, 2020.
- *Storm Drain Plan* prepared by Storhaug, dated August 7, 2020.
- *Concept Profile* prepared by Storhaug, dated August 7, 2020.

3.0 GEOTECHNICAL EXPLORATION

3.1 Geology, Topography, and Current Site Use

The *Geologic Map of the Spokane Southwest 7.5-minute Quadrangle* (Hamilton, 2004) was reviewed to determine the geologic deposit at the site. The geologic map indicated that the geologic unit was an Alluvium, Glacial Flood Deposit, and Grande Ronde Basalt. In addition, the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2019) was reviewed. The soil survey indicates that the soil units are Marble Loamy Sand, Clayton-Hagen, Lakespring Ashy Loam. The soil survey describes the soil as sandy glaciofluvial deposits and loess mixed with minor amounts of volcanic ash over glaciolacustrine deposits.

The majority of the site is an abandoned auto salvage yard. There are 2 structures located at the northeast portion of the property. The eastern half of the property is heavily littered with abandoned vehicles and trash. The central western portion of the property is relatively steeply sloped and contains what appears to be old mining roads. Outside of the previous auto yard and possible mining area is sparsely vegetated with trees and prairie grasses. Based on elevations obtained from Google Earth™, the site slopes from the southwest to the northeast with approximately 160-feet of relief.

3.2 Subsurface Exploration

The soils encountered in the test pits were highly variable across the site. In general, the test pits encountered either topsoil or undocumented fill to depths ranging from about ½-foot to 7 ½-feet. Below the topsoil or undocumented fill, the test pits encountered alluvium, glacial outwash, wind deposits, lacustrine deposits, and/or bedrock to their termination or refusal depths. The alluvium consisted of silt and clayey and silty to poorly graded sand, the glacial outwash consisted of silty to poorly graded sand, the wind deposits consisted of silt, and the lacustrine deposits consisted of silt.

3.3 Estimated Groundwater and Bedrock Elevations

Groundwater was not observed during the exploration. Well logs in the vicinity of the site (Department of Ecology, State of Washington) indicate that the static groundwater is at depth of about 50-feet below the ground surface. However, groundwater can become perched on the shallow bedrock surface. Seasonal and annual fluctuations of groundwater levels should be anticipated.

Furthermore, bedrock was encountered in test pits TP-4, TP-7 to TP-10, TP-13, TP-14, TP-24 and TP-25 at depths ranging from about 2.5-feet to 13-feet below the ground surface.

4.0 LABORATORY TESTING RESULTS

Soil samples were obtained in the exploration locations at varying depths to characterize the soil encountered at the site. The results of the laboratory testing results are presented in Appendix C: *Laboratory Testing Results*. The laboratory testing was performed referencing the following American Society for Testing and Material Standard Methods (ASTM):

- ASTM D1140 *Amount of Material in Soils Finer than the No. 200 Sieve*,
- ASTM D2216 *Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass,*
- ASTM D6913 *Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis*.

4.1 Summary of Laboratory Testing Results

The following table summarizes the laboratory tests that were performed on the soil samples obtained from the site. Additional details are provided in Appendix B and D.

Table 4.1.A - Summary of Laboratory Testing

Soil Unit	Lab Tests Performed	Summary of Results
Native Alluvium	• Percent Passing No. 200 Sieve • Gradation Sieve • Natural Moisture Content	Soil classified as silty sand and sandy silt. • % Passing No. 200: 16% - 59% • Moisture Content: 4% - 29%
Glacial Outwash	• Percent Passing No. 200 Sieve • Gradation Sieve • Natural Moisture Content	Soil classified as poorly-graded sand. • % Passing No. 200: 1% - 7% • Moisture Content: 3% - 4%

Native Lacustrine	• Percent Passing No. 200 Sieve • Natural Moisture Content	Soil classified as sandy silt • % Passing No. 200: 63% Moisture Content: 29%

5.0 GEOTECHNICAL RECOMMENDATIONS

5.1 Earthwork

The following recommendations should be considered by the general contractors and earthwork subcontractors prior to providing a cost estimate for the earthwork on the project.

5.1.1 Subgrade Preparation

Clear and grub all vegetation, strip all topsoil and remove all undocumented fill to prepare the subgrades under foundations, slabs, and pavements. If alluvial silts are encountered at foundation subgrade elevation, the soil should be sub-excavated to at least 1 foot below bottom of footing elevation and replaced with compacted structural fill. The sub-excavations should be oversized to provide lateral stability for the structural backfill. The bottoms of the excavations should be oversized at least 1 foot beyond the outside edges of the proposed footings for each foot of excavation below the bottoms of the footings (1H:1V oversizing).

Liberty Geotech should be contacted once the foundation subgrade areas have been exposed to review the subgrade conditions.

In pavement areas, after removing any topsoil and existing fill, the upper 8 inches of the resulting subgrade should be scarified, moistened or dried to within -1 to +3 percent optimum moisture, and compacted to a minimum of 95 percent of the modified Proctor dry density determined in accordance with ASTM D 1557. Furthermore, prior to placing the aggregate base, all areas should be proof-rolled with a loaded dump truck or loaded water truck to determine if the subgrade materials are loose, soft or weak, and in need of further stabilization, compaction, or sub-excavation and re-compaction or replacement. The proof-roll should be witnessed by a geotechnical engineer from Liberty Geotech.

5.1.2 Site Grading

The pavement subgrade surface should be shaped to provide positive drainage to minimize the potential for water to pond in the subgrade. Because the site soils are moderately to highly frost susceptible, it will be important to avoid creating low areas in the subgrade where water can

pond and freeze, which could heave the pavement. Snow storage areas should be carefully considered to minimize the amount of water infiltrating in the subgrade areas.

Slope construction will require proper benching techniques as shown on the attached *Benching and Slope Fill Requirements* diagram in Appendix E. These recommendations should be applied to *Structural Fill* placed on slopes steeper than 10 percent. Furthermore, keyway and bench drains should be considered to remove potential groundwater from the keyway and benches.

Permanent slopes should be graded no steeper than 1.5:1 (horizontal:vertical). Establishing vegetation on permanent slopes as soon as possible is recommended. Slopes excavated into bedrock are often stable at steeper angles. We recommend the geotechnical engineer be retained to observe excavations into bedrock to provide final sloping recommendations.

5.1.3 Earthwork Soil Products, Compaction, and Testing Frequency

Different soil products should be used for different applications. The following table presents recommendations for anticipated earthwork construction:

Table 5.1.2.A - Soil product selection.

Soil Product	Project Use	Soil Description
Structural Fill	● Fill areas under foundation. ● Fill to achieve subgrade under pavement, slab or driveway. ● Backfill of shallow foundations. ● Fill outside 3 feet of the back face of retaining walls. ● Soil restraining a retaining wall from sliding. ● Embankment fill.	Soil classified as: ● GP-GM or GW-GM ● GM ● SP-SM or SW-SM ● SM Soil should be free of organics, deleterious material, and all material larger than 6-inches in diameter.
Retaining Wall Fill	● Fill within 3 feet of the back face of retaining walls. ● Fill within 1.5 feet of the back face of basement walls.	Free-draining soil classified as: ● GP or GW ● SP or SW Soil should be free of organics, deleterious material, and all material larger than 3-inches in diameter.
Concrete Slab	● Fill immediately below	Soil should meet the percent passing the

Cushion	slab-on-grade, sidewalks and exterior hardscapes.	following sieve size: ● 1”: 80-100% ● No. 4: 25-65% ● No. 200: 7% maximum Soil should be free of organics, clay fines, deleterious material, and all material larger than 2-inches in diameter.
Crushed Surfacing	● Fill immediately below slab-on-grade, asphaltic-pavement, concrete pavement, sidewalks and exterior hardscapes.	Crushed rock should meet the percent passing the following sieve size: ● 1-¼”: 99-100% ● 1”: 80-100% ● ⅝”: 50-80% ● No. 4: 25-45% ● No. 40: 3-18% ● No. 200: 7.5% maximum ● Sand equivalent: 40 minimum Also, the material should be free of wood, roots, bark, and deleterious material. For roadway base the following requirements should also be met: ● Fracture face: 75%, minimum ● Los Angeles Wear, 500 rev: 35%, maximum. ● Degradation factor: 15 minimum.
Landscaping Fill	● Non-structural fill areas. ● Vegetated areas.	Soil meeting the following requirements: ● Silt or Clay: 35% to 70% ● Sand: 20% to 60% ● Organic material: 2% to 20% ● Deleterious materials (gravel, rock, slag, cinder, roots, sod): 5% max ● pH between 5 and 7

The following table provides compaction recommendations specific to ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort.* All fill products should be compacted in lifts of soil not exceeding 12 inches measured prior to compaction.

Table 5.1.3.B - Compaction recommendation.

Project Use	**Recommended Compaction**
● Fill areas under foundation. ● Fill to achieve subgrade under slab or driveway.	95 percent of the maximum dry density of Modified Proctor.

• Fill immediately below slab-on-grade. • Fill immediately below the asphaltic-concrete pavement, concrete pavement, sidewalks, and exterior hardscapes.	
• Exterior wall backfill. • Utility trench backfills.	92 percent of the maximum dry density of Modified Proctor.
• Non-structural fill areas. • Vegetated areas.	80 to 85 percent of the maximum dry density of Modified Proctor.

If more than 30 percent of native or imported *Structural Fill* material is retained on the ¾" sieve, ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort* is not recommended to be used. In this case, a soil specific method specification can be developed. A nuclear density gauge can be used during earthwork operations to establish a moisture and compaction method that provides an acceptable maximum dry density. Method specification earthwork operations are recommended to have full-time soil testing to ensure adequate compaction.

The soil products are recommended to have passing compaction testing results at the following frequency to ensure the soil is uniformly meeting compaction requirements. Failing test results should be retested after additional compactive effort and, if necessary, water is added. At least 90% of the compaction testing results must achieve the required maximum dry density.

Table 5.1.3.C - Testing Frequency.

Project Use	**Testing Frequency**
• Below interior building concrete slabs for fill less than a vertical foot.	2,500 square feet and a minimum of 2 tests.
• Along the building footings for every vertical foot of fill.	50 lineal feet and a minimum of 2 tests.
• Structural fill placements larger than one foot in height	100 cubic yards
• Fill under asphalt parking areas and exterior concrete flatwork	5,000 square feet and a minimum of 2 tests.
• Utility trenches for every two vertical feet of trench backfill.	100 lineal feet and a minimum of 2 tests.

The jurisdictional requirements should be conformed to if there is a conflict with the requirements of Table 5.1.2.C. Excavations deeper than four feet must have adequate trenching protection or sloped back in accordance with state and federal requirements in order to be compaction tested.

5.1.4 Excavation Construction Considerations

The soils at the site are removable with a toothed-bucket on an excavator. However, a hydraulic breaker may be required for excavations into weathered bedrock. Blasting may be considered to remove isolated rock outcroppings if it is more economical than removal with a hydraulic breaker. A blasting plan should be prepared if blasting is required.

If groundwater is encountered in excavations we recommend dewatering. When final plans are available, we should be contacted to discuss dewatering options.

No excavation support or sloped excavations have been reviewed in preparation of this report. The contractor should perform excavations in accordance with state and federal regulations. If requested, Liberty Geotech is available to provide further analysis of excavation support or shoring design. Liberty Geotech is not responsible for the safety of trenches, excavations or shoring support.

5.1.5 Weather-Related Earthwork Considerations

Wet weather, freezing conditions, or snow can impede or prevent earthwork operations. The following recommendations should be considered by the contractors and owners during construction:

1. It is not recommended that soil products are placed during freezing conditions. No concrete or soil products should be placed on frozen soil.
2. The steeply-sloped topography may cause hazardous working conditions during winter or wet weather conditions.
3. The on-site soils, bedrock and any imported soil products may become saturated during earthwork operations and will reduce operation production.
4. Stockpiles of soil products should be protected during wet weather. Soil products that have been compacted should be protected and not travelled on during wet weather to prevent disturbing the subgrade.

This report does not provide recommendations for erosion, runoff, trackout from trucks removing site stripping, or environmental considerations associated with earthwork operations.

5.2 Shallow Foundation Design

The following design parameters are provided based on the project understanding described in Section 2.0. Liberty Geotech should be notified to revise or confirm the following

recommendations if the building location, locations of the site improvements, or structural loads change.

- If alluvial silts are encountered at foundation subgrade elevation, the soil should be sub-excavated to at least 1 foot below bottom of footing elevation and replaced with compacted structural fill.
- Allowable bearing capacity for foundations: 1,500 psf.
- Footing embedment for heated foundations*:* 2 feet.
- Footing embedment for unheated foundations: 3 feet.
- Estimated total settlement for foundations on *Structural Fill:* Less than 1 inch.
- A sliding coefficient of friction between the shallow foundations and native soil of 0.35 may be used.

Differential settlement can occur when two different foundations exert different bearing pressures on the soil. The magnitude of the differential settlement depends on the foundation pressure difference. Or, differential settlement can occur due to differences in the soil resistance to the foundation pressure. Footing foundations are not recommended to bear on both *Structural Fill* and bedrock to prevent differential settlement. Differential settlement is anticipated to be less than ½ inch.

5.3 Concrete Slab Design and Construction Considerations

The following recommendations should be considered to be the minimum design requirements. The structural engineer's design supersedes these recommendations. A structural engineer should design concrete slabs supporting more than 200 pounds per square foot.

- The concrete slab should be a minimum of four inches thick.
- The slab reinforcement should not be less than No. 3 rebar, 18 inches in the center in both directions, and constructed in the middle of the slab.
- The modulus of subgrade support is recommended to be 150 pounds per square inch per inch (pci).
- The slab should be supported with inches of compacted *Concrete Slab Cushion* soil in accordance with Section 5.1.

Vapor transmission through the concrete slabs may damage moisture sensitive floor coverings. The design and ownership team should carefully consider design publication *Guide to Concrete Floor and Slab Construction* (ACI, 2015) before ommiting a vapor retarded under the slab. The design and ownership team may consider omitting a vapor retarder under the slab based on lack of clay in the native soil, depth to groundwater, usage of *Concrete Slab Cushion*, and no proposed moisture sensitive floor coverings. If a moisture retarder is used, it should meet the requirements of ASTM E1643: *Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*.

Concrete slabs can crack because of numerous reasons. The following considerations should be mitigated during construction to reduce the risk of the concrete slabs cracking.

- The concrete mix design can be altered based on the ambient temperature, aggregate moisture content, anticipated time in the mix truck, and finishing methods. A poorly designed mix that does not incorporate these factors can cause concrete slabs to crack.
- The contractor's means and methods can cause concrete slabs to crack including improper placement of rebar support, improper crack control joints, improper curing methods or poor finishing techniques, and placing concrete during cold or hot weather.

5.4 Exterior Slabs

The silty sands and silts at the site are considered to be moderately to highly frost-susceptible. If these soils become saturated and freeze, heave may occur. One way to reduce the potential for heave is to remove any frost-susceptible soil down to bottom-of-footing grade or to a maximum depth of 3 feet, whichever is less, and replace with non-frost-susceptible sand or gravel. Sand or sandy gravel having less than 5 percent of the particles by weight passing a 200 sieve is considered to be non-frost-susceptible.

5.5 Seismicity and Liquefaction

The proposed site is designated a **Site Class D**. The following table presents seismicity coefficients referencing the IBC 2015 code.

Table 5.4.A Seismic Design Parameters

0.2 Second MCE Spectral Response Acceleration	S_s	0.330
0.2 Second MCE Spectral Response Acceleration	S_1	0.115
1.0 Second MCE Spectral Response Acceleration	S_{DS}	0.338
1.0 Second MCE Spectral Response Acceleration	S_{D1}	0.179
Design Peak Ground Acceleration	PGA_M	0.216

Latitude: 47.619941

Longitude: -117.43970

There is a low potential for liquefaction based on the *Liquefaction Susceptibility Map of Spokane County, Washington*.

5.6 Lateral Earth Pressure Design

The following table provides equivalent fluid pressures recommended to be used by the structural engineer to design retaining or basement walls.

Table 5.5.A Seismic Design Parameters

Equivalent Fluid Pressure Designation	Unit Weight (PCF)
Active Equivalent Fluid Pressure	40
At-rest Equivalent Fluid Pressure	60
Passive Equivalent Fluid Pressure	250

Concrete basement walls that are fully restrained should be designed for at-rest equivalent fluid pressure. Flexible walls or concrete walls that are allowed to crack may be designed for the active equivalent fluid pressure. Soil that is preventing a retaining wall or foundation wall from sliding may be analyzed with the passive equivalent fluid pressure.

5.7 Drainage and Stormwater Infiltration Recommendations

The following recommendations should be used by the civil engineer to design bio-infiltration swales, drywell structures, or infiltration galleries:

- The depth to a restrictive layer is highly variable across the site.
- Based on the test pits, drywells would be suitable for the proposed swales located near TP-18, TP-20, TP-21, and TP-22. Low-profile drywells could be considered for the swale located near TP-14. Furthermore, drainage areas could be repositioned such that they are located in areas of the site containing free-draining soils at depth (sands classified as SP).
- Swales and drywells should be located 10-feet from the edge of buildings and concrete hardscapes to minimize the effects of infiltration.
- Hardscaping and landscaping should be sloped at least five percent away from buildings or settlement prone site improvements.

Subsurface infiltration using bio-infiltration swales or infiltration galleries may be designed with a hydraulic conductivity of 15 inches per hour should be used for infiltration design. The following recommendations are provided in the *Stormwater Management Manual for Eastern Washington* (Stormwater, 2019).

- All biofiltration swales should be sized to empty within 72 hours of an infiltration event.

- The soil has a medium to high treatment capacity based on Table 5.6.1 of the *Stormwater Management Manual for Eastern* (Stormwater, 2004).

Single and double-depth drywells may utilize a design outflow rate of 0.14 and 0.23 cubic feet per second, respectively. Higher drywell outflow recommendations may be provided once the final drywell locations are determined. Drywells should only be placed in the free-draining sands encountered at the site. The drywells must conform to the jurisdiction specification in which they are constructed. Low profile drywells could be considered for swales in areas with shallow limiting layers.

Foundation drains should not be omitted based on the drainage characteristics of the native soils. In addition, all basement walls are recommended to have a waterproofing membrane to help prevent water infiltration. A plate in Appendix F: *Basement Wall Drainage Detail* provides recommendations for helping mitigate water seepage through the basement wall.

5.8 Pavement Section Design Recommendations

The following pavement design recommendations are provided for 3.0 inches of asphaltic-concrete pavement over 6.0 inches of *Crushed Surfacing*. Subgrade areas that are predominately silt should be over-excavated by 6.0 inches and replaced with *Structural Fill* or *Crushed Surfacing.* Alternative to over-excavation, a geotextile separation (Mirifi H2Ri or an approved equivalent) may be installed over prepared silt subgrade. The Structural Number for this pavement section is 1.91 and the number of passes with an equivalent single-axle load (ESAL) is 50,000. The following design parameters were used in the analysis:

- Subgrade support modulus, M_r: 8,000 psi (assuming the subgrade has been scarified and re-compacted to a minimum of 95 percent of the modified Proctor).
- Reliability percent: 80%.
- Standard deviation: 0.45.
- Asphaltic-concrete layer coefficient, a1: 0.42.
- Aggregate base layer coefficient, a2: 0.12.
- Drainage coefficient of aggregate base, m: 0.90.

Paving operations can be observed and tested by Liberty Geotech or by the asphalt paving company. Asphalt should be compacted to 92 percent of the Rice density. Liberty Geotech can provide additional traffic analysis or life-cycle cost analysis upon request.

6.0 DESIGN REVIEW AND CONSTRUCTION OBSERVATIONS

6.1 Geotechnical Consultant versus Geotechnical Inspector

The owner chooses to retain Liberty Geotech as either the Geotechnical Consultant or Geotechnical Inspector. Liberty Geotech provides recommendations and suggestions to the project team as the Geotechnical Consultant. In a Consultant role, Liberty Geotech has no

liability for settlement associated with *Structural Fill* placement and compaction, moisture or seepage through retaining walls or concrete slabs, site drainage, or cracks in the interior or exterior concrete flatwork. Liberty Geotech's liability is limited to the authorized proposal dated August 19, 2020. As a geotechnical inspector, Liberty Geotech provides inspections and soil testing during construction.

Liberty Geotech has been retained as a Geotechnical Consultant for the Latah Glen. At the owner's request Liberty Geotech can provide a proposal to perform additional geotechnical inspections for the project. This report cannot be relied upon for geotechnical recommendations if Liberty Geotech is not retained to observe and confirm the soil conditions as recommended in this report.

6.2 Revisions and Transfer of Geotechnical Recommendations

Liberty Geotech should be notified to update recommendations if the proposed development changes or subsurface soil or groundwater conditions vary from those described in this report. This report cannot be relied upon by property owners adjacent to this property without confirmation of their specific site soil conditions. Also, the report recommendations cannot be transferred to other business entities or subsequent property owners without written authorization. No warranty or certification of construction is provided with this report. It is recommended that Liberty Geotech is retained to provide design review of the proposed construction and be the Geotechnical Consultant during construction in order to continue to be the Geotechnical Engineer of Record.

7.0 REFERENCES

ACI Committee 302. "Guide for Concrete Floor and Slab Construction." ACI 302.1R-15. American Concrete Institute, P.O. Box 19150 Redford Station, Detroit, Michigan 48219.

Derkey, Robert E., Hamilton, Michael M., Stradling, Dale F., 2004. Geologic Map of the Spokane SW 7.5-minute Quadrangle, Spokane County, Washington. Washington Division of Geology and Earth Resources.

OSHPD. "Seismic Design Maps."Accessed September 27, 2020. https://seismicmaps.org/

Palmer, Stephen P., Magsino, Sammantha L., Bilderback, Eric L., *et. al.,* 2004. "Liquefaction Susceptibility Map of Yakima County, Washington." Washington State Department of Natural Resources.

United States Department of Agriculture, Natural Resources Conservation Service. "Web Soil Survey." Accessed September 27, 2020. http://websoilsurvey.nrcs.usda.gov/

Washington State Department of Ecology. "Stormwater Management Manual for Eastern Washington." February 2019. Publication Number 18-10-044.

Washington State Department of Ecology. “Washington State Well Report Viewer.” Accessed September 27, 2020. fortress.wa.gov/ecy/wellconstruction/map/WCLSWebMap/

APPENDIX A

Exploration Site Plan



VICINITY MAP
(GOOGLE MAPPING SERVICE™)

APPROXIMATE SCALE - FEET

0 75 150

LEGEND

TP-1 TEST PIT LOCATION

IMAGE SOURCE: GOOGLE EARTH, PARTIAL OVERLAY OF LATAH GLEN, SITE PLAN, STORHAUG, DATED JULY 15, 2020

EXPLORATION SITE PLAN

LATAH GLEN

PARCEL NOS: 25364.0001 AND 25361.0004

SPOKANE, WASHINGTON

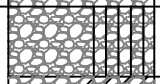
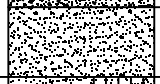
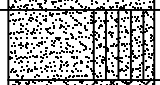
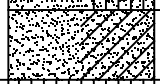
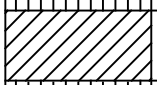
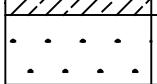
LIBERTY GEOTECH

JOB NO. 20211	SEPTEMBER 30, 2020	PLATE 1

APPENDIX B

Subsurface Exploration Logs

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS GROUP SYMBOL	SOIL DECRIPTION
COURSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	WELL-GRADED GRAVEL
				GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES		GM	SILTY GRAVEL SILTY GRAVEL WITH SAND
				GC	CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
	SAND	CLEAN SAND		SW	WELL-GRADED SAND
				SP	POORLY-GRADED SAND
		SAND WITH FINES		SM	SILTY SAND
				SC	CLAYEY SAND
	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	INELASTIC SILT
				CL	LEAN CLAY
				OL	ORGANIC SILT
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	ELASTIC SILT
				CH	FAT CLAY
				OH	ORGANIC CLAY
				PT	PEAT

ABBREVATIONS
BGS - BELOW EXISTING GROUND SURFACE
N.E. - NOT ENCOUNTERED

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Poorly-Graded Sand with Silt (SP-SM) Loose, Brown, Dry	1934	0								
ALLUVIUM - Sandy Silt (ML) Firm, Brown, Dry	1930	5								cobbles and boulders up to 16"
ALLUVIUM - Silty Sand (SM) Medium Dense, Brown, Moist	1925	10								

Test pit terminated at 10-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 1		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: ne	Logged By: MK		Sheet: 1 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Silty Sand (SM) Loose, Light Brown, Dry	1920	0								
ALLUVIUM - Sandy Silt (ML) Firm, Light Brown, Dry	1915	5		1-Gallon Bag		57		8		
ALLUVIUM - Silty Sand (SM) Dense, Brown, Moist	1910	10		1-Gallon Bag		33		8		

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 2		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: ne	Logged By: MK		Sheet: 2 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Dense, Brown, Dry	1910	5		1-Gallon Bag						
	1905	10								
	1900	15								

Test pit terminated at 15-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 3		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 3 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1910	0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Light Brown, Dry	1905	5		1-Gallon Bag		16		13		
LACUSTRINE - Sandy Silt (ML) Firm, Light Brown, Moist	1900	10		1-Gallon Bag	4.5+	63		29		
BEDROCK - Poorly-Graded Gravel (GP) Hard, Brown, Moist										

Test pit terminated at 13-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 4		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 4 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt (SP-SM) Loose, Light Brown, Dry	1902	0								
EOLIAN - Sandy Silt (ML) Hard, Brown, Dry	1900	5		1-Gallon Bag						
ALLUVIUM - Silty Sand with Gravel (SM) Dense, Dark Brown, Moist	1895			1-Gallon Bag						
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Dark Brown, Moist		10								

Test pit terminated at 11-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 5		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 5 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1865	0								
ALLUVIUM - Silty Sand (SM) Loose, Brown, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Dense, Dark Brown, Moist	1860	10		1-Gallon Bag		1		4.8		angular cobbles

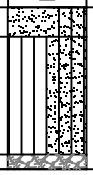
Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 6		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 6 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1892	0								
BEDROCK - Poorly-Graded Gravel (GP) Dense, Light Brown, Dry										

Test pit terminated at 4-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 7		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 7 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1864	0								
LACUSTRINE - Sandy Silt (ML) Soft, Light Brown, Dry										
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Dry										

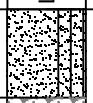
Test pit terminated at 2.75-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 8		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 8 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
ALLUVIUM - Silty Sand (SM) Loose, Light Brown, Dry	1855	0		1-Gallon Bag						
LACUSTRINE - Sandy Silt (ML) Very Hard, Brown, Dry	1850	5		1-Gallon Bag 1-Gallon Bag	4.5+					
LACUSTRINE - Sandy Silt (ML) Very Hard, Dark Brown, Moist					4.5+					
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Moist				1-Gallon Bag	4.5+					

Test pit terminated at 9-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 9		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 9 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1880	0								
BEDROCK - Poorly-Graded Gravel (GP) Very Hard, Brown, Dry										

Test pit terminated at 2.5-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 10		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 10of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt with Gravel (ML) Very Soft, Light Brown, Dry	1850	0								
ALLUVIUM - Silty Sand (SM) Loose, Tan, Dry	1845	5		1-Gallon Bag						
ALLUVIUM - Sandy Silt (ML) Firm, Tan, Dry				1-Gallon Bag		59		32		
ALLUVIUM - Silty Sand (SM) Dense, Light Brown, Dry	1840	10		1-Gallon Bag		33		18		

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 11		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 11of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt with Gravel (ML) Very Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1845									
ALLUVIUM - Silty Sand (SM) Medium Dense, Brown, Moist		5								
	1840									
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense Gray, Moist		10		1-Gallon Bag		4		6		
	1835									

Test pit terminated at 14-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 12		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 12of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silt (ML) Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1830	5								
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Dark Brown, Moist										

Test pit terminated at 8-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 13		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 13of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1860	0								angular basalt cobbles
UNDOCUMENTED FILL - Silty Sand (SM) Medium Dense, Tan, Dry										andgular cobbels from builidng the road.
ALLUVIUM - Poorly-Graded Sand (SP) Dense, Dark Brown, Moist	1855	5								angular cobbles
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Dark Brown, Moist		10								

Test pit terminated at 10-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 14		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 14of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1855	0								angular basalt cobbles, old car parts
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Dark Brown, Dense	1850									angular cobbles

Test pit terminated at 9-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 15		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 15of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1850	0								
UNDOCUMENTED FILL - Silty Gravel with Sand (GM) Loose, Tan, Dry										cobble and boulders up to 30"
	1845	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Medium Dense, Gray, Moist										
	1840	10								

Test pit terminated at 11-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 16		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 16of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
ALLUVIUM - Sandy Silt (ML) Very Soft, Light Brown, Dry		0		1-Gallon Bag		32		4		
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1830	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Gray, Medium Dense	1825	10								angular cobbles

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 17		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 17of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry	1825	0								
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry		5								cobbles and boulders up to 36"/ concrete blocks
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Light Gray, Moist	1820	10								
	1815									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 18		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 18of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1850	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Silt (SP-SM) Medium Dense, Dark Brown, Dry	1845	10		1-Gallon Bag		7		3		
	1840									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 19		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 19of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1845	0								Garbage and road building material
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1840	10								
	1835									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 20		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 20of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Soft, Light Brown, Dry	1845	0								
ALLUVIUM - Silty Sand (SM) Dense, Tan, Dry	1840	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1835	10								

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 21		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 21of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Very Soft, Light Brown, Dry	1835	0								
ALLUVIUM - Silty Sand (SM) Loose, Tan, Dry	1830	5								
		10								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1825									cobbles

Test pit terminated at 14-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 22		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 22of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Gray, Dry	1825	0								
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry		5		1-Gallon Bag						cobbles and boulders up to 20" and garbage
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Light Gray, Dry	1820	10		1-Gallon Bag		1		4		
	1815									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 23		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 23of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Silty Sand with Gravel (SM) Loose, Light Gray, Dry		0								
UNDOCUMENTED FILL - Silt (ML) Loose, Light Gray, Dry	1810	5		5-Gallon Bulk						boulders up to 20", Very ashy, Small pieces of charcoal
ALLUVIUM - Silty Sand with Gravel (SM) Loose, Brown, Dry	1805			1-Gallon Bag		18		4		boulders up to 20"
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Dry										Basalt bedrock

Test pit terminated at 9-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 24		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 24of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Loose, Dark Brown, Dry ALLUVIUM - Sandy Silt (ML) Soft, Light Brown, Dry										With roots With roots and cobbles

Test pit terminated at 3.5-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 25		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 1 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry	1815									With cobbles, boulders, and debris
UNDOCUMENTED FILL - Poorly-Graded Sand with Gravel (SP) Loose, Dark Gray, Dry	1810	5								With cobbles and boulders
ALLUVIUM - Clayey Sand (SC) Loose, Brown, Moist										
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	10								

Test pit terminated at 13.5-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 26		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 2 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry		0								With cobbles and debris
GLACIAL FLOOD DEPOSITS - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1810	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	10		1-Gallon Bag		2		4		

Test pit terminated at 12-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 27		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 3 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry	1810									With cobbles and debris
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	5								With cobbles and boulders
		10								

Test pit terminated at 10-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 28		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 4 of 4

APPENDIX C

Laboratory Testing Results

ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

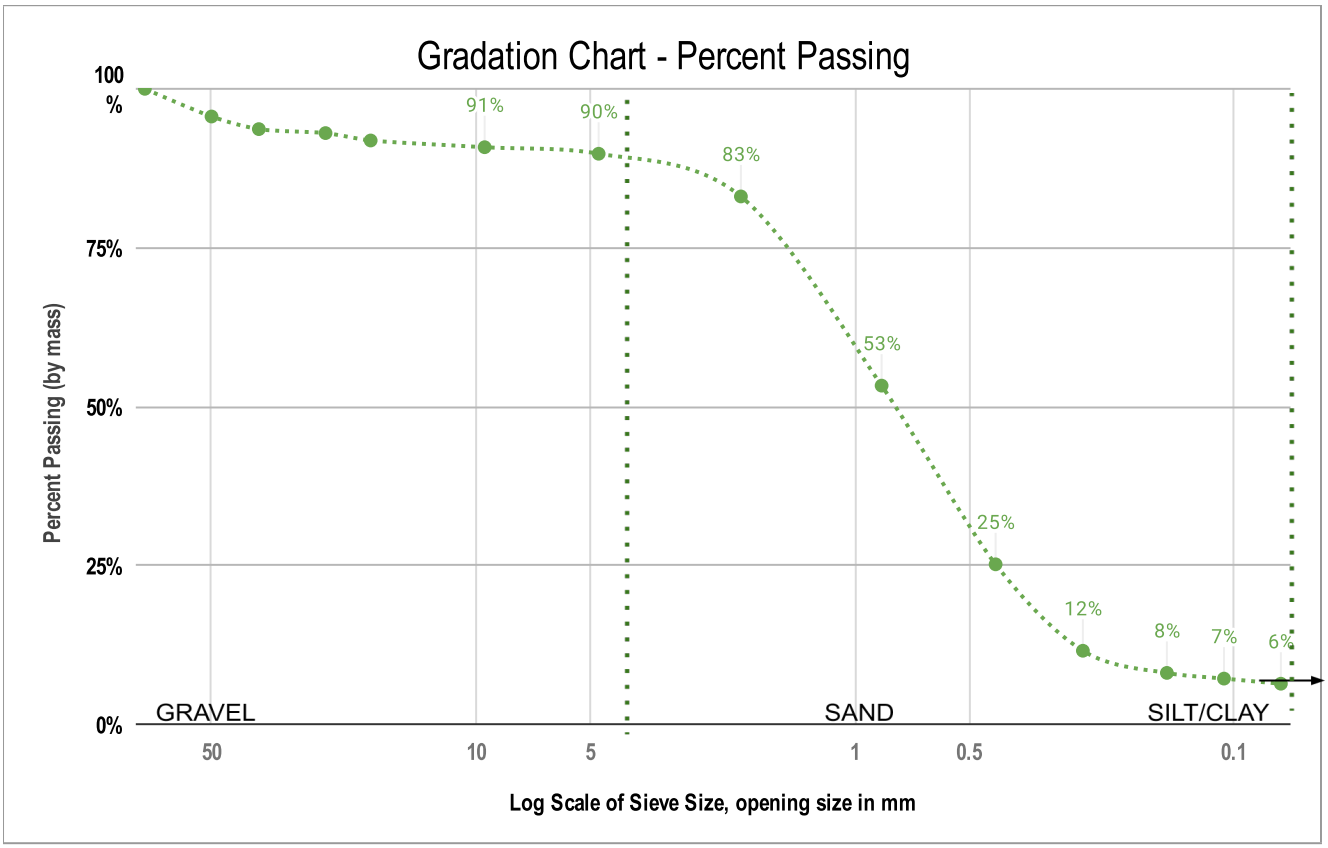
Project: Latah Glen **Test No.:** 20211.2 **Testing Date:** 9/21/2020

Job No: 20211 **Sample Location:** TP-23@3.5' **Laboratory Technician:** James Swearingen

Method Used: Method A Max Particle Size: 3/8"

Total Sample Mass: 25,336 grams Minimum Sample Size: 165 grams

Drying Method: Oven Dry



Notes:

Excluded Material: None.

Additional Results

Soil Classification: Poorly-Graded Sand with Silt

Percent Moisture: 2.7%

%Gravel: 10% **%Sand:** 83% **%Fines:** 6%

Coefficient of Uniformity, Cu: 5.0

Coefficient of Curvature, Cc: 1.3

ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

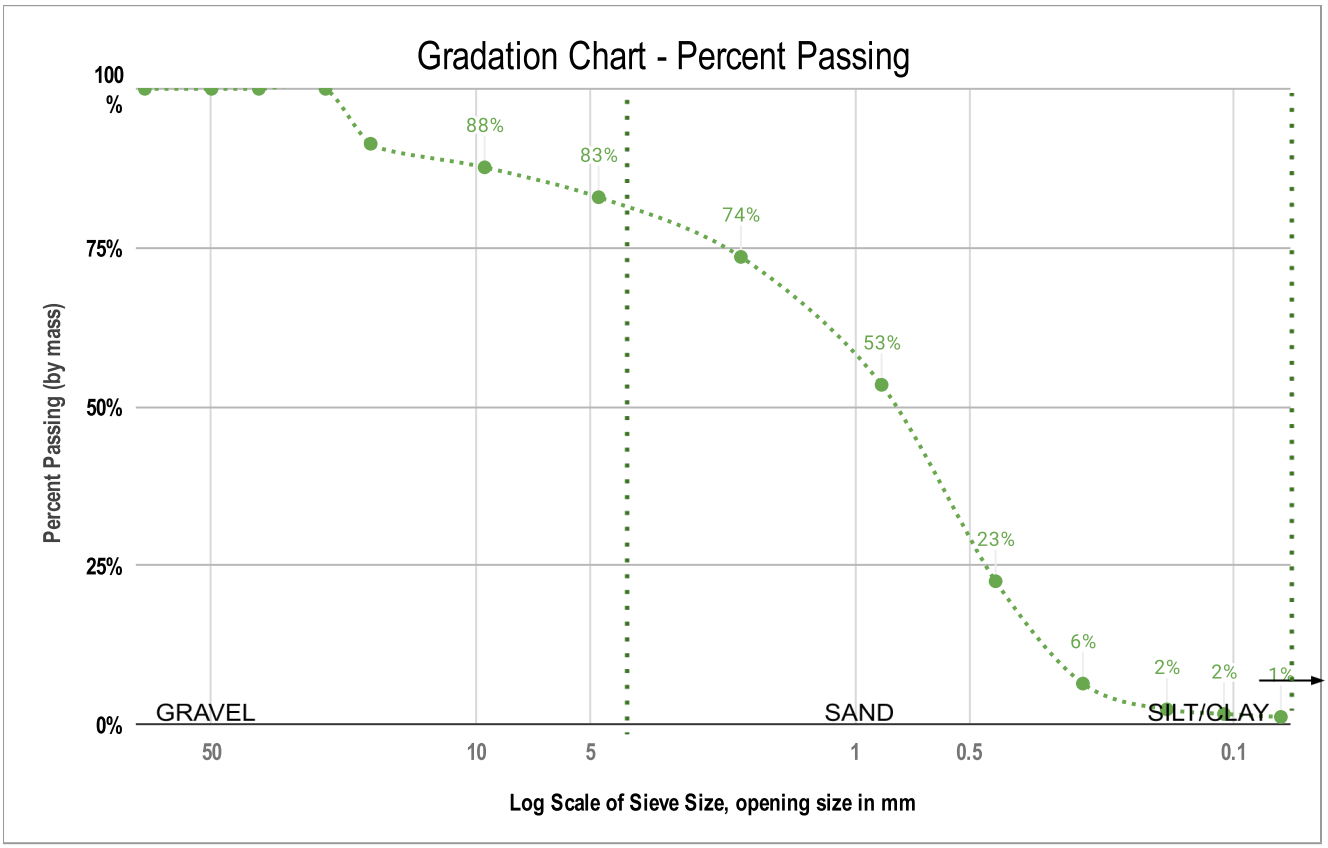
Project: Latah Glenn **Test No.:** 20211.4 **Testing Date:** 9/11/2020

Job No: 20211 **Sample Location:** TP-6@12' **Laboratory Technician:** James Swearingen

Method Used: Method A Max Particle Size: 3/4"

Total Sample Mass: 1,521 grams Minimum Sample Size: 1,300 grams

Drying Method: Oven Dry



Notes:

Excluded Material: None.

Additional Results

Soil Classification: Well-Graded Sand with Gravel

Percent Moisture: 4.8%

%Gravel: 17% **%Sand:** 82% **%Fines:** 1%

Coefficient of Uniformity, Cu: 5.0

Coefficient of Curvature, Cc: 0.5

APPENDIX D

Photo Log

Appendix E: Photo Log



PHOTO 1: TP-1



PHOTO 2: TP-2



PHOTO 3: TP-3



PHOTO 4: TP-4



PHOTO 5: TP-5

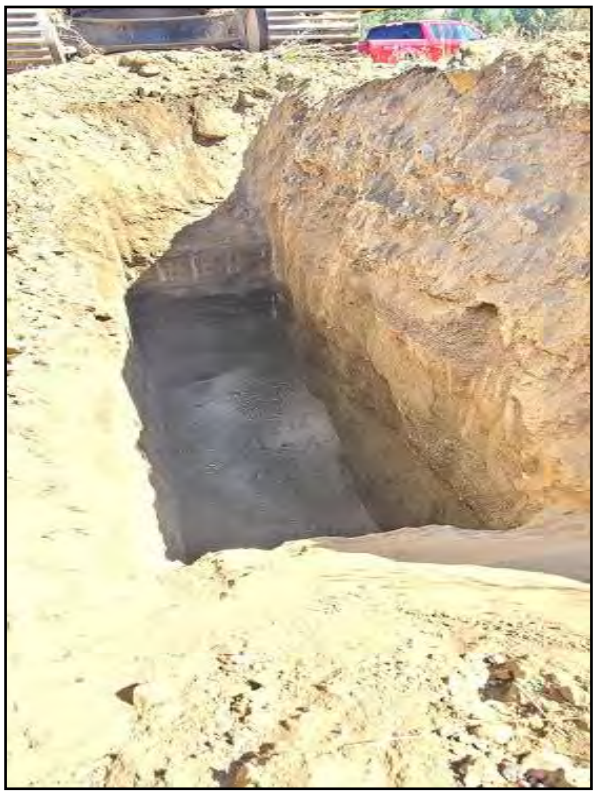


PHOTO 6: TP-6



PHOTO 7: TP-7



PHOTO 8: TP-8

Appendix E: Photo Log

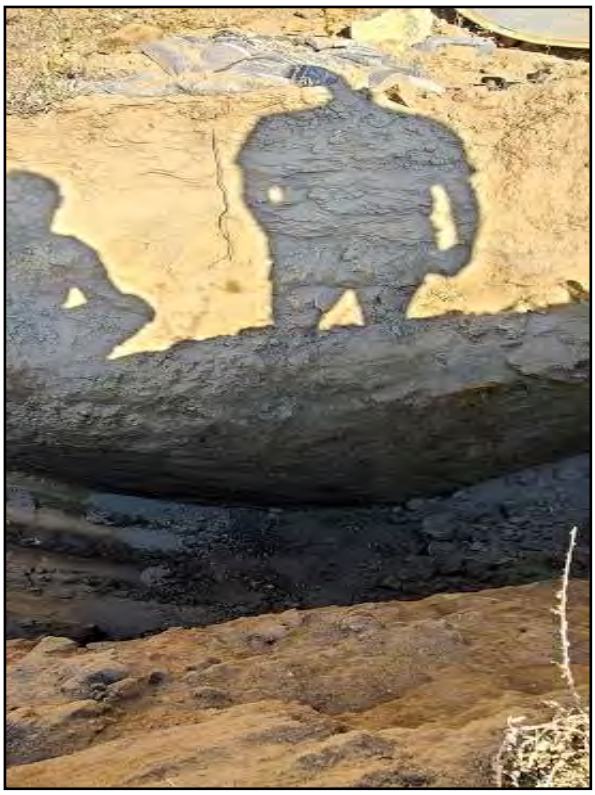


PHOTO 9: TP-9



PHOTO 10: TP-10



PHOTO 11: TP-11



PHOTO 12: TP-12



PHOTO 13: TP-13



PHOTO 14: TP-14



PHOTO 15: TP-15



PHOTO 16: TP-16



PHOTO 17: TP-17



PHOTO 18: TP-18



PHOTO 19: TP-19



PHOTO 20: TP-20

Appendix E: Photo Log



PHOTO 21: TP-21

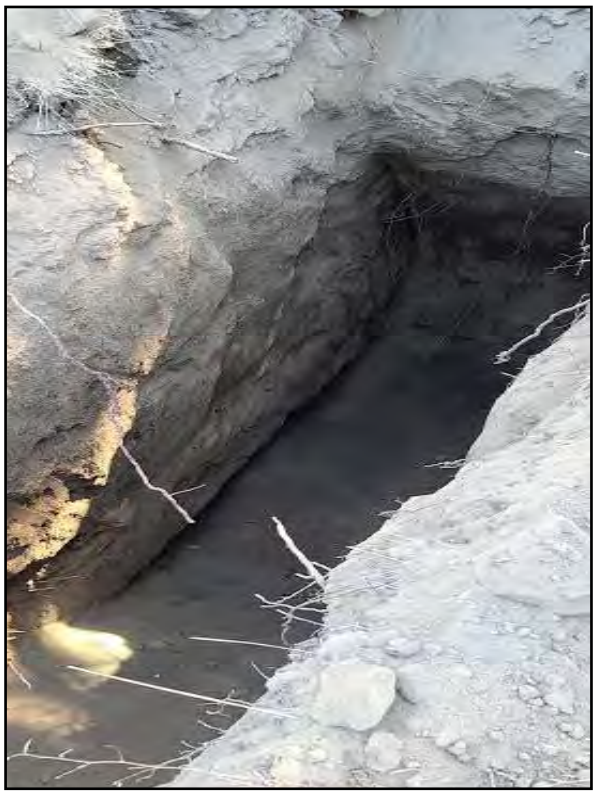


PHOTO 22: TP-22



PHOTO 23: TP-23



PHOTO 24: TP-24



PHOTO 25: TP-25



PHOTO 26: TP-26



PHOTO 27: TP-27

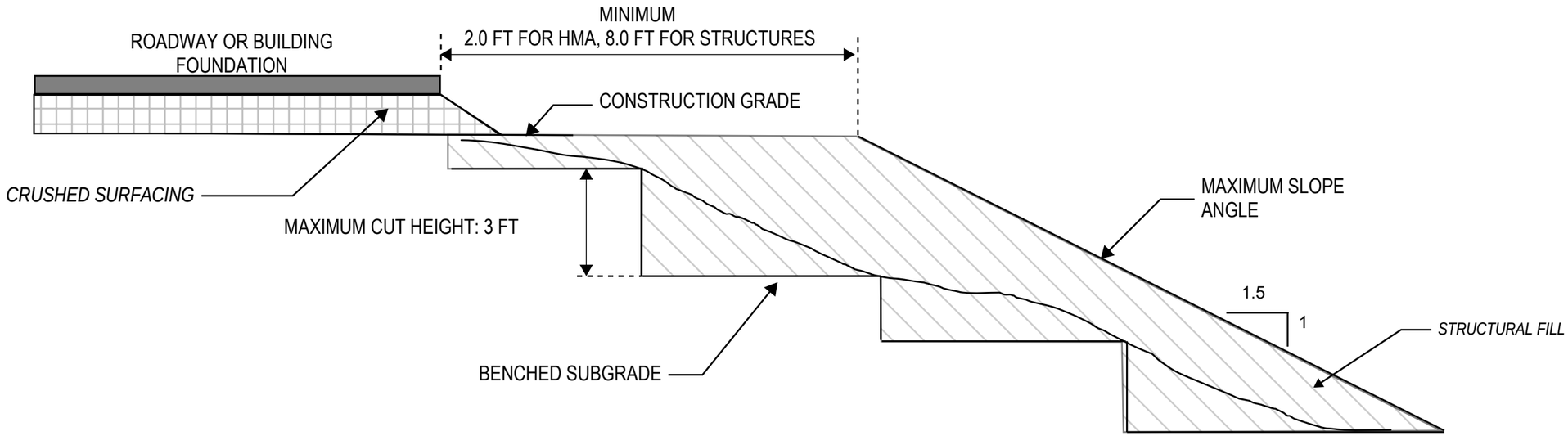


PHOTO 28: TP-28

APPENDIX E

BENCHING AND SLOPE FILL REQUIREMENTS

BENCHING AND CONSTRUCTION REQUIREMENTS FOR SLOPE CONSTRUCTION



GENERAL NOTES

1. THE SLOPE BENCHING SHOULD BE CONSTRUCTED ON SUBGRADE SURFACE THAT HAVE BEEN PREPARED IN ACCORDANCE WITH THE *SITE STRIPPING* OF THE GEOTECHNICAL REPORT. THE SUBGRADE SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF THE FIRST LIFT.
2. ALL SLOPING SURFACES SHOULD BE BENCHED WITH A MAXIMUM VERTICAL CUT OF 3 FEET.
3. ALL LOOSE LIFT HEIGHTS SHOULD BE LIMITED TO 12 INCHES PRIOR TO COMPACTION
4. REFER TO THE GEOTECH REPORT FOR ADDITIONAL DESIGN RECOMMENDATIONS AND CONSTRUCTION RECOMMENDATIONS.

BENCHING AND SLOPE FILL REQUIREMENTS
LATAH GLEN
PARCEL NOS: 25364.0001 AND 25361.0004
SPOKANE, WASHINGTON

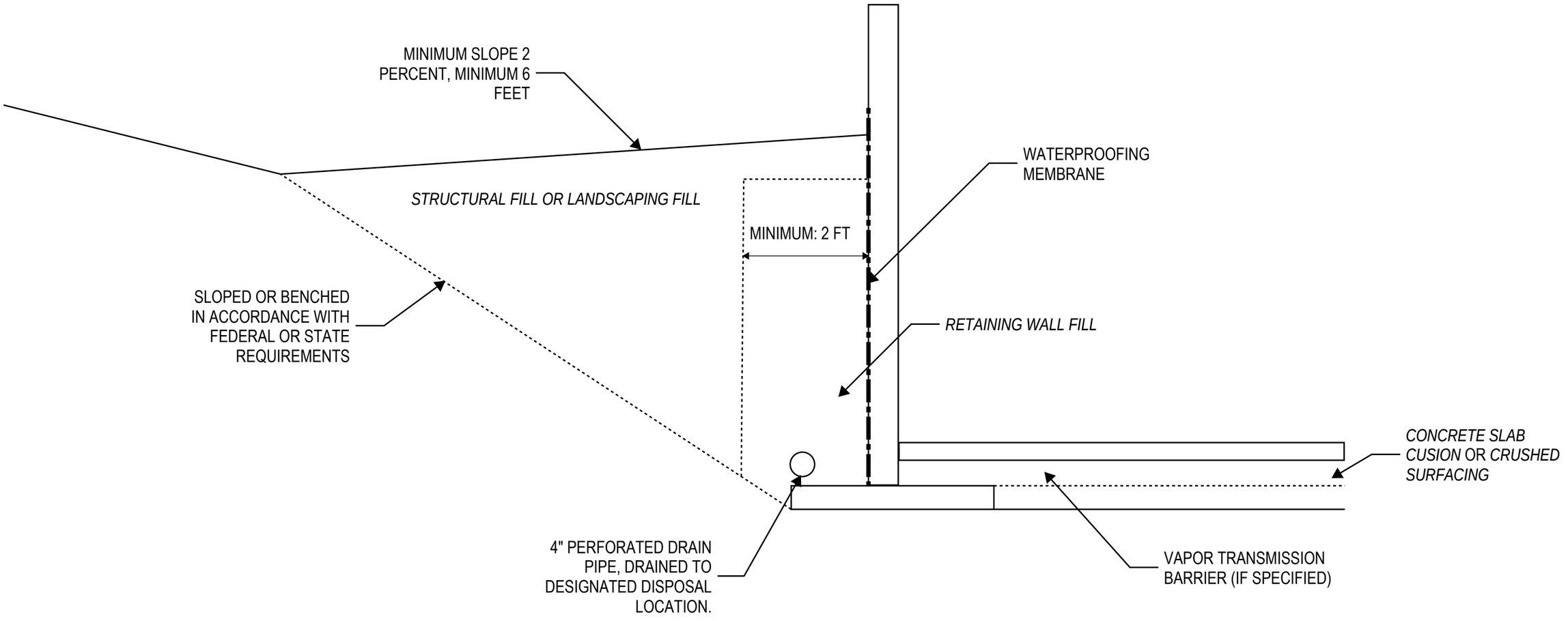
LIBERTY GEOTECH

JOB NO. 20211	SEPTEMBER 30, 2020	PLATE 2

APPENDIX F

BASEMENT WALL DRAINAGE
DETAIL

BASEMENT WALL DRAINAGE DETAIL



GENERAL NOTES

1. ALL FILL SHOULD BE PLACED AND COMPACTED IN ACCORDANCE WITH THE GEOTECH REPORT.
2. DRAIN PIPE SHOULD BE PLACED BELOW INTERIOR SLAB ELEVATION.
3. ALL LOOSE LIFT HEIGHTS SHOULD BE LIMITED TO 12 INCHES PRIOR TO COMPACTION
4. REFER TO THE GEOTECH REPORT FOR ADDITIONAL DESIGN RECOMMENDATIONS AND CONSTRUCTION RECOMMENDATIONS.

BASEMENT WALL DRAINAGE DETAIL

LATAH GLEN

PARCEL NOS: 25364.0001 AND 25361.0004

SPOKANE, WASHINGTON

LIBERTY GEOTECH

JOB NO. 20211	SEPTEMBER 30, 2020	PLATE 3

LIBERTY GEOTECH

3012 N Sullivan Rd, Suite D
Spokane Valley, Washington 99216
(509) 213-0400

February 1, 2023
Project Number: 20211

William Nascimento
Sycamore Group, LLC
10 Sycamore Canyon Drive
Dove Canyon, California 92679

Subject: Geotechnical Report Addendum
Latah Glen
Parcel Nos: 25364.0001 & 25361.0004
Spokane, Washington

Dear Mr. Nascimento:

This memorandum summarizes the infiltration design recommendations located along S Marshall Road with parcel numbers 25364.0001 & 25361.0004 in Spokane, Washington. The design recommendations are based on the *Storm Drain Plan* prepared by Storhaug, dated August 7, 2020. Liberty Geotech provided the *Geotechnical Engineering Report,* dated September 30, 2020. The geotechnical report provides additional project understanding, geologic, and geotechnical design recommendations that are not included herein.

The shallow bedrock limits the areas possible for infiltration. An infiltration gallery may be used to dispose of stormwater if there is at least four feet of separation between the bottom of the infiltration gallery and the limiting layer (anticipated to be basalt). The depth to rock should be confirmed during construction or Liberty Geotech may be retained to determine the depth to rock once the infiltration galleries have been determined. A drywell may be used if no limiting layer is present at the time of construction and has been reviewed by Liberty Geotech.

- The allowable infiltration rate of 1.71×10^{-5} cubic feet per second per square foot (cfs/sf) may be used to design the infiltration gallery in silty sand material (SM) material. This includes a factor of safety of 3.0 and is based on the fines content of 33 percent at TP-2 at 12.0-feet below the ground surface. The allowable outflow rate of a single-depth drywell is 0.008 cubic feet per second (cfs). A full-scale drywell test should be conducted during construction to verify the design outflow rate.
- The allowable infiltration rate of 2.09×10^{-4} cubic feet per second per square foot (cfs/sf) may be used to design the infiltration gallery in poorly-graded sand with silt (SP-SM) material. This includes a factor of safety of 2.0 and is based on the fines content of 7 percent at TP-19 at 8.0-feet below the ground surface. A single-depth drywell installed in this type of soil may utilize an allowable outflow rate 0.14 cfs.

The infiltration rates were designed using the hydraulic conductivity presented in Figure 4C-1 of the *Spokane Regional Stormwater Manual*.

Bioretention swales may be utilized to treat stormwater in areas with less than four feet of separation between the bottom of the swale location. The bioretention swales should be designed in accordance with the Stormwater Management Manual for Eastern Washington. The infiltration rate is dependent on the location of the bioretention facility.

Please contact Liberty Geotech if there are any questions about the recommendations in this addendum.

Respectfully,



Ben Vance, P.E.
Liberty Geotechnical Engineering, Inc.