STONEFIELD

STORMWATER MANAGEMENT REPORT
ENCLAVE AT MILLINGTON

PROPOSED MIXED-USE RESIDENTIAL & COMMERCIAL DEVELOPMENT

BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01
50 DIVISION AVENUE
MILLINGTON, TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

PREPARED FOR:
PRISM MILLINGTON, LLC

PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
92 PARK AVENUE
RUTHERFORD, NEW JERSEY

REPORT DATE:
OCTOBER 25, 2019

CHUCK D. OLIVO, PE, PP, PTOE
NJ PE LICENSE #46719

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ATTACHMENTS AND THAT, BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING AND PREPARING THE INFORMATION, I BELIEVE THAT THE INFORMATION IS TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR KNOWINGLY SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT.

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REPORT CONTENTS

APPENDICES

1.0 PROJECT DESCRIPTION

Prism Millington, LLC is proposing to redevelop Block 12301, Lot 1 and Block 10100, Lot 7.01 (herein referred to as the "project site") to accommodate fourteen multi-family residential buildings (140 units total), one commercial building (approximately 4,992 SF), and multiple amenity areas for residents (consisting of a multiple patios throughout the project site, community building and a pool). Additional improvements include multiple patio areas located throughout the project site, off-street parking lots, lighting, and landscaping. The subject property is located within the Township of Long Hill and is bounded by an NJ Transit Railroad to the north, Division Avenue to the east, Stone House Road to the south, and the Passaic River to the west.

Refer to **APPENDIX A** for project maps of the subject site.

The total project area is 518,332 SF (11.90 acres), the impervious surfaces has been reduced by 101,084 SF (2.32 acres), and the total area of disturbance is 339,160 SF (7.79 acres).

This Stormwater Management Report has been prepared to analyze the potential stormwater runoff impacts of the proposed project and discuss the measures proposed to conform to the stormwater management requirements set forth by the Township of Long Hill, Morris County Soil Conservation District, and the New Jersey Department of Environmental Protection (NJDEP).

2.0 EXISTING CONDITIONS

EXISTING SITE DEVELOPMENT

The project site is currently occupied by multiple industrial tenants. Under existing conditions, the site contains two one-story industrial buildings, one two-story industrial building, and one three-story industrial building. Access to the site is provided via two full-movement driveways along River Road and a parking lot that opens directly to the road on Stone House Road. There are single family residences to the west and south-west of the site, commercial businesses to the south and east. To the north, there are commercial businesses and a train station. Train tracks run adjacent to the northern property line while the Passaic River runs along the western property line. An Aerial Map depicting the existing site conditions can be found in **APPENDIX A**.

EXISTING TOPOGRAPHY

The high point of the subject site is at the northeast corner of the site abutting River Road and Division Avenue. River Road drains northwest towards current parking areas of adjacent lots, Division Avenue drains south towards Stone House Road and combines with the run-off of Stone House Road ultimately discharging into the Passaic River. On-site topography slopes toward low points within the site, collected by a stormwater system, and discharged to the Passaic River. Grades on the subject site average between 0% and 3.43%. within the areas surrounding the buildings. However, steeper slopes are seen in the northern and southwestern corners of the subject site.

PROJECT SITE SOILS

Soil mapping was obtained from the National Resource Conservation Service (NRCS) for the project site and immediate area. Generally, the project site is underlain with one major soil group: silt loam which occupies a majority of the site. Overall, the soils drain well, and runoff flows overland directly to the Passaic River. The table below provide a summary of soils for the project site:

TABLE 1: NRCS SOIL MAPPING RESULTS

Soil Unit Code	Soil Description	Approximate Project Coverage	Drainage Class	Hydrologic Soil Group
PeoC	Penn Channery Silt Loam, 8% to 15% Slopes	9.5%	Well drained	B
USPENB	Urban Land-Penn Complex, 0% to 8% Slopes	87.5%	Well drained	C
WATER	Passaic River	3.0%	N/A	N/A

***USPENB does not have a pre-determined hydraulic soil group due to high variability in the historic fill material utilized. As such, these soils are analyzed as HSG B under pre-existing conditions and HSG D under post-development conditions.**

Additional information regarding the NRCS soil mapping can be found in **APPENDIX B**.

EXISTING ENVIRONMENTAL INVENTORY

The project site is bounded by the Passaic River on the west with a NJDEP Restricted Area separating it from the proposed project site. The river is subject to a special flood hazard area as verified and delineated on FEMA Flood Insurance Map Panel # 3403560005B. The limits of these areas are shown on the Critical Area Plan (Sheet C-17) of the Preliminary and Final Major Site Plans prepared by Stonefield in conjunction with this Report.

3.0 PROPOSED CONDITIONS

PROPOSED SITE DEVELOPMENT

Under the proposed development plan, the project area will include a mixed-use family and commercial development. The proposed development includes the construction of fourteen 10-unit multi-family residences, an 1,800 SF community building, a 4,992 SF retail building, and supporting improvements inclusive of parking facilities, landscaping, utilities, site lighting, and stormwater management measures. The eastern portion of the site that is within the limit of disturbance is being collected via the proposed conveyance system on site and either being sent directly to the Passaic River or to the Municipal conveyance system via catch basins and HDPE pipes. Refer to **APPENDIX A** for a half-size Overall Site Plan depicting the proposed project improvements.

PROPOSED TOPOGRAPHY

Project site topography and drainage patterns will generally remain similar to existing conditions; however, due to the need for more commercially friendly, ADA compliant grades (1.5% to 3%) various retaining walls will be implemented through the project to make up for the change in grades.

ANTICIPATED ENVIRONMENTAL INVENTORY IMPACTS

The proposed redevelopment will not disturb land within environmentally regulated areas (flood hazard area, riparian zone, freshwater wetland ditch, and freshwater wetland transition area). As such, permits and approvals will not be sought from the NJDEP to perform work within these areas.

4.0 STORMWATER MANAGEMENT METHODOLOGY & PARAMETERS

HYDROLOGIC METHODOLOGY

The analysis program "HydroCAD" Version 10.0 by HydroCAD Software Solutions was utilized to calculate and plot the runoff hydrographs. The program incorporates the time of concentration, C values, rainfall data, and project drainage areas to calculate the runoff characteristics. The existing and proposed drainage areas have been analyzed utilizing Intensity-Duration-Frequency data was obtained from NOAA for the project area; specifics of the rainfall distribution can be found in Appendix C. Additional key variables utilized in the analysis include:

TABLE 2: HYDROCAD DESIGN VARIABLES

Variable	Input	Variable	Input
Runoff Calculation Method	SCS TR-20	NRCS Rainfall Frequency Data Set	Morris
Pervious/Impervious CN Calculations	Separate	Storm Intervals (Year Events)	2, 10, 25, 100
Stage-Storage Relationship	Dynamic	Storm Duration	24 Hours
Minimum time of concentration	10 minutes	Storm Curve	NOAA D

Additional information regarding the hydrologic calculations can be found in **APPENIDX C**.

HYDRAULIC METHODOLOGY

The analysis program "HydraFlow Storm Sewers" Version 2018 by Autodesk was utilized to generate hydraulic grade lines through the proposed conveyance system model based on various pipe / junction losses and the runoff tributary to each inlet or discharge structure. Additional key variables utilized in the analysis include:

TABLE 3: HYDRAFLOW DESIGN VARIABLES

Variable	Input	Variable	Input
Runoff Calculation Method	Rational	Pipe Conveyance Method	Std. Step
C-value for impervious surfaces	0.95	Initial Hydraulic Grade Line	Normalized
C-value for pervious surfaces	0.60	Inlet Drainage Area Delineation	Surveyed
Minimum time of concentration	10 minutes	Inlet Geometry & Capacity	NJDOT Std.

Additional information regarding the hydrologic calculations can be found in **APPENDIX C**.

5.0 STORMWATER ANALYSIS

EXISTING DRAINAGE AREAS

Under existing conditions, the site is comprised of four drainage areas, and one Point of Interest (POI). The Point of Interest (POI-1) discharges to the Passaic River along the western property line. The site slopes from the northeastern corner of the site to the southwestern portion of the site. The existing slopes are not steep throughout the site with an average grade around 3.5%. See below for a short summary of each area:

TABLE 4: SUMMARY OF EXISTING DRAINAGE AREAS

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
E-1A	Existing Drainage to Existing Conveyance System (18" Pipe)	52,576	9,429	10*
E-1B	Existing Drainage to Existing Conveyance System (42" Pipe)	141,668	141,668	10*
E-1C	Existing Drainage to Existing Conveyance System (15" Pipe)	80,227	78,544	10*
E-1D	Existing Drainage to Municipal System	52,934	43,589	10*
POI (E-1)	Ultimate Point of Interest: Passaic River	327,405 SF	273,230	N/A

***The minimum time of concentration was utilized due to the high level of impervious coverage and proximity to the Passaic River.**

All existing drainage areas were delineated based on field surveying data. Hydrologic calculations and parameters for each drainage area can be found in **APPENDIX C**; specific drainage area delineations and land cover can be found in **APPENDIX D.**

PROPOSED DRAINAGE AREAS

Under proposed conditions the site is comprised of one (1) point of interest. POI-1 is comprised of four sub-areas with all areas ultimately discharging to the Passaic River, consistent with existing drainage patterns. The sub-areas are either collected via proposed catch basins and sent directly to the Passaic River via existing conveyance pipes on-site or to the Municipal conveyance system within Stone House Road. Drainage area P-1A is discharged to the Passaic River via a connection to an existing catch basin on the northwest corner of the site with an outlet pipe 18" in diameter. Drainage area P-1B is discharged to the Passaic River via a connection to an existing manhole located between Building #2 and Building #3 with an outlet pipe 42" in diameter. Drainage area P-1C is discharged to the Passaic River via a connection to an existing catch basin located north of Building #5 with an outlet pipe 15" in diameter. Drainage area P-1D is collected within the Municipal System in Stone House Road via sheet flow to various existing inlets which eventually discharge into the Passaic River. See below for a short summary of each area:

TABLE 5: SUMMARY OF PROPOSED DRAINAGE AREAS

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
P-1A	Proposed Drainage to Passaic River via Proposed Conveyance System (18" Pipe)	50,878	20,909	10*
P-1B	Proposed Drainage to Passaic River via Proposed Conveyance System (42" Pipe)	142,558	103,691	10*
P-1C	Proposed Drainage to Passaic River via Proposed Conveyance System (15" Pipe)	81,290	58,221	10*
P-1D	Proposed Drainage Directly to Municipal System	52,679	23,598	10*
POI (P-1)	Ultimate Point of Interest: Passaic River	327,405 SF	206,525 SF	N/A

***The minimum time of concentration was utilized for all drainage areas due to the high level of impervious coverage / land disturbance and proximity to existing and proposed stormwater pipe conveyance system.**

All proposed drainage areas were delineated based on the proposed grading design overlain on field survey data. Hydrologic calculations and parameters for each drainage area can be found in **APPENDIX C**; specific drainage area delineations and land cover can be found in **APPENDIX D.**

STORMWATER MANAGEMENT DESIGN PARAMETERS

As the proposed improvement will disturb 7.79 acres of land, the project is defined as a "Major Development" as indicated in Town Ordinances and per NJDEP regulations. The proposed project will meet the stormwater quantity requirements by demonstrating that at no point in time does the post-development hydrograph or run-off volumes exceed the pre-development hydrograph or run-off volumes; as the analysis area is the same and impervious surfaces have been decreased, the post-construction quantities will at no point exceed the pre-development quantities. Groundwater recharge requirements do not apply as the site is located within the State Planning Area PA-1. Additionally, water quality requirements do not apply as the site is proposing to decrease impervious surfaces on-site by 2.32 acres per NJAC Section 7:8-5.5. See below for a summary of each design parameter and compliance requirements:

TABLE 6: STORMWATER MANAGEMENT DESIGN TARGET SUMMARY

Design Parameter	Design Target for Compliance
Stormwater Runoff Quantity	Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 10, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events.
Groundwater Recharge	The project is **exempt** from groundwater recharge requirements as the project site is located within State Planning Area PA-1 (Metropolitan).
Water Quality	The project is **exempt** from water quality requirements as the project site is proposing to decrease impervious surfaces on-site per NJAC Section 7:8-5.5

STORMWATER RUNOFF QUANTITY

Runoff is controlled through the implementation of the reduction of impervious area on site. The tables below summarize the various drainage areas in relation to flow rates and runoff volume during regulatory storm events:

TABLE 7: SUMMARY OF EXISTING DRAINAGE AREA FLOW RATES & VOLUMES

Drainage Area	2-Year Flow Rate	10-Year Flow Rate	100-Year Flow Rate
E-1A	3.14 CFS	4.89 CFS	8.29 CFS
E-1B	9.18 CFS	13.91 CFS	22.97 CFS
E-1C	5.16 CFS	7.84 CFS	12.98 CFS
E-1D	3.16 CFS CFS	4.93 CFS	8.35 CFS
POI (E-1)	20.64 CFS	31.57 CFS	52.59 CFS

TABLE 8: SUMMARY OF PROPOSED DRAINAGE AREA FLOW RATES & VOLUMES

Drainage Area	2-Year Flow Rate	10-Year Flow Rate	100-Year Flow Rate
P-1A	2.44 CFS	4.15 CFS	7.50 CFS
P-1B	8.13 CFS	12.89 CFS	22.14 CFS
P-1C	4.61 CFS	7.33 CFS	12.60 CFS
P-1D	2.59 CFS	4.35 CFS	7.81 CFS
POI (P-1)	17.77 CFS	28.71 CFS	50.05 CFS

Under post-development conditions the runoff flow rates and volumes are reduced to the undetained drainage areas including Stone Hill Road (E-1D/P-1D). The diverted runoff from these areas are collected in the on-site

stormwater management system (E-1A/P-1A, E-1B/P-1B, and E-1C/P-1C) and conveyed directly to discharge into the Passaic River. The table below outlines the regulatory compliance parameters for runoff quantity on the project site:

TABLE 9: STORMWATER RUNOFF QUANTITY COMPLIANCE SUMMARY AT POINT OF INTEREST (E-1 / P-1)

Rainfall Event	Existing Flow Rate	Required % Reduction	Required Flow Rate	Proposed Flow Rate	Proposed % Reduction
2-Year Storm	20.64 CFS	N/A	20.39 CFS	17.77 CFS	13.91%
10-Year Storm	31.57 CFS	N/A	31.25 CFS	28.71 CFS	9.06%
100-Year Storm	52.59 CFS	N/A	52.19 CFS	50.05 CFS	4.83%

The reduction of impervious area on site decreases the flow rate as to ensure that no adverse impacts are anticipated downstream of the project site. Detailed hydrologic calculations for each drainage area can be found in **APPENDIX C**.

GROUNDWATER RECHARGE

As indicated in the Township Ordinances and NJAC 7:8-5.4, the project site is exempt from groundwater recharge requirements as the site is located within the Metropolitan Planning Area (PA-1) per the State Plan Policy Map and thus qualifies as an Urban Redevelopment Area (which is exempt from groundwater recharge requirements).

STORMWATER PIPE CONVEYANCE SYSTEM

The on-site stormwater conveyance system has been sized for the 25-year storm event and is able to safely convey runoff to the proposed stormwater management facilities without overflow or bypass. Detailed hydraulic calculations for the conveyance system can be found in **APPENDIX C**. See below for a table summarizing the various drainage areas during the 25-year storm event:

TABLE 10: SUMMARY OF 25-YEAR STORM (FOR DRAINAGE DIRECT TO PUBLIC ROW OR TRIBUTARY)

Tributary Area	Existing Flow Rate	Proposed Flow Rate	Flow Rate Difference	Existing Volume	Proposed Volume	Volume Difference
Drainage Direct to Passaic River (E-1A/P-1A, E-1B/P-1B, and E-1C/P-1C)	32.93 CFS	30.74 CFS	-2.19 CFS	137,739 CF	124,277 CF	-13,462 CF
Drainage Direct to Municipal System (E-1D / P-1D)	6.15 CFS	5.58 CFS	-0.57 CFS	25,348 CF	21,909 CF	-3,439 CF
Overall Drainage to Passaic River (E-1/P-1)	39.08 CFS	36.33 CFS	-2.75 CFS	163,087 CF	146,186 CF	-16,901 CF

The runoff flow rates and volumes that directly tributary to the existing Township stormwater pipe conveyance systems within Stone House Road (E-1D/P-1D) are significantly reduced under proposed conditions. As such, no adverse impacts to the adjacent existing stormwater infrastructure is anticipated. Additionally, the volume of stormwater runoff is proposed to decrease overall to the ultimate point of interest (due to the decrease in impervious coverage on-site) the flow rates are significantly reduced and the proposed stormwater management and soil erosion features ensure that runoff entering the Passaic River is safely conveyed so as to not cause any adverse impacts further downstream.

6.0 STORMWATER FACILITY OPERATIONS & MAINTENANCE

A Stormwater Operations & Maintenance Manual will be submitted for approval to the Morris County Soil Conservation District prior to the start construction. Any required easements or covenants associated with the stormwater improvements will be recorded prior to the start of construction.

7.0 EROSION & SEDIMENT CONTROL

A Soil Erosion & Sediment Control Plan has been prepared in accordance with the latest edition of the Standards for Soil Erosion and Sediment Control in New Jersey. Proposed temporary measures during construction include silt fencing, stabilized construction entrances, inlet filters, and cover for soil stabilization. No land disturbance will occur until a permit has been obtained from the Morris County Soil Conservation District.

8.0 CONCLUSIONS

The proposed project complies with all applicable stormwater management regulations and standards. As such, the project is not anticipated to have any adverse impacts or neighboring properties, downstream watercourses, or conveyance systems within the watershed.

9.0 REFERENCES

1. New Jersey Administrative Code Title 7, Chapter 8 Stormwater Management, last amended June 20, 2016

   https://www.nj.gov/dep/rules/rules/njac7_8.pdf

2. New Jersey Stormwater Best Management Practices Manual, last revised November 2018

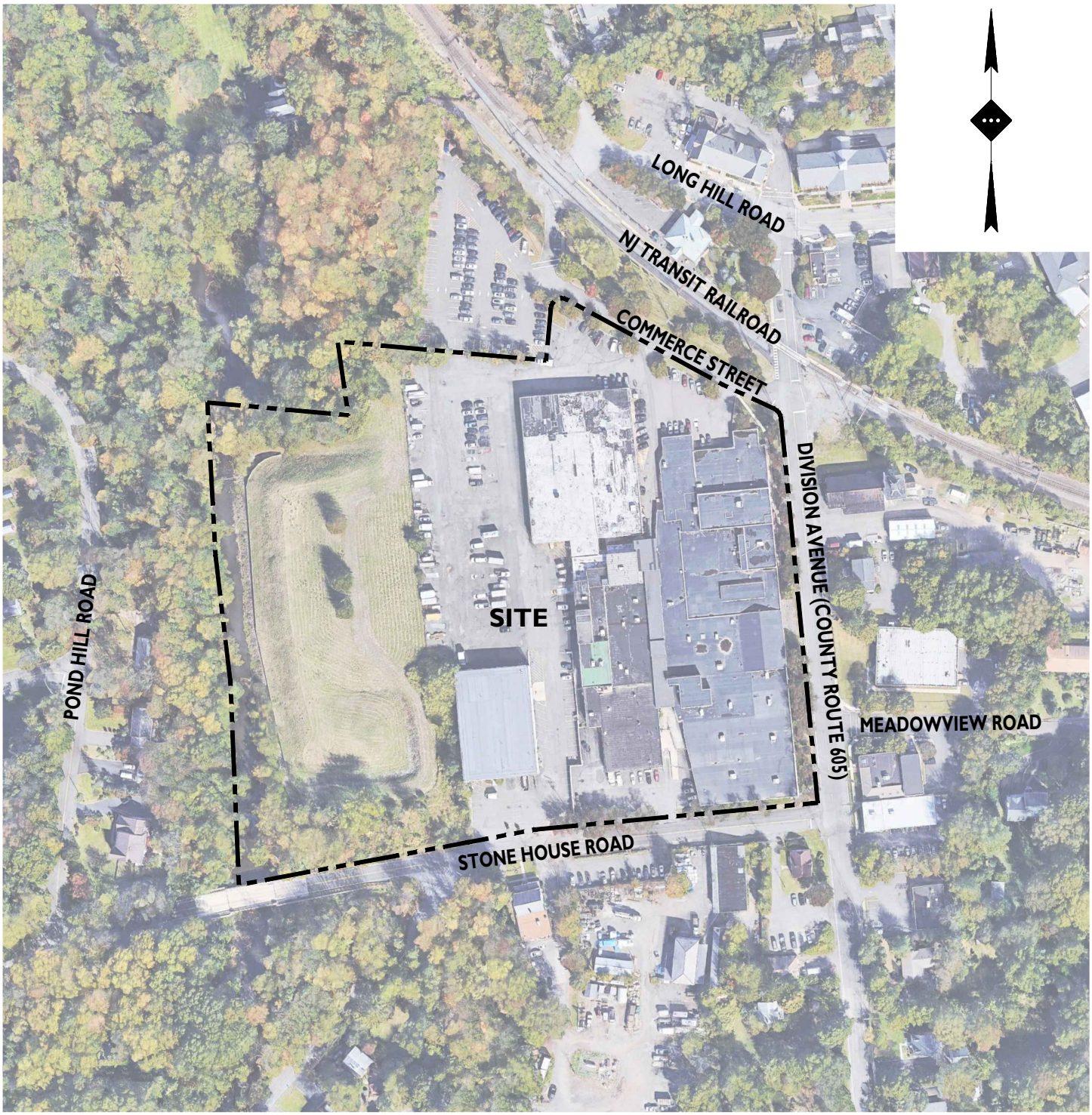
   https://www.njstormwater.org/bmp_manual2.htm

3. Township of Long Hill Land Use Ordinance, last amended May 31, 2019

   https://clerkshq.com/LongHill-nj

APPENDIX A
PROJECT FIGURES

INVENTORY



AERIAL MAP

200' 0' 200' 400'

GRAPHIC SCALE IN FEET

1" = 200'

SOURCE: GOOGLE EARTH PRO, DATED 2018

ENCLAVE AT MILLINGTON
PROPOSED MIXED USE MULTI-FAMILY AND COMMERCIAL DEVELOPMENT

BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01
DIVISION AVENUE & STONE HOUSE ROAD
MILLINGTON, TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

DRAWN BY:	BVT
CHECKED BY:	SMO
DATE:	06/11/2019
SCALE:	1" = 200'
PROJECT ID:	T-17298

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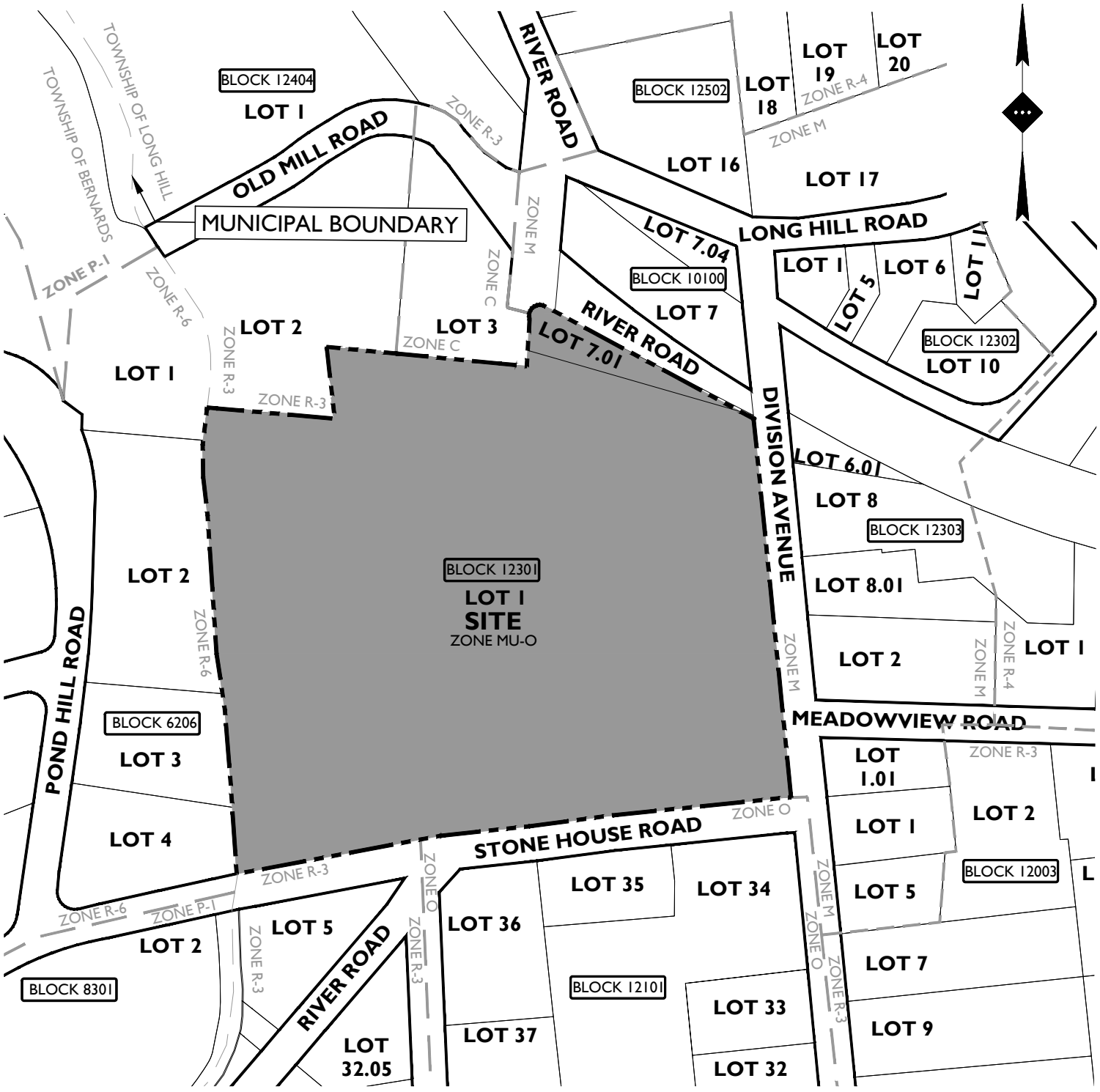

TAX AND ZONING MAP

200' 0' 200' 400'

GRAPHIC SCALE IN FEET

1" = 200'

SOURCES: TOWNSHIP OF LONG HILL, NEW JERSEY - TAX MAP SHEETS 20-25 AND BERNARDS TOWNSHIP, NEW JERSEY - TAX MAP SHEETS 62 & 83. TOWNSHIP OF LONG HILL ZONING MAP, BERNARDS TOWNSHIP ZONING MAP

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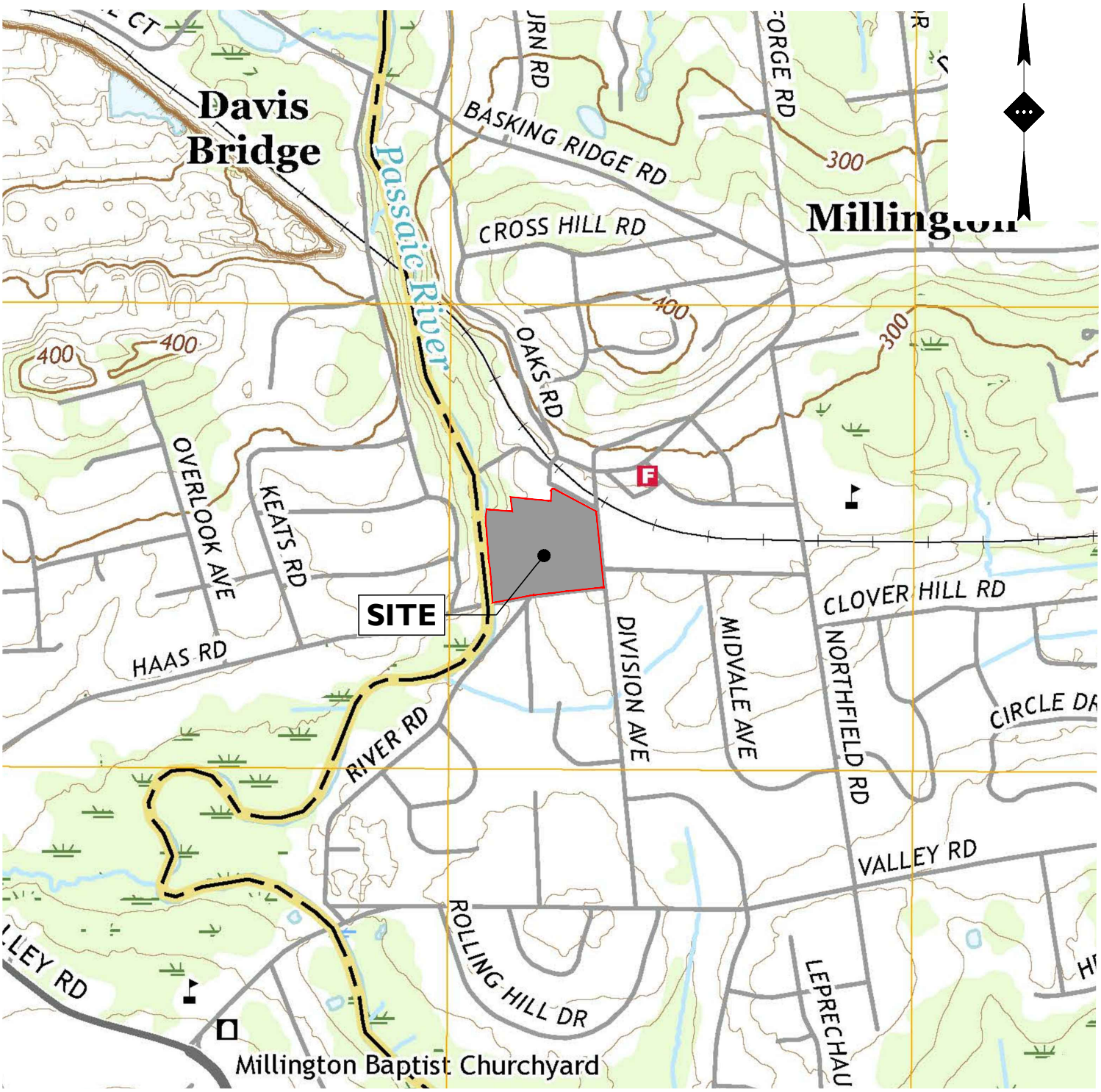

USGS QUADRANGLE MAP

1000' 0' 1000' 2000'

GRAPHIC SCALE IN FEET

1"= 1000'

SOURCE: UNITED STATES GEOLOGICAL SURVEY QUADRANGLE MAP, BERNARDSVILLE, NEW JERSEY, 7.5 MINUTE SERIES, 2016.

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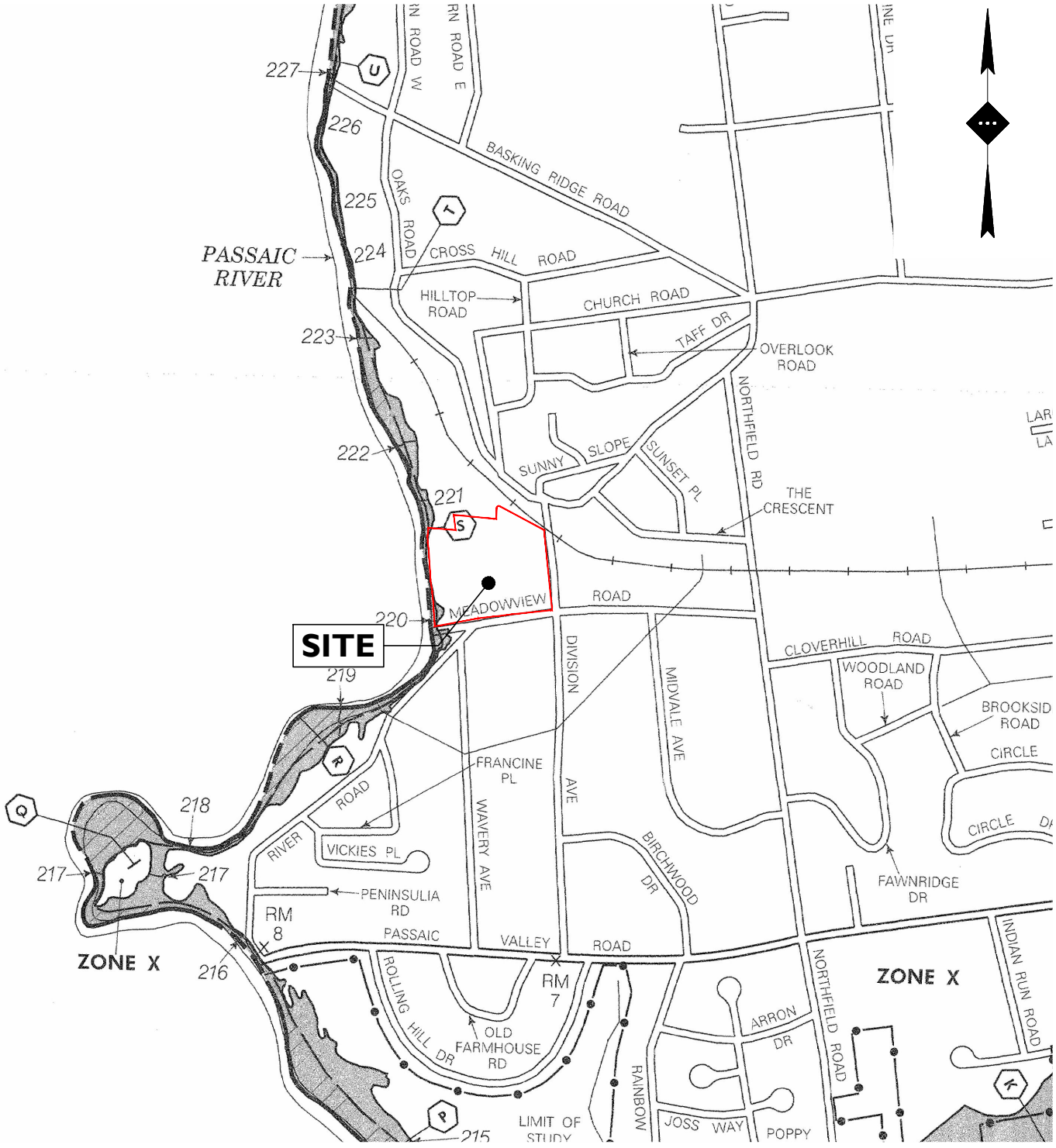

EFFECTIVE FEMA FLOOD INSURANCE RATE MAP

1000' 0' 1000' 2000'

GRAPHIC SCALE IN FEET

1" = 1000'

SOURCE: FLOOD INSURANCE RATE MAP, MORRIS COUNTY, NEW JERSEY, MAP NUMBER 3403560005B, DATED SEPTEMBER 21, 2001.

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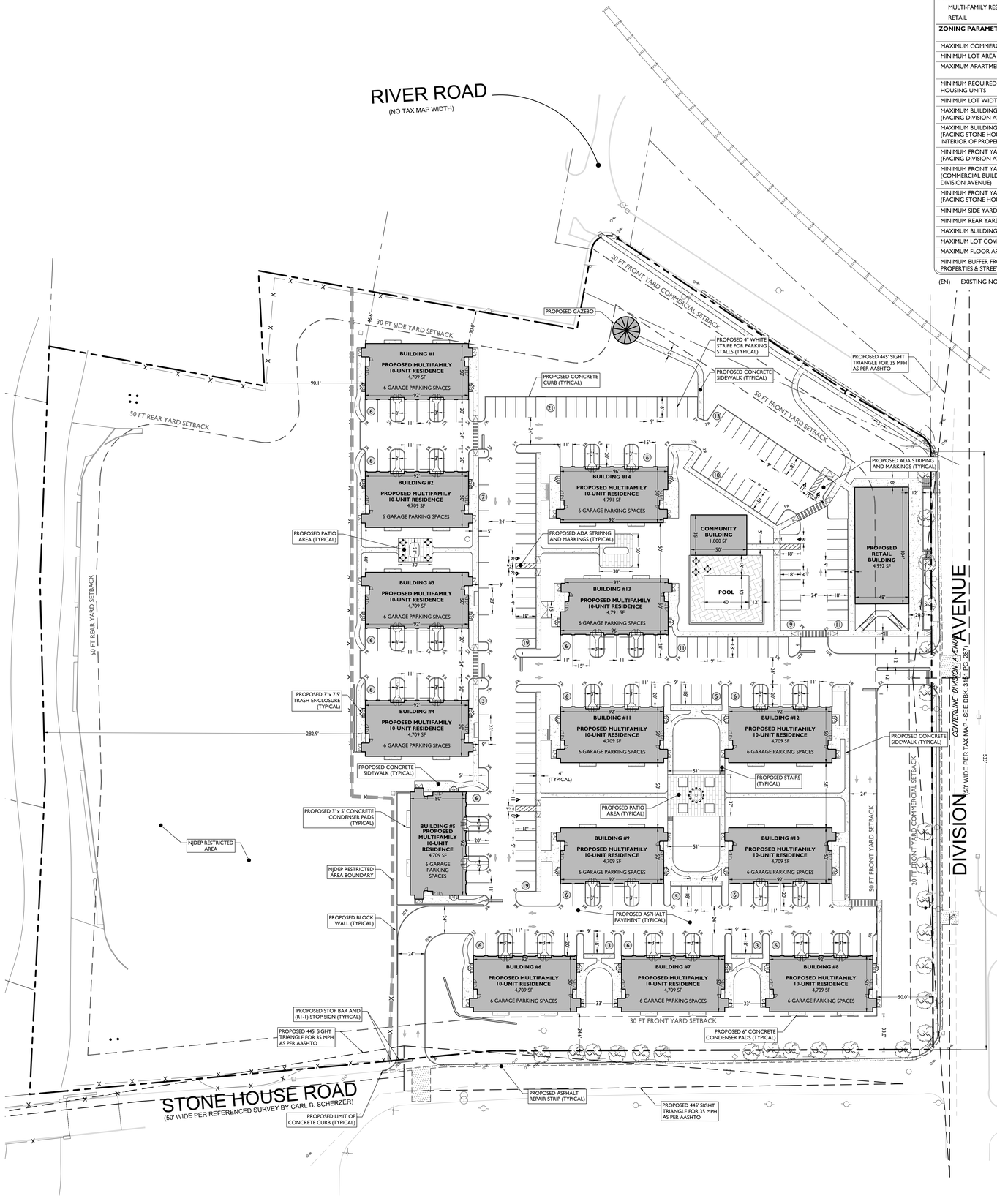

LAND USE AND ZONING

BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01

PROPOSED REDEVELOPMENT (MU-O ZONE)

PROPOSED USE	
MULTI-FAMILY RESIDENTIAL	PERMITTED USE
RETAIL	PERMITTED USE

ZONING PARAMETERS	ZONE MU-O REQUIREMENTS	EXISTING	PROPOSED
MAXIMUM COMMERCIAL SPACE	10,000 SF	N/A	4,992 SF
MINIMUM LOT AREA	11 ACRES (495,786.26 SF)	11.90 ACRES (518,322 SF)	11.90 ACRES (518,322 SF)
MAXIMUM APARTMENT DENSITY	142.8 APARTMENTS (12 APARTMENTS / 1 ACRE)	N/A	140 APARTMENTS (11.8 APARTMENTS / 1 ACRE)
MINIMUM REQUIRED AFFORDABLE HOUSING UNITS	15%	N/A	15% (21 UNITS)
MINIMUM LOT WIDTH	500 FT	532.98 FT	532.98 FT
MAXIMUM BUILDING HEIGHT (FACING DIVISION AVE OR NJ TRANSIT)	2.5 STORIES / 35 FT	1 STORY / 20 FT	1 STORY / < 20 FT
MAXIMUM BUILDING HEIGHT (FACING STONE HOUSE RD AND IN INTERIOR OF PROPERTY)	3 STORIES / 45 FT	3 STORIES / 45 FT	3 STORIES / < 45 FT
MINIMUM FRONT YARD SETBACK (FACING DIVISION AVENUE)	50 FT	20.9 FT	50.0 FT
MINIMUM FRONT YARD SETBACK (COMMERCIAL BUILDINGS FACING DIVISION AVENUE)	20 FT	20.9 FT	20.0 FT
MINIMUM FRONT YARD SETBACK (FACING STONE HOUSE ROAD)	30 FT	9.3 FT (EN)	33.8 FT
MINIMUM SIDE YARD SETBACK	30 FT	49.2 FT	30.0 FT
MINIMUM REAR YARD SETBACK	50 FT	241.1 FT	90.1 FT
MAXIMUM BUILDING COVERAGE	20.0% (103,664.4 SF)	29.7% (154,190 SF) (EN)	14.1% (72,882 SF)
MAXIMUM LOT COVERAGE	40.0% (207,323.2 SF)	59.3% (307,609 SF) (EN)	39.8% (206,525 SF)
MAXIMUM FLOOR AREA RATIO	0.50 (259,161 SF)	0.47 (244,490 SF)	0.39 (203,194 SF)
MINIMUM BUFFER FROM NEIGHBORING PROPERTIES & STREETS	10 FT	49.2 FT	20.0 FT

(EN) EXISTING NON-CONFORMITY

OFF-STREET PARKING REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 151.1 c	RETAIL PARKING 4,992 SF x (1 SPACE / 200 SF) = 25 SPACES	25 SPACES
RSIS - § 5.21 TABLE 4.4	RESIDENTIAL PARKING (GARDEN APARTMENTS): 126 - TWO BR UNIT x (2.0 SPACES / UNIT) = 252 SPACES 14 - THREE BR UNIT x (2.1 SPACES / UNIT) = 29 SPACES TOTAL = 281 SPACES	84 DRIVEWAY SPACES* 84 GARAGE SPACES* 114 GUEST SPACES
	TOTAL REQUIRED PARKING: 306 SPACES	307 SPACES
RSIS - § 5.21 TABLE 4.4 b.	REQUIREMENTS FOR ATTACHED UNITS INCLUDE PROVISIONS FOR GUEST PARKING (0.5 SPACES PER DWELLING UNIT). GUEST PARKING MUST EITHER BE PROVIDED FOR ON STREET OR IN COMMON PARKING AREAS. 140 UNITS x (.5 SPACES / UNIT) = 70 GUEST PARKING SPACES	114 SPACES**
ADA REQUIREMENTS	REQUIRED ADA PARKING SPACES 2% OF TOTAL PARKING PROVIDED 306 SPACES x 0.02 = 6.12 ≈ 7 SPACES	10 ADA PARKING SPACES (INCLUSIVE OF 2 VAN ACCESSIBLE AND 2 SPACES WITHIN GARAGES
§ 151.2 a	PARKING AREA DESIGN: INGRESS AND EGRESS DRIVE WIDTH TWO-WAY = 24 FT	24.0 FT
§ 151.2 b	PARKING AREA DESIGN: DRIVE AISLE WIDTH 90 DEGREE PARKING = 24 FT	24.0 FT
§ 151.1 b	OFF STREET PARKING SPACE DIMENSIONS WIDTH = 9 FT LENGTH = 18 FT	WIDTH = 9.0 FT LENGTH = 18.0 FT
§ 151.3 a	REQUIRED LOADING BERTHS: RETAIL USE - 0 SF TO 5,000 SF: 0 LOADING BERTH	0 LOADING BERTHS

(*) PER NJAC 5:21-4.14 (d) 2, ONE-CAR GARAGE AND DRIVEWAY COMBINATION SHALL COUNT AS 2.0 OFF-STREET PARKING SPACES. PROVIDED DRIVEWAY MEASURES A MINIMUM 18FT IN LENGTH.

(**) ALL SPACES NOT LOCATED WITHIN GARAGES AND DRIVEWAYS ARE CONSIDERED GUEST PARKING

SYMBOL	DESCRIPTION
	PROPERTY LINE
	SETBACK LINE
	SAWCUT LINE
	PROPOSED CURB
	PROPOSED DEPRESSED CURB
	PROPOSED FLUSH CURB
	PROPOSED SIGNS / BOLLARDS
	PROPOSED BUILDING
	PROPOSED CONCRETE
	PROPOSED BUILDING DOORS
	PROPOSED RETAINING WALL

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.

40' 0' 40' 80'

GRAPHIC SCALE IN FEET

1" = 40'

ISSUE	DATE	BY	DESCRIPTION
01	10/25/2019	NA	FOR MUNICIPAL SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design

Rutherford, NJ · New York, NY
Princeton, NJ · Tampa, FL · Detroit, MI
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PRELIMINARY & FINAL MAJOR SITE PLAN

ENCLAVE AT MILLINGTON

PROPOSED MIXED-USE MULTI-FAMILY AND COMMERCIAL DEVELOPMENT

BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01
DIVISION AVENUE
TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

CHARLES D. OLIVO, P.E.
NEW JERSEY LICENSE No. 46719
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: T-17298

TITLE:

SITE PLAN

DRAWING:

C-4

T:\2017\17298 PROFESSIONAL - 92 DIVISION AVENUE, MILLINGTON, NEW JERSEY\DWG\PLOT\17298 SITE PLOT.DWG - PLOTTED: 10/29/2019

APPENDIX B
NRCS SOILS REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Morris County, New Jersey

April 19, 2019

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Morris County, New Jersey
Survey Area Data: Version 13, Sep 13, 2018

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

Date(s) aerial images were photographed: Dec 31, 2009—Feb 26, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PeoC	Penn channery silt loam, 8 to 15 percent slopes	1.1	9.3%
USPENB	Urban land-Penn complex, 0 to 8 percent slopes	10.7	88.7%
WATER	Water	0.2	2.0%
Totals for Area of Interest		**12.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Morris County, New Jersey

PeoC—Penn channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2tt83
Elevation: 250 to 800 feet
Mean annual precipitation: 38 to 53 inches
Mean annual air temperature: 43 to 57 degrees F
Frost-free period: 170 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Penn and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Penn

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt1 - 10 to 15 inches: channery silt loam
Bt2 - 15 to 19 inches: channery silt loam
Bt3 - 19 to 22 inches: channery loam
C - 22 to 28 inches: very channery loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.28 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Klinesville

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Croton

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Readington

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

USPENB—Urban land-Penn complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 13q0b
Elevation: 250 to 1,300 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Penn and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills
Down-slope shape: Linear, convex

Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile
C - 0 to 60 inches: variable

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Description of Penn

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from acid reddish shale, siltstone, and fine-grain sandstone

Typical profile
A - 0 to 8 inches: channery silt loam
BA - 8 to 14 inches: channery silt loam
B - 14 to 24 inches: channery silt loam
BC - 24 to 30 inches: channery silt loam
C - 30 to 36 inches: very channery silt loam
R - 36 to 80 inches: weathered bedrock

Properties and qualities
Slope: 0 to 6 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Klinesville
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Reaville

Percent of map unit: 5 percent
Landform: Interfluves
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WATER—Water

Map Unit Setting

National map unit symbol: b0p9
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

APPENDIX C
HYDROLOGIC & HYDRAULIC CALCULATIONS

INVENTORY

NOAA Atlas 14, Volume 2, Version 3
Location name: Millington, New Jersey, USA*
Latitude: 40.6718°, Longitude: -74.5245°
Elevation: 249.16 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.335** (0.305-0.369)	**0.399** (0.363-0.439)	**0.471** (0.428-0.519)	**0.524** (0.475-0.577)	**0.588** (0.531-0.646)	**0.632** (0.569-0.695)	**0.676** (0.605-0.743)	**0.715** (0.636-0.785)	**0.764** (0.674-0.840)	**0.799** (0.700-0.881)
10-min	**0.534** (0.486-0.589)	**0.637** (0.580-0.702)	**0.754** (0.685-0.830)	**0.837** (0.759-0.921)	**0.936** (0.845-1.03)	**1.01** (0.904-1.11)	**1.07** (0.960-1.18)	**1.13** (1.01-1.24)	**1.21** (1.06-1.33)	**1.25** (1.10-1.38)
15-min	**0.667** (0.608-0.735)	**0.800** (0.729-0.881)	**0.953** (0.866-1.05)	**1.06** (0.959-1.16)	**1.19** (1.07-1.30)	**1.27** (1.15-1.40)	**1.36** (1.21-1.49)	**1.43** (1.27-1.57)	**1.52** (1.34-1.67)	**1.58** (1.38-1.74)
30-min	**0.913** (0.832-1.01)	**1.10** (1.00-1.22)	**1.35** (1.23-1.49)	**1.53** (1.39-1.68)	**1.75** (1.58-1.93)	**1.91** (1.72-2.10)	**2.07** (1.85-2.28)	**2.22** (1.97-2.44)	**2.41** (2.13-2.65)	**2.54** (2.23-2.81)
60-min	**1.14** (1.04-1.25)	**1.38** (1.26-1.53)	**1.73** (1.58-1.91)	**1.99** (1.81-2.19)	**2.33** (2.11-2.56)	**2.59** (2.33-2.85)	**2.85** (2.55-3.13)	**3.11** (2.77-3.42)	**3.46** (3.05-3.80)	**3.71** (3.26-4.10)
2-hr	**1.39** (1.26-1.54)	**1.70** (1.54-1.88)	**2.15** (1.95-2.38)	**2.50** (2.26-2.77)	**2.99** (2.68-3.30)	**3.39** (3.02-3.74)	**3.80** (3.37-4.19)	**4.23** (3.72-4.66)	**4.83** (4.20-5.34)	**5.30** (4.57-5.87)
3-hr	**1.56** (1.41-1.73)	**1.90** (1.72-2.11)	**2.41** (2.18-2.68)	**2.81** (2.53-3.11)	**3.36** (3.01-3.71)	**3.80** (3.40-4.20)	**4.26** (3.78-4.71)	**4.74** (4.18-5.24)	**5.41** (4.71-5.99)	**5.94** (5.12-6.59)
6-hr	**2.00** (1.82-2.23)	**2.43** (2.21-2.70)	**3.08** (2.79-3.41)	**3.61** (3.26-3.98)	**4.37** (3.90-4.80)	**5.00** (4.44-5.49)	**5.67** (4.99-6.23)	**6.40** (5.58-7.01)	**7.44** (6.39-8.17)	**8.30** (7.05-9.13)
12-hr	**2.49** (2.26-2.77)	**3.02** (2.74-3.36)	**3.85** (3.48-4.27)	**4.55** (4.10-5.02)	**5.58** (4.98-6.13)	**6.46** (5.72-7.09)	**7.43** (6.50-8.14)	**8.49** (7.34-9.31)	**10.1** (8.55-11.0)	**11.4** (9.55-12.5)
24-hr	**2.83** (2.62-3.08)	**3.42** (3.17-3.72)	**4.36** (4.03-4.74)	**5.15** (4.75-5.60)	**6.34** (5.81-6.87)	**7.36** (6.69-7.97)	**8.48** (7.65-9.19)	**9.73** (8.68-10.6)	**11.6** (10.2-12.6)	**13.2** (11.4-14.4)
2-day	**3.32** (3.06-3.64)	**4.02** (3.70-4.40)	**5.11** (4.69-5.59)	**6.01** (5.51-6.57)	**7.33** (6.67-8.00)	**8.44** (7.64-9.20)	**9.64** (8.66-10.5)	**10.9** (9.74-12.0)	**12.9** (11.3-14.1)	**14.4** (12.5-15.9)
3-day	**3.50** (3.23-3.82)	**4.23** (3.90-4.61)	**5.36** (4.93-5.84)	**6.28** (5.77-6.84)	**7.63** (6.96-8.30)	**8.75** (7.95-9.52)	**9.95** (8.98-10.8)	**11.3** (10.1-12.3)	**13.1** (11.6-14.4)	**14.7** (12.8-16.2)
4-day	**3.68** (3.40-4.00)	**4.44** (4.11-4.83)	**5.61** (5.17-6.10)	**6.56** (6.03-7.12)	**7.93** (7.26-8.60)	**9.06** (8.25-9.84)	**10.3** (9.29-11.2)	**11.6** (10.4-12.6)	**13.4** (11.9-14.7)	**15.0** (13.1-16.5)
7-day	**4.34** (4.03-4.70)	**5.21** (4.84-5.64)	**6.46** (5.99-6.99)	**7.49** (6.92-8.10)	**8.96** (8.24-9.69)	**10.2** (9.31-11.0)	**11.5** (10.4-12.4)	**12.9** (11.6-14.0)	**14.8** (13.2-16.2)	**16.5** (14.5-18.0)
10-day	**4.98** (4.64-5.36)	**5.95** (5.55-6.40)	**7.27** (6.76-7.82)	**8.34** (7.75-8.98)	**9.86** (9.11-10.6)	**11.1** (10.2-11.9)	**12.4** (11.3-13.4)	**13.7** (12.5-14.9)	**15.7** (14.0-17.0)	**17.2** (15.3-18.7)
20-day	**6.72** (6.32-7.17)	**7.97** (7.49-8.51)	**9.51** (8.93-10.1)	**10.7** (10.1-11.4)	**12.3** (11.5-13.2)	**13.6** (12.7-14.5)	**14.9** (13.8-15.9)	**16.2** (15.0-17.4)	**17.9** (16.4-19.3)	**19.3** (17.5-20.8)
30-day	**8.37** (7.92-8.85)	**9.89** (9.35-10.4)	**11.6** (10.9-12.2)	**12.8** (12.1-13.5)	**14.5** (13.6-15.3)	**15.7** (14.8-16.6)	**17.0** (15.9-17.9)	**18.2** (16.9-19.3)	**19.7** (18.3-21.0)	**20.9** (19.2-22.2)
45-day	**10.6** (10.1-11.2)	**12.5** (11.9-13.2)	**14.4** (13.7-15.2)	**15.8** (15.0-16.7)	**17.7** (16.7-18.6)	**19.1** (18.0-20.1)	**20.4** (19.2-21.5)	**21.6** (20.3-22.8)	**23.2** (21.7-24.6)	**24.3** (22.6-25.8)
60-day	**12.8** (12.1-13.4)	**15.0** (14.2-15.7)	**17.1** (16.3-17.9)	**18.7** (17.8-19.6)	**20.6** (19.6-21.7)	**22.1** (20.9-23.2)	**23.4** (22.2-24.7)	**24.7** (23.3-26.0)	**26.2** (24.6-27.7)	**27.2** (25.6-28.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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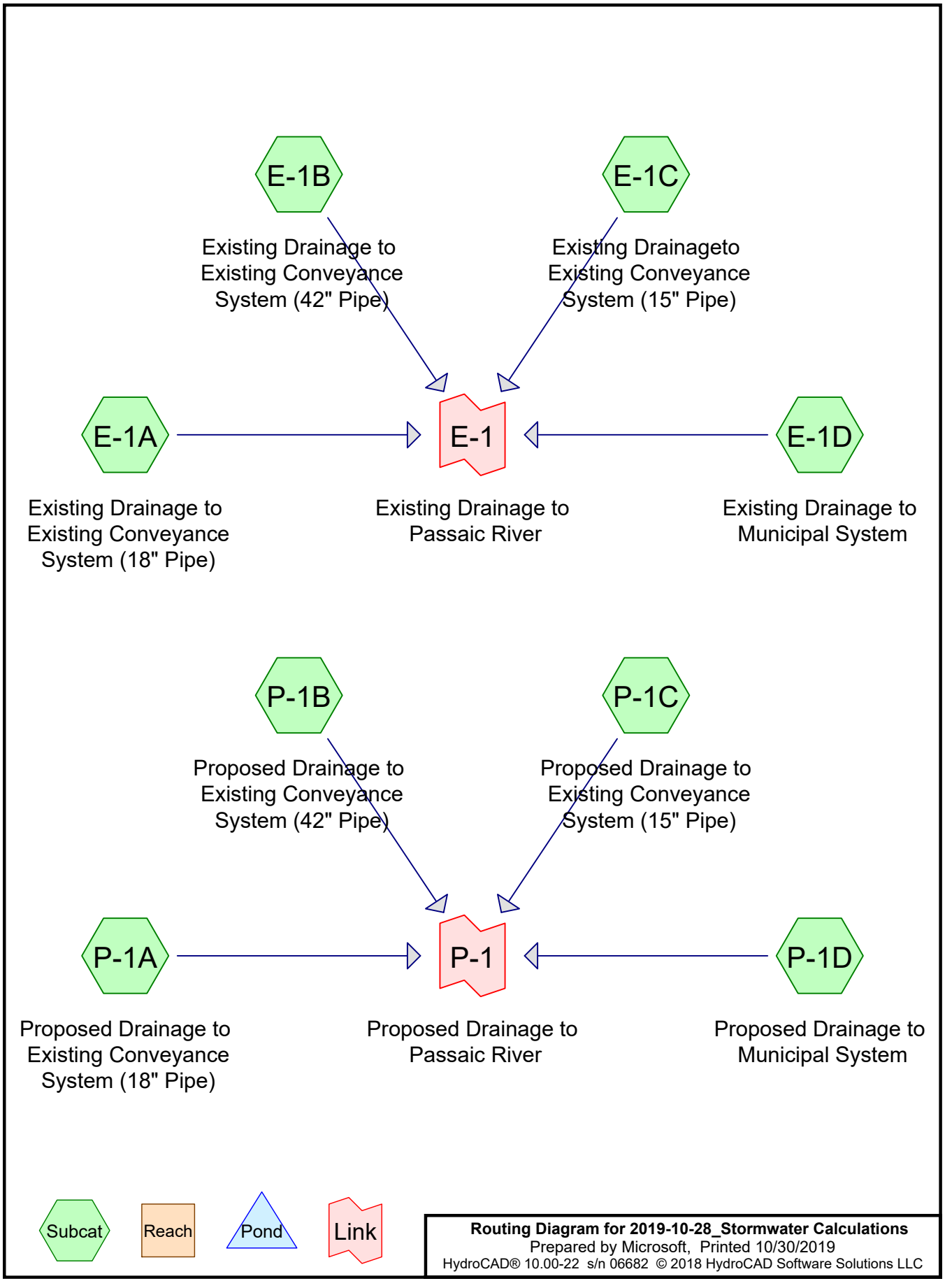
PF graphical



Routing Diagram for 2019-10-28_Stormwater Calculations
Prepared by Microsoft, Printed 10/30/2019

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1A: Existing Drainage to Runoff Area=52,576 sf 82.07% Impervious Runoff Depth=2.90"
Tc=10.0 min CN=80/98 Runoff=3.14 cfs 12,694 cf

Subcatchment E-1B: Existing Drainage Runoff Area=141,668 sf 100.00% Impervious Runoff Depth=3.19"
Tc=10.0 min CN=0/98 Runoff=9.18 cfs 37,621 cf

Subcatchment E-1C: Existing Drainageto Runoff Area=80,227 sf 97.90% Impervious Runoff Depth=3.16"
Tc=10.0 min CN=83/98 Runoff=5.16 cfs 21,109 cf

Subcatchment E-1D: Existing Drainage to Runoff Area=52,934 sf 82.35% Impervious Runoff Depth=2.90"
Tc=10.0 min CN=80/98 Runoff=3.16 cfs 12,801 cf

Subcatchment P-1A: Proposed Drainage to Runoff Area=50,878 sf 41.10% Impervious Runoff Depth=2.24"
Tc=10.0 min CN=80/98 Runoff=2.44 cfs 9,481 cf

Subcatchment P-1B: Proposed Drainage Runoff Area=142,558 sf 72.74% Impervious Runoff Depth=2.75"
Tc=10.0 min CN=80/98 Runoff=8.13 cfs 32,631 cf

Subcatchment P-1C: Proposed Drainage to Runoff Area=81,290 sf 71.62% Impervious Runoff Depth=2.73"
Tc=10.0 min CN=80/98 Runoff=4.61 cfs 18,485 cf

Subcatchment P-1D: Proposed Drainage to Runoff Area=52,679 sf 44.80% Impervious Runoff Depth=2.30"
Tc=10.0 min CN=80/98 Runoff=2.59 cfs 10,079 cf

Link E-1: Existing Drainage to Passaic River Inflow=20.64 cfs 84,226 cf
Primary=20.64 cfs 84,226 cf

Link P-1: Proposed Drainage to Passaic River Inflow=17.77 cfs 70,677 cf
Primary=17.77 cfs 70,677 cf

Total Runoff Area = 654,810 sf Runoff Volume = 154,903 cf Average Runoff Depth = 2.84"
21.60% Pervious = 141,443 sf 78.40% Impervious = 513,367 sf

Summary for Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)

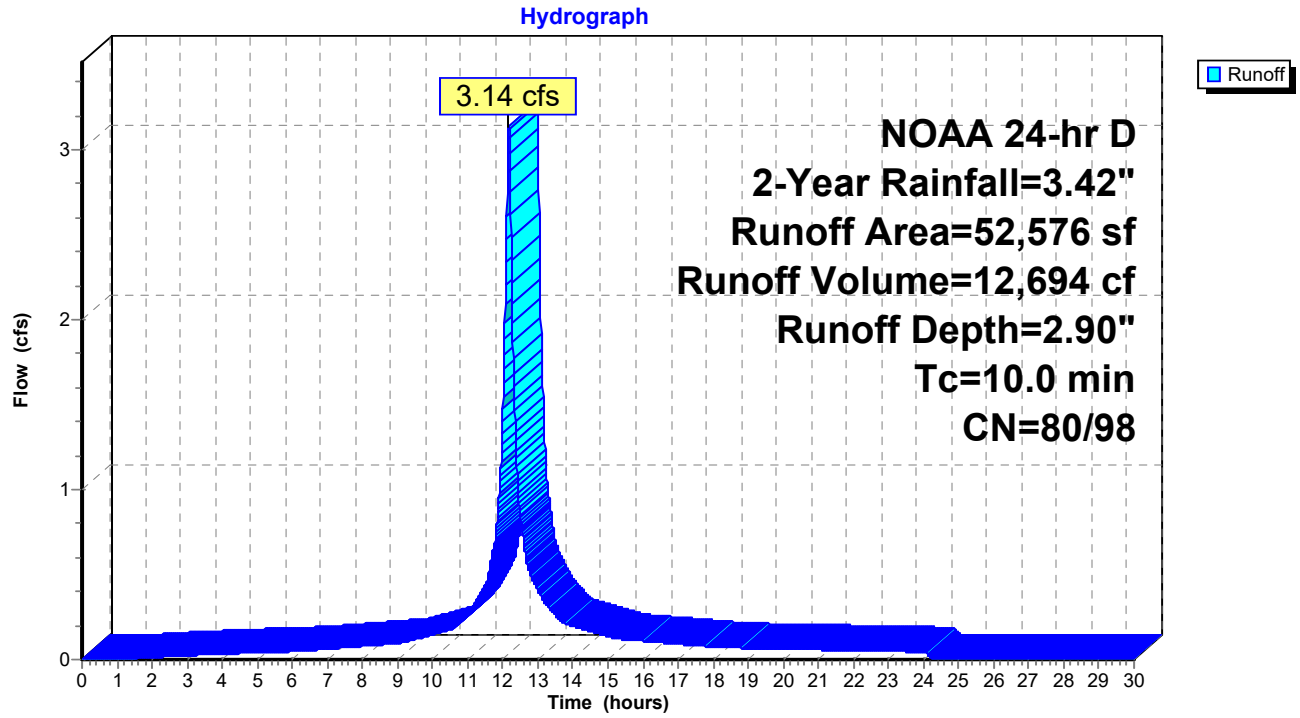
Runoff = 3.14 cfs @ 12.17 hrs, Volume= 12,694 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	43,147	98	Impervious Areas
	9,429	80	>75% Grass cover, Good, HSG D
	52,576	95	Weighted Average
	9,429	80	17.93% Pervious Area
	43,147	98	82.07% Impervious Area

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

Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)

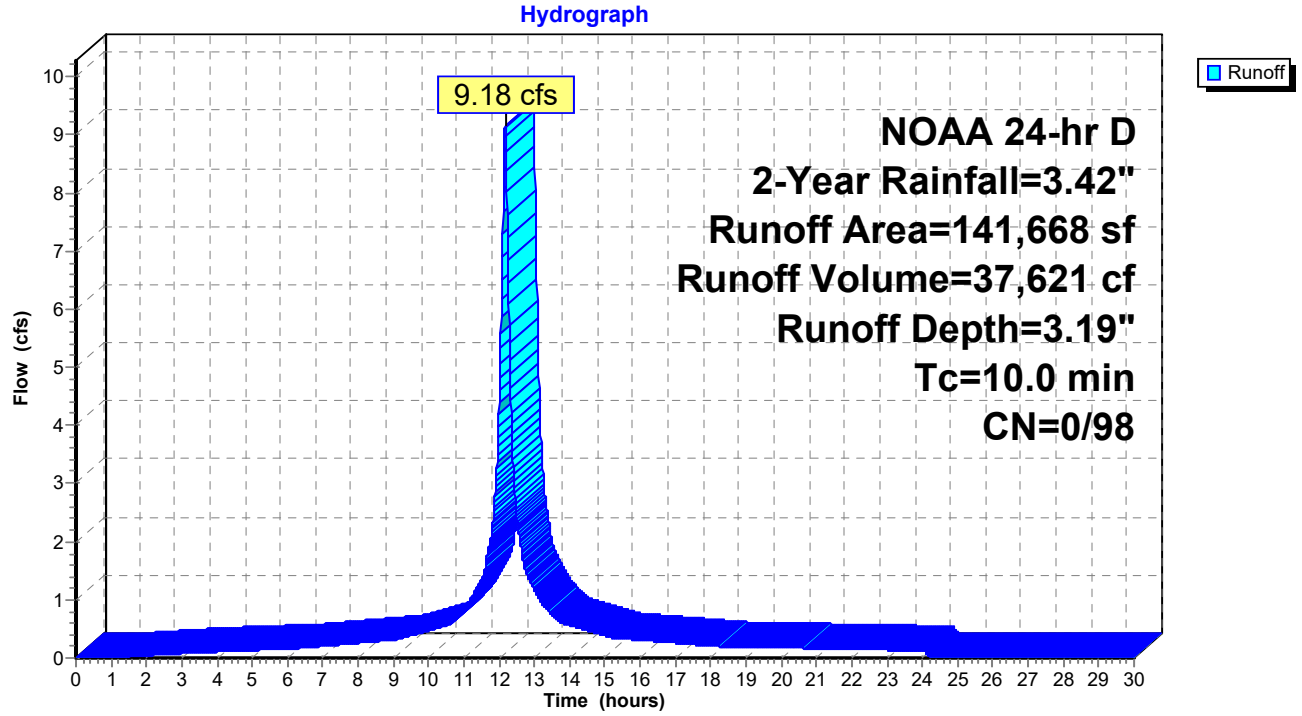
Runoff = 9.18 cfs @ 12.17 hrs, Volume= 37,621 cf, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	141,668	98	Impervious Areas
	141,668	98	100.00% Impervious Area

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

Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)

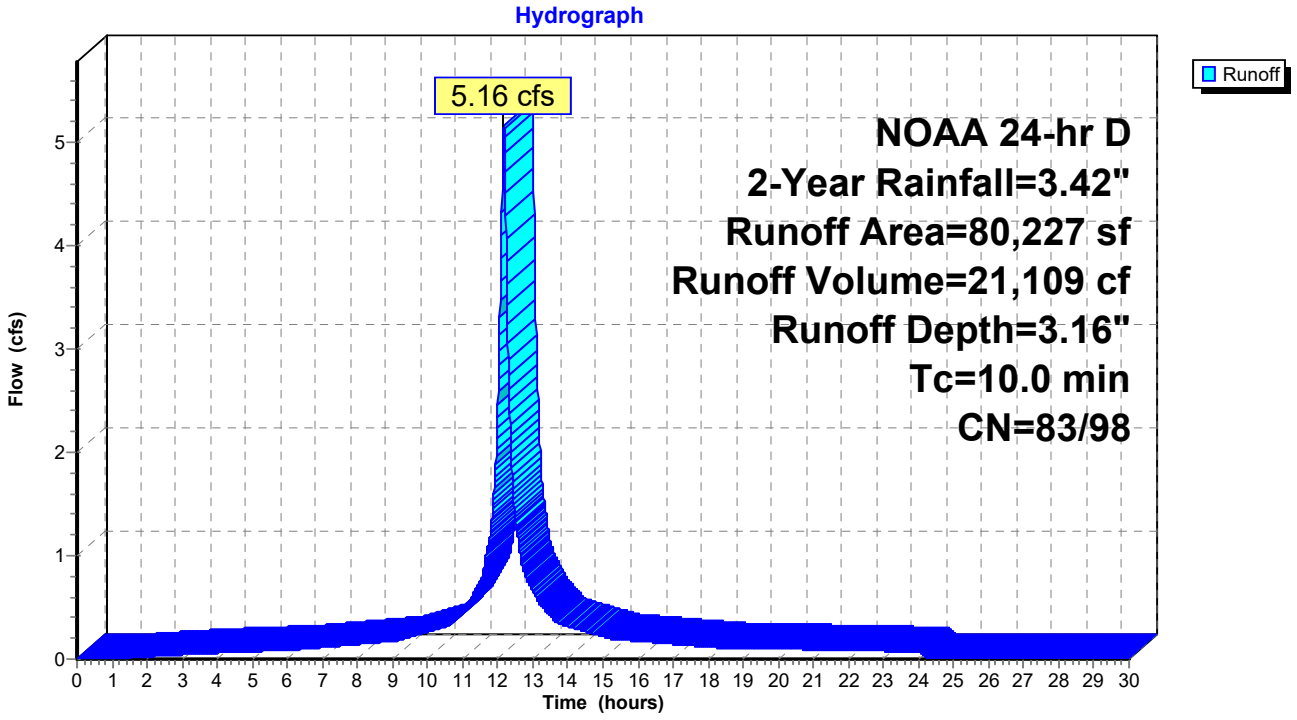
Runoff = 5.16 cfs @ 12.17 hrs, Volume= 21,109 cf, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	78,544	98	Impervious Areas
	353	96	Gravel surface, HSG D
	1,330	80	>75% Grass cover, Good, HSG D
	80,227	98	Weighted Average
	1,683	83	2.10% Pervious Area
	78,544	98	97.90% Impervious Area

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

Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)



Summary for Subcatchment E-1D: Existing Drainage to Municipal System

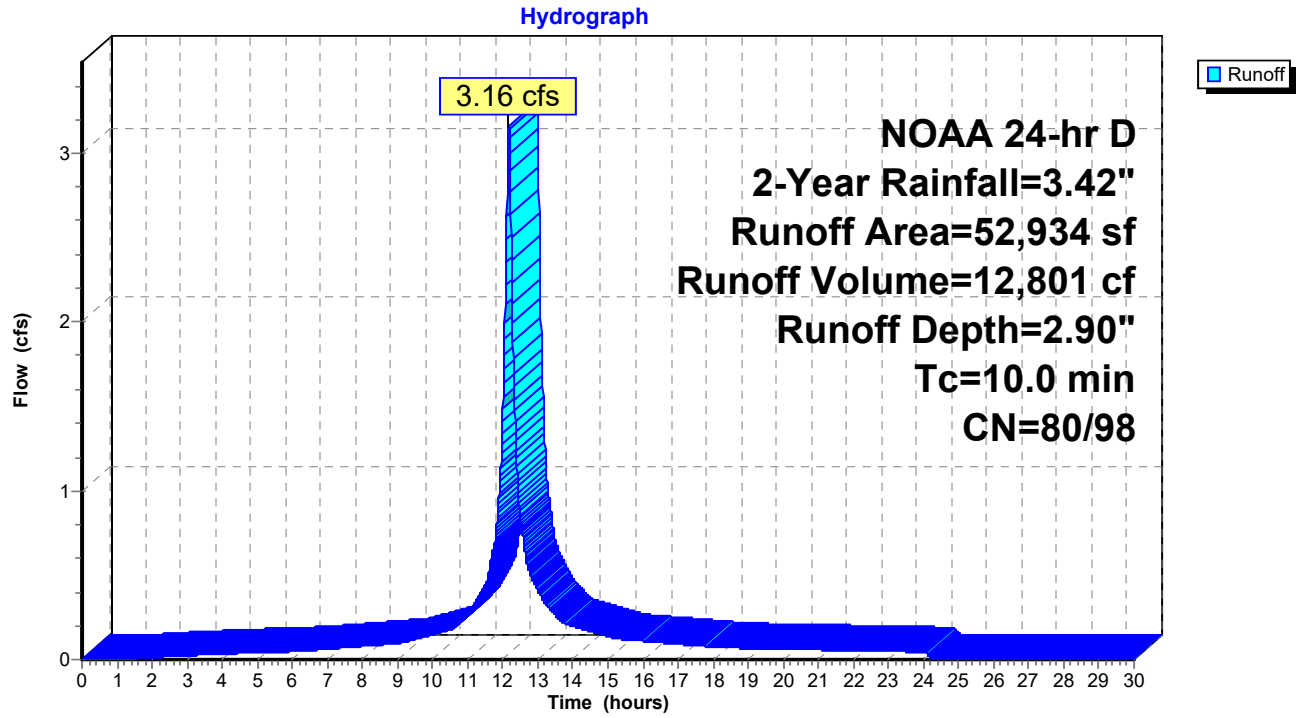
Runoff = 3.16 cfs @ 12.17 hrs, Volume= 12,801 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	43,589	98	Impervious Areas
	9,345	80	>75% Grass cover, Good, HSG D
	52,934	95	Weighted Average
	9,345	80	17.65% Pervious Area
	43,589	98	82.35% Impervious Area

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

Subcatchment E-1D: Existing Drainage to Municipal System



Summary for Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)

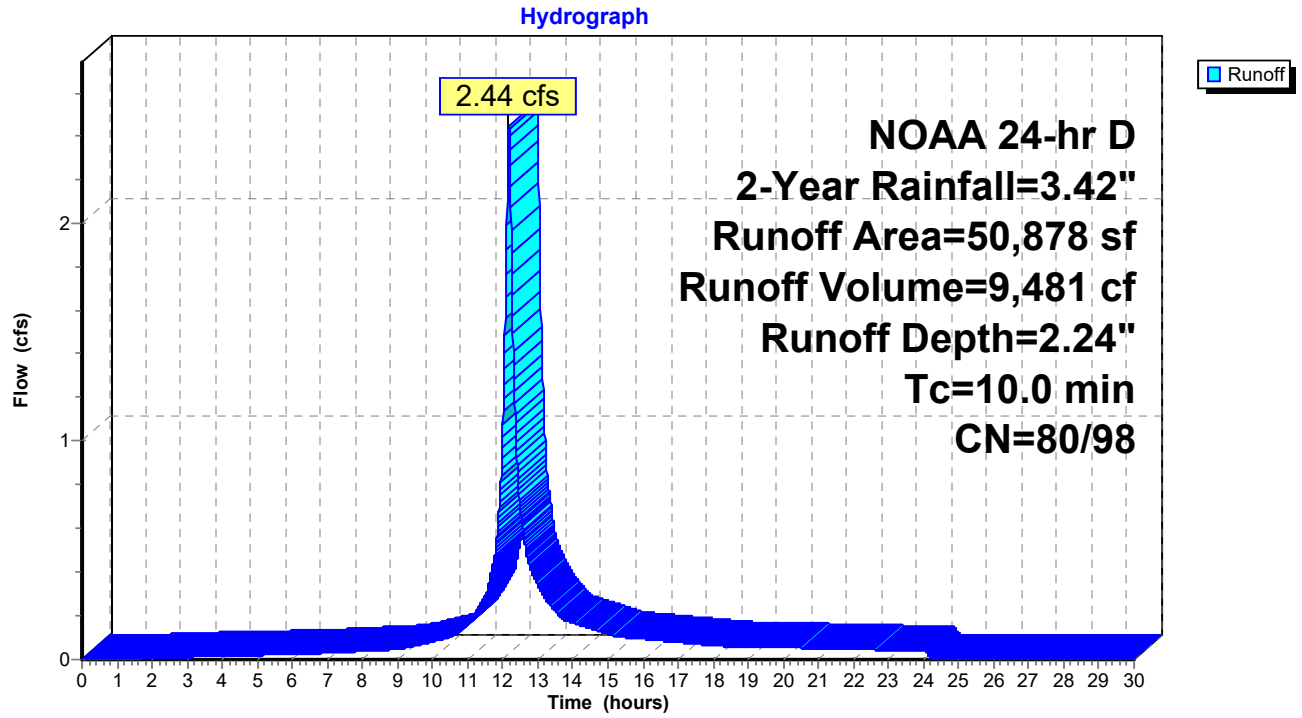
Runoff = 2.44 cfs @ 12.17 hrs, Volume= 9,481 cf, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	20,909	98	Impervious Areas
	29,969	80	>75% Grass cover, Good, HSG D
	50,878	87	Weighted Average
	29,969	80	58.90% Pervious Area
	20,909	98	41.10% Impervious Area

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

Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)

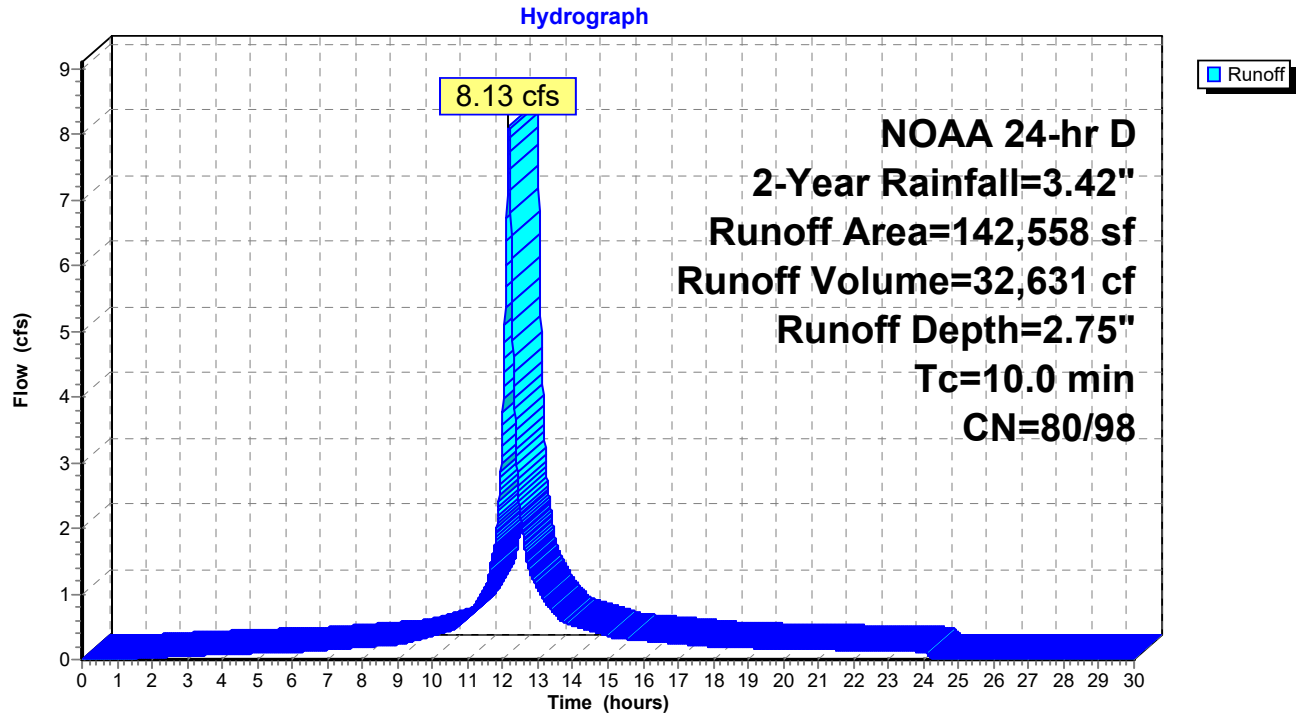
Runoff = 8.13 cfs @ 12.17 hrs, Volume= 32,631 cf, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	103,691	98	Impervious Areas
	38,867	80	>75% Grass cover, Good, HSG D
	142,558	93	Weighted Average
	38,867	80	27.26% Pervious Area
	103,691	98	72.74% Impervious Area

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

Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)

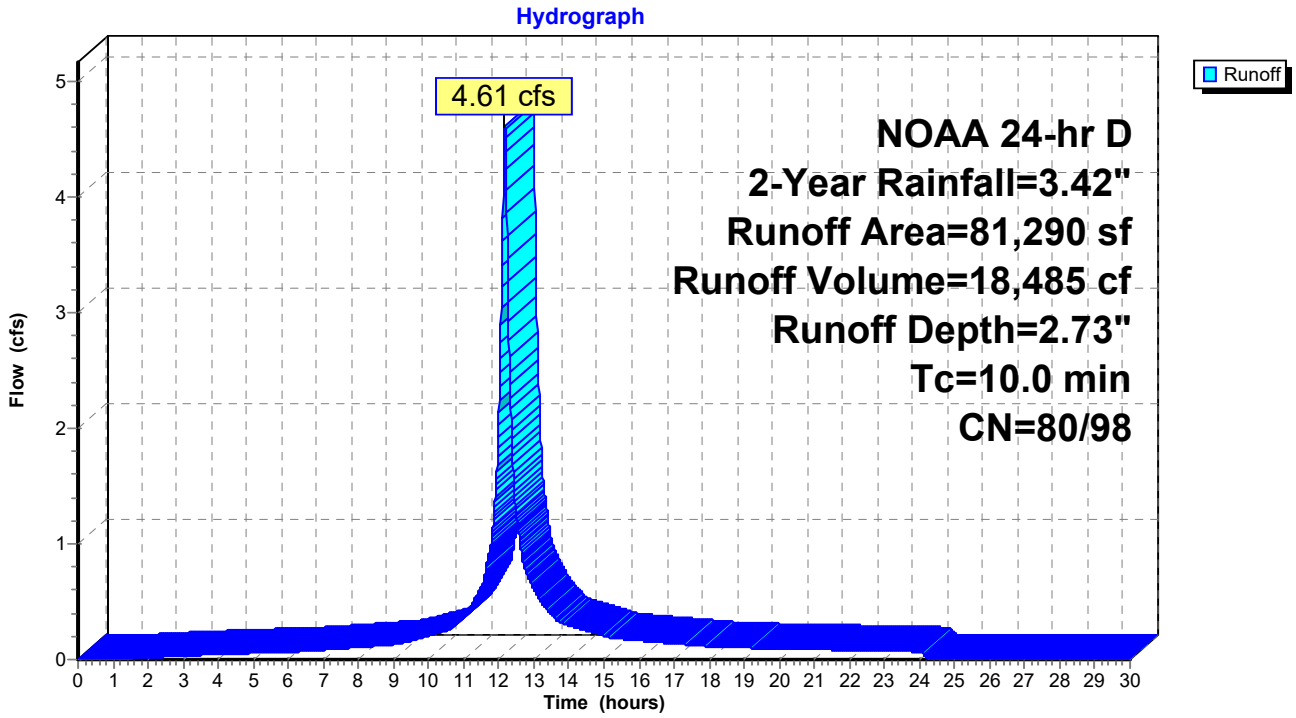
Runoff = 4.61 cfs @ 12.17 hrs, Volume= 18,485 cf, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	58,221	98	Impervious Areas
	23,069	80	>75% Grass cover, Good, HSG D
	81,290	93	Weighted Average
	23,069	80	28.38% Pervious Area
	58,221	98	71.62% Impervious Area

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

Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)



Summary for Subcatchment P-1D: Proposed Drainage to Municipal System

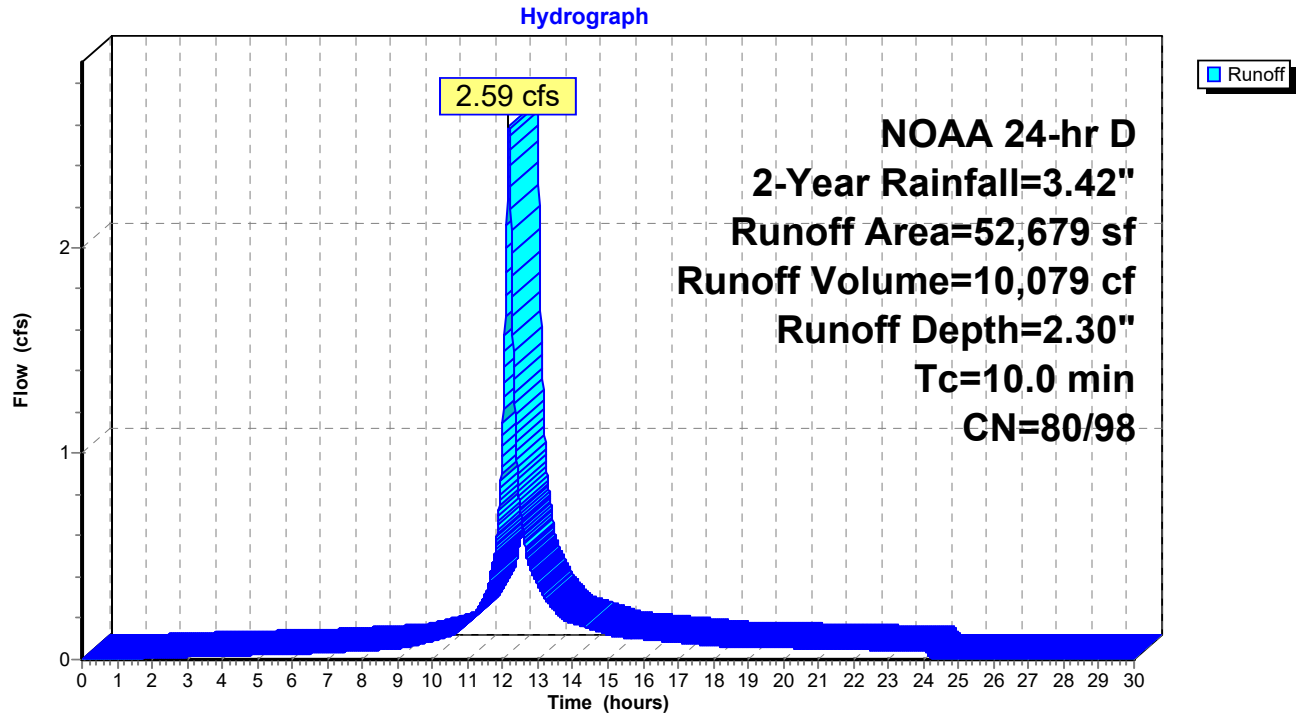
Runoff = 2.59 cfs @ 12.17 hrs, Volume= 10,079 cf, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.42"

	Area (sf)	CN	Description
*	23,598	98	Impervious Areas
	29,081	80	>75% Grass cover, Good, HSG D
	52,679	88	Weighted Average
	29,081	80	55.20% Pervious Area
	23,598	98	44.80% Impervious Area

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

Subcatchment P-1D: Proposed Drainage to Municipal System

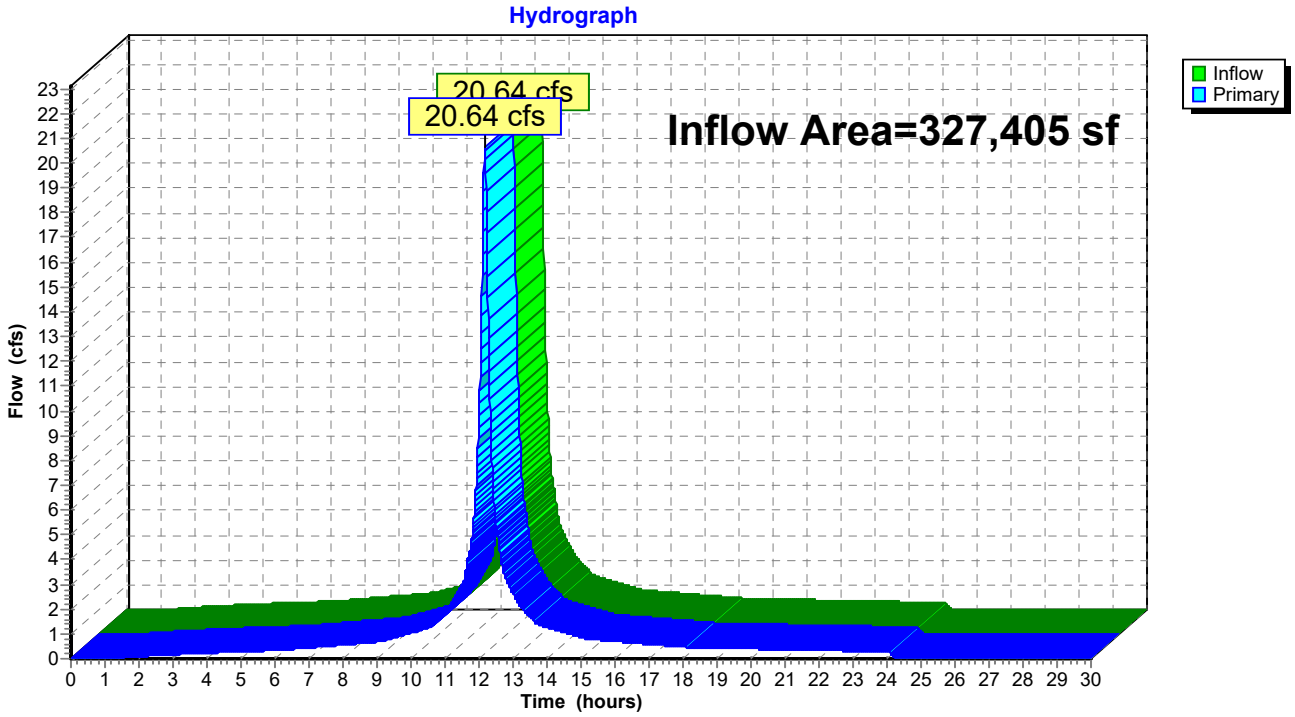


Summary for Link E-1: Existing Drainage to Passaic River

Inflow Area = 327,405 sf, 93.75% Impervious, Inflow Depth = 3.09" for 2-Year event
Inflow = 20.64 cfs @ 12.17 hrs, Volume= 84,226 cf
Primary = 20.64 cfs @ 12.17 hrs, Volume= 84,226 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link E-1: Existing Drainage to Passaic River

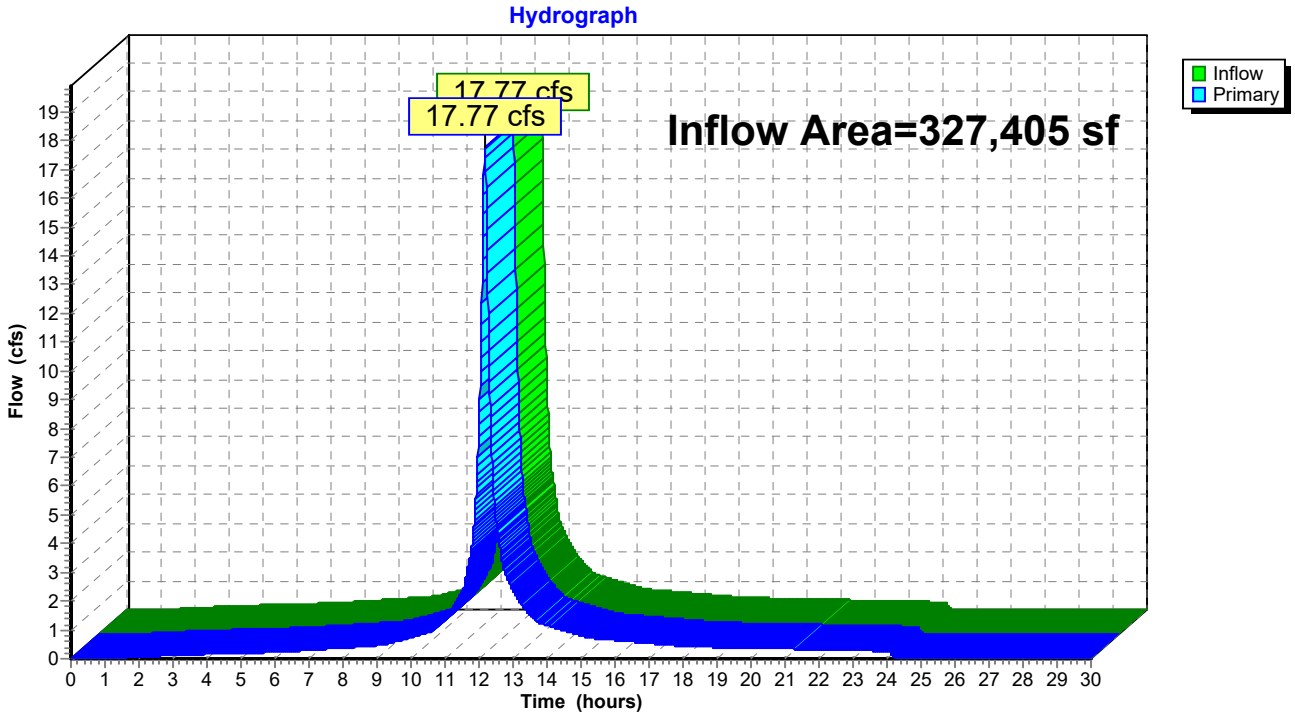


Summary for Link P-1: Proposed Drainage to Passaic River

Inflow Area = 327,405 sf, 63.05% Impervious, Inflow Depth = 2.59" for 2-Year event
Inflow = 17.77 cfs @ 12.17 hrs, Volume= 70,677 cf
Primary = 17.77 cfs @ 12.17 hrs, Volume= 70,677 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link P-1: Proposed Drainage to Passaic River



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1A: Existing Drainage to Runoff Area=52,576 sf 82.07% Impervious Runoff Depth=4.57"
Tc=10.0 min CN=80/98 Runoff=4.89 cfs 20,041 cf

Subcatchment E-1B: Existing Drainage Runoff Area=141,668 sf 100.00% Impervious Runoff Depth=4.91"
Tc=10.0 min CN=0/98 Runoff=13.91 cfs 58,001 cf

Subcatchment E-1C: Existing Drainageto Runoff Area=80,227 sf 97.90% Impervious Runoff Depth=4.88"
Tc=10.0 min CN=83/98 Runoff=7.84 cfs 32,621 cf

Subcatchment E-1D: Existing Drainage to Runoff Area=52,934 sf 82.35% Impervious Runoff Depth=4.58"
Tc=10.0 min CN=80/98 Runoff=4.93 cfs 20,201 cf

Subcatchment P-1A: Proposed Drainage to Runoff Area=50,878 sf 41.10% Impervious Runoff Depth=3.80"
Tc=10.0 min CN=80/98 Runoff=4.15 cfs 16,113 cf

Subcatchment P-1B: Proposed Drainage Runoff Area=142,558 sf 72.74% Impervious Runoff Depth=4.40"
Tc=10.0 min CN=80/98 Runoff=12.89 cfs 52,247 cf

Subcatchment P-1C: Proposed Drainage to Runoff Area=81,290 sf 71.62% Impervious Runoff Depth=4.38"
Tc=10.0 min CN=80/98 Runoff=7.33 cfs 29,650 cf

Subcatchment P-1D: Proposed Drainage to Runoff Area=52,679 sf 44.80% Impervious Runoff Depth=3.87"
Tc=10.0 min CN=80/98 Runoff=4.35 cfs 16,990 cf

Link E-1: Existing Drainage to Passaic River Inflow=31.57 cfs 130,864 cf
Primary=31.57 cfs 130,864 cf

Link P-1: Proposed Drainage to Passaic River Inflow=28.71 cfs 115,000 cf
Primary=28.71 cfs 115,000 cf

Total Runoff Area = 654,810 sf Runoff Volume = 245,864 cf Average Runoff Depth = 4.51"
21.60% Pervious = 141,443 sf 78.40% Impervious = 513,367 sf

Summary for Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)

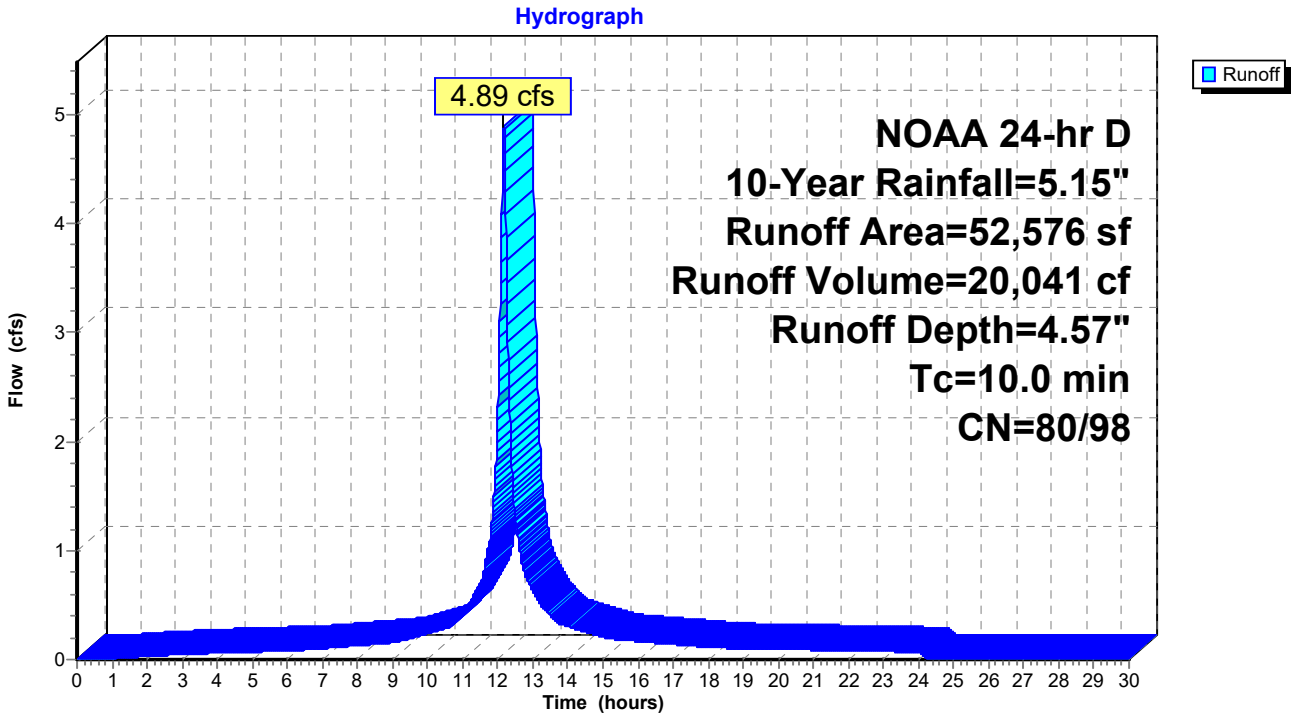
Runoff = 4.89 cfs @ 12.17 hrs, Volume= 20,041 cf, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	43,147	98	Impervious Areas
	9,429	80	>75% Grass cover, Good, HSG D
	52,576	95	Weighted Average
	9,429	80	17.93% Pervious Area
	43,147	98	82.07% Impervious Area

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

Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)

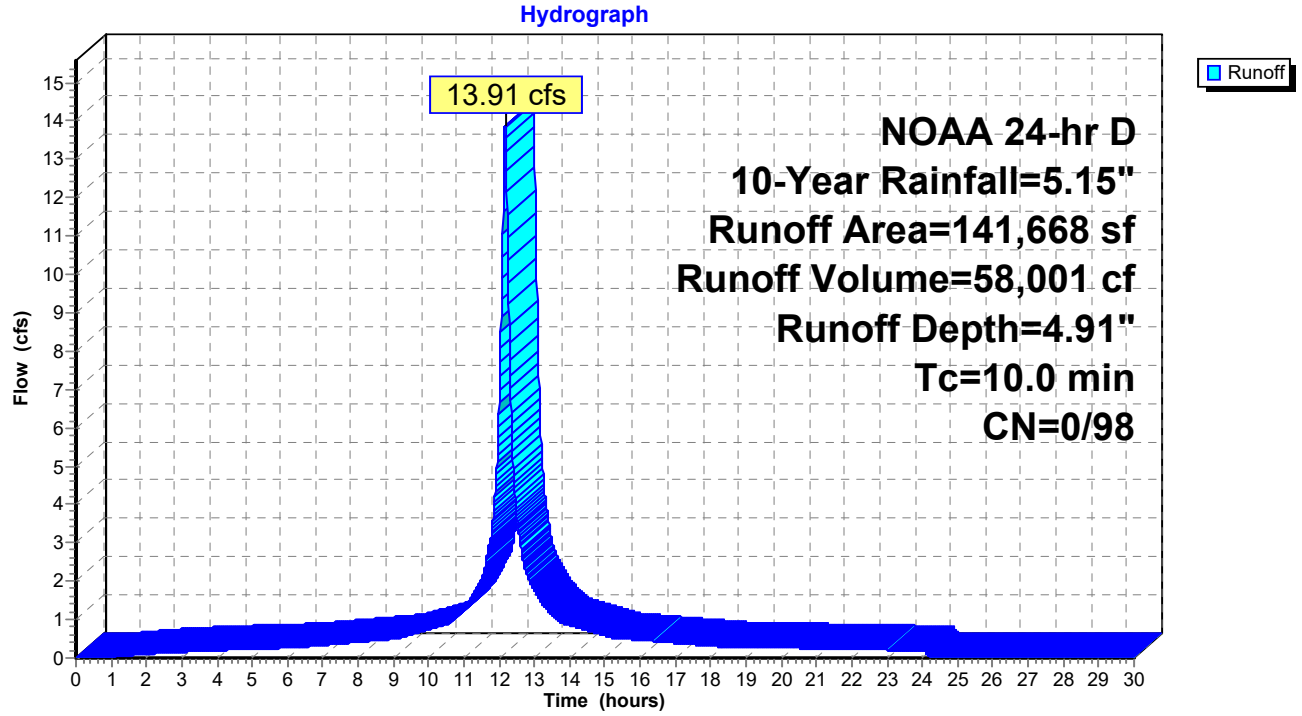
Runoff = 13.91 cfs @ 12.17 hrs, Volume= 58,001 cf, Depth= 4.91"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	141,668	98	Impervious Areas
	141,668	98	100.00% Impervious Area

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

Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)

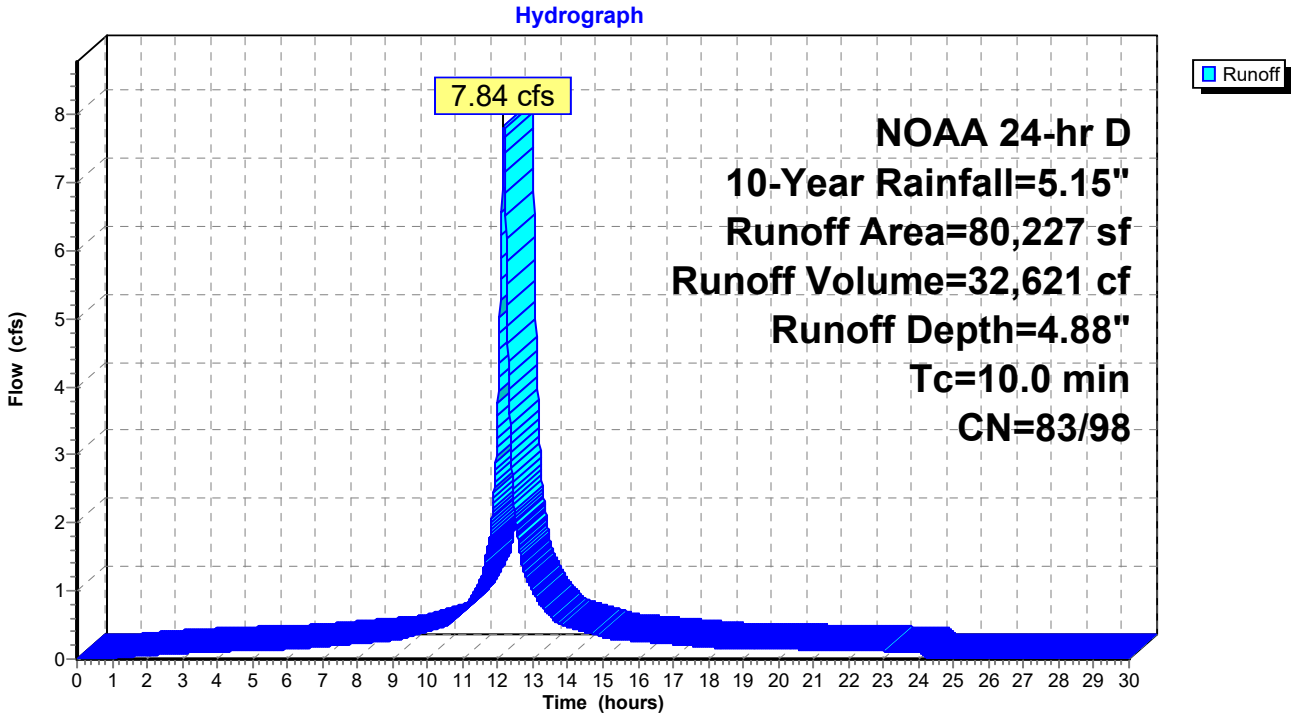
Runoff = 7.84 cfs @ 12.17 hrs, Volume= 32,621 cf, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	78,544	98	Impervious Areas
	353	96	Gravel surface, HSG D
	1,330	80	>75% Grass cover, Good, HSG D
	80,227	98	Weighted Average
	1,683	83	2.10% Pervious Area
	78,544	98	97.90% Impervious Area

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

Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)



Summary for Subcatchment E-1D: Existing Drainage to Municipal System

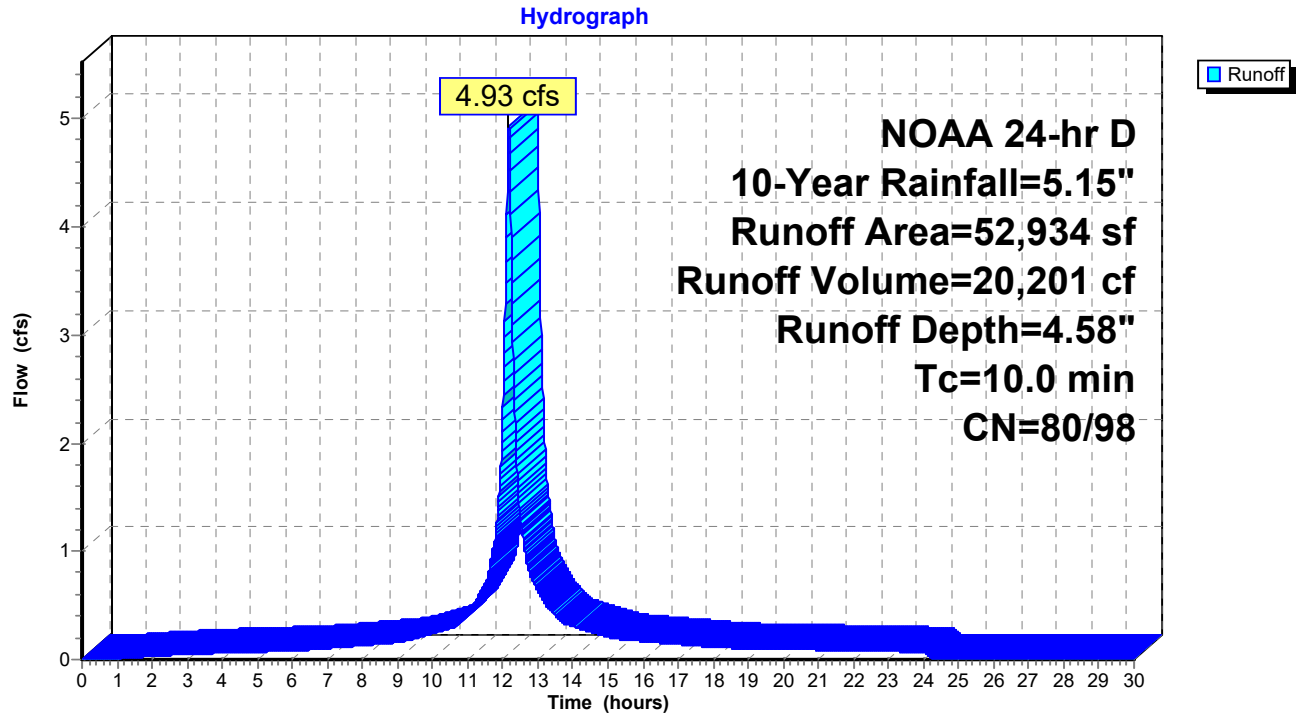
Runoff = 4.93 cfs @ 12.17 hrs, Volume= 20,201 cf, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	43,589	98	Impervious Areas
	9,345	80	>75% Grass cover, Good, HSG D
	52,934	95	Weighted Average
	9,345	80	17.65% Pervious Area
	43,589	98	82.35% Impervious Area

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

Subcatchment E-1D: Existing Drainage to Municipal System



Summary for Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)

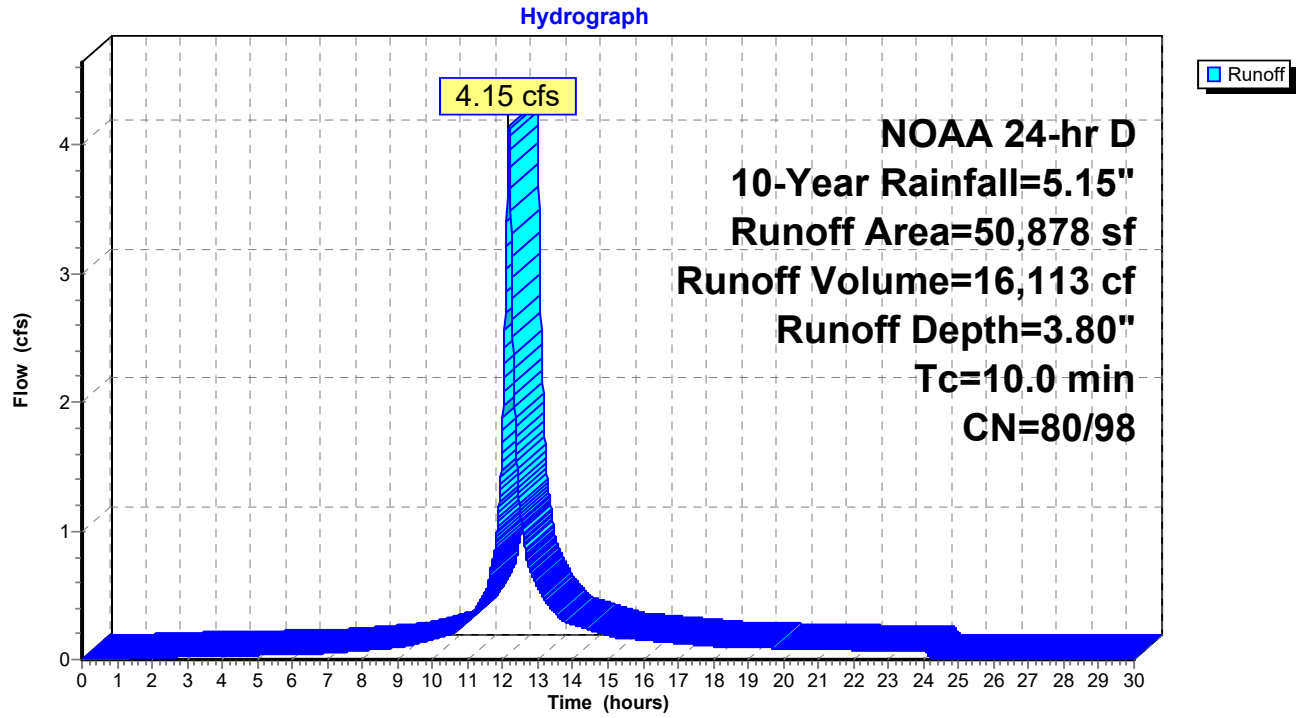
Runoff = 4.15 cfs @ 12.17 hrs, Volume= 16,113 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	20,909	98	Impervious Areas
	29,969	80	>75% Grass cover, Good, HSG D
	50,878	87	Weighted Average
	29,969	80	58.90% Pervious Area
	20,909	98	41.10% Impervious Area

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

Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)

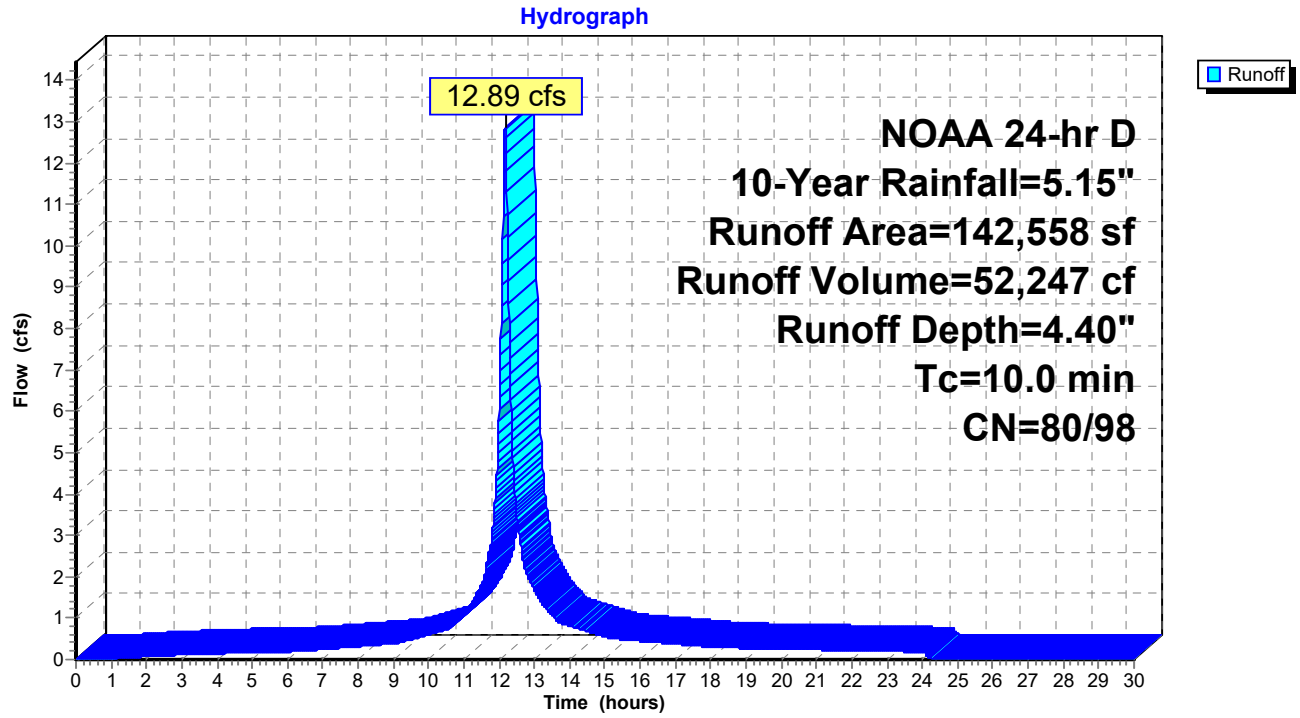
Runoff = 12.89 cfs @ 12.17 hrs, Volume= 52,247 cf, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	103,691	98	Impervious Areas
	38,867	80	>75% Grass cover, Good, HSG D
	142,558	93	Weighted Average
	38,867	80	27.26% Pervious Area
	103,691	98	72.74% Impervious Area

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

Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)

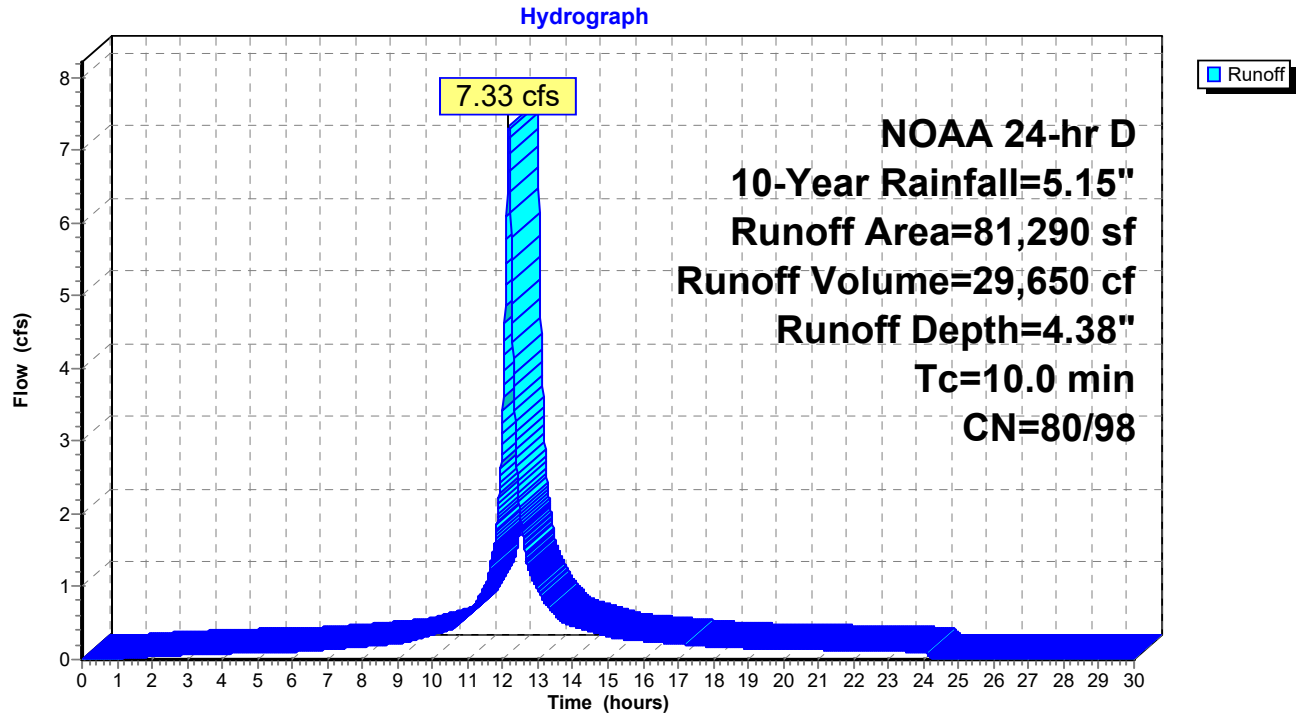
Runoff = 7.33 cfs @ 12.17 hrs, Volume= 29,650 cf, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	58,221	98	Impervious Areas
	23,069	80	>75% Grass cover, Good, HSG D
	81,290	93	Weighted Average
	23,069	80	28.38% Pervious Area
	58,221	98	71.62% Impervious Area

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

Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)



Summary for Subcatchment P-1D: Proposed Drainage to Municipal System

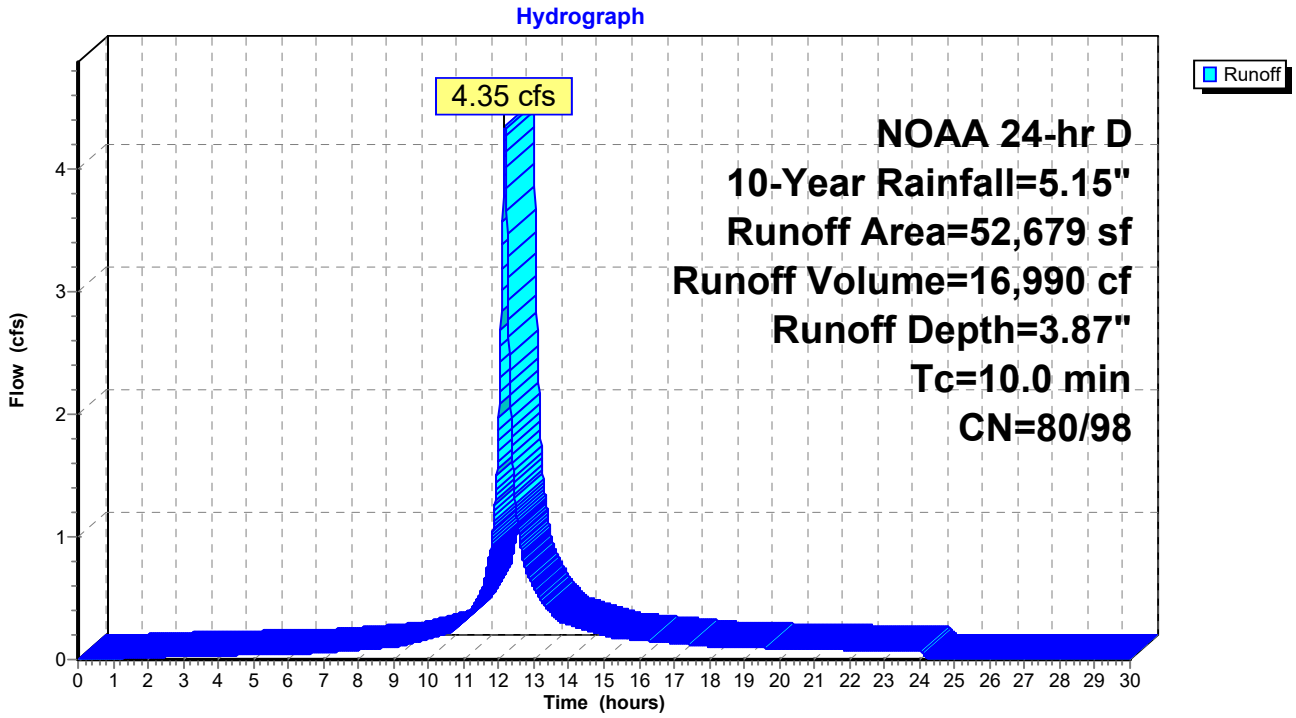
Runoff = 4.35 cfs @ 12.17 hrs, Volume= 16,990 cf, Depth= 3.87"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.15"

	Area (sf)	CN	Description
*	23,598	98	Impervious Areas
	29,081	80	>75% Grass cover, Good, HSG D
	52,679	88	Weighted Average
	29,081	80	55.20% Pervious Area
	23,598	98	44.80% Impervious Area

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

Subcatchment P-1D: Proposed Drainage to Municipal System

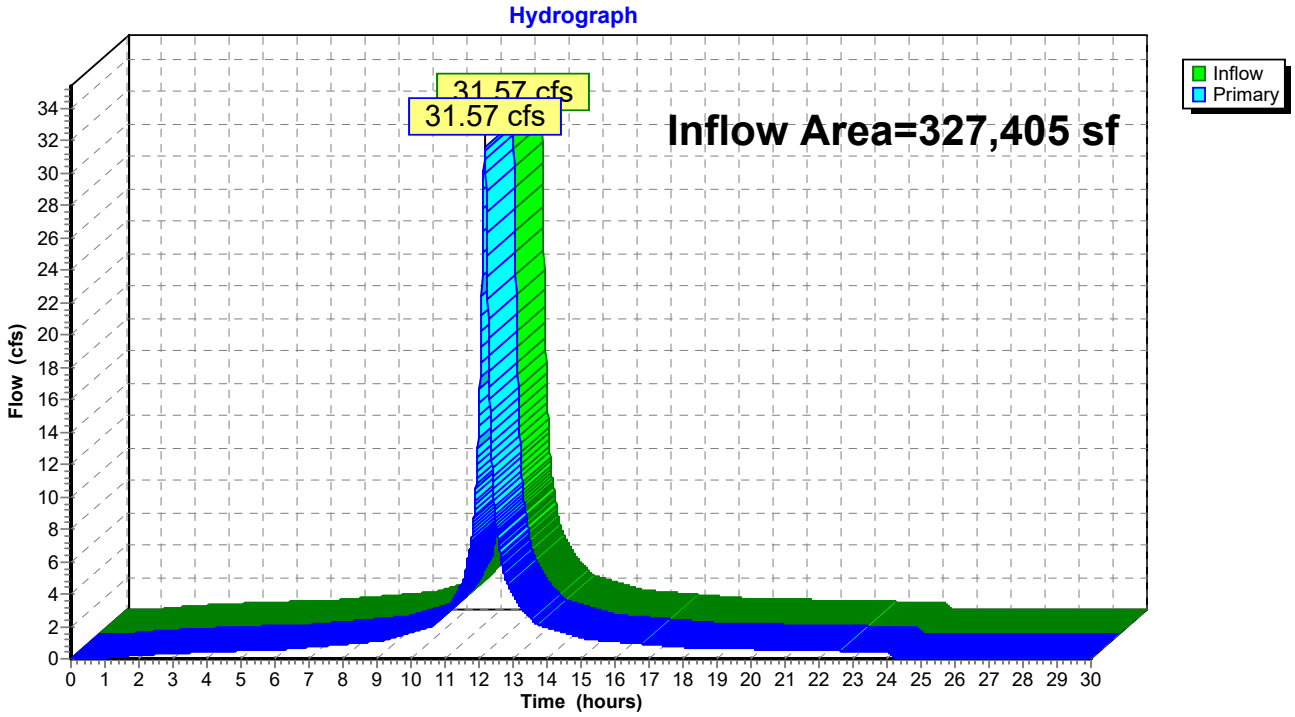


Summary for Link E-1: Existing Drainage to Passaic River

Inflow Area = 327,405 sf, 93.75% Impervious, Inflow Depth = 4.80" for 10-Year event
Inflow = 31.57 cfs @ 12.17 hrs, Volume= 130,864 cf
Primary = 31.57 cfs @ 12.17 hrs, Volume= 130,864 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link E-1: Existing Drainage to Passaic River

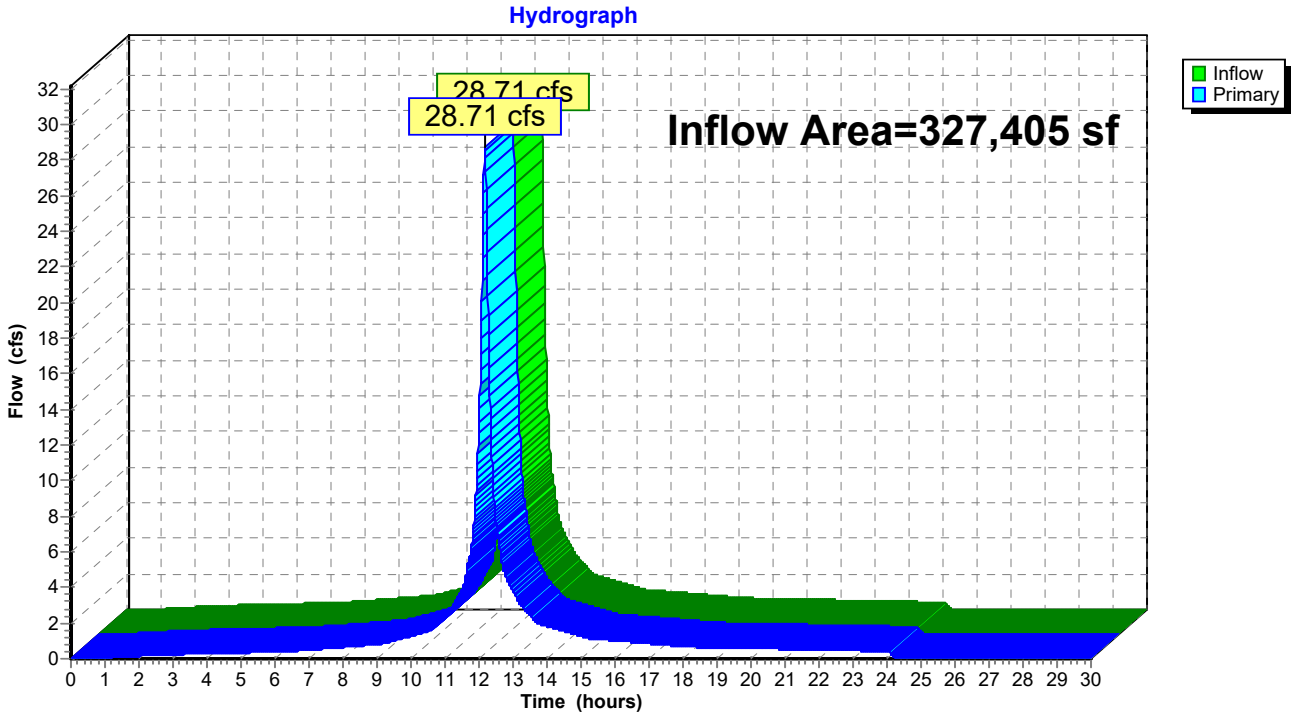


Summary for Link P-1: Proposed Drainage to Passaic River

Inflow Area = 327,405 sf, 63.05% Impervious, Inflow Depth = 4.21" for 10-Year event
Inflow = 28.71 cfs @ 12.17 hrs, Volume= 115,000 cf
Primary = 28.71 cfs @ 12.17 hrs, Volume= 115,000 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link P-1: Proposed Drainage to Passaic River



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1A: Existing Drainage to Runoff Area=52,576 sf 82.07% Impervious Runoff Depth=5.74"
Tc=10.0 min CN=80/98 Runoff=6.11 cfs 25,152 cf

Subcatchment E-1B: Existing Drainage Runoff Area=141,668 sf 100.00% Impervious Runoff Depth=6.10"
Tc=10.0 min CN=0/98 Runoff=17.15 cfs 72,032 cf

Subcatchment E-1C: Existing Drainageto Runoff Area=80,227 sf 97.90% Impervious Runoff Depth=6.07"
Tc=10.0 min CN=83/98 Runoff=9.68 cfs 40,555 cf

Subcatchment E-1D: Existing Drainage to Runoff Area=52,934 sf 82.35% Impervious Runoff Depth=5.75"
Tc=10.0 min CN=80/98 Runoff=6.15 cfs 25,348 cf

Subcatchment P-1A: Proposed Drainage to Runoff Area=50,878 sf 41.10% Impervious Runoff Depth=4.92"
Tc=10.0 min CN=80/98 Runoff=5.34 cfs 20,844 cf

Subcatchment P-1B: Proposed Drainage Runoff Area=142,558 sf 72.74% Impervious Runoff Depth=5.55"
Tc=10.0 min CN=80/98 Runoff=16.19 cfs 65,968 cf

Subcatchment P-1C: Proposed Drainage to Runoff Area=81,290 sf 71.62% Impervious Runoff Depth=5.53"
Tc=10.0 min CN=80/98 Runoff=9.21 cfs 37,465 cf

Subcatchment P-1D: Proposed Drainage to Runoff Area=52,679 sf 44.80% Impervious Runoff Depth=4.99"
Tc=10.0 min CN=80/98 Runoff=5.58 cfs 21,909 cf

Link E-1: Existing Drainage to Passaic River Inflow=39.08 cfs 163,087 cf
Primary=39.08 cfs 163,087 cf

Link P-1: Proposed Drainage to Passaic River Inflow=36.33 cfs 146,186 cf
Primary=36.33 cfs 146,186 cf

Total Runoff Area = 654,810 sf Runoff Volume = 309,272 cf Average Runoff Depth = 5.67"
21.60% Pervious = 141,443 sf 78.40% Impervious = 513,367 sf

Summary for Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)

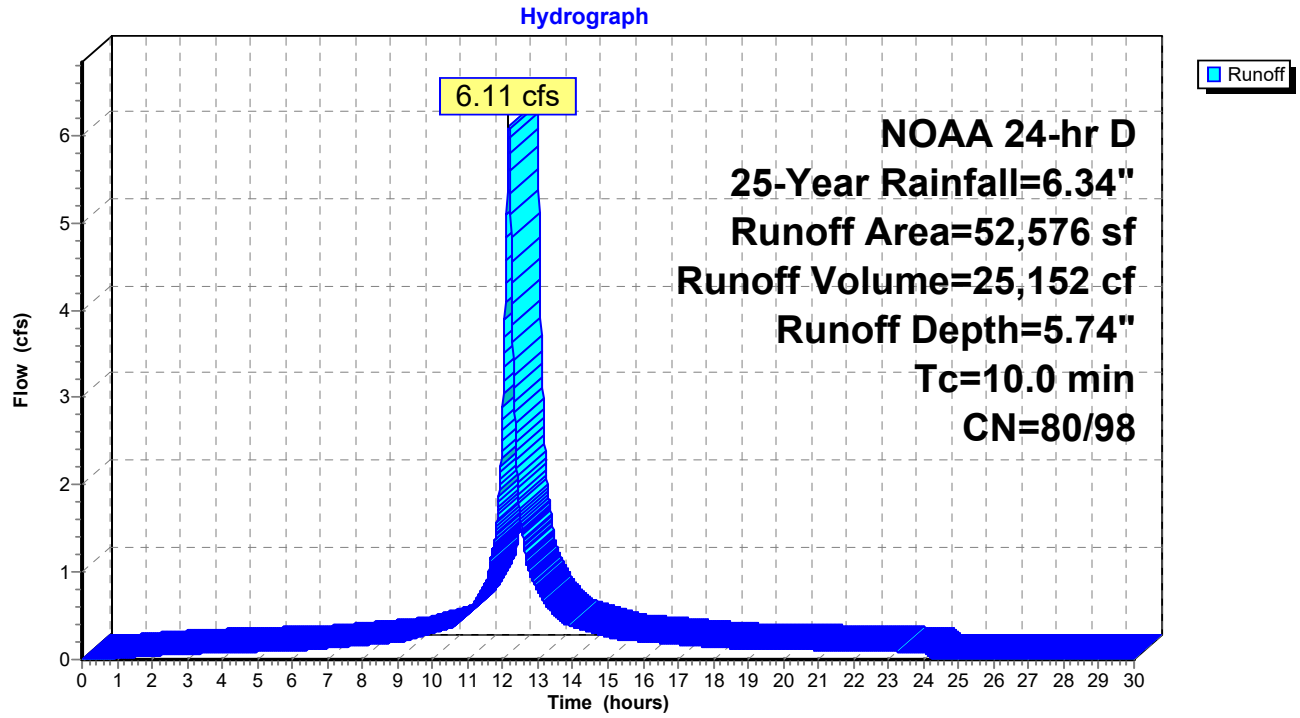
Runoff = 6.11 cfs @ 12.17 hrs, Volume= 25,152 cf, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	43,147	98	Impervious Areas
	9,429	80	>75% Grass cover, Good, HSG D
	52,576	95	Weighted Average
	9,429	80	17.93% Pervious Area
	43,147	98	82.07% Impervious Area

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

Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)

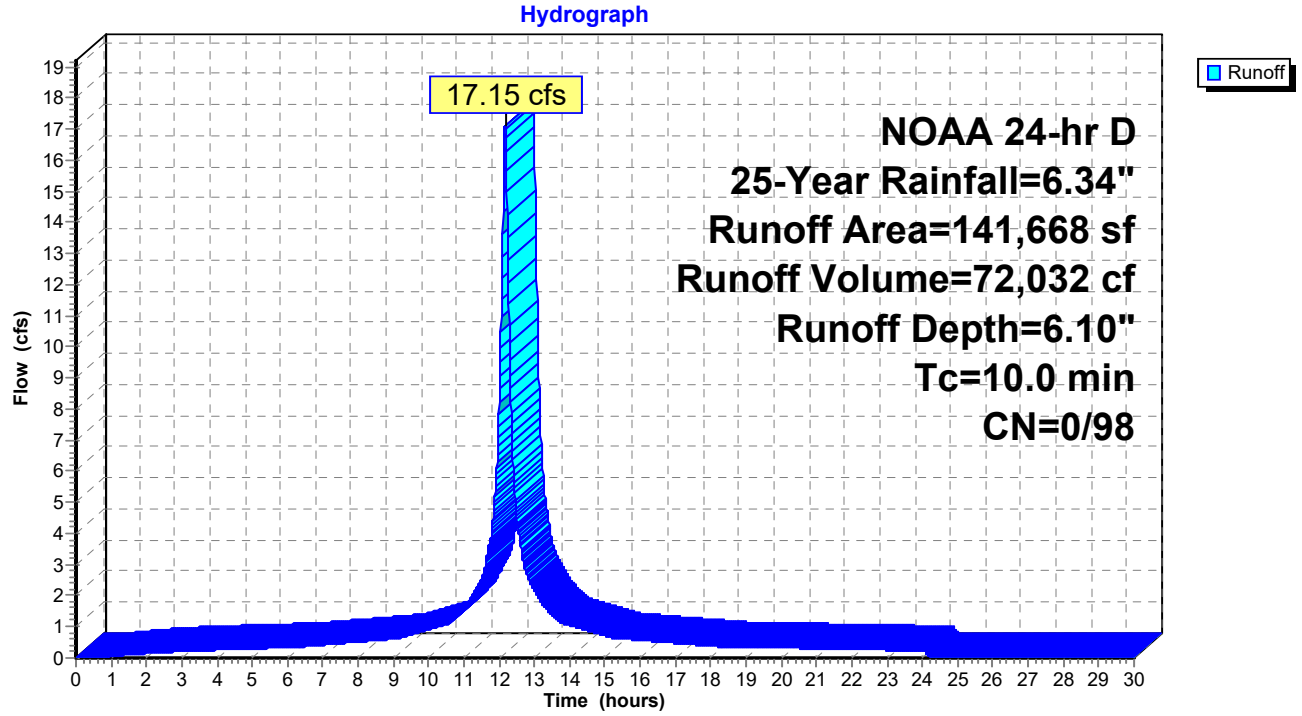
Runoff = 17.15 cfs @ 12.17 hrs, Volume= 72,032 cf, Depth= 6.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	141,668	98	Impervious Areas
	141,668	98	100.00% Impervious Area

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

Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)

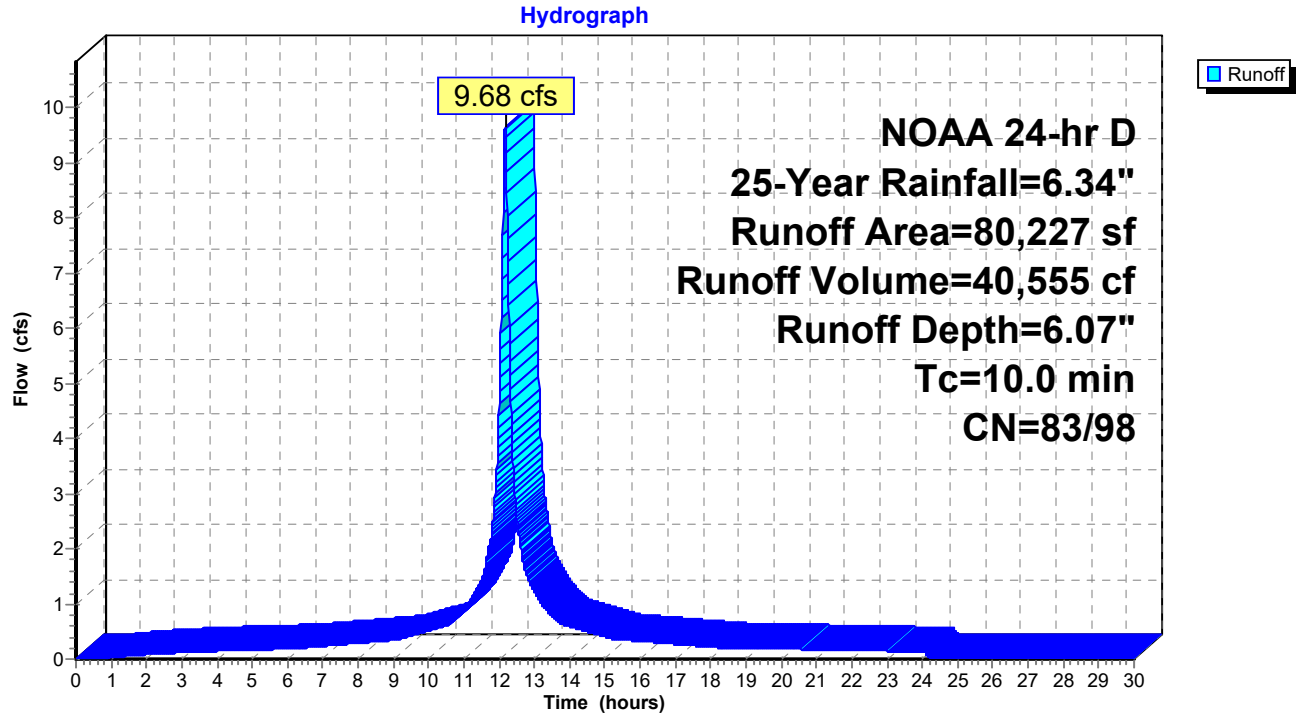
Runoff = 9.68 cfs @ 12.17 hrs, Volume= 40,555 cf, Depth= 6.07"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	78,544	98	Impervious Areas
	353	96	Gravel surface, HSG D
	1,330	80	>75% Grass cover, Good, HSG D
	80,227	98	Weighted Average
	1,683	83	2.10% Pervious Area
	78,544	98	97.90% Impervious Area

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

Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)



Summary for Subcatchment E-1D: Existing Drainage to Municipal System

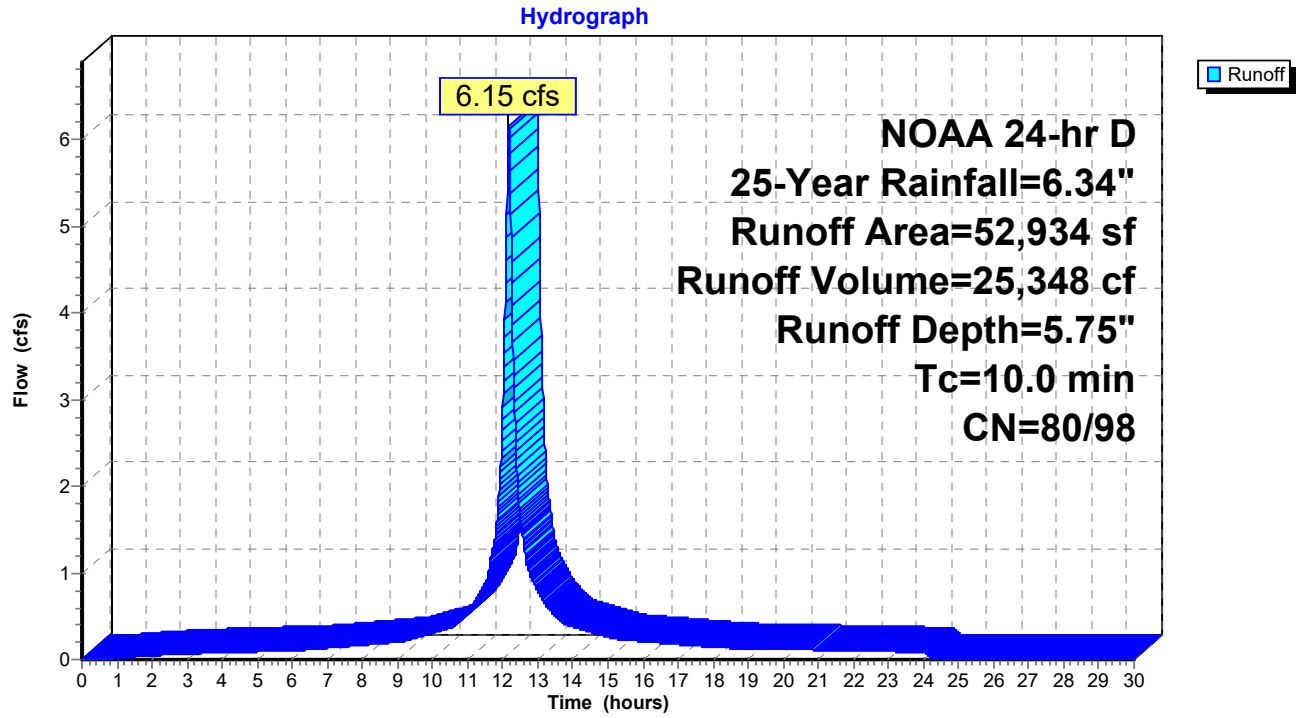
Runoff = 6.15 cfs @ 12.17 hrs, Volume= 25,348 cf, Depth= 5.75"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	43,589	98	Impervious Areas
	9,345	80	>75% Grass cover, Good, HSG D
	52,934	95	Weighted Average
	9,345	80	17.65% Pervious Area
	43,589	98	82.35% Impervious Area

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

Subcatchment E-1D: Existing Drainage to Municipal System



Summary for Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)

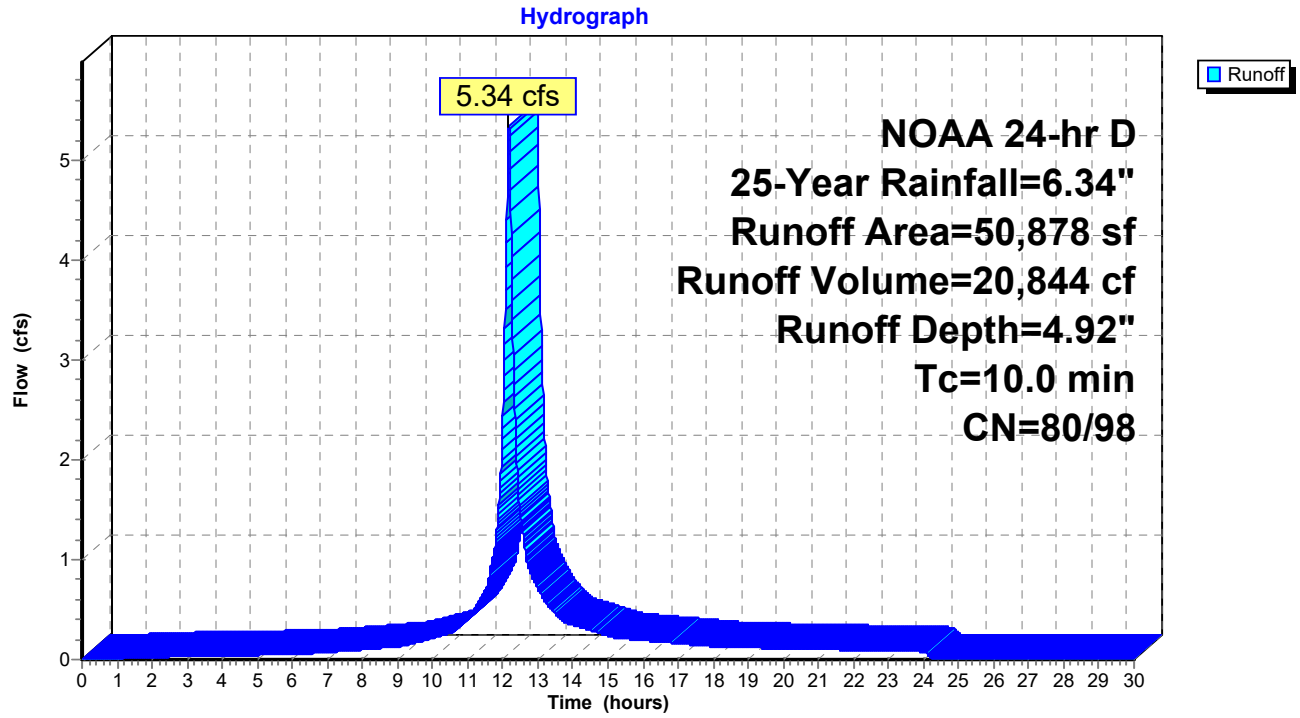
Runoff = 5.34 cfs @ 12.17 hrs, Volume= 20,844 cf, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	20,909	98	Impervious Areas
	29,969	80	>75% Grass cover, Good, HSG D
	50,878	87	Weighted Average
	29,969	80	58.90% Pervious Area
	20,909	98	41.10% Impervious Area

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

Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)

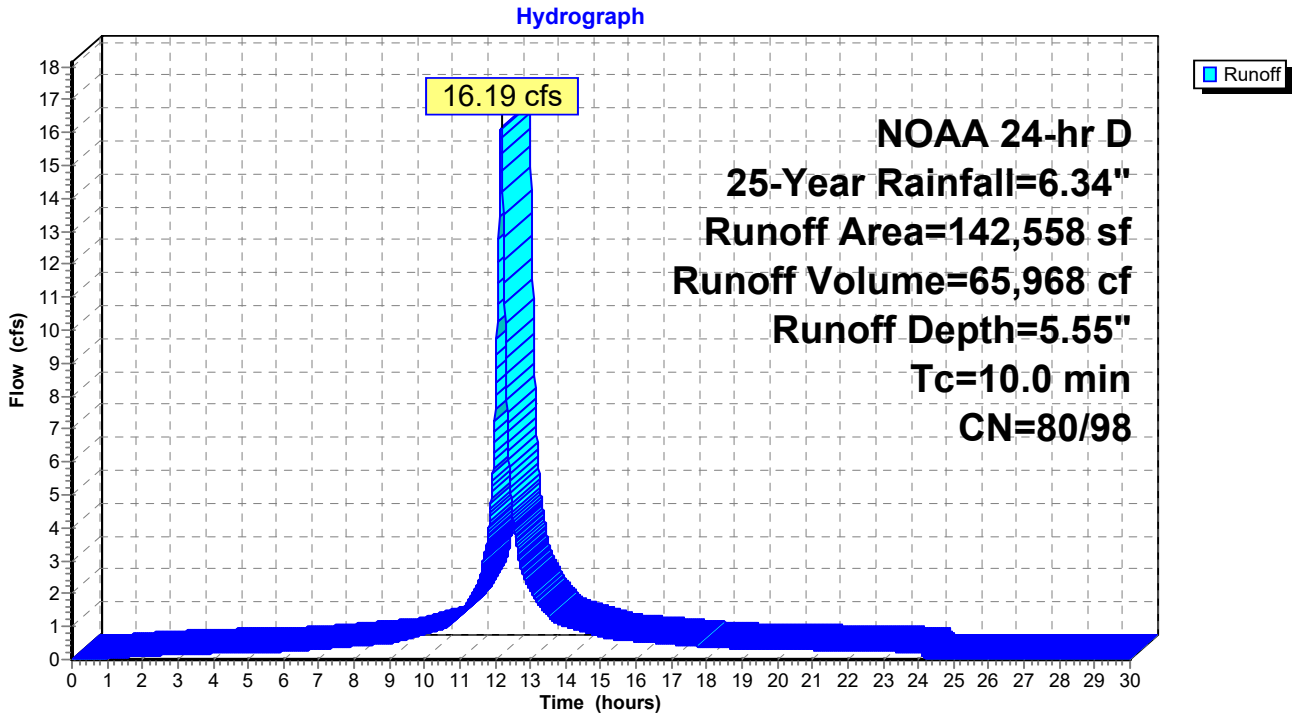
Runoff = 16.19 cfs @ 12.17 hrs, Volume= 65,968 cf, Depth= 5.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	103,691	98	Impervious Areas
	38,867	80	>75% Grass cover, Good, HSG D
	142,558	93	Weighted Average
	38,867	80	27.26% Pervious Area
	103,691	98	72.74% Impervious Area

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

Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)

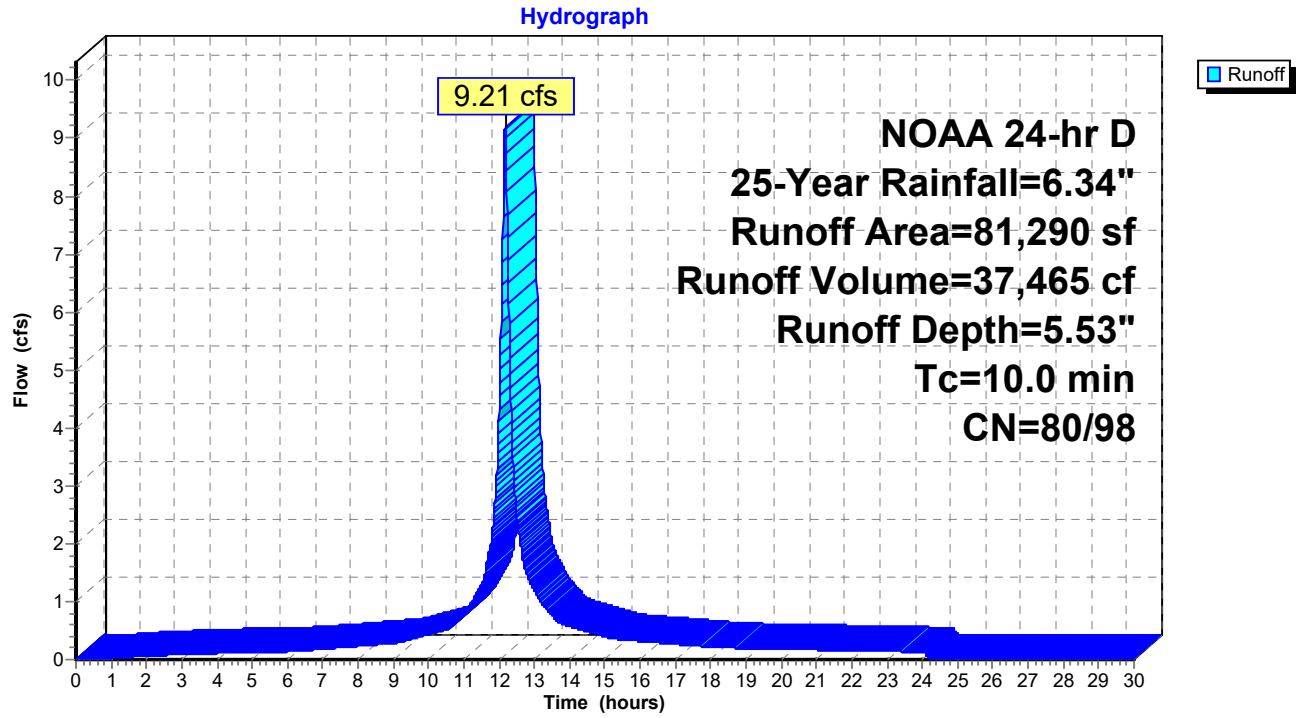
Runoff = 9.21 cfs @ 12.17 hrs, Volume= 37,465 cf, Depth= 5.53"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	58,221	98	Impervious Areas
	23,069	80	>75% Grass cover, Good, HSG D
	81,290	93	Weighted Average
	23,069	80	28.38% Pervious Area
	58,221	98	71.62% Impervious Area

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

Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)



Summary for Subcatchment P-1D: Proposed Drainage to Municipal System

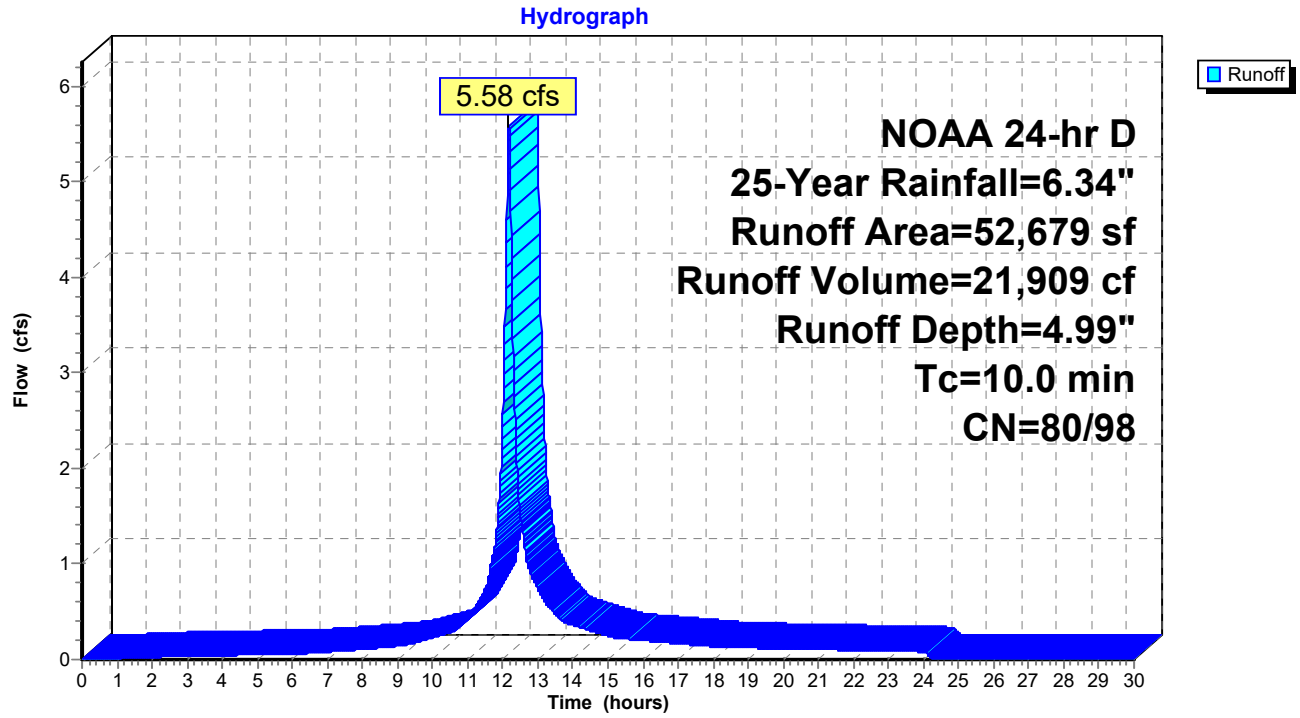
Runoff = 5.58 cfs @ 12.17 hrs, Volume= 21,909 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.34"

	Area (sf)	CN	Description
*	23,598	98	Impervious Areas
	29,081	80	>75% Grass cover, Good, HSG D
	52,679	88	Weighted Average
	29,081	80	55.20% Pervious Area
	23,598	98	44.80% Impervious Area

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

Subcatchment P-1D: Proposed Drainage to Municipal System

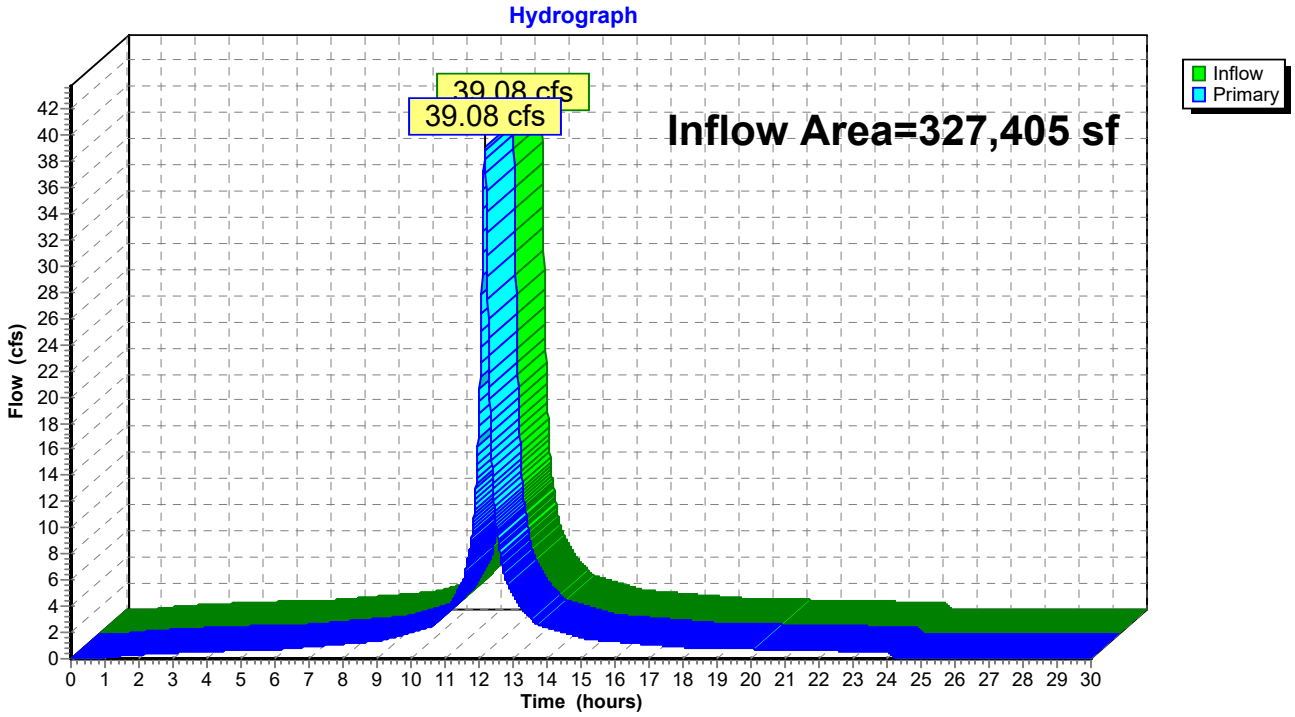


Summary for Link E-1: Existing Drainage to Passaic River

Inflow Area = 327,405 sf, 93.75% Impervious, Inflow Depth = 5.98" for 25-Year event
Inflow = 39.08 cfs @ 12.17 hrs, Volume= 163,087 cf
Primary = 39.08 cfs @ 12.17 hrs, Volume= 163,087 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link E-1: Existing Drainage to Passaic River

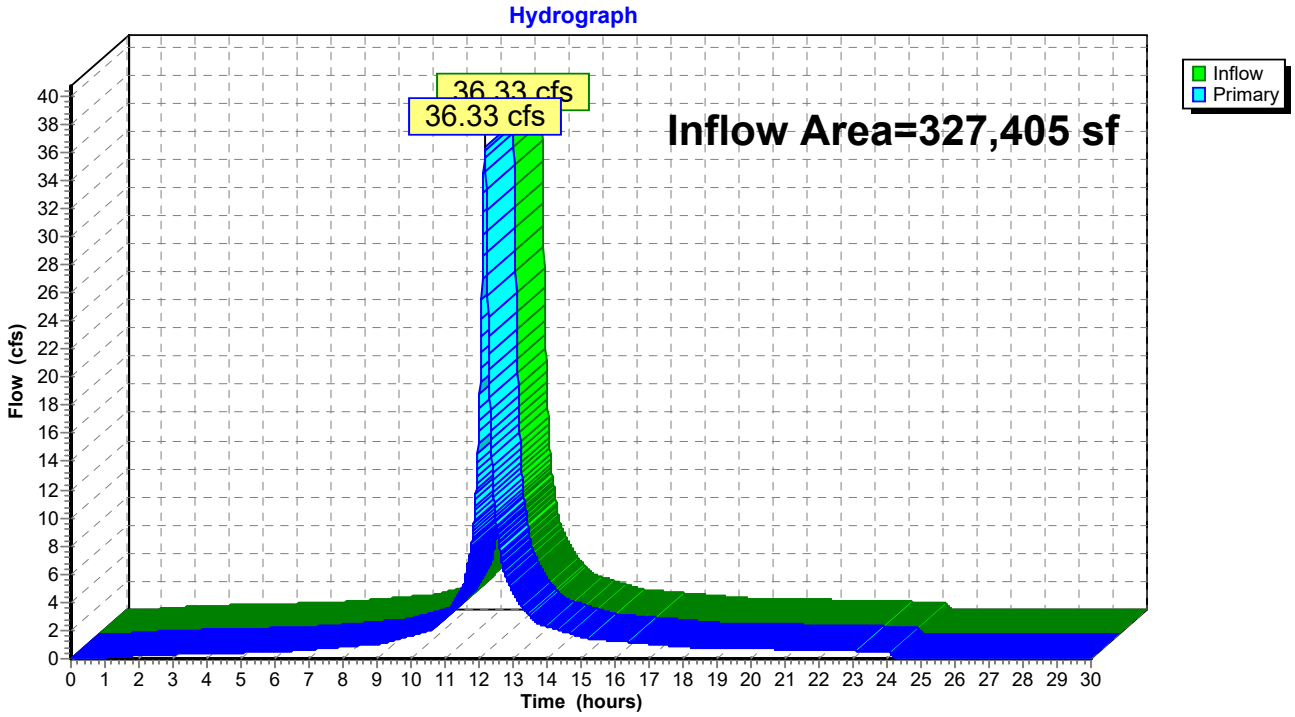


Summary for Link P-1: Proposed Drainage to Passaic River

Inflow Area = 327,405 sf, 63.05% Impervious, Inflow Depth = 5.36" for 25-Year event
Inflow = 36.33 cfs @ 12.17 hrs, Volume= 146,186 cf
Primary = 36.33 cfs @ 12.17 hrs, Volume= 146,186 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link P-1: Proposed Drainage to Passaic River



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1A: Existing Drainage to Runoff Area=52,576 sf 82.07% Impervious Runoff Depth=7.85"
Tc=10.0 min CN=80/98 Runoff=8.29 cfs 34,402 cf

Subcatchment E-1B: Existing Drainage Runoff Area=141,668 sf 100.00% Impervious Runoff Depth=8.24"
Tc=10.0 min CN=0/98 Runoff=22.97 cfs 97,278 cf

Subcatchment E-1C: Existing Drainageto Runoff Area=80,227 sf 97.90% Impervious Runoff Depth=8.20"
Tc=10.0 min CN=83/98 Runoff=12.98 cfs 54,836 cf

Subcatchment E-1D: Existing Drainage to Runoff Area=52,934 sf 82.35% Impervious Runoff Depth=7.86"
Tc=10.0 min CN=80/98 Runoff=8.35 cfs 34,663 cf

Subcatchment P-1A: Proposed Drainage to Runoff Area=50,878 sf 41.10% Impervious Runoff Depth=6.97"
Tc=10.0 min CN=80/98 Runoff=7.50 cfs 29,533 cf

Subcatchment P-1B: Proposed Drainage Runoff Area=142,558 sf 72.74% Impervious Runoff Depth=7.65"
Tc=10.0 min CN=80/98 Runoff=22.14 cfs 90,881 cf

Subcatchment P-1C: Proposed Drainage to Runoff Area=81,290 sf 71.62% Impervious Runoff Depth=7.63"
Tc=10.0 min CN=80/98 Runoff=12.60 cfs 51,659 cf

Subcatchment P-1D: Proposed Drainage to Runoff Area=52,679 sf 44.80% Impervious Runoff Depth=7.05"
Tc=10.0 min CN=80/98 Runoff=7.81 cfs 30,929 cf

Link E-1: Existing Drainage to Passaic River Inflow=52.59 cfs 221,178 cf
Primary=52.59 cfs 221,178 cf

Link P-1: Proposed Drainage to Passaic River Inflow=50.05 cfs 203,003 cf
Primary=50.05 cfs 203,003 cf

Total Runoff Area = 654,810 sf Runoff Volume = 424,181 cf Average Runoff Depth = 7.77"
21.60% Pervious = 141,443 sf 78.40% Impervious = 513,367 sf

Summary for Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)

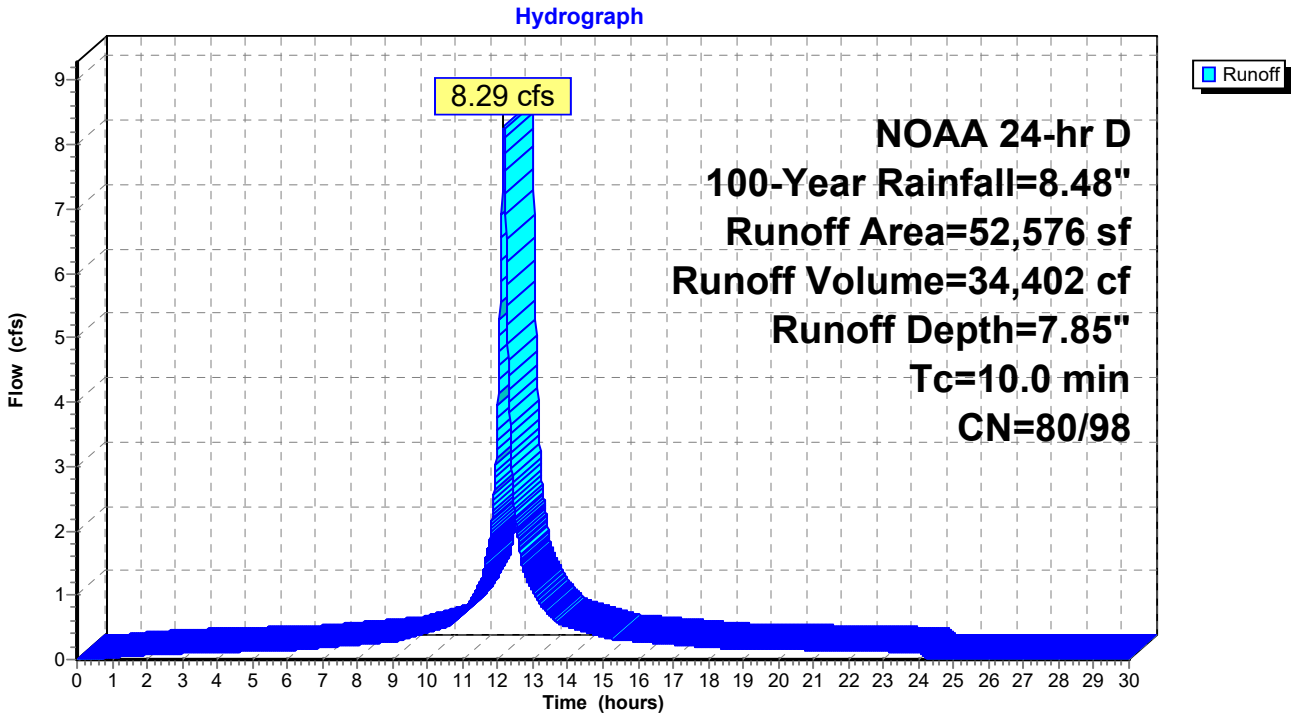
Runoff = 8.29 cfs @ 12.17 hrs, Volume= 34,402 cf, Depth= 7.85"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	43,147	98	Impervious Areas
	9,429	80	>75% Grass cover, Good, HSG D
	52,576	95	Weighted Average
	9,429	80	17.93% Pervious Area
	43,147	98	82.07% Impervious Area

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

Subcatchment E-1A: Existing Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)

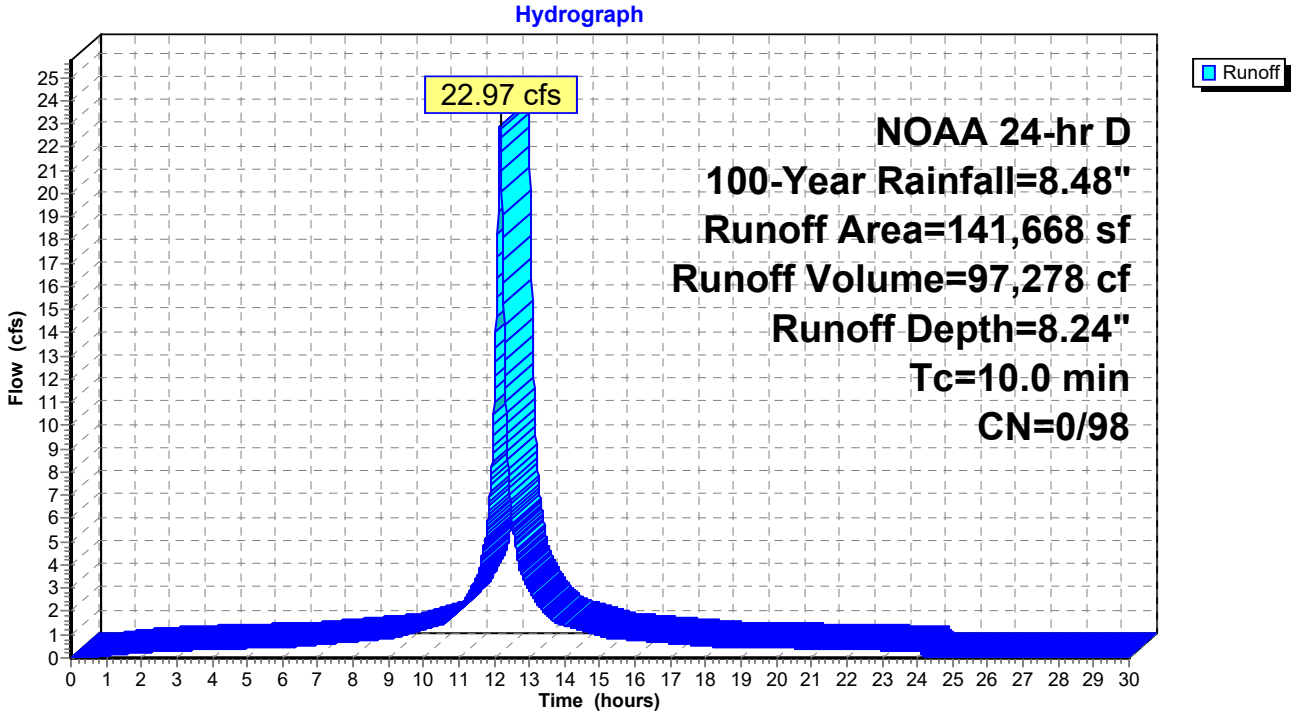
Runoff = 22.97 cfs @ 12.17 hrs, Volume= 97,278 cf, Depth= 8.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	141,668	98	Impervious Areas
	141,668	98	100.00% Impervious Area

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

Subcatchment E-1B: Existing Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)

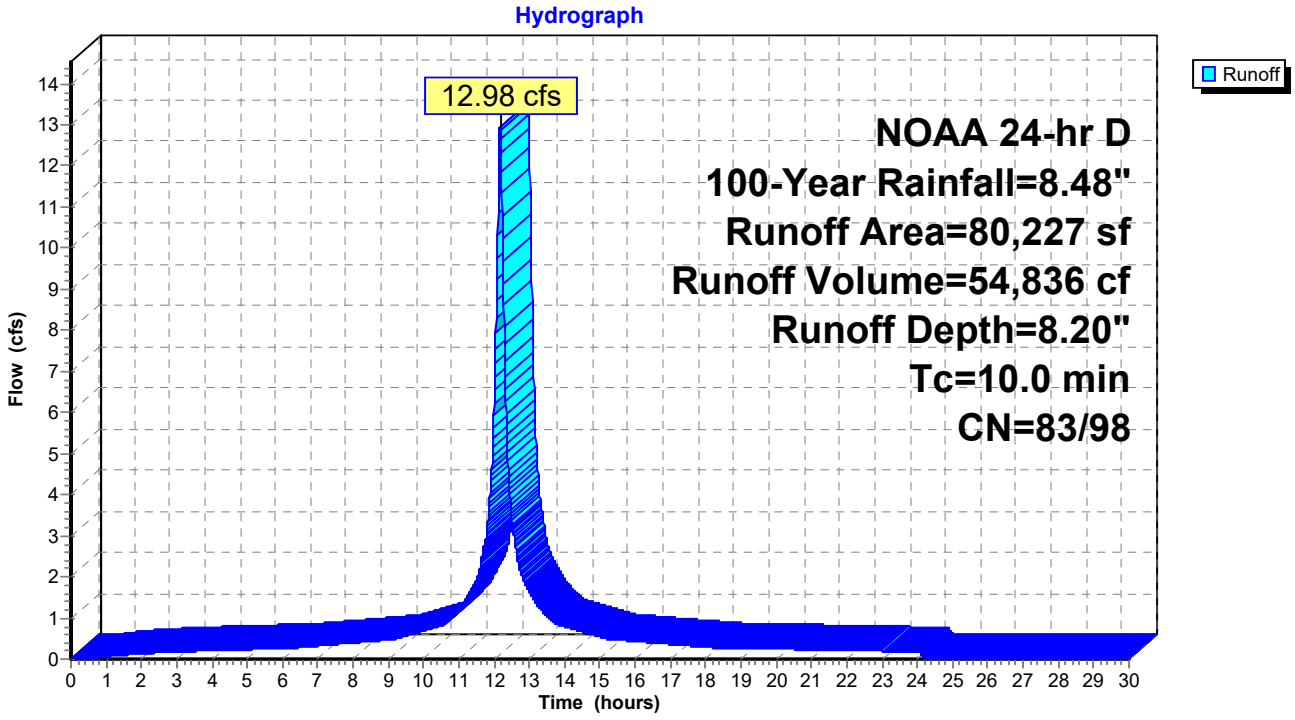
Runoff = 12.98 cfs @ 12.17 hrs, Volume= 54,836 cf, Depth= 8.20"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	78,544	98	Impervious Areas
	353	96	Gravel surface, HSG D
	1,330	80	>75% Grass cover, Good, HSG D
	80,227	98	Weighted Average
	1,683	83	2.10% Pervious Area
	78,544	98	97.90% Impervious Area

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

Subcatchment E-1C: Existing Drainageto Existing Conveyance System (15" Pipe)



Summary for Subcatchment E-1D: Existing Drainage to Municipal System

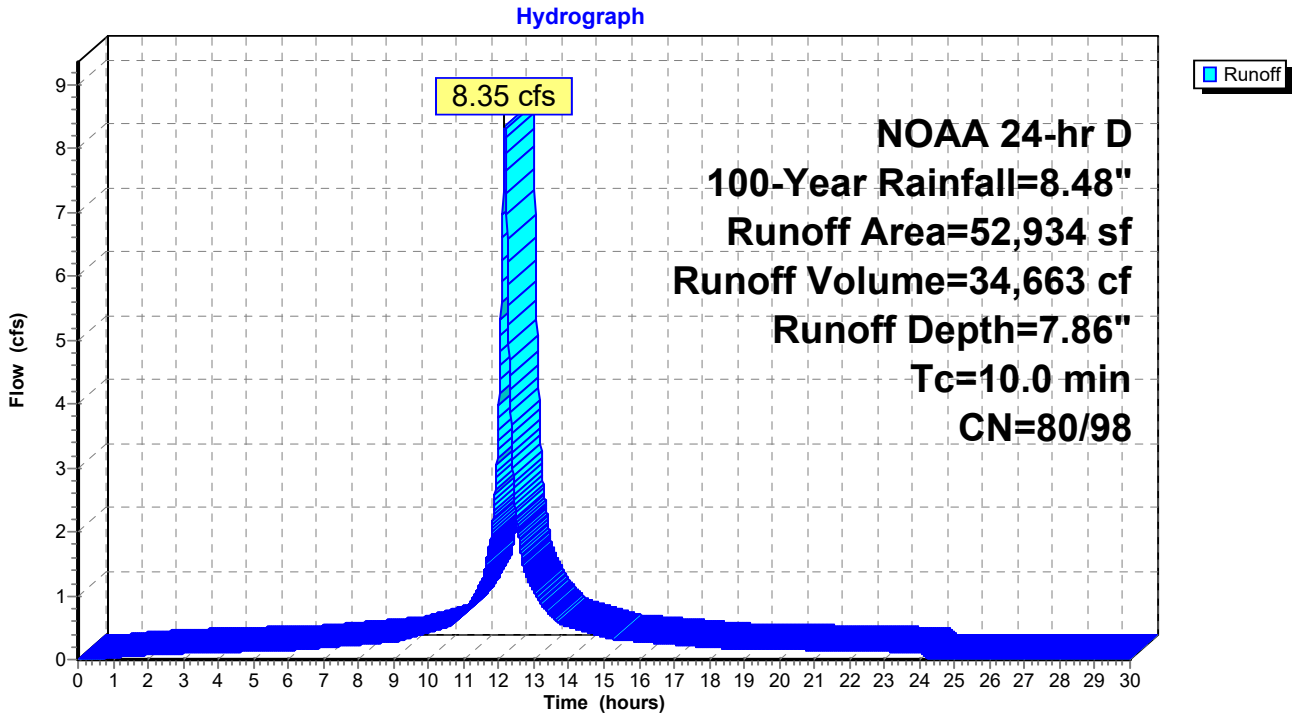
Runoff = 8.35 cfs @ 12.17 hrs, Volume= 34,663 cf, Depth= 7.86"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	43,589	98	Impervious Areas
	9,345	80	>75% Grass cover, Good, HSG D
	52,934	95	Weighted Average
	9,345	80	17.65% Pervious Area
	43,589	98	82.35% Impervious Area

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

Subcatchment E-1D: Existing Drainage to Municipal System



Summary for Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)

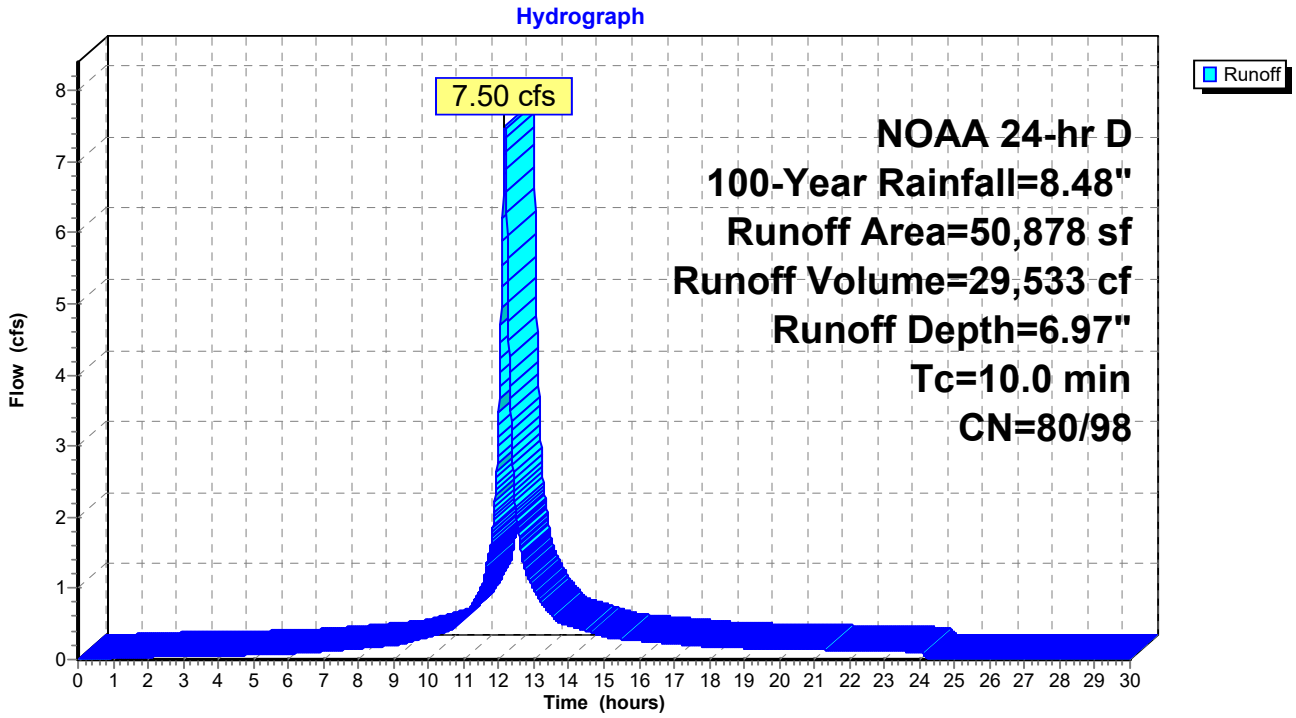
Runoff = 7.50 cfs @ 12.17 hrs, Volume= 29,533 cf, Depth= 6.97"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	20,909	98	Impervious Areas
	29,969	80	>75% Grass cover, Good, HSG D
	50,878	87	Weighted Average
	29,969	80	58.90% Pervious Area
	20,909	98	41.10% Impervious Area

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

Subcatchment P-1A: Proposed Drainage to Existing Conveyance System (18" Pipe)



Summary for Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)

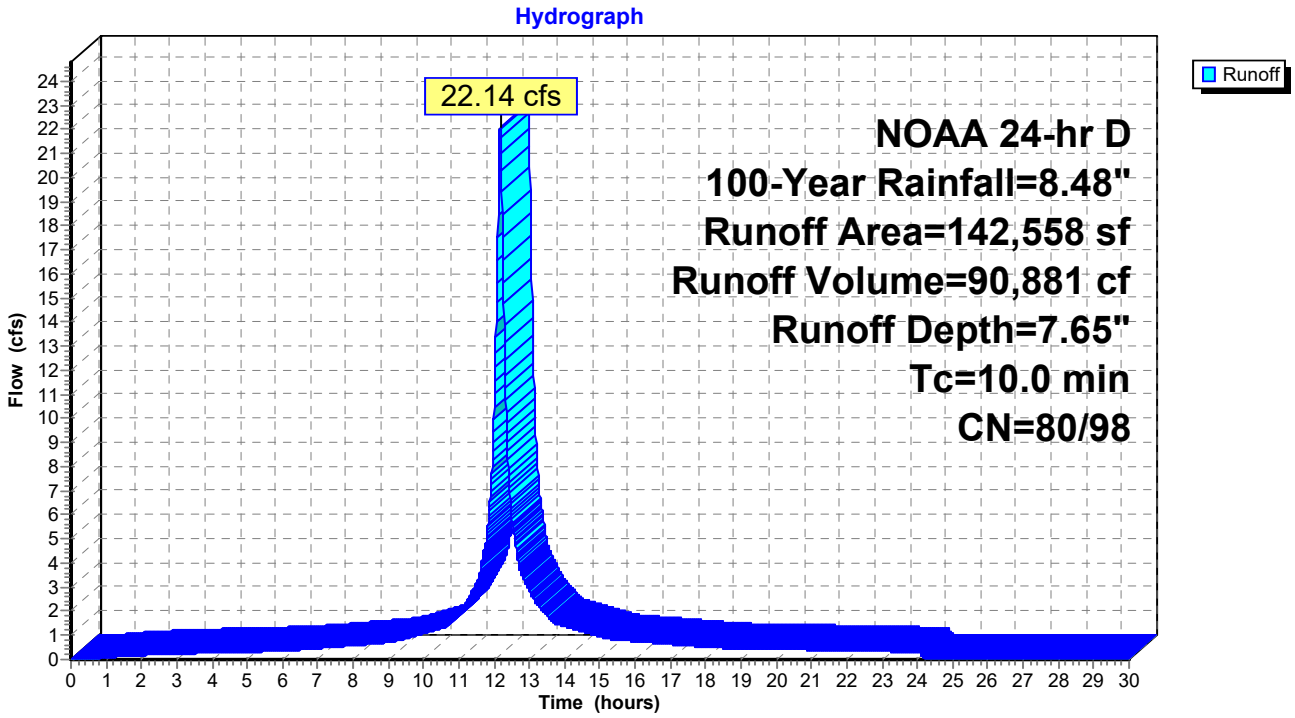
Runoff = 22.14 cfs @ 12.17 hrs, Volume= 90,881 cf, Depth= 7.65"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	103,691	98	Impervious Areas
	38,867	80	>75% Grass cover, Good, HSG D
	142,558	93	Weighted Average
	38,867	80	27.26% Pervious Area
	103,691	98	72.74% Impervious Area

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

Subcatchment P-1B: Proposed Drainage to Existing Conveyance System (42" Pipe)



Summary for Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)

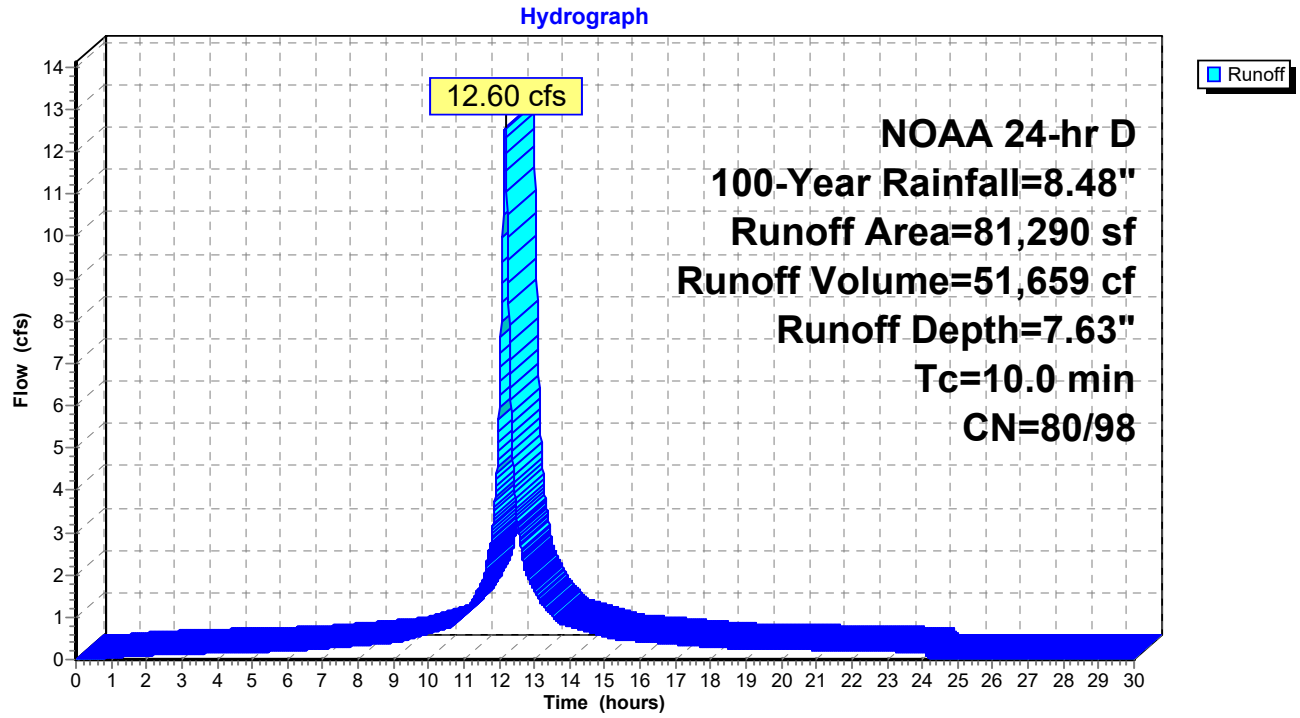
Runoff = 12.60 cfs @ 12.17 hrs, Volume= 51,659 cf, Depth= 7.63"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	58,221	98	Impervious Areas
	23,069	80	>75% Grass cover, Good, HSG D
	81,290	93	Weighted Average
	23,069	80	28.38% Pervious Area
	58,221	98	71.62% Impervious Area

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

Subcatchment P-1C: Proposed Drainage to Existing Conveyance System (15" Pipe)



Summary for Subcatchment P-1D: Proposed Drainage to Municipal System

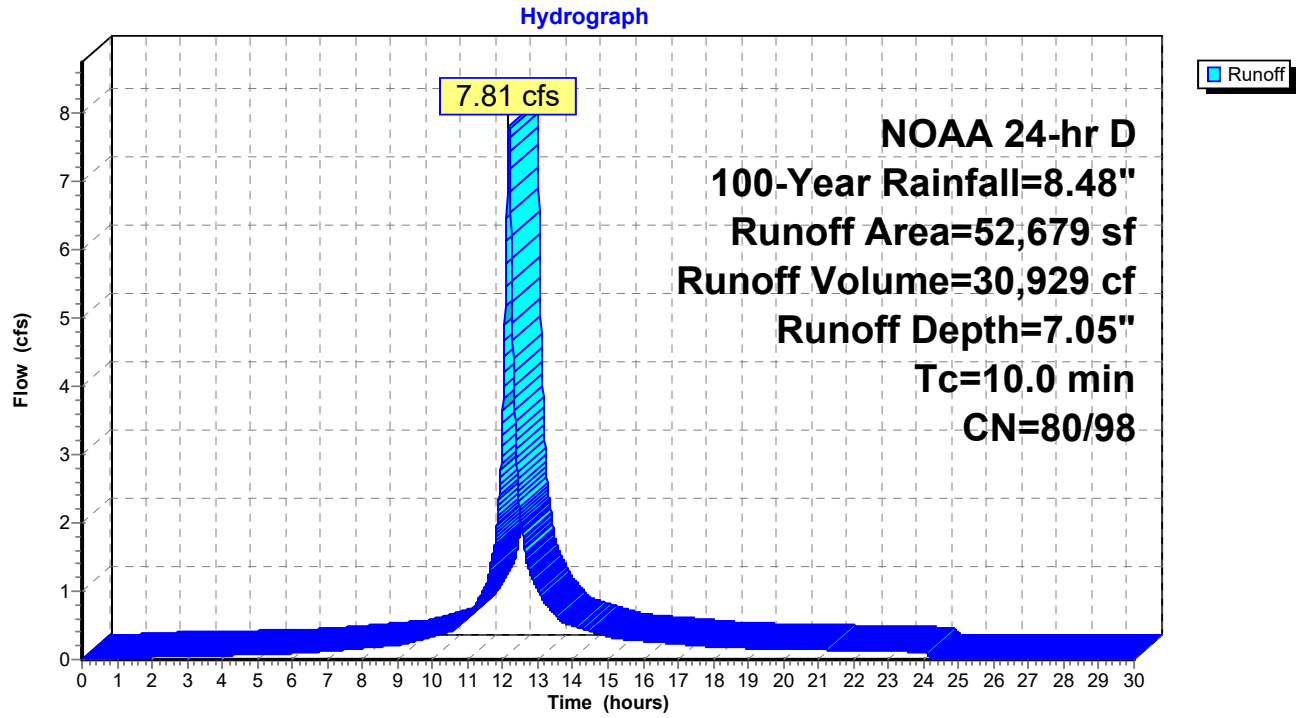
Runoff = 7.81 cfs @ 12.17 hrs, Volume= 30,929 cf, Depth= 7.05"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.48"

	Area (sf)	CN	Description
*	23,598	98	Impervious Areas
	29,081	80	>75% Grass cover, Good, HSG D
	52,679	88	Weighted Average
	29,081	80	55.20% Pervious Area
	23,598	98	44.80% Impervious Area

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

Subcatchment P-1D: Proposed Drainage to Municipal System

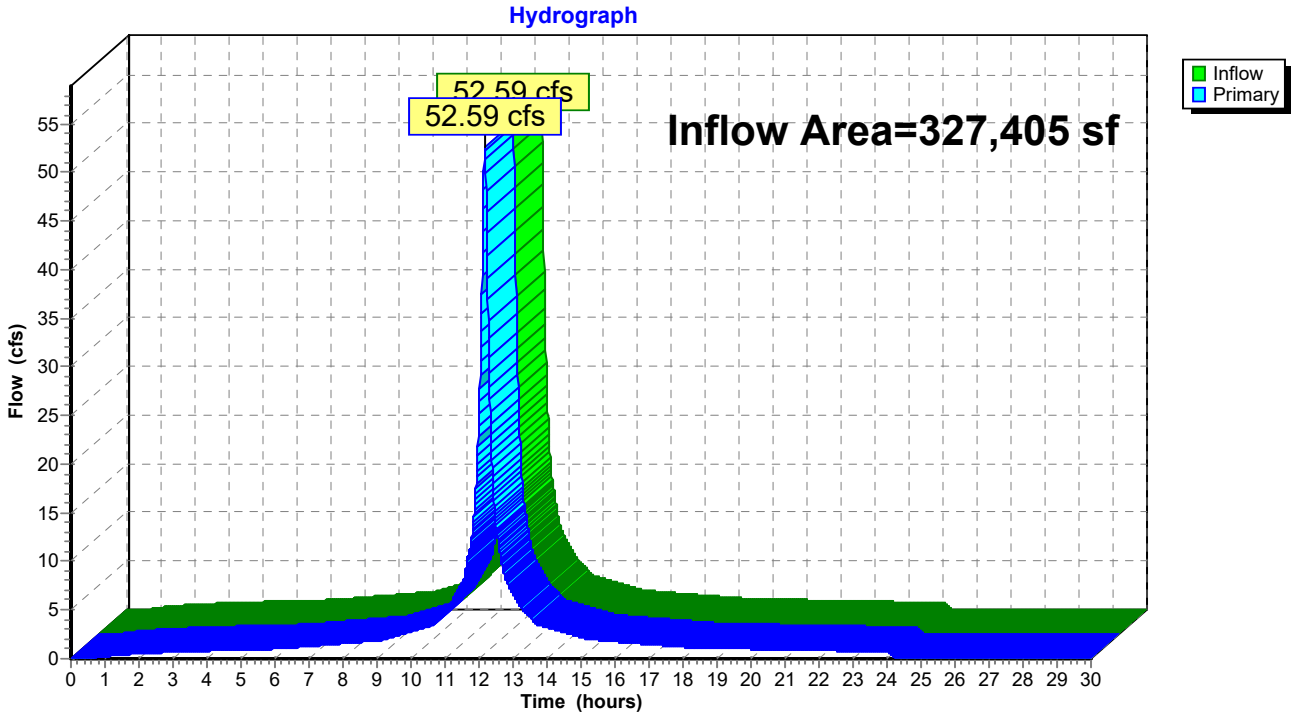


Summary for Link E-1: Existing Drainage to Passaic River

Inflow Area = 327,405 sf, 93.75% Impervious, Inflow Depth = 8.11" for 100-Year event
Inflow = 52.59 cfs @ 12.17 hrs, Volume= 221,178 cf
Primary = 52.59 cfs @ 12.17 hrs, Volume= 221,178 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link E-1: Existing Drainage to Passaic River

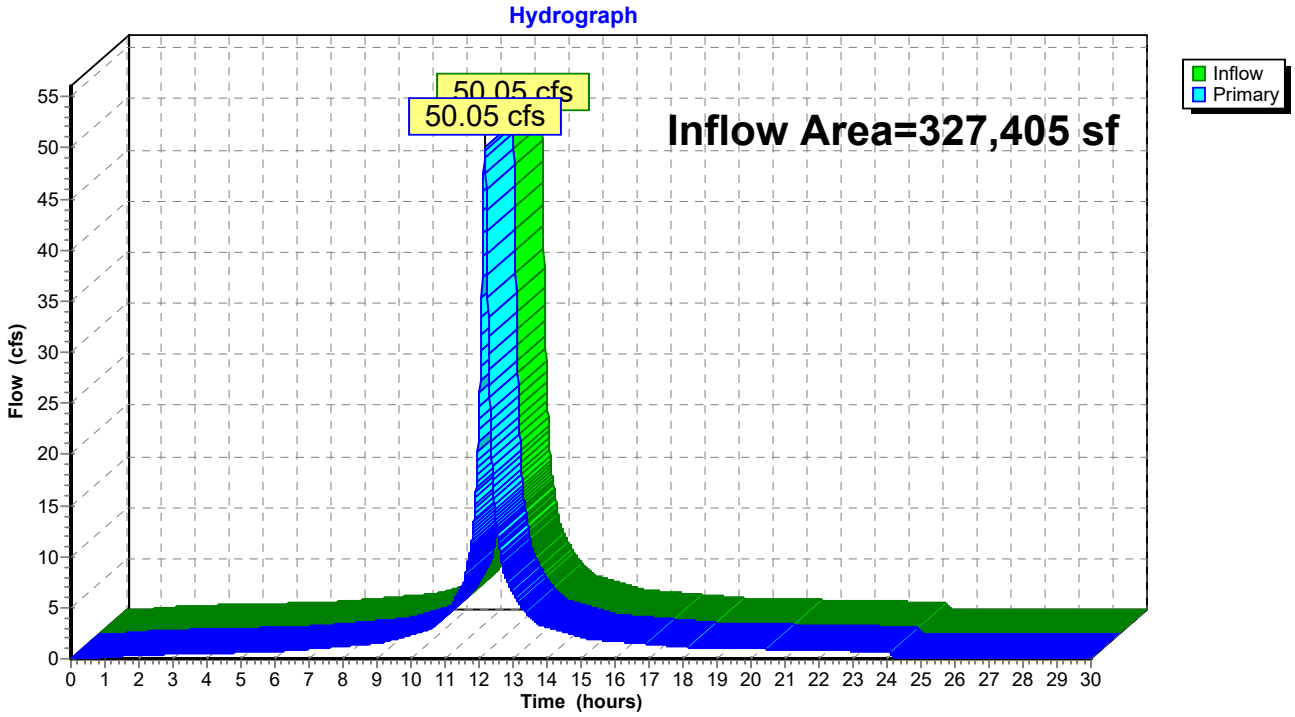


Summary for Link P-1: Proposed Drainage to Passaic River

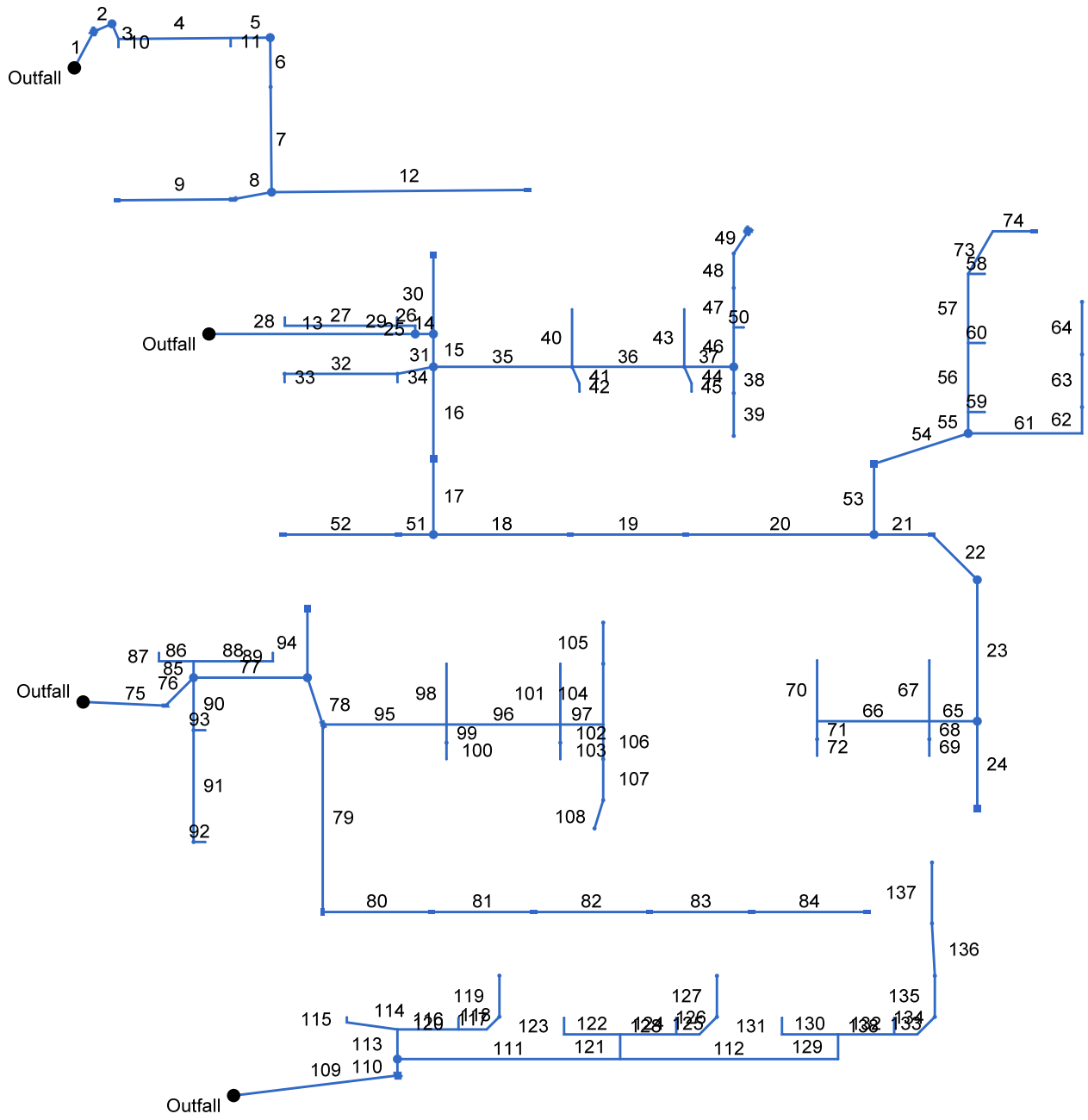
Inflow Area = 327,405 sf, 63.05% Impervious, Inflow Depth = 7.44" for 100-Year event
Inflow = 50.05 cfs @ 12.17 hrs, Volume= 203,003 cf
Primary = 50.05 cfs @ 12.17 hrs, Volume= 203,003 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link P-1: Proposed Drainage to Passaic River



Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: 2019-10-30_Pipe Sizing.stm	Number of lines: 138	Date: 10/31/2019

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	1A - E100	6.39	18	Cir	25.000	250.91	251.04	0.520	251.97	252.10	0.37	252.46	End	Grate
2	E100 - D100	4.39	18	Cir	12.000	251.04	251.83	6.583	252.46	252.63	n/a	252.63 j	1	Manhole
3	D100 - R100	4.39	15	Cir	10.000	253.95	254.05	1.000	254.71	254.90	0.36	254.90	2	None
4	R100 - R101	4.14	15	Cir	68.000	254.05	254.73	1.000	254.90	255.55	n/a	255.55 j	3	None
5	R101 - D101	3.86	15	Cir	24.000	254.73	254.97	1.000	255.55	255.76	n/a	255.76 j	4	Manhole
6	D101 - YD01	3.87	15	Cir	30.000	254.97	255.27	1.000	255.76	256.06	0.17	256.06	5	Grate
7	YD01 - D102	3.70	15	Cir	64.000	255.27	255.91	1.000	256.06	256.69	n/a	256.69 j	6	Manhole
8	D102 - D103	1.39	15	Cir	24.000	255.91	256.15	1.000	256.69	256.61	0.09	256.61	7	Grate
9	D103 - D104	0.53	15	Cir	70.000	256.15	256.85	1.000	256.61	257.13	n/a	257.13 j	8	Grate
10	R100 - BLDG	0.30	6	Cir	5.000	254.05	254.15	2.000	254.90*	254.91*	0.04	254.95	3	None
11	R101 - BLDG	0.30	6	Cir	5.000	254.73	254.83	2.000	255.55*	255.57*	0.04	255.60	4	None
12	D102 - D105	2.38	15	Cir	155.000	255.91	259.79	2.503	256.69	260.41	n/a	260.41 j	7	Grate
13	1B - D200	16.30	42	Cir	125.000	248.21	248.52	0.248	249.58	249.89	0.34	250.23	End	Manhole
14	D200 - D201	15.79	24	Cir	11.000	250.25	250.36	1.000	251.48	251.79	n/a	251.79	13	Manhole
15	D201 -D202	14.77	18	Cir	20.000	250.36	250.56	1.000	251.86*	252.26*	1.09	253.34	14	Manhole
16	D202 - D203	10.37	18	Cir	56.000	250.56	251.12	1.000	253.34*	253.89*	0.27	254.16	15	Combination
17	D203 - D204	9.38	18	Cir	46.000	251.12	251.58	1.000	254.16*	254.52*	0.44	254.96	16	Manhole
18	D204 - D205	8.88	18	Cir	83.000	251.58	252.41	1.000	254.96*	255.56*	0.20	255.75	17	Grate
19	D205 - D206	8.56	18	Cir	70.000	252.41	253.11	1.000	255.75*	256.22*	0.18	256.40	18	Grate
20	D206 - D207	7.29	18	Cir	114.000	253.11	254.25	1.000	256.40*	256.95*	0.26	257.22	19	Manhole
21	D207 - D208	4.66	15	Cir	35.000	254.25	254.60	1.000	257.22*	257.40*	0.25	257.65	20	Grate
22	D208 - D209	3.15	15	Cir	39.000	254.60	254.99	1.000	257.65*	257.75*	0.08	257.82	21	Manhole
23	D209 - D210	3.21	15	Cir	86.000	254.99	255.85	1.000	257.82*	258.04*	0.11	258.14	22	Manhole
24	D210 - D211	1.42	15	Cir	53.000	255.85	256.38	1.000	258.14*	258.17*	0.02	258.19	23	Combination

Project File: 2019-10-30_Pipe Sizing.stm | Number of lines: 138 | Run Date: 10/31/2019

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	D200 - R200	0.59	6	Cir	5.000	257.36	257.41	1.000	257.80	257.85	0.16	258.01	13	None
26	R200 - R201	0.59	6	Cir	11.000	257.41	257.52	1.000	258.01*	258.13*	0.14	258.28	25	None
27	R201 - R202	0.30	6	Cir	68.000	257.52	258.20	1.000	258.28	258.52	0.08	258.60	26	None
28	R202 - BLDG	0.30	6	Cir	5.000	258.20	258.25	1.000	258.60	258.53	0.11	258.53	27	None
29	R201 - BLDG	0.30	6	Cir	5.000	257.52	257.57	1.000	258.28*	258.29*	0.04	258.33	26	None
30	D201 - D212	1.18	15	Cir	48.000	256.77	257.25	1.000	257.13	257.68	0.16	257.68	14	Combination
31	D202 - YD09	1.12	6	Cir	22.170	257.30	257.52	0.992	257.80*	258.69*	0.75	259.45	15	Grate
32	YD09 - YD10	0.57	6	Cir	68.380	257.52	258.20	0.994	259.45*	260.15*	0.20	260.35	31	Grate
33	YD10 - BLDG	0.30	6	Cir	5.000	258.20	258.25	1.000	260.35*	260.36*	0.04	260.40	32	None
34	YD09 - BLDG	0.30	6	Cir	5.000	257.57	257.62	1.000	259.45*	259.46*	0.04	259.50	31	None
35	D202 - YD03	3.83	15	Cir	84.000	257.17	258.01	1.000	257.86	258.80	n/a	258.80	15	Grate
36	YD03 - YD04	3.02	15	Cir	68.000	258.01	258.69	1.000	258.80	259.39	n/a	259.39 j	35	Grate
37	YD04 - D213	1.91	15	Cir	30.000	258.69	258.99	1.000	259.39	259.54	n/a	259.54 j	36	Manhole
38	D213 - YD05	0.23	6	Cir	16.000	258.99	259.15	1.000	259.54	259.56	0.01	259.57	37	Grate
39	YD05 - YD06	0.12	6	Cir	26.000	259.15	259.41	1.000	259.57	259.58	n/a	259.58 j	38	Grate
40	YD03 - BLDG	0.30	6	Cir	35.000	258.01	258.36	1.000	258.80	258.86	0.04	258.90	35	None
41	YD03 - BLDG	0.30	6	Cir	11.000	258.01	258.12	1.000	258.80*	258.83*	0.02	258.85	35	None
42	YD03 - BLDG	0.30	6	Cir	5.000	258.12	258.17	1.000	258.85*	258.86*	0.04	258.90	41	None
43	YD04 - BLDG	0.36	6	Cir	35.000	258.69	259.04	1.000	259.39	259.52	0.05	259.58	36	None
44	YD04 - BLDG	0.36	6	Cir	11.000	258.69	258.80	1.000	259.39*	259.43*	0.02	259.46	36	None
45	YD04 - BLDG	0.36	6	Cir	5.000	258.80	258.85	1.000	259.46*	259.48*	0.05	259.53	44	None
46	D213 - R203	1.69	15	Cir	24.000	260.08	260.32	1.000	260.52	260.84	n/a	260.84	37	None
47	R203 - YD07	1.46	15	Cir	24.000	260.32	260.56	1.000	260.84	261.04	n/a	261.04 j	46	Grate
48	YD07 - YD08	1.36	15	Cir	21.000	260.56	260.77	1.000	261.04	261.23	n/a	261.23 j	47	Grate

Project File: 2019-10-30_Pipe Sizing.stm | Number of lines: 138 | Run Date: 10/31/2019

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
49	YD08 - D214	1.20	15	Cir	16.000	260.77	260.93	1.000	261.23	261.36	n/a	261.36 j	48	Combination
50	R203 - BLDG	0.24	6	Cir	6.000	260.32	260.38	1.000	260.84	260.84	0.03	260.87	46	None
51	D204 - D215	0.90	15	Cir	21.000	251.58	251.79	1.000	254.96*	254.97*	0.00	254.97	17	Grate
52	D215 - D216	0.41	15	Cir	70.000	251.79	252.49	1.000	254.97*	254.97*	0.00	254.98	51	Grate
53	D207 - D217	2.68	15	Cir	43.000	261.50	261.93	1.000	262.06	262.59	n/a	262.59	20	Combination
54	D217 - D218	1.57	15	Cir	60.000	261.93	262.53	1.000	262.59	263.03	n/a	263.03 j	53	Manhole
55	D218 - R204	1.37	12	Cir	13.000	264.60	264.73	1.000	265.03	265.22	n/a	265.22	54	None
56	R204 - R205	1.14	12	Cir	42.000	264.73	265.15	1.000	265.22	265.60	n/a	265.60 j	55	None
57	R205 - R206	0.91	12	Cir	42.000	265.15	265.57	1.000	265.60	265.97	n/a	265.97 j	56	None
58	R206 - BLDG	0.24	6	Cir	10.000	265.57	265.67	1.000	265.97	265.92	n/a	265.92	57	None
59	R204 - BLDG	0.24	6	Cir	10.000	264.73	264.83	1.000	265.22	265.08	n/a	265.08	55	None
60	R205 - BLDG	0.24	6	Cir	10.000	265.15	265.25	1.000	265.60	265.50	n/a	265.50	56	None
61	D217 - R208	0.22	6	Cir	69.000	264.60	265.29	1.000	264.82	265.53	n/a	265.53	54	None
62	R208 - YD11	0.23	6	Cir	16.000	265.29	265.45	1.000	265.53	265.69	0.05	265.69	61	Grate
63	YD11 - YD12	0.17	6	Cir	32.000	265.45	265.77	1.000	265.69	265.98	n/a	265.98 j	62	Grate
64	YD12 - YD13	0.11	6	Cir	32.000	265.77	266.09	1.000	265.98	266.26	n/a	266.26 j	63	Grate
65	D210 - R209	1.84	12	Cir	29.000	258.75	259.04	1.000	259.26	259.62	n/a	259.62	23	None
66	R209 - R210	0.96	12	Cir	68.000	259.04	259.72	1.000	259.62	260.13	n/a	260.13 j	65	None
67	R209 - BLDG	0.30	6	Cir	37.000	259.04	259.41	1.000	259.62	259.73	0.08	259.81	65	None
68	R209 - YD14	0.61	6	Cir	11.000	259.04	259.15	1.000	259.62*	259.75*	0.08	259.82	65	Grate
69	YD14 - BLDG	0.30	6	Cir	10.000	259.15	259.25	1.000	259.82*	259.85*	0.04	259.89	68	None
70	R210 - BLDG	0.30	6	Cir	37.000	259.72	260.09	1.000	260.13	260.37	n/a	260.37 j	66	None
71	R210 - YD15	0.66	6	Cir	11.000	259.72	259.83	1.000	260.22	260.33	0.09	260.42	66	Grate
72	YD15 - BLDG	0.30	6	Cir	10.000	259.83	259.93	1.000	260.42	260.43	0.04	260.47	71	None

Project File: 2019-10-30_Pipe Sizing.stm | Number of lines: 138 | Run Date: 10/31/2019

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
73	R206 - R207	0.67	12	Cir	30.000	265.57	265.87	1.000	265.97	266.21	n/a	266.21 j	57	None
74	R207 - D219	0.68	12	Cir	25.000	265.87	266.12	1.000	266.21	266.46	n/a	266.46	73	Grate
75	1C - D300	9.63	15	Cir	50.000	244.75	245.00	0.500	246.00*	247.11*	1.12	248.23	End	Grate
76	D300 - D301	9.31	15	Cir	24.000	248.50	249.22	3.000	249.37	250.39	n/a	250.39	75	Manhole
77	D301 - D302	8.15	15	Cir	69.000	249.22	250.60	2.000	250.39	251.72	n/a	251.72 j	76	Manhole
78	D302 - D303	7.36	15	Cir	30.000	250.75	251.05	1.000	252.00*	252.39*	0.80	253.19	77	Grate
79	D303 - D304	4.08	15	Cir	114.000	251.05	252.19	1.000	253.19*	253.65*	0.26	253.91	78	Grate
80	D304 - D305	3.24	15	Cir	66.000	252.19	252.85	1.000	253.91	254.06	0.06	254.12	79	Grate
81	D305 - D306	2.44	15	Cir	62.000	252.85	253.47	1.000	254.12	254.16	0.10	254.26	80	Grate
82	D306 - D307	1.89	15	Cir	70.000	253.47	254.17	1.000	254.26	254.72	n/a	254.72 j	81	Grate
83	D307 - D308	1.40	15	Cir	62.000	254.17	254.79	1.000	254.72	255.26	n/a	255.26 j	82	Grate
84	D308 - D309	1.12	15	Cir	70.000	254.79	255.49	1.000	255.26	255.91	n/a	255.91 j	83	Grate
85	D301 - R300	0.60	8	Cir	10.000	254.17	254.27	1.000	254.50	254.63	n/a	254.63	76	None
86	R300 - R301	0.30	8	Cir	21.000	254.27	254.48	1.000	254.63	254.73	n/a	254.73 j	85	None
87	R301 - BLDG	0.30	6	Cir	5.000	254.48	254.53	1.000	254.74	254.81	0.11	254.81	86	None
88	R300 - R302	0.30	8	Cir	48.000	254.27	254.75	1.000	254.63	255.00	n/a	255.00 j	85	None
89	R302 - BLDG	0.30	6	Cir	5.000	254.75	254.80	1.000	255.01	255.08	0.11	255.08	88	None
90	D301 - YD16	0.69	8	Cir	32.000	252.22	252.54	1.000	252.58	252.93	0.25	252.93	76	Grate
91	YD16 - YD17	0.35	8	Cir	68.000	252.54	253.22	1.000	252.93	253.50	n/a	253.50 j	90	Grate
92	YD17 - BLDG	0.30	6	Cir	7.000	253.22	253.29	1.000	253.50	253.57	0.11	253.57	91	None
93	YD16 - BLDG	0.30	6	Cir	7.000	252.54	252.61	1.000	252.93	252.89	0.11	252.89	90	None
94	D302 - D310	0.89	15	Cir	42.000	254.58	255.00	1.000	254.89	255.37	n/a	255.37	77	Combination
95	D303 - R303	2.78	15	Cir	75.000	253.85	254.60	1.000	254.42	255.27	n/a	255.27	78	None
96	R303 - R304	1.71	15	Cir	69.000	254.60	255.29	1.000	255.27	255.81	n/a	255.81 j	95	None

Project File: 2019-10-30_Pipe Sizing.stm | Number of lines: 138 | Run Date: 10/31/2019

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
97	R304 - R305	0.87	15	Cir	26.000	255.29	255.55	1.000	255.81	255.91	n/a	255.91 j	96	None
98	R303 - BLDG	0.30	6	Cir	37.000	254.60	254.97	1.000	255.27	255.37	0.05	255.42	95	None
99	R303 - YD18	0.82	6	Cir	11.000	254.60	254.71	1.000	255.27*	255.50*	0.14	255.64	95	Grate
100	YD18 - BLDG	0.30	6	Cir	10.000	254.71	254.81	1.000	255.64*	255.67*	0.04	255.71	99	None
101	R304 - BLDG	0.30	6	Cir	37.000	255.29	255.66	1.000	255.81	255.94	n/a	256.05 j	96	None
102	R304 - YD19	0.57	6	Cir	11.000	255.29	255.40	1.000	255.81	255.90	0.07	255.96	96	Grate
103	YD19 - BLDG	0.30	6	Cir	10.000	255.40	255.50	1.000	255.96	255.99	0.04	256.03	102	None
104	R305 - YD20	0.27	6	Cir	37.000	255.55	255.92	1.000	255.91	256.18	n/a	256.18 j	97	Grate
105	YD20 - YD21	0.22	6	Cir	25.000	255.92	256.17	1.000	256.18	256.40	n/a	256.40 j	104	Grate
106	R305 - YD22	0.60	6	Cir	21.000	255.55	255.76	1.000	256.01	256.22	0.08	256.30	97	Grate
107	YD22 - YD23	0.27	6	Cir	25.000	255.76	256.01	1.000	256.30	256.34	0.03	256.37	106	Grate
108	YD23 - YD24	0.11	6	Cir	18.000	256.01	256.19	1.000	256.37	256.36	0.06	256.36	107	Grate
109	1D - D400	3.96	15	Cir	100.000	236.31	243.81	7.500	236.71	244.61	0.52	244.61	End	Grate
110	D400 - D401	2.56	15	Cir	10.000	244.67	244.97	3.000	245.08	245.61	0.25	245.61	109	Manhole
111	D401 - R400	1.88	15	Cir	135.000	248.00	252.05	3.000	248.35	252.60	n/a	252.60	110	None
112	R400 - R401	1.17	15	Cir	132.000	252.05	256.01	3.000	252.60	256.44	n/a	256.44 j	111	None
113	D401 - R402	0.75	10	Cir	18.000	248.00	251.60	20.000	248.16	251.98	0.15	251.98	110	None
114	R402 - R403	0.30	6	Cir	31.000	251.60	251.91	1.000	251.98	252.19	n/a	252.19 j	113	None
115	R403 - BLDG	0.30	6	Cir	3.000	251.91	251.94	1.000	252.19	252.22	0.11	252.22	114	None
116	R402 - R404	0.46	6	Cir	37.000	251.60	251.97	1.000	251.98	252.31	0.16	252.31	113	None
117	R404 - R405	0.16	6	Cir	17.000	251.97	252.14	1.000	252.31	252.34	n/a	252.34 j	116	None
118	R405 - YD25	0.16	6	Cir	11.000	252.14	252.25	1.000	252.34	252.45	0.08	252.45	117	Grate
119	YD25 - YD26	0.11	6	Cir	25.000	252.25	252.50	1.000	252.45	252.66	n/a	252.66 j	118	Grate
120	R404 - BLDG	0.30	6	Cir	7.000	251.97	252.04	1.000	252.31	252.32	0.11	252.32	116	None

Project File: 2019-10-30_Pipe Sizing.stm | Number of lines: 138 | Run Date: 10/31/2019

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

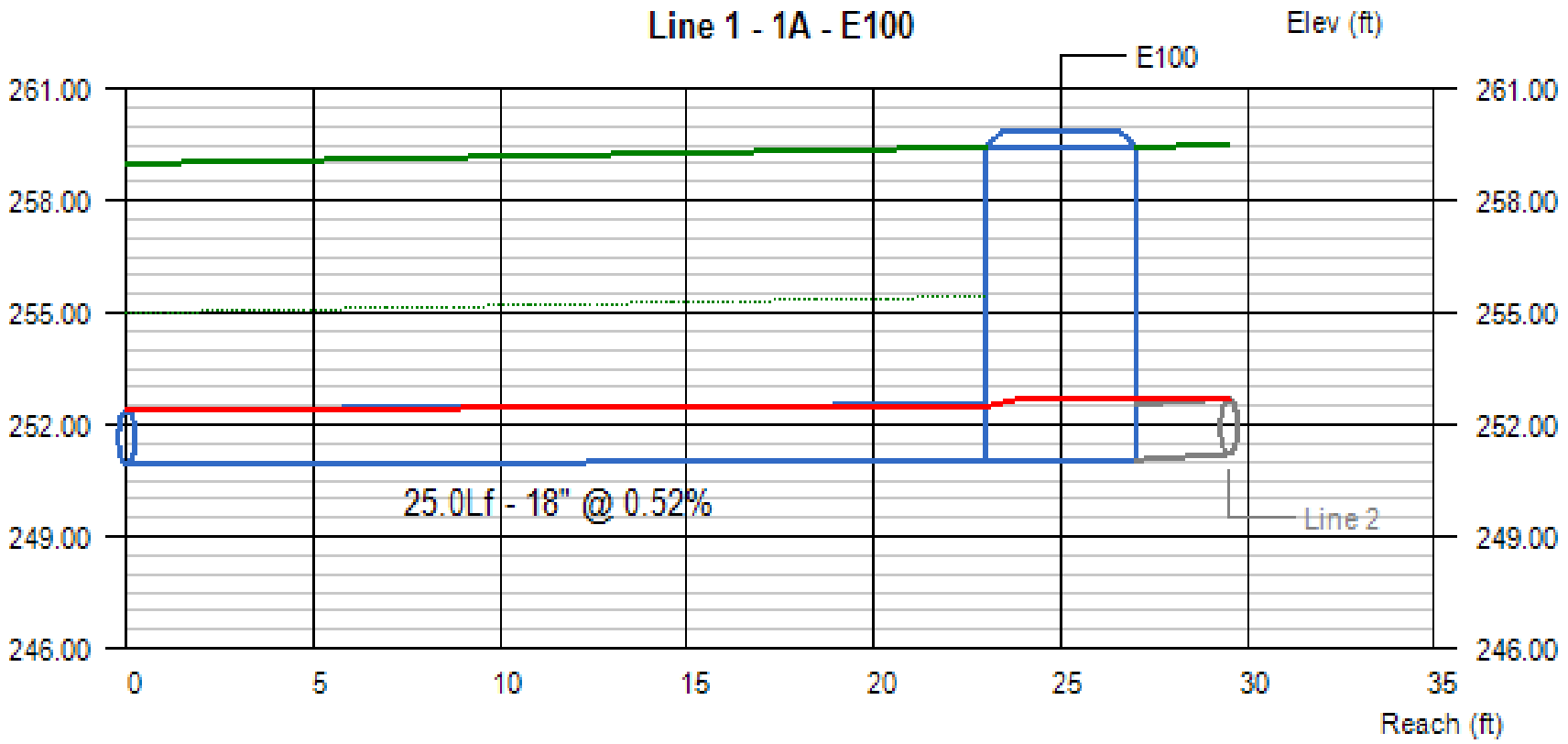
Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
121	R400 - R406	0.78	10	Cir	15.000	252.05	252.20	1.000	252.60	252.59	n/a	252.59 j	111	None
122	R406 - R407	0.30	6	Cir	34.000	252.20	252.54	1.000	252.59	252.82	n/a	252.82 j	121	None
123	R407 - BLDG	0.30	6	Cir	10.000	252.54	252.64	1.000	252.82	252.92	0.11	252.92	122	None
124	R406 - R408	0.49	6	Cir	34.000	252.20	252.54	1.000	252.59	252.90	n/a	253.06 j	121	None
125	R408 - R409	0.19	6	Cir	14.000	252.54	252.68	1.000	253.06	253.07	0.02	253.09	124	None
126	R409 - YD27	0.19	6	Cir	15.000	252.68	252.83	1.000	253.09	253.05	0.09	253.05	125	Grate
127	YD27 - YD28	0.13	6	Cir	25.000	252.83	253.08	1.000	253.05	253.26	n/a	253.26 j	126	Grate
128	R408 - BLDG	0.30	6	Cir	10.000	252.54	252.64	1.000	253.06	253.08	0.04	253.12	124	None
129	R401 - R410	1.17	10	Cir	15.000	256.01	256.16	1.000	256.44	256.64	0.20	256.64	112	None
130	R410 - R411	0.30	6	Cir	34.000	256.16	256.50	1.000	256.64	256.78	n/a	256.78 j	129	None
131	R411 - BLDG	0.30	6	Cir	10.000	256.50	256.60	1.000	256.78	256.88	0.11	256.88	130	None
132	R410 - R412	0.89	6	Cir	34.000	256.16	256.50	1.000	256.66*	257.51*	0.32	257.83	129	None
133	R412 - R413	0.60	6	Cir	14.000	256.50	256.64	1.000	257.83*	257.99*	0.11	258.10	132	None
134	R413 - YD29	0.60	6	Cir	15.000	256.64	256.79	1.000	258.10*	258.27*	0.16	258.43	133	Grate
135	YD29 - YD30	0.50	6	Cir	25.000	256.79	257.04	1.000	258.43*	258.63*	0.05	258.68	134	Grate
136	YD30 - YD31	0.35	6	Cir	32.000	257.04	257.36	1.000	258.68*	258.81*	0.03	258.84	135	Grate
137	YD31 - YD32	0.21	6	Cir	37.000	257.36	257.73	1.000	258.84*	258.89*	0.02	258.90	136	Grate
138	R412 - BLDG	0.30	6	Cir	10.000	256.50	256.60	1.000	257.83*	257.86*	0.04	257.89	132	None

Project File: 2019-10-30_Pipe Sizing.stm | Number of lines: 138 | Run Date: 10/31/2019

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

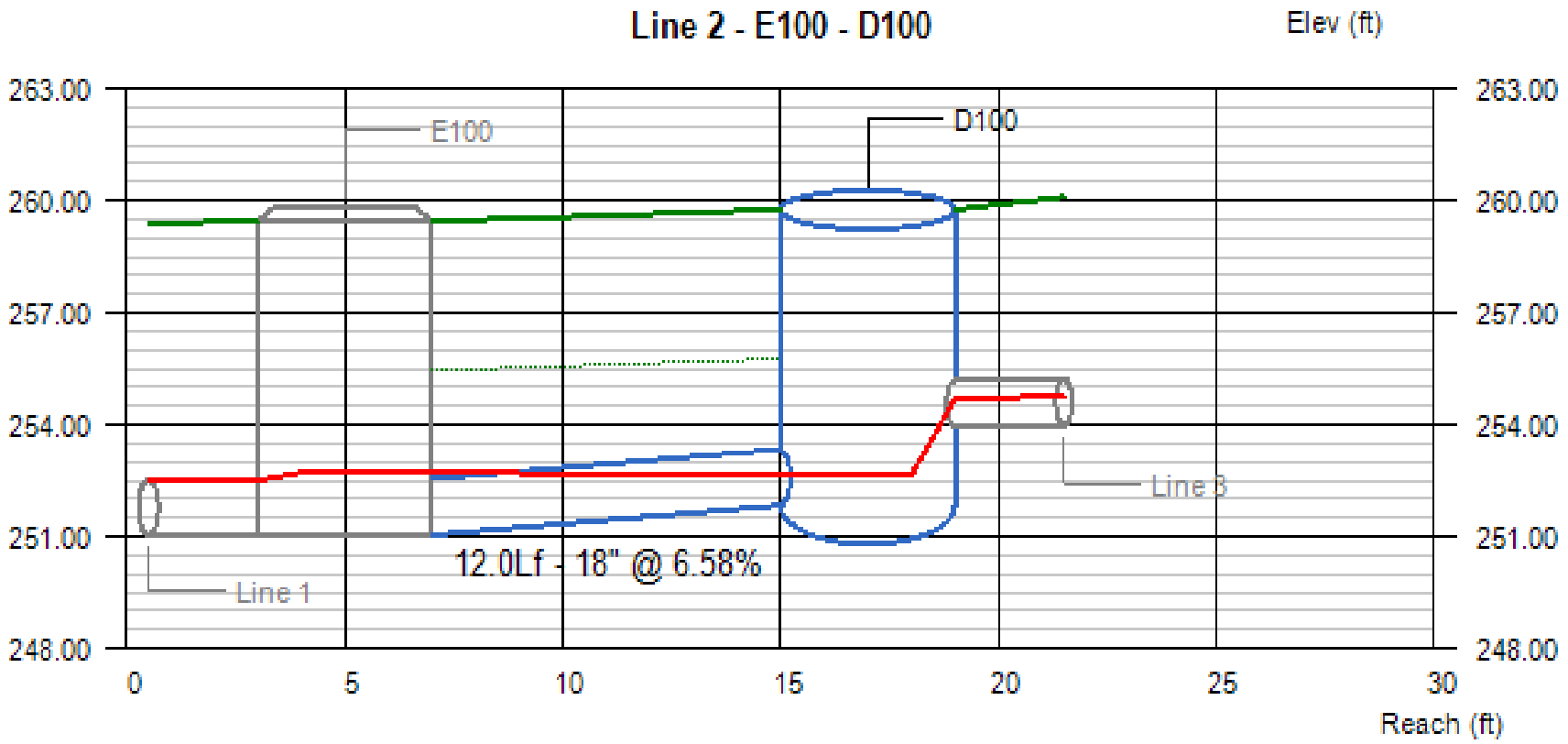
Line Profile (Line 1) - 1A - E100



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
1	6.39	250.91	251.04	1.50	1.45	1.66	252.41	252.49	252.70	3.62	3.65	6.59	6.90

Project File: | No. Lines: 138 | Run Date: 10/31/2019

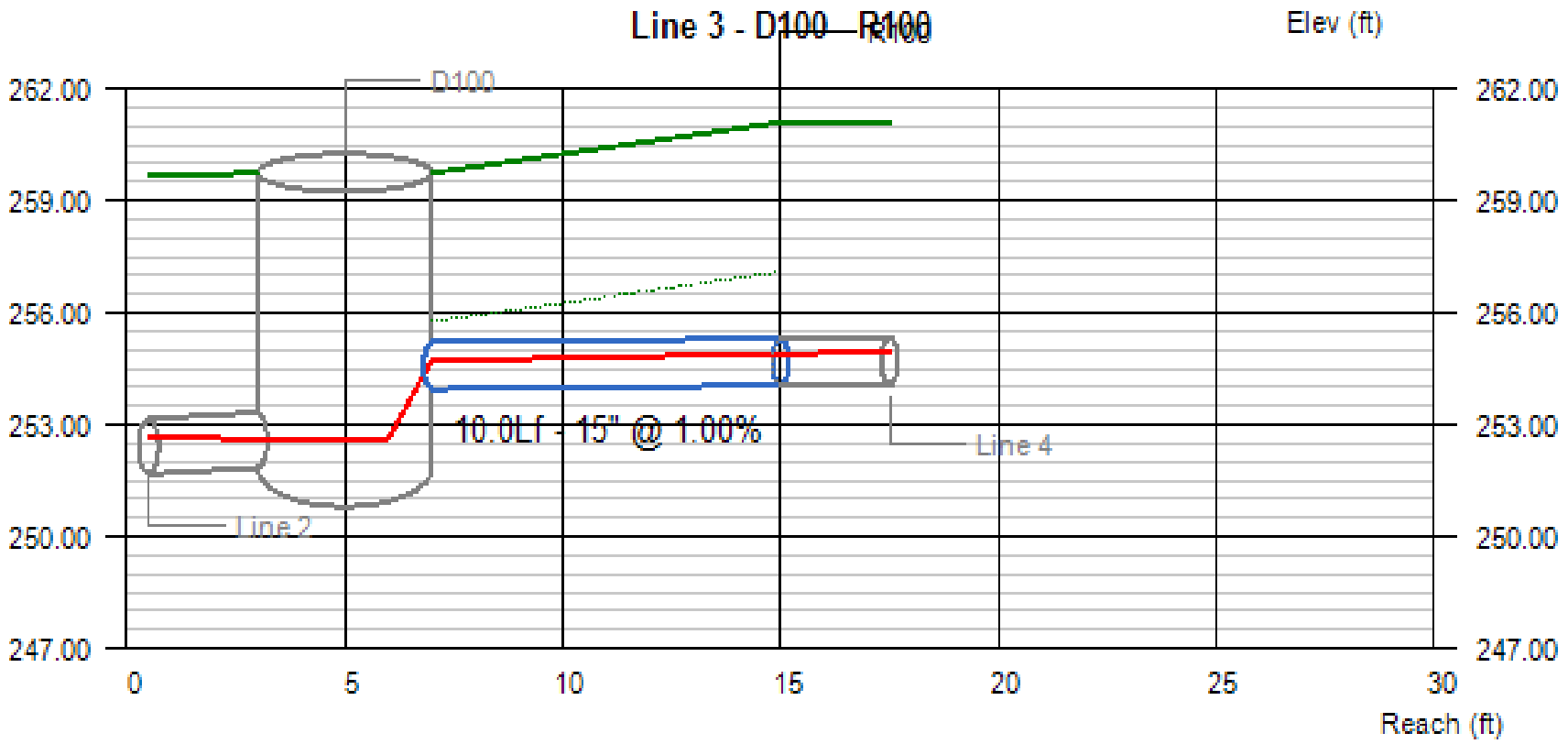
Line Profile (Line 2) - E100 - D100



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
2	4.39	251.04	251.83	1.50	0.80	0.80	252.70	252.63	252.63	2.48	4.56	6.90	6.42

Project File: | No. Lines: 138 | Run Date: 10/31/2019

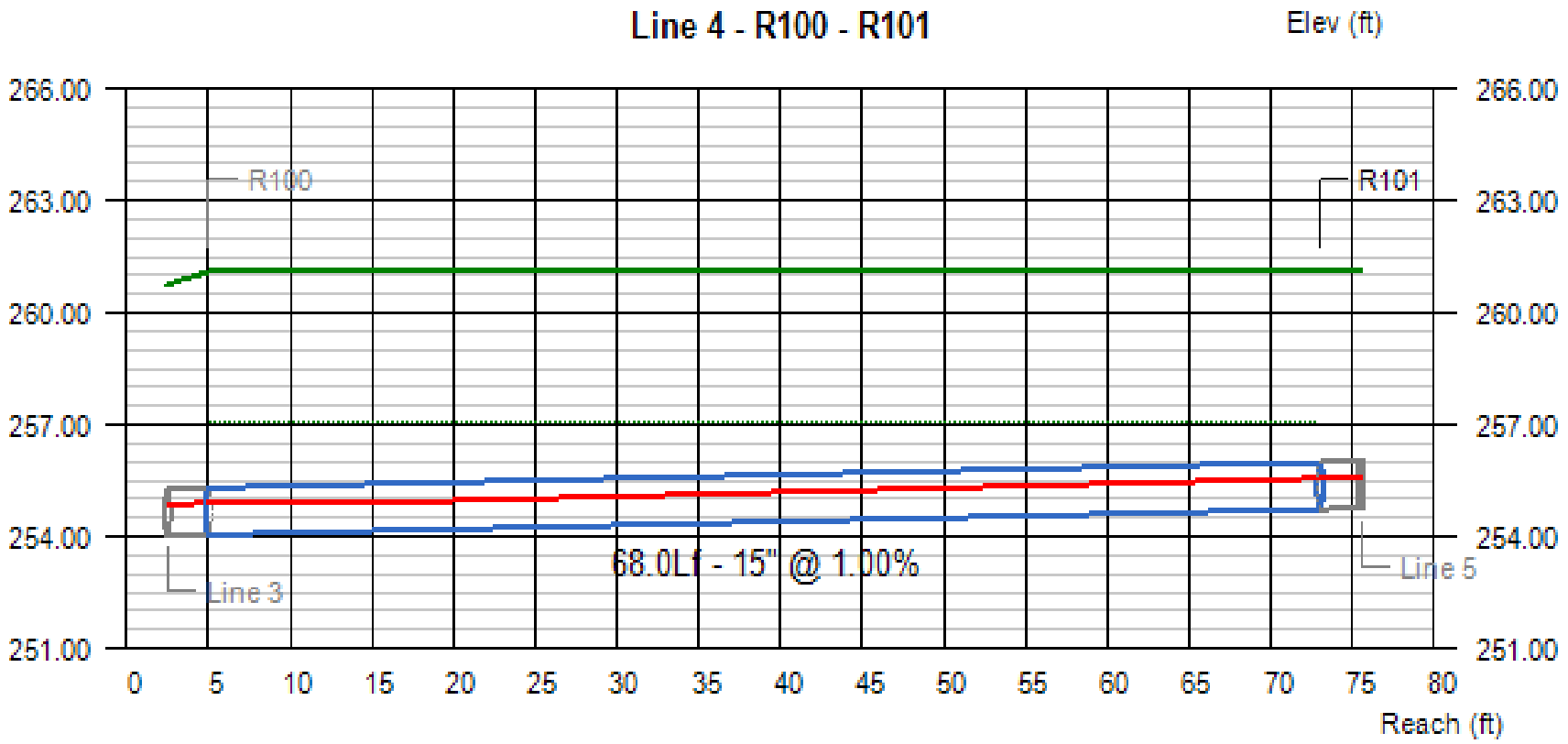
Line Profile (Line 3) - D100 - R100



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
3	4.39	253.95	254.05	0.76	0.85	0.85	254.71	254.90	254.90	5.66	4.95	4.55	5.80

Project File: | No. Lines: 138 | Run Date: 10/31/2019

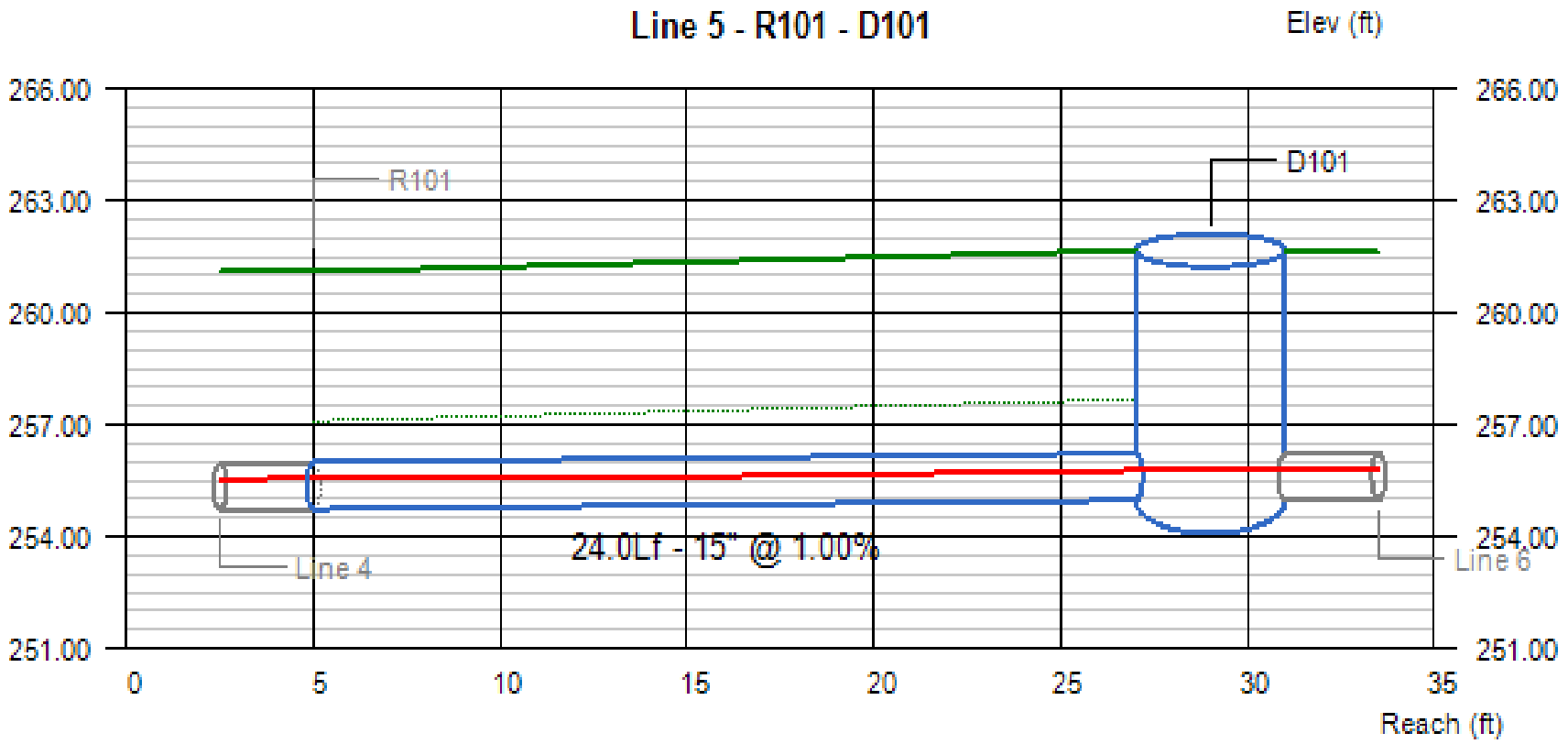
Line Profile (Line 4) - R100 - R101



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
4	4.14	254.05	254.73	0.85	0.82	0.82	254.90	255.55 j	255.55	4.66	4.83	5.80	5.12

Project File:	No. Lines: 138	Run Date: 10/31/2019

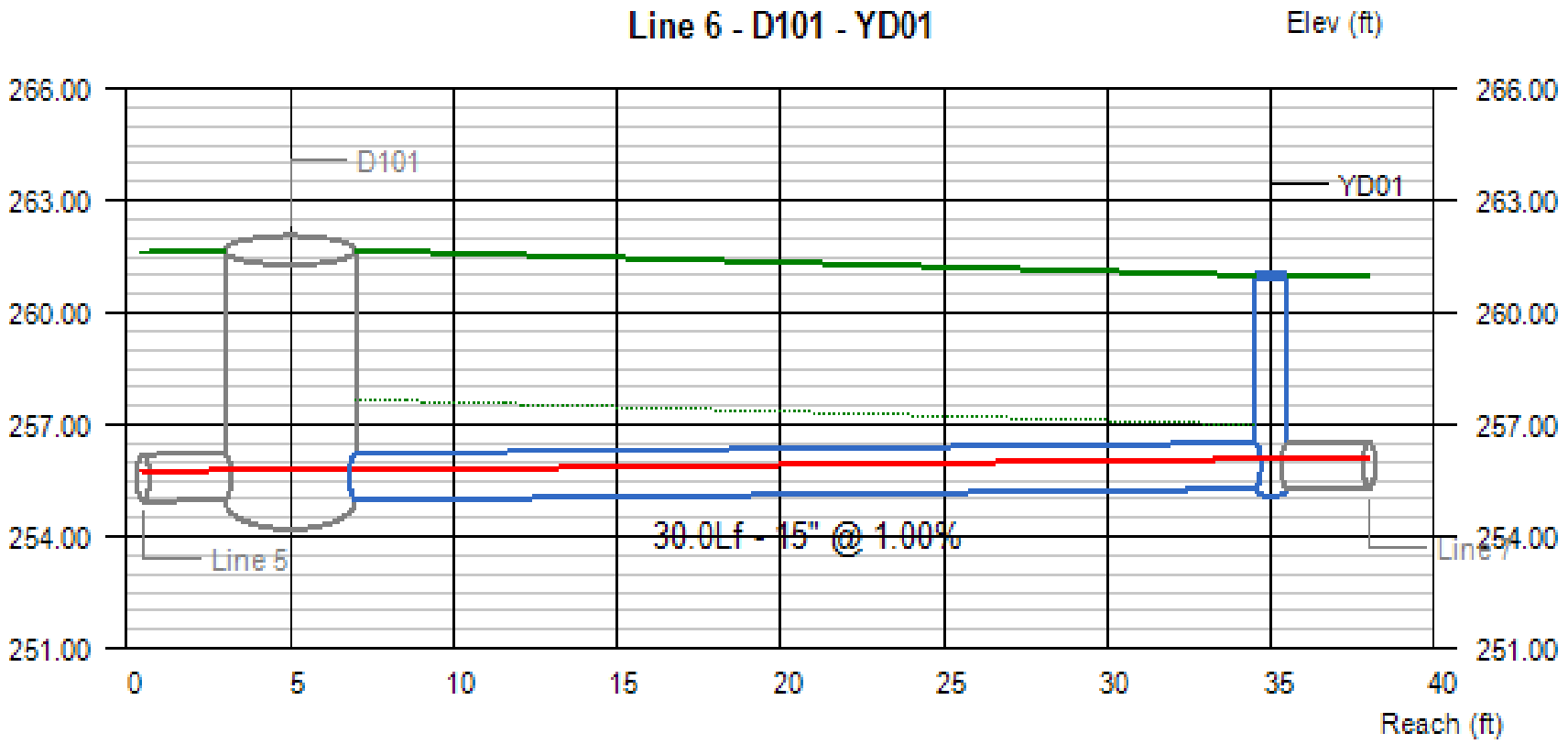
Line Profile (Line 5) - R101 - D101



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
5	3.86	254.73	254.97	0.82	0.79	0.79	255.55	255.76 j	255.76	4.50	4.69	5.12	5.45

Project File: | No. Lines: 138 | Run Date: 10/31/2019

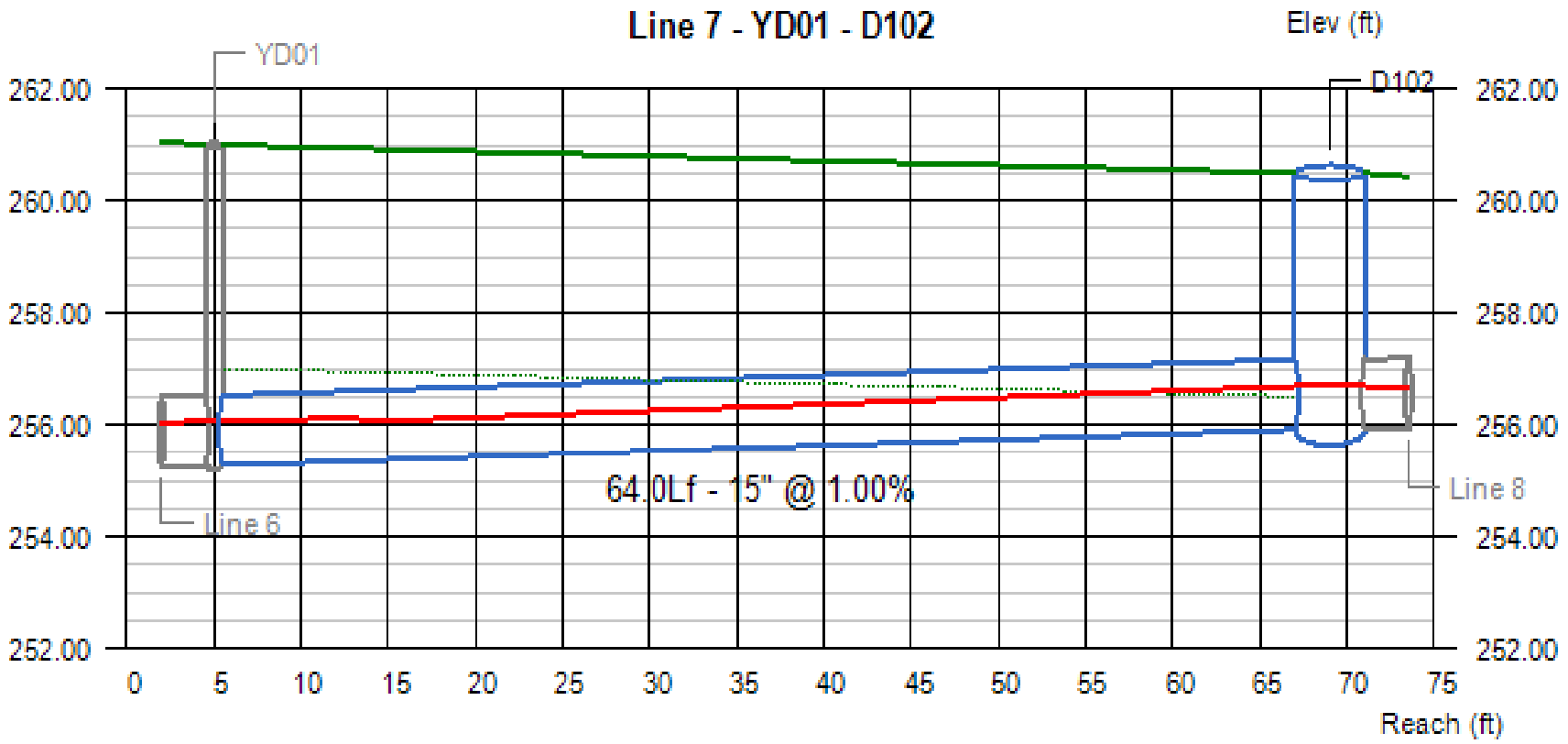
Line Profile (Line 6) - D101 - YD01



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
6	3.87	254.97	255.27	0.79	0.79	0.79	255.76	256.06	256.06	4.71	4.70	5.45	4.48

Project File:	No. Lines: 138	Run Date: 10/31/2019

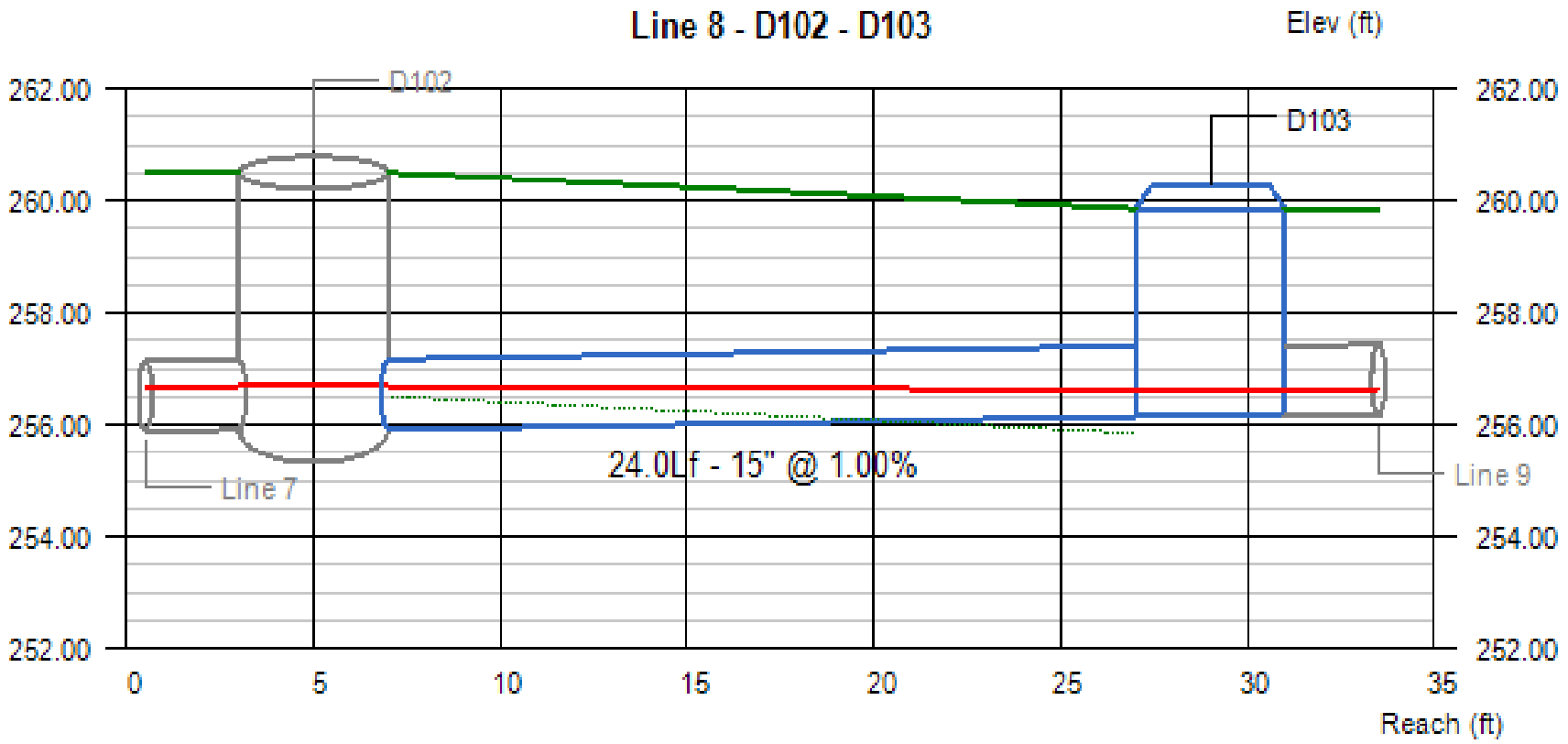
Line Profile (Line 7) - YD01 - D102



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
7	3.70	255.27	255.91	0.79	0.78	0.78	256.06	256.69 j	256.69	4.49	4.62	4.48	3.34

Project File: | No. Lines: 138 | Run Date: 10/31/2019

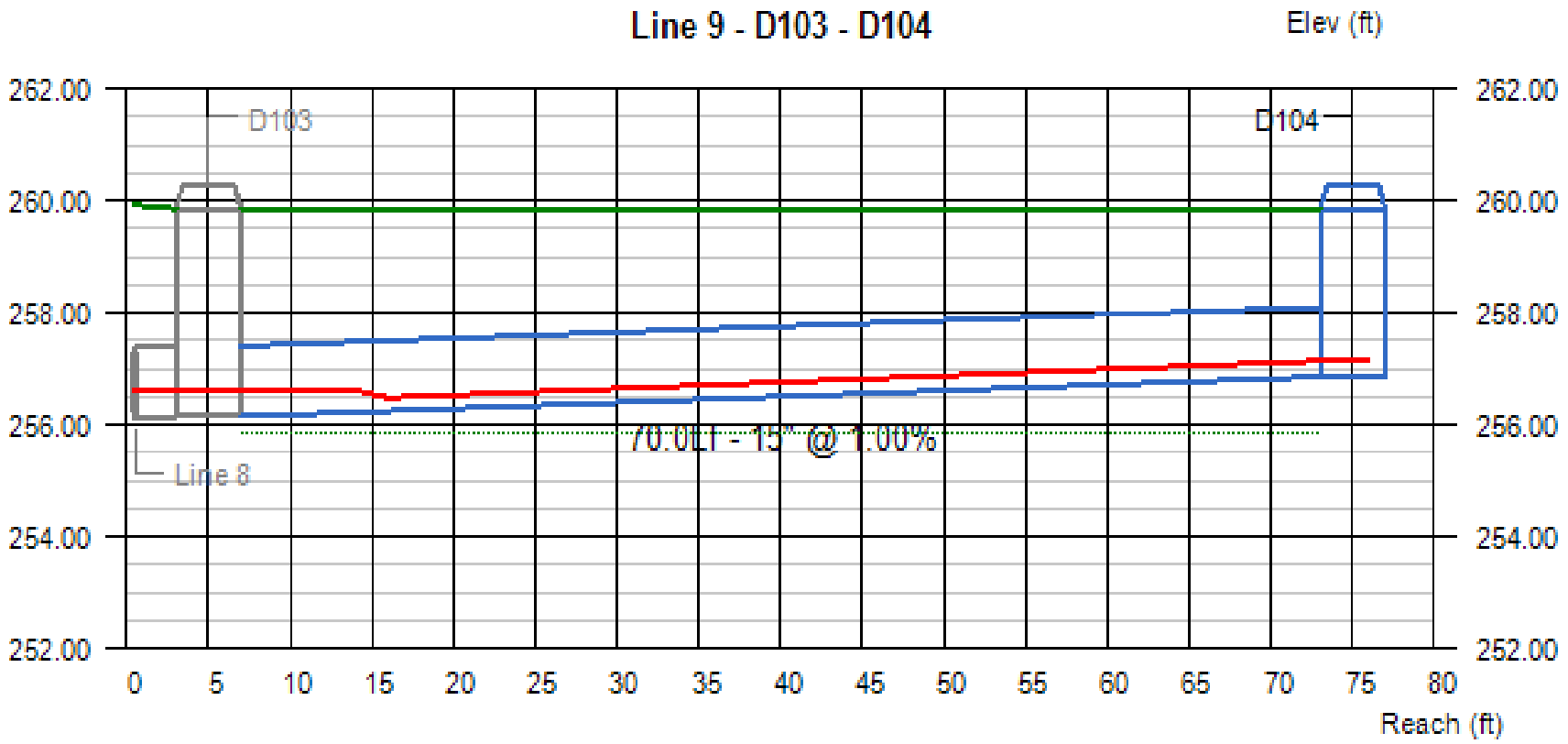
Line Profile (Line 8) - D102 - D103



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
8	1.39	255.91	256.15	0.78	0.46	0.46	256.69	256.61	256.61	1.73	3.33	3.34	2.45

Project File: | No. Lines: 138 | Run Date: 10/31/2019

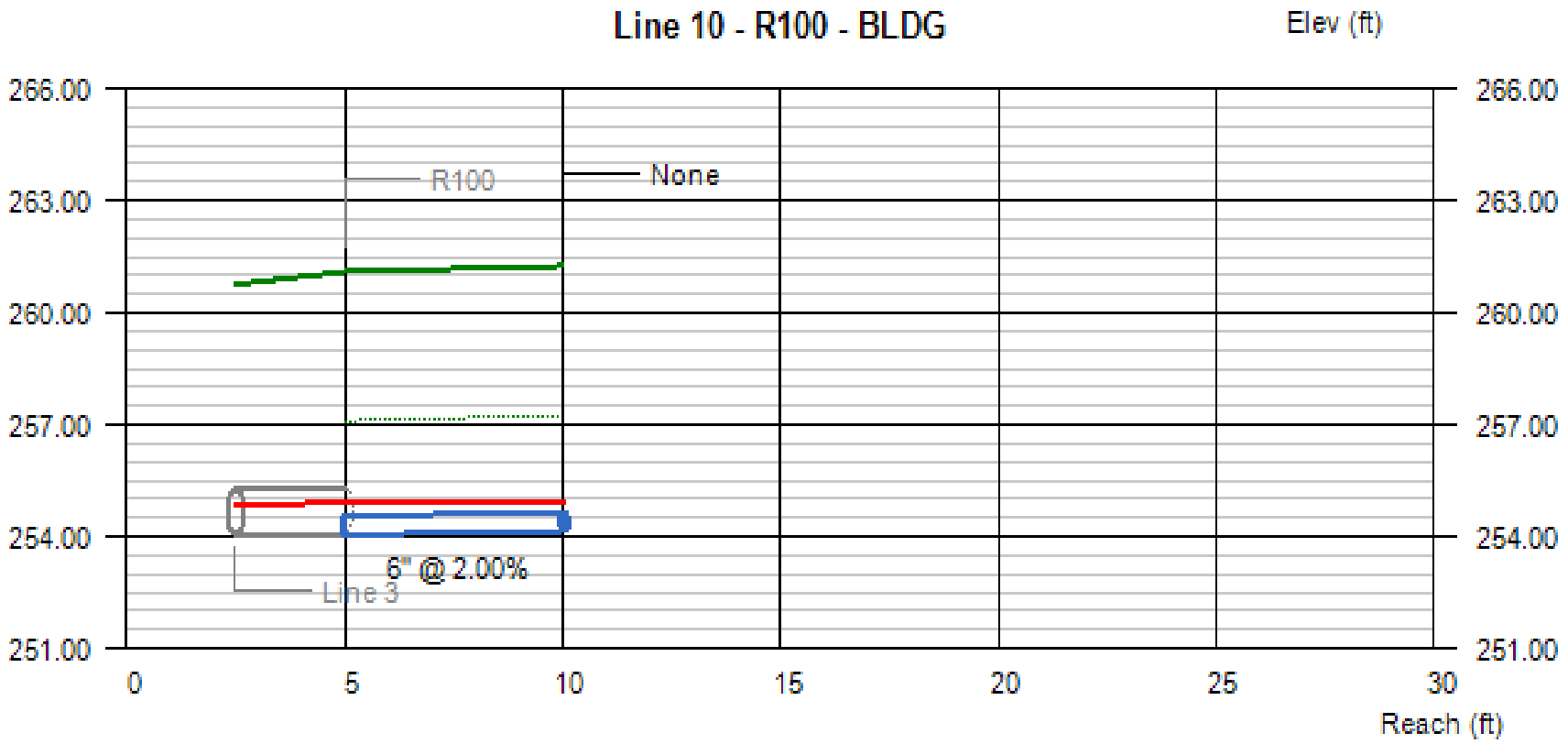
Line Profile (Line 9) - D103 - D104



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
9	0.53	256.15	256.85	0.46	0.28	0.28	256.61	257.13 j	257.13	1.27	2.53	2.45	1.75

Project File: | No. Lines: 138 | Run Date: 10/31/2019

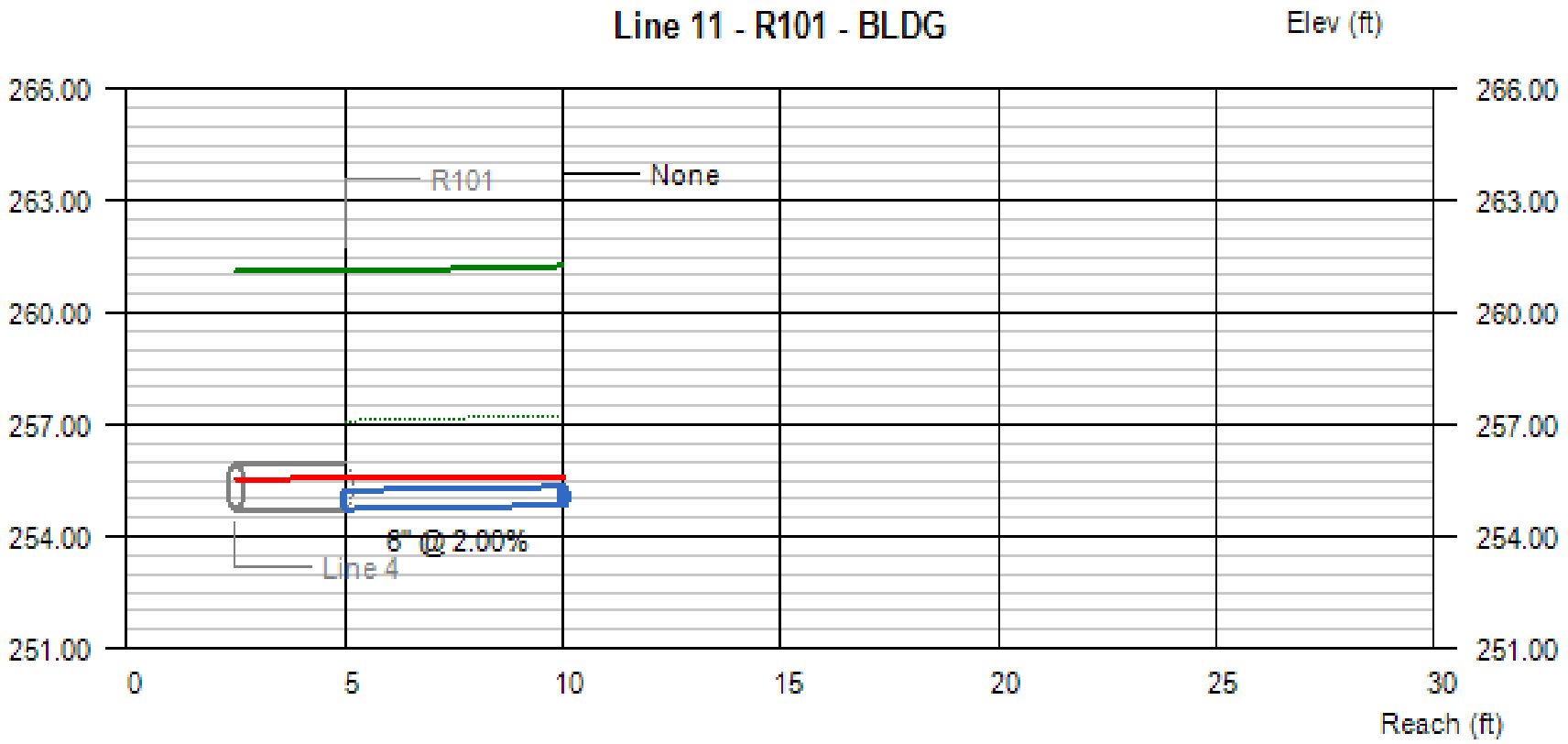
Line Profile (Line 10) - R100 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
10	0.30	254.05	254.15	0.50	0.50	0.80	254.90	254.91	254.95	1.54	1.54	6.55	6.60

Project File:	No. Lines: 138	Run Date: 10/31/2019

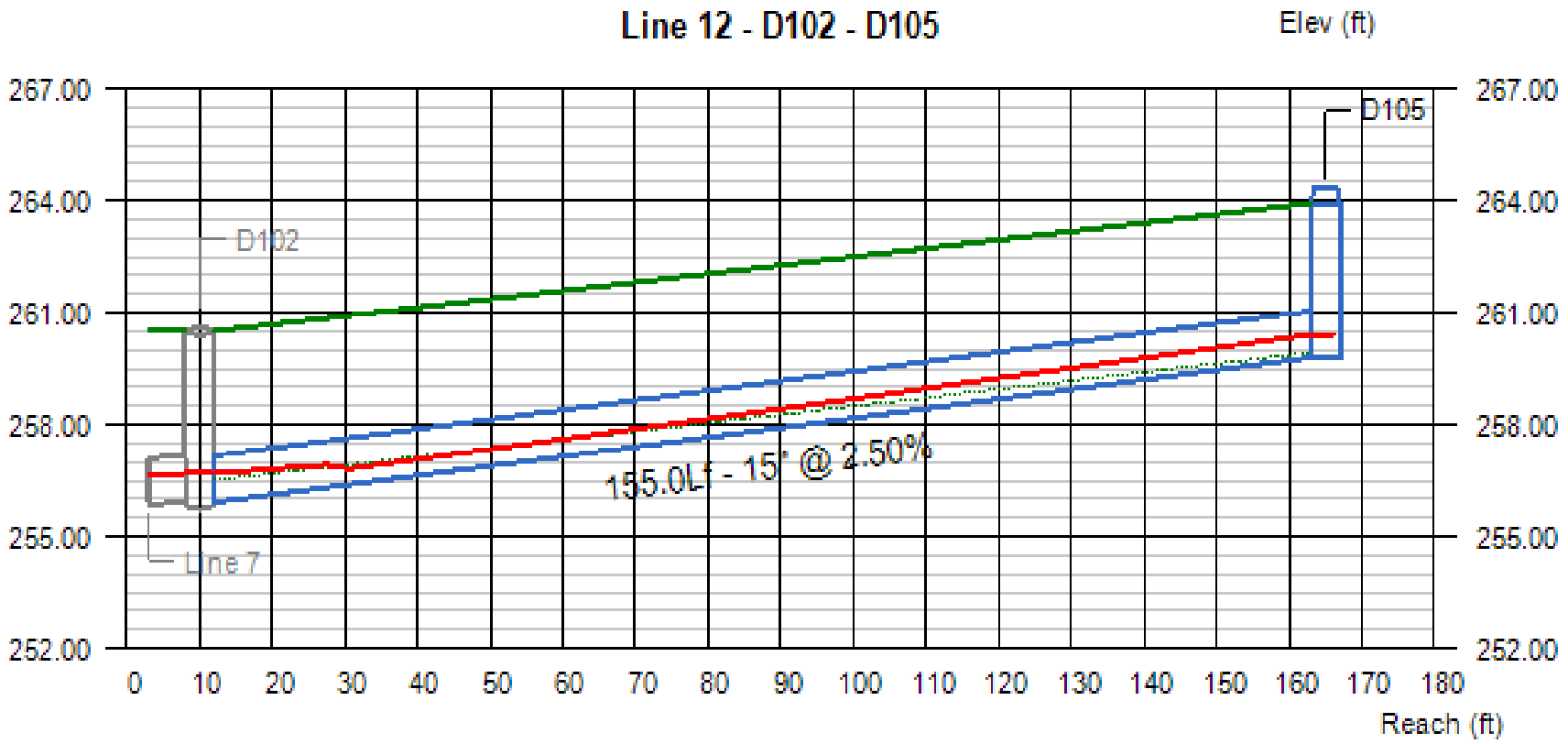
Line Profile (Line 11) - R101 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
11	0.30	254.73	254.83	0.50	0.50	0.77	255.55	255.57	255.60	1.54	1.54	5.87	5.92

Project File: | No. Lines: 138 | Run Date: 10/31/2019

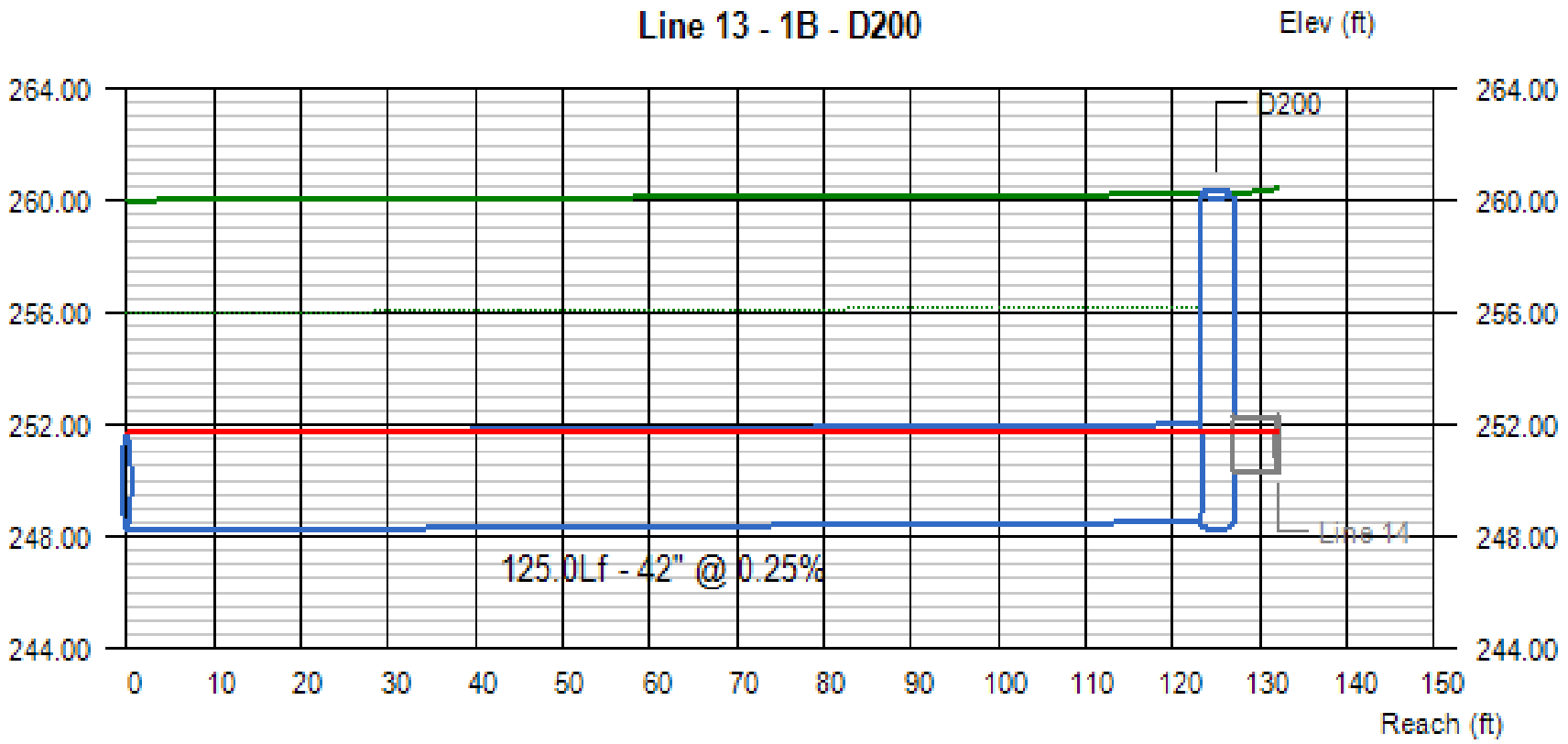
Line Profile (Line 12) - D102 - D105



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
12	2.38	255.91	259.79	0.78	0.62	0.62	256.69	260.41 j	260.41	2.97	3.95	3.34	2.88

Project File: | No. Lines: 138 | Run Date: 10/31/2019

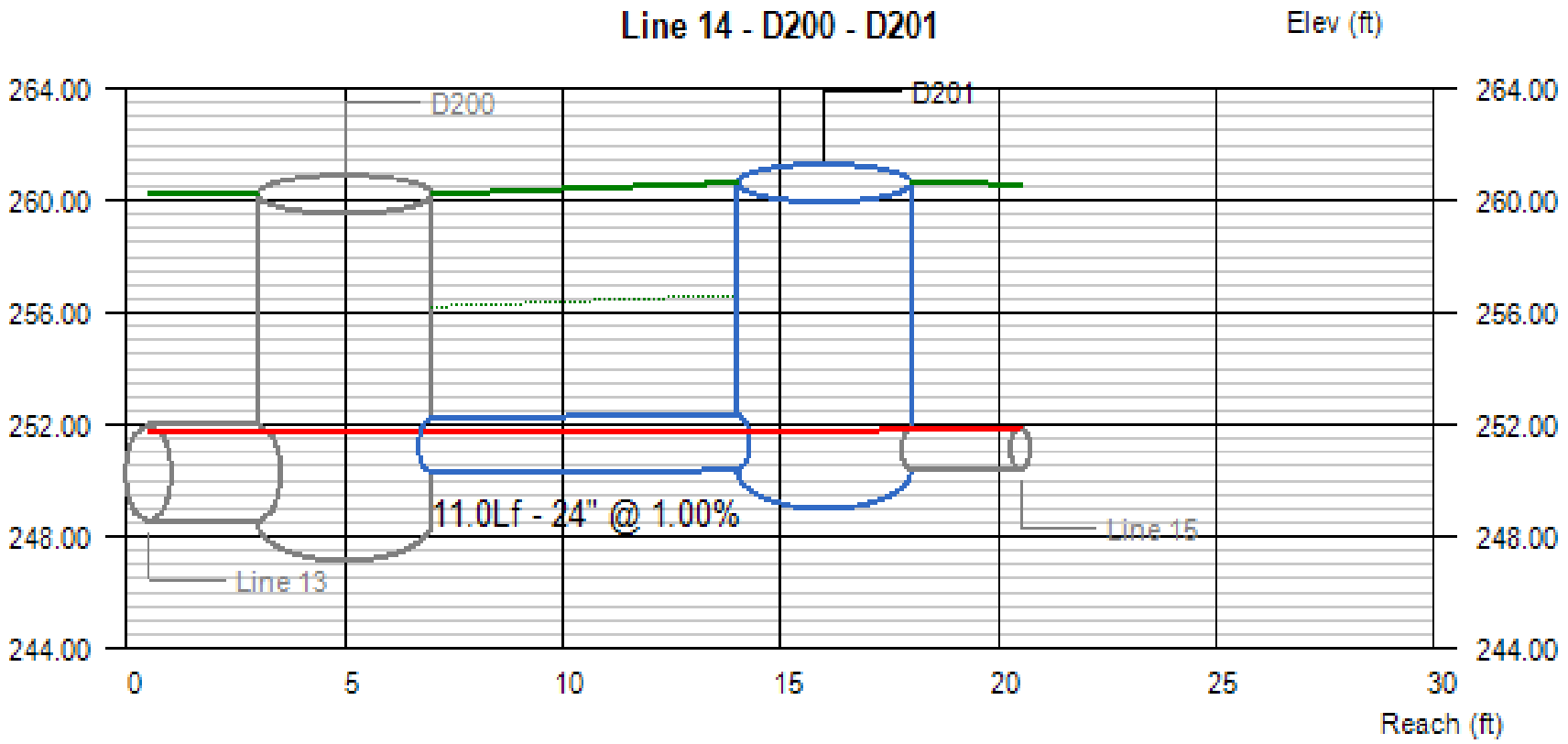
Line Profile (Line 13) - 1B - D200



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
13	16.30	248.21	248.52	3.50	3.22	3.26	251.71	251.74	251.78	1.69	1.76	8.29	8.20

Project File: | No. Lines: 138 | Run Date: 10/31/2019

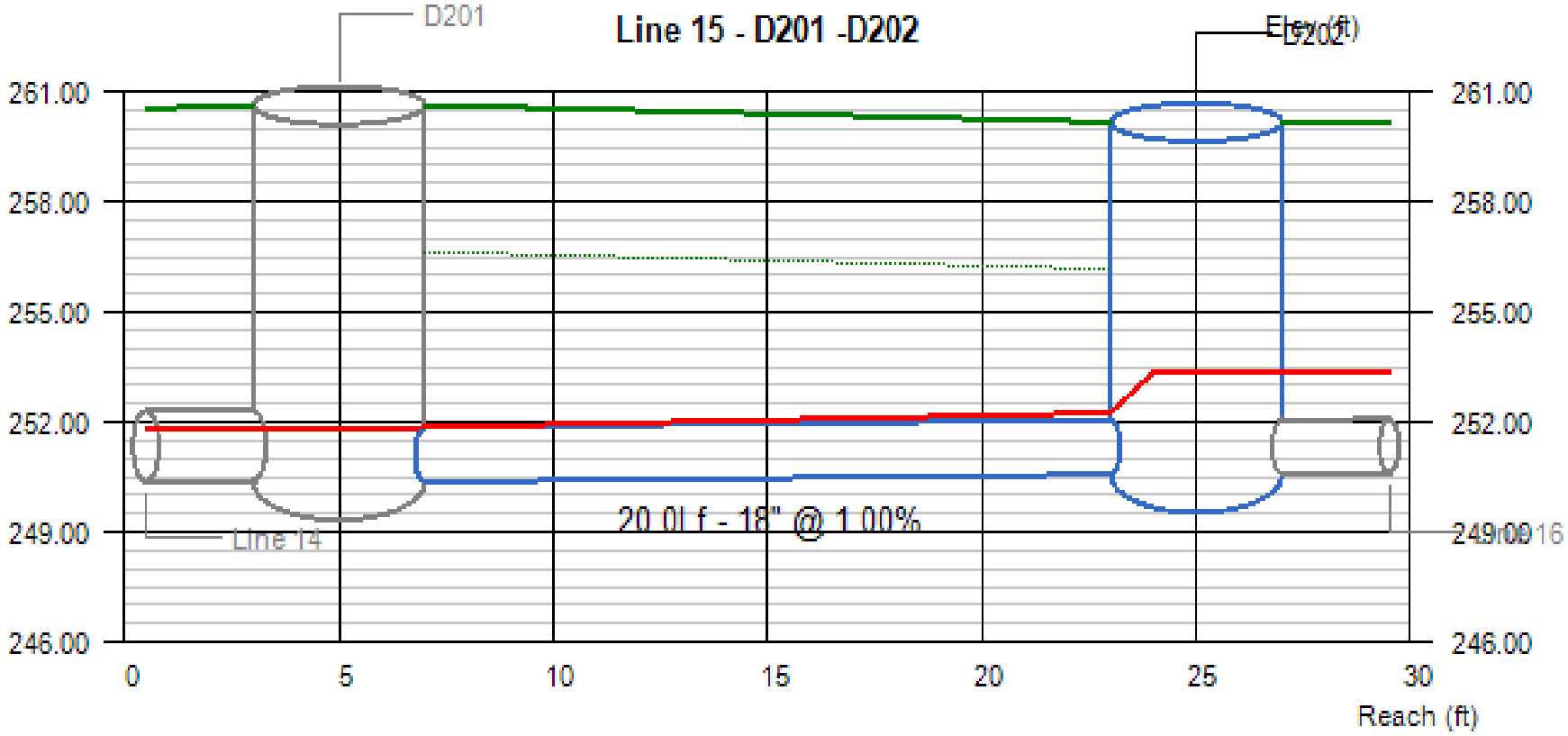
Line Profile (Line 14) - D200 - D201



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
14	15.79	250.25	250.36	1.53	1.43	1.43	251.78	251.79	251.79	6.10	6.56	7.97	8.27

Project File: | No. Lines: 138 | Run Date: 10/31/2019

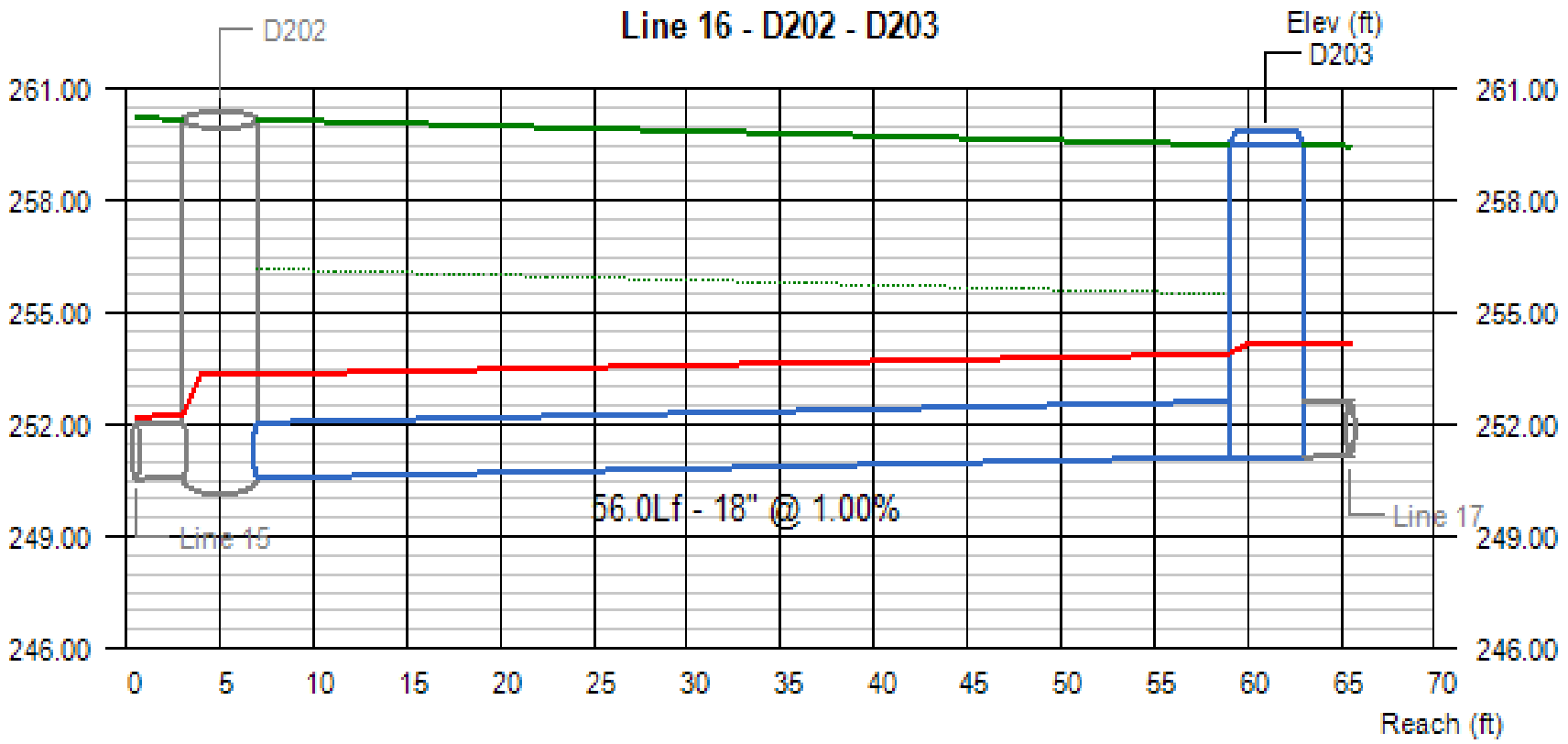
Line Profile (Line 15) - D201 -D202



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
15	14.77	250.36	250.56	1.50	1.50	2.78	251.86	252.26	253.34	8.36	8.36	8.77	8.11

Project File: | No. Lines: 138 | Run Date: 10/31/2019

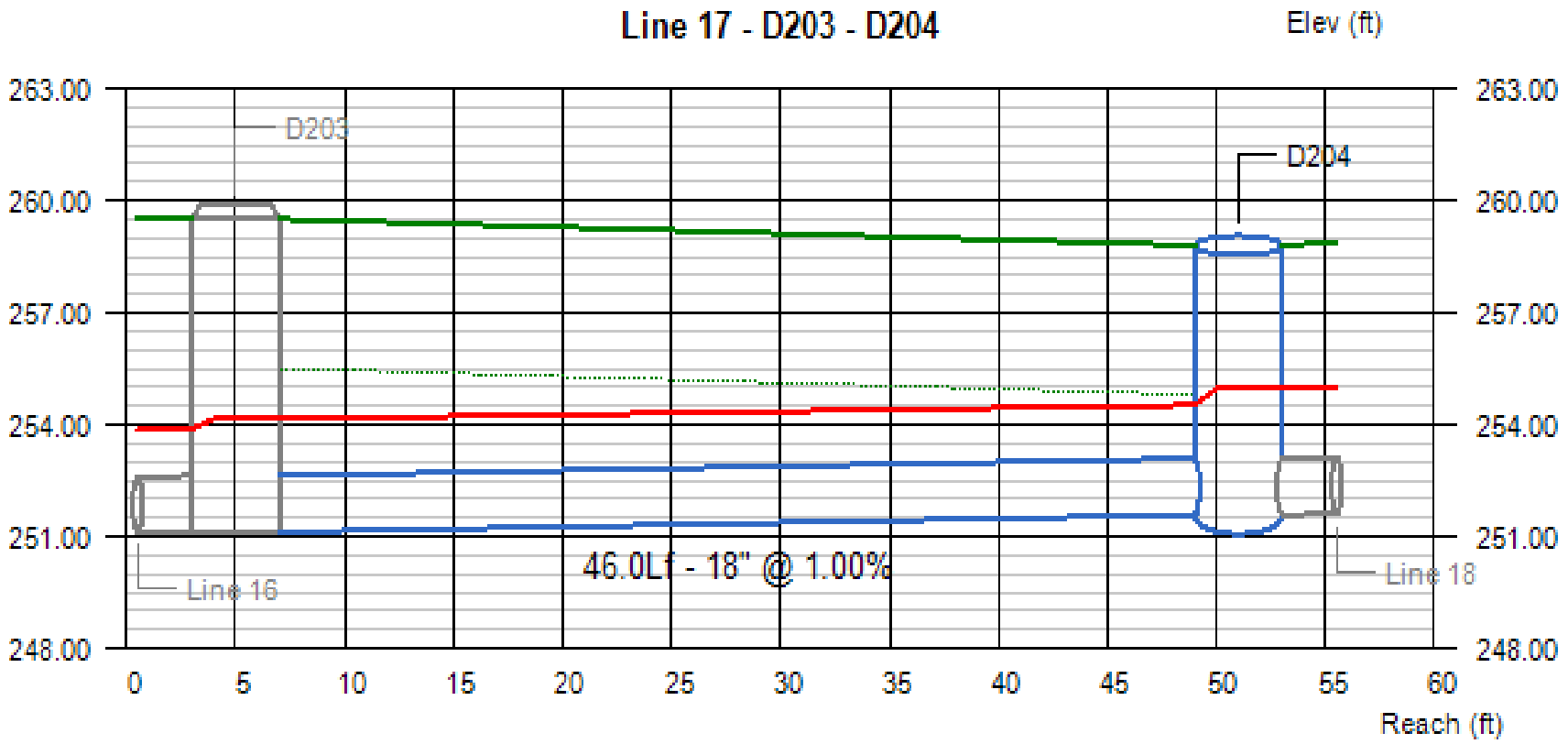
Line Profile (Line 16) - D202 - D203



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
16	10.37	250.56	251.12	1.50	1.50	3.04	253.34	253.89	254.16	5.87	5.87	8.11	6.88

Project File: | No. Lines: 138 | Run Date: 10/31/2019

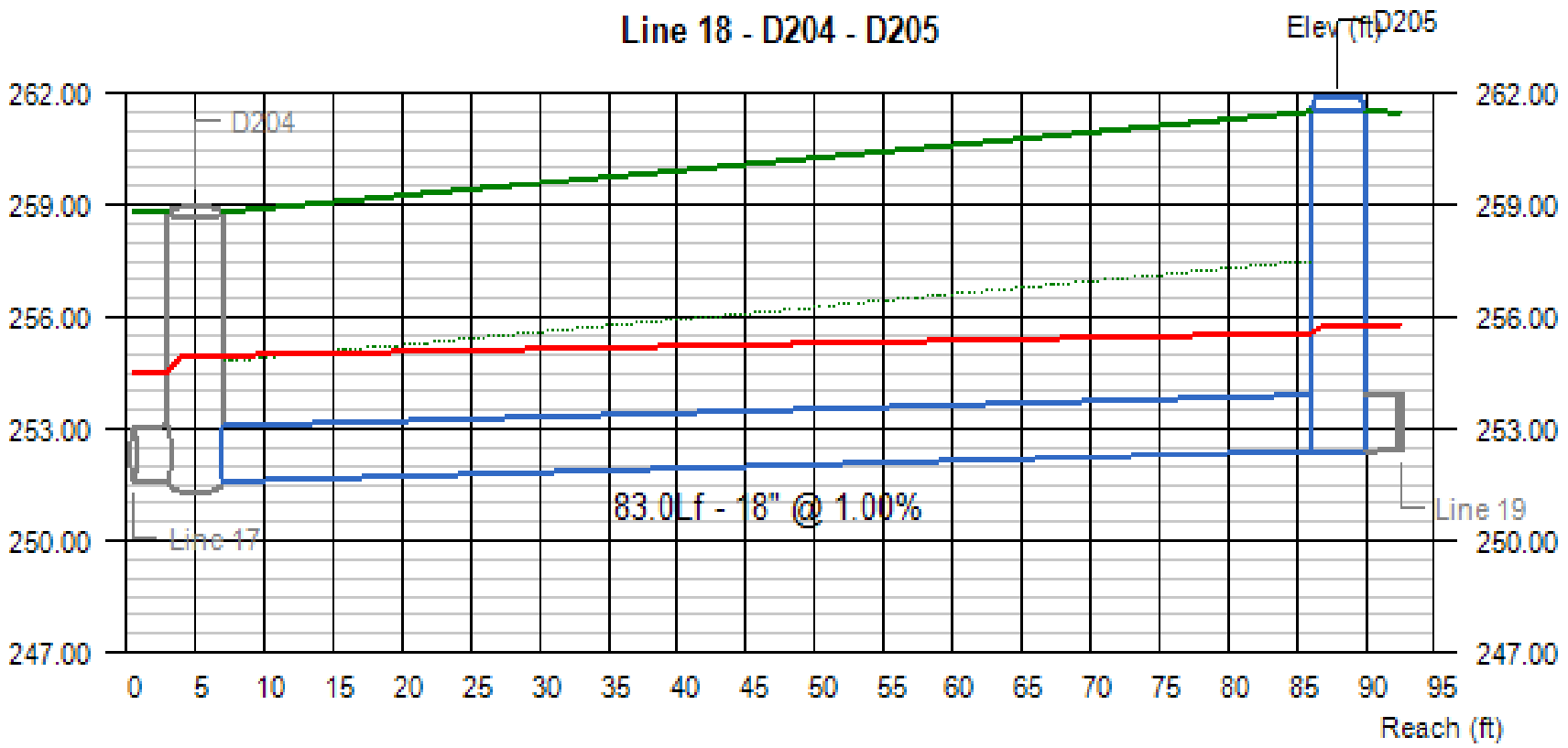
Line Profile (Line 17) - D203 - D204



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
17	9.38	251.12	251.58	1.50	1.50	3.38	254.16	254.52	254.96	5.31	5.31	6.88	5.72

Project File: | No. Lines: 138 | Run Date: 10/31/2019

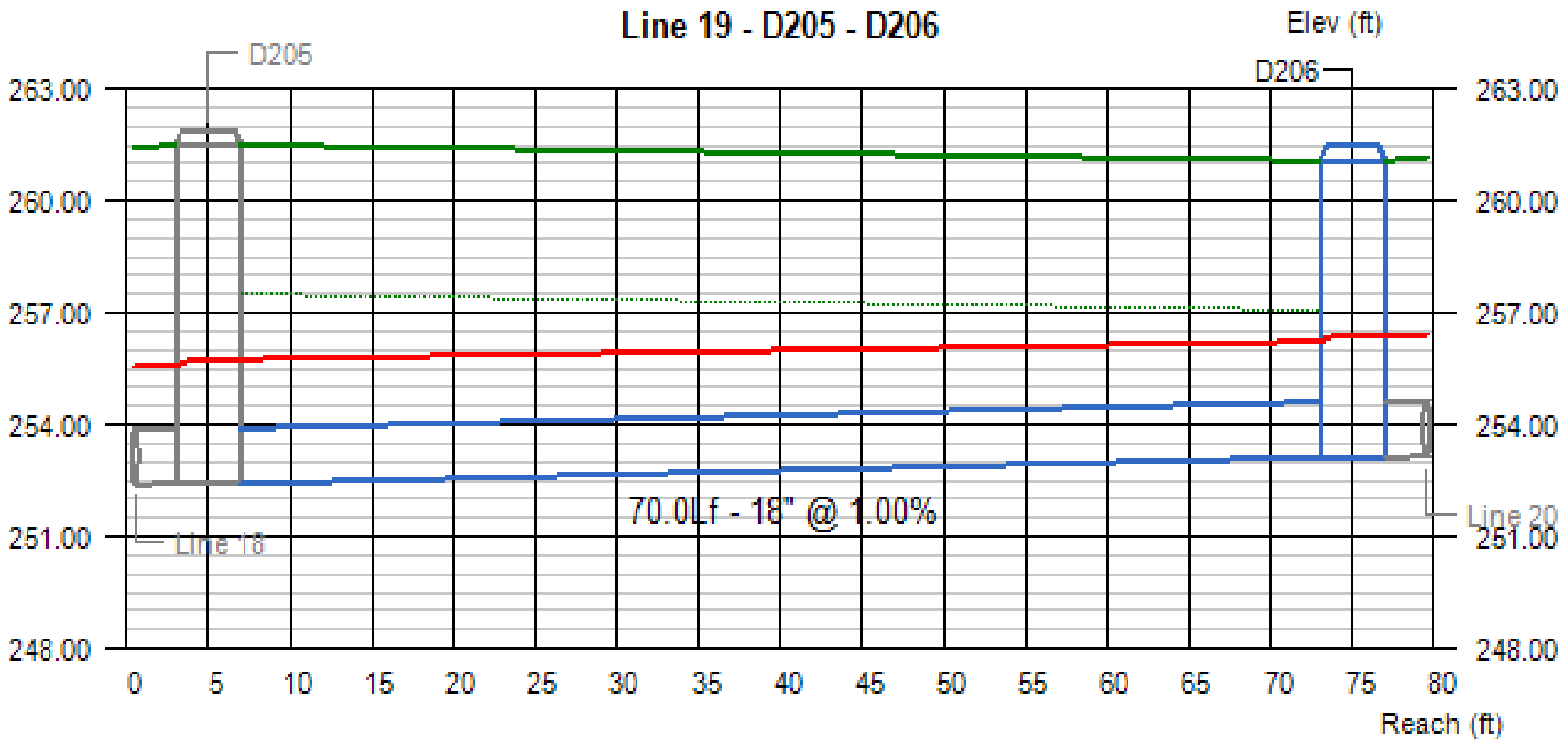
Line Profile (Line 18) - D204 - D205



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
18	8.88	251.58	252.41	1.50	1.50	3.34	254.96	255.56	255.75	5.03	5.03	5.72	7.59

Project File:	No. Lines: 138	Run Date: 10/31/2019

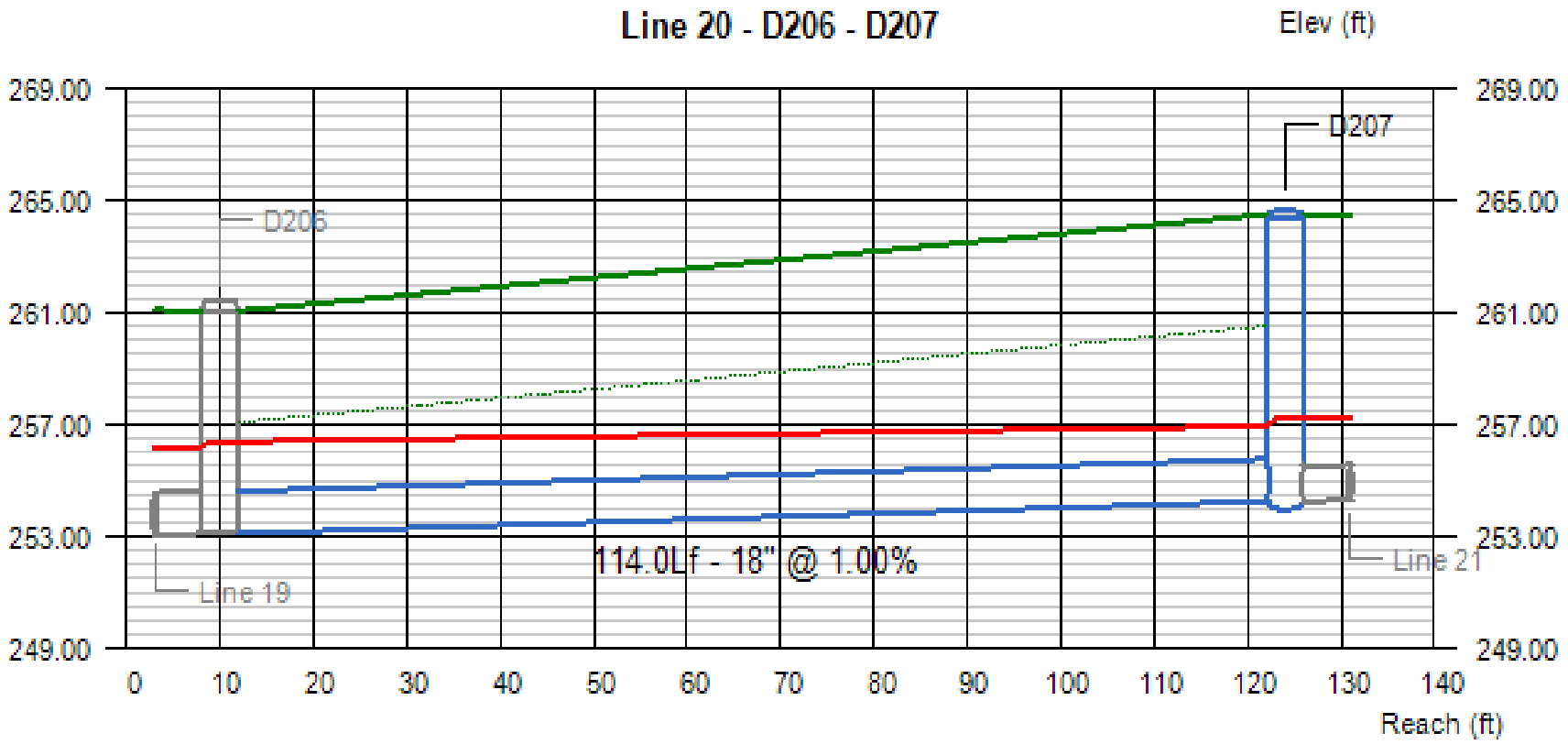
Line Profile (Line 19) - D205 - D206



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
19	8.56	252.41	253.11	1.50	1.50	3.29	255.75	256.22	256.40	4.85	4.84	7.59	6.47

Project File: | No. Lines: 138 | Run Date: 10/31/2019

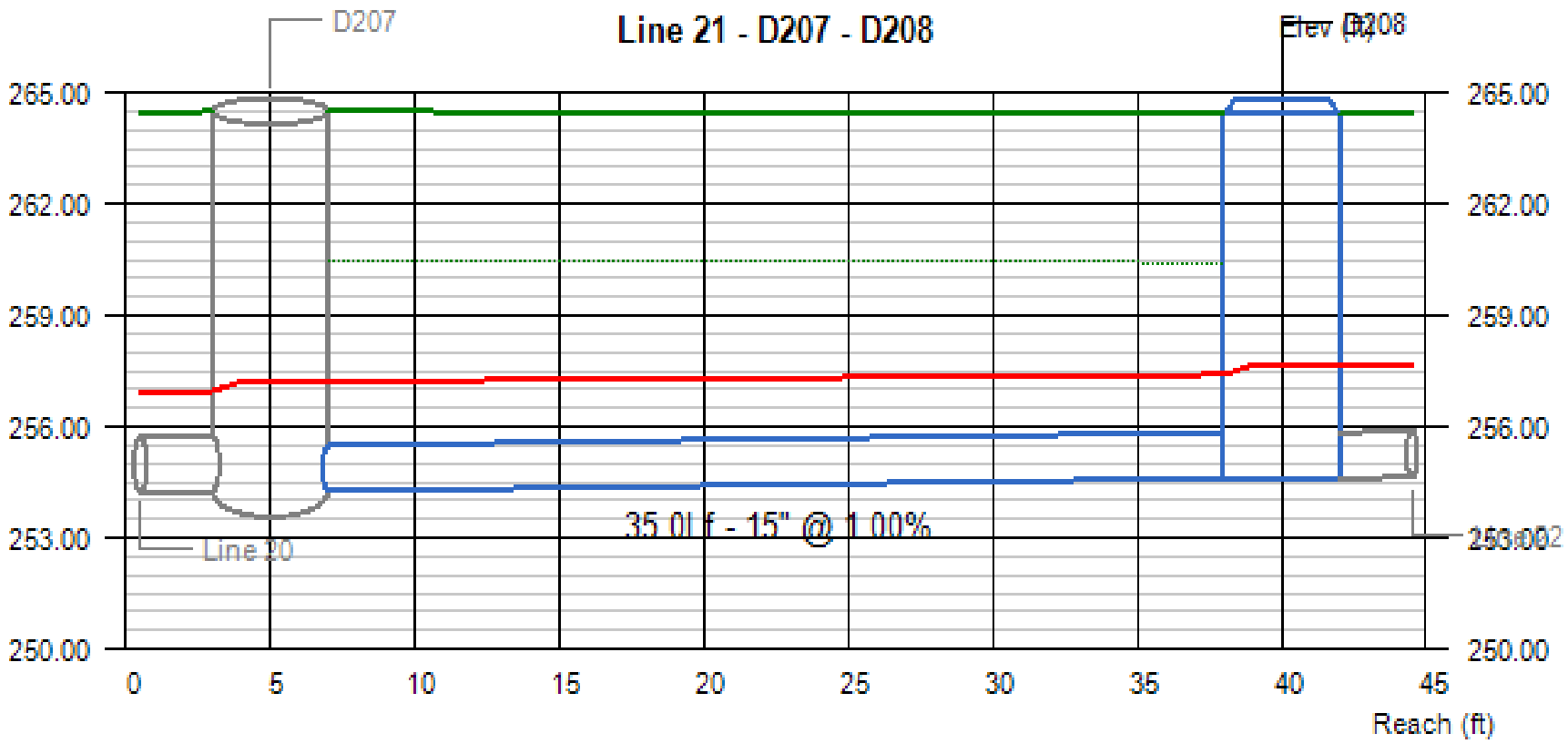
Line Profile (Line 20) - D206 - D207



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
20	7.29	253.11	254.25	1.50	1.50	2.97	256.40	256.95	257.22	4.13	4.13	6.47	8.75

Project File:	No. Lines: 138	Run Date: 10/31/2019

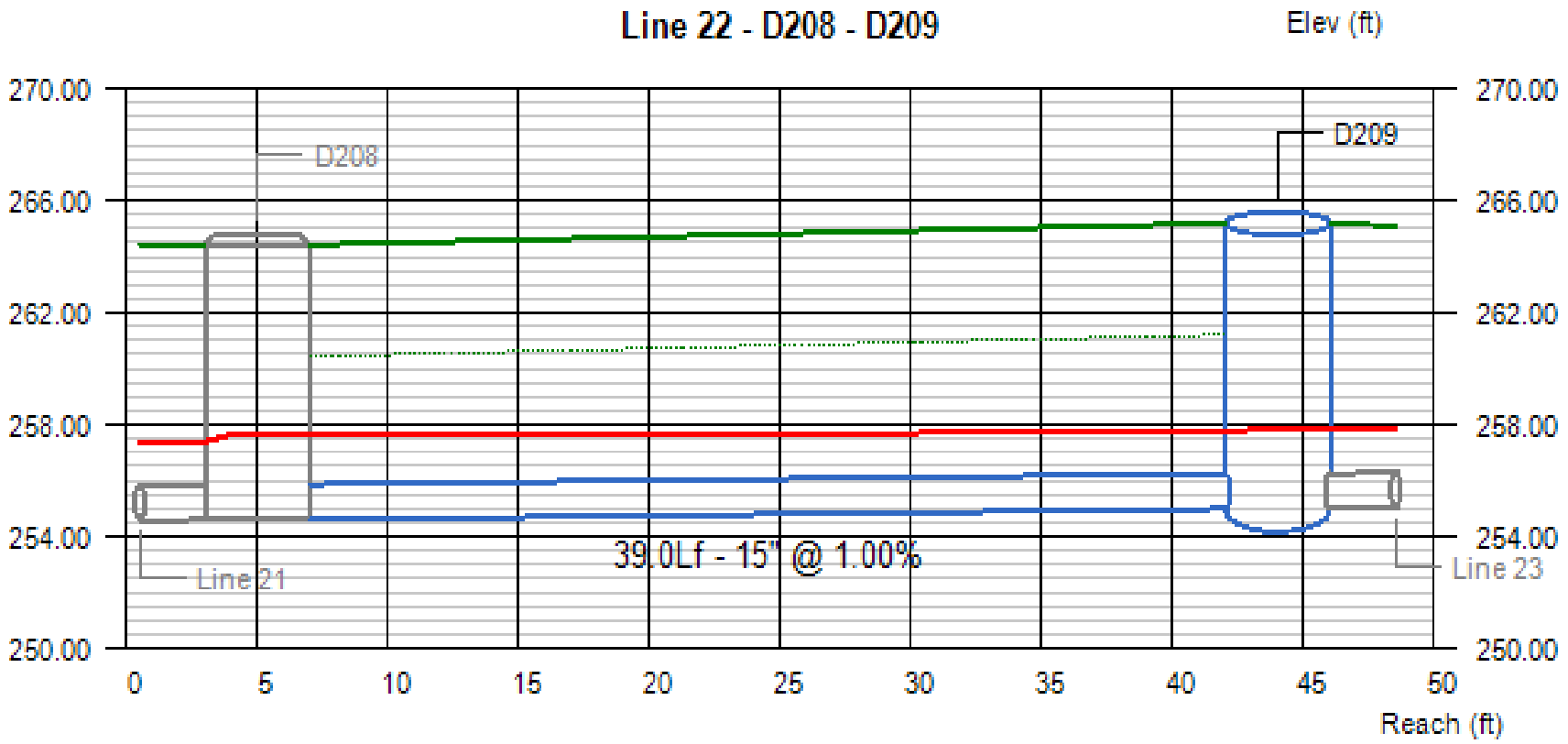
Line Profile (Line 21) - D207 - D208



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
21	4.66	254.25	254.60	1.25	1.25	3.05	257.22	257.40	257.65	3.80	3.80	9.00	8.57

Project File: | No. Lines: 138 | Run Date: 10/31/2019

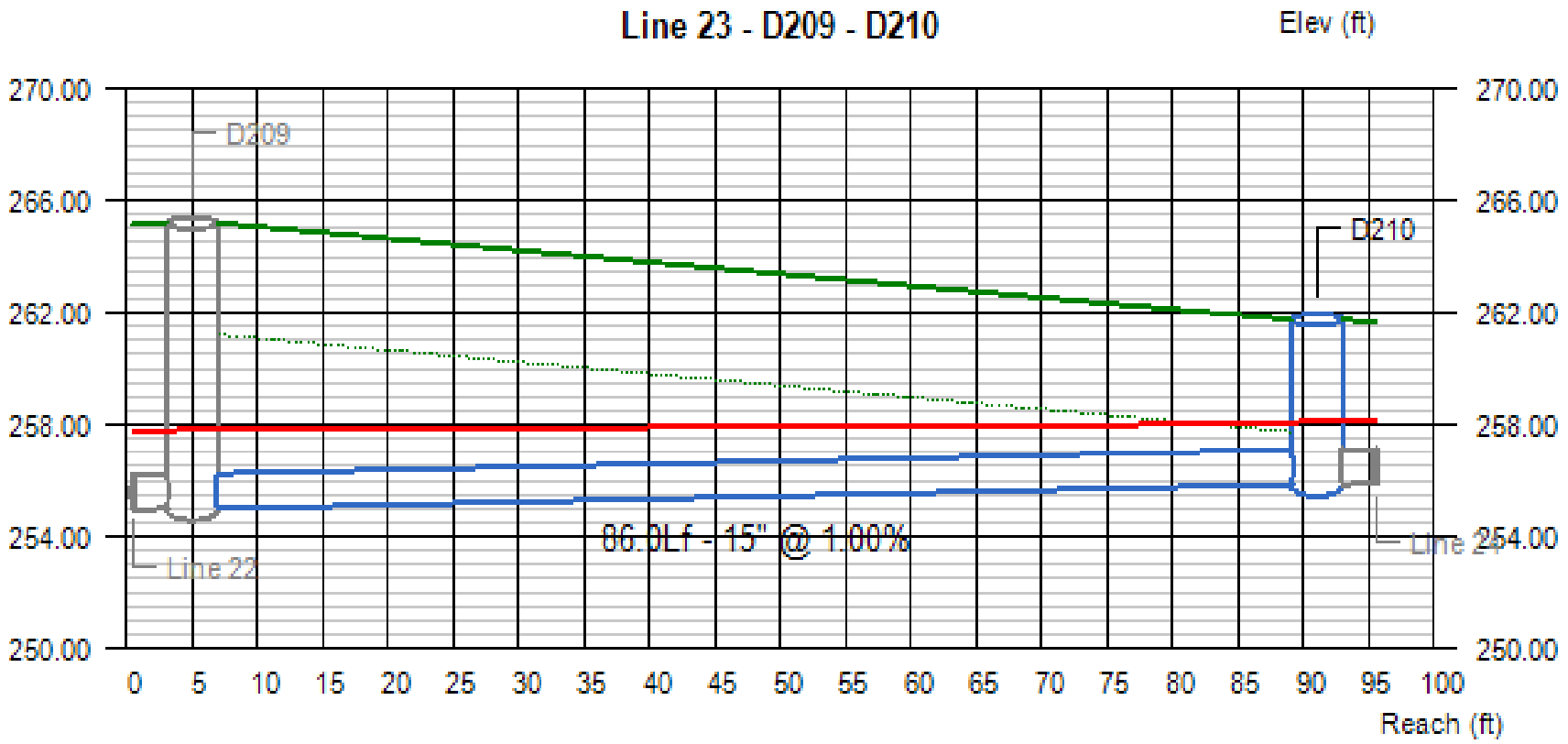
Line Profile (Line 22) - D208 - D209



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
22	3.15	254.60	254.99	1.25	1.25	2.83	257.65	257.75	257.82	2.57	2.57	8.57	8.95

Project File: | No. Lines: 138 | Run Date: 10/31/2019

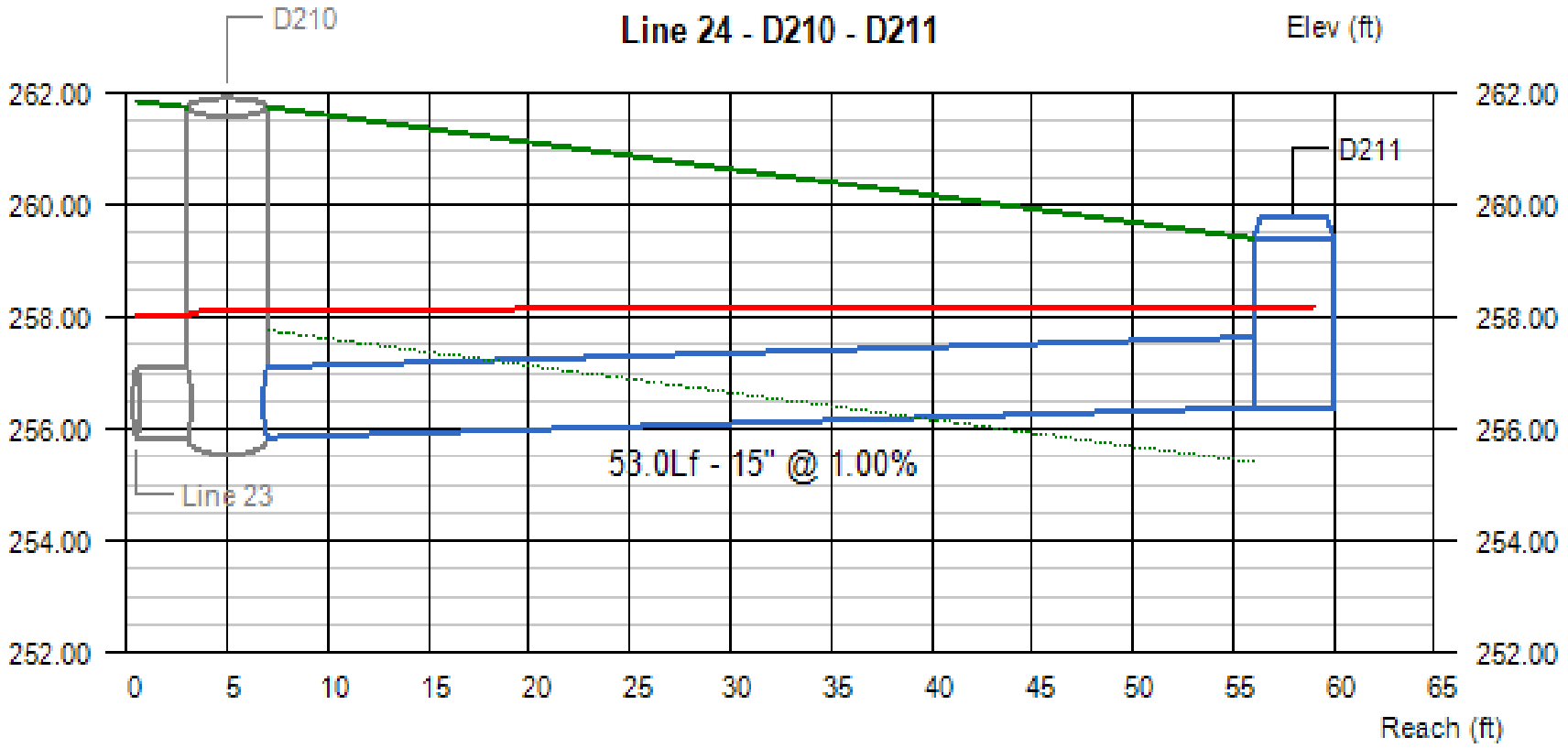
Line Profile (Line 23) - D209 - D210



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
23	3.21	254.99	255.85	1.25	1.25	2.29	257.82	258.04	258.14	2.62	2.62	8.95	4.65

Project File: | No. Lines: 138 | Run Date: 10/31/2019

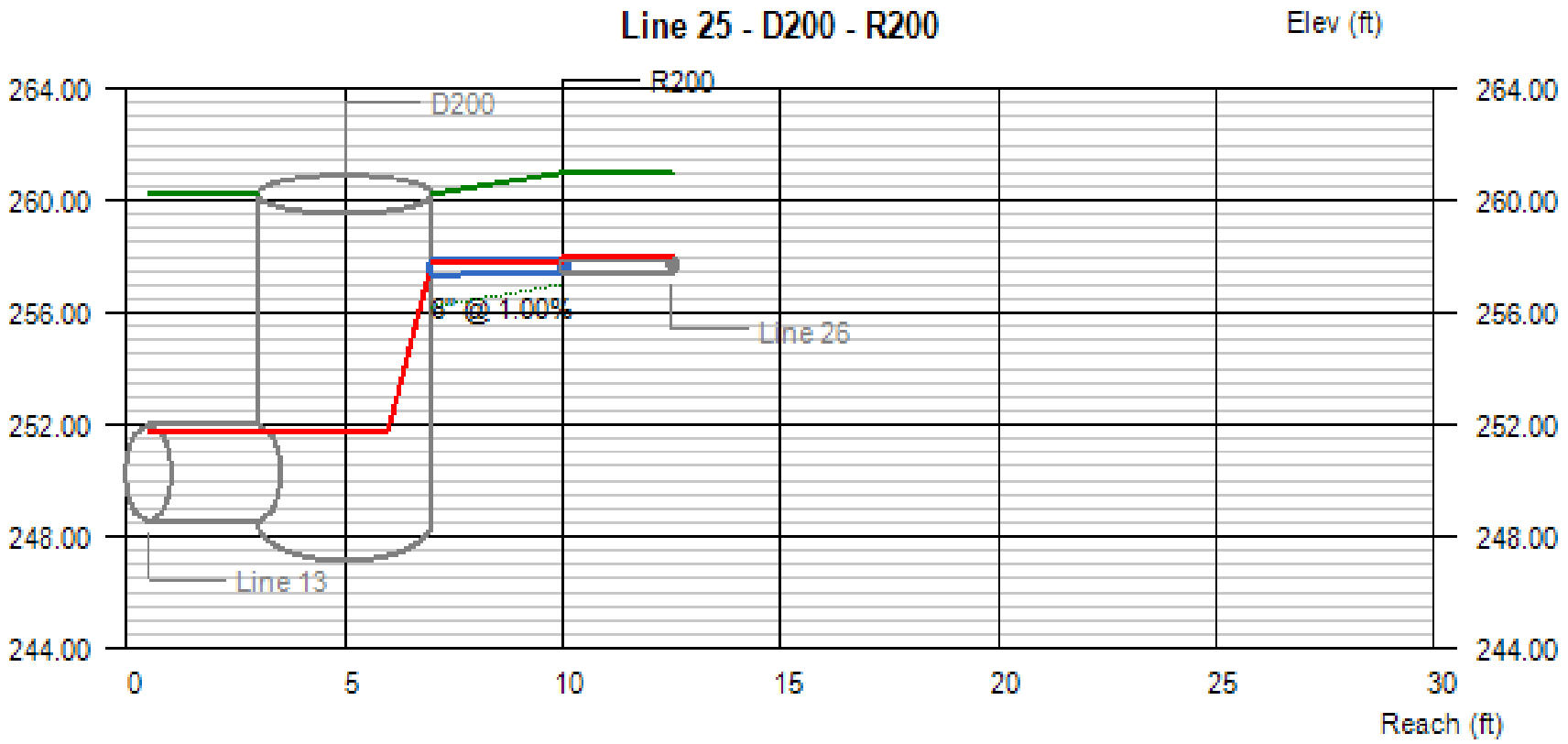
Line Profile (Line 24) - D210 - D211



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
24	1.42	255.85	256.38	1.25	1.25	1.81	258.14	258.17	258.19	1.15	1.15	4.65	1.77

Project File: | No. Lines: 138 | Run Date: 10/31/2019

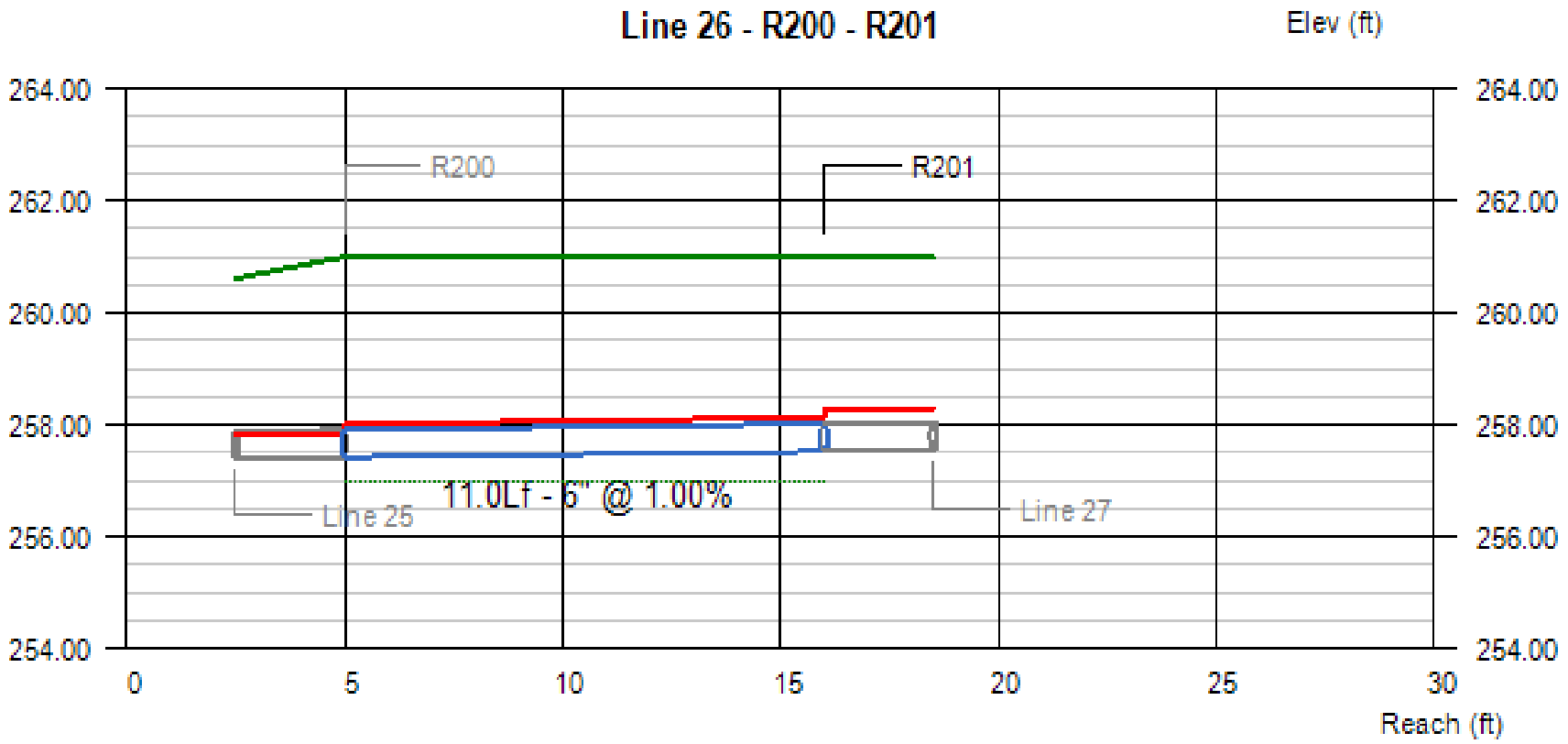
Line Profile (Line 25) - D200 - R200



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
25	0.59	257.36	257.41	0.44	0.44	0.60	257.80	257.85	258.01	3.23	3.23	2.36	3.09

Project File: | No. Lines: 138 | Run Date: 10/31/2019

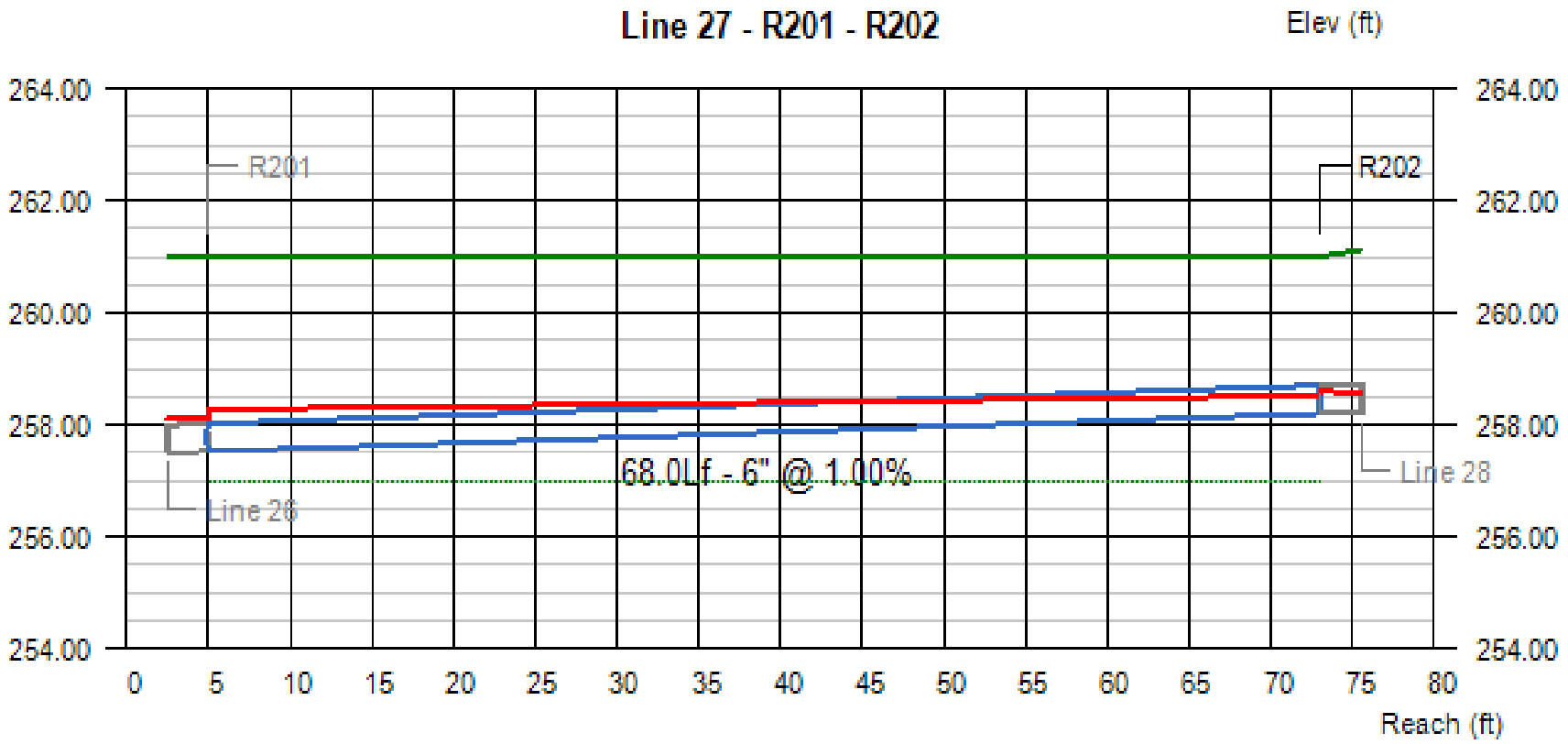
Line Profile (Line 26) - R200 - R201



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
26	0.59	257.41	257.52	0.50	0.50	0.76	258.01	258.13	258.28	3.01	3.01	3.09	2.98

Project File: | No. Lines: 138 | Run Date: 10/31/2019

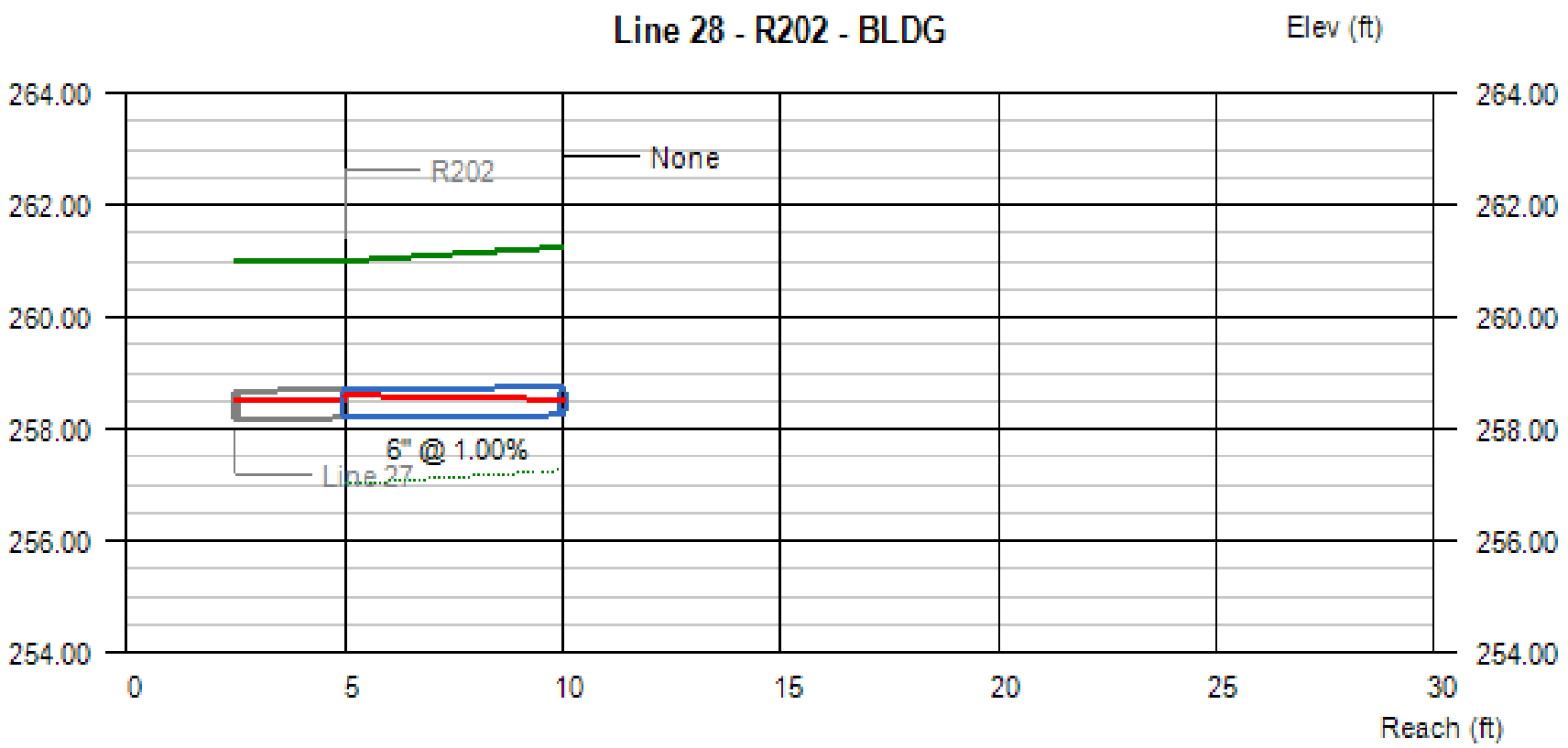
Line Profile (Line 27) - R201 - R202



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
27	0.30	257.52	258.20	0.50	0.32	0.40	258.28	258.52	258.60	1.54	2.31	2.98	2.30

Project File: | No. Lines: 138 | Run Date: 10/31/2019

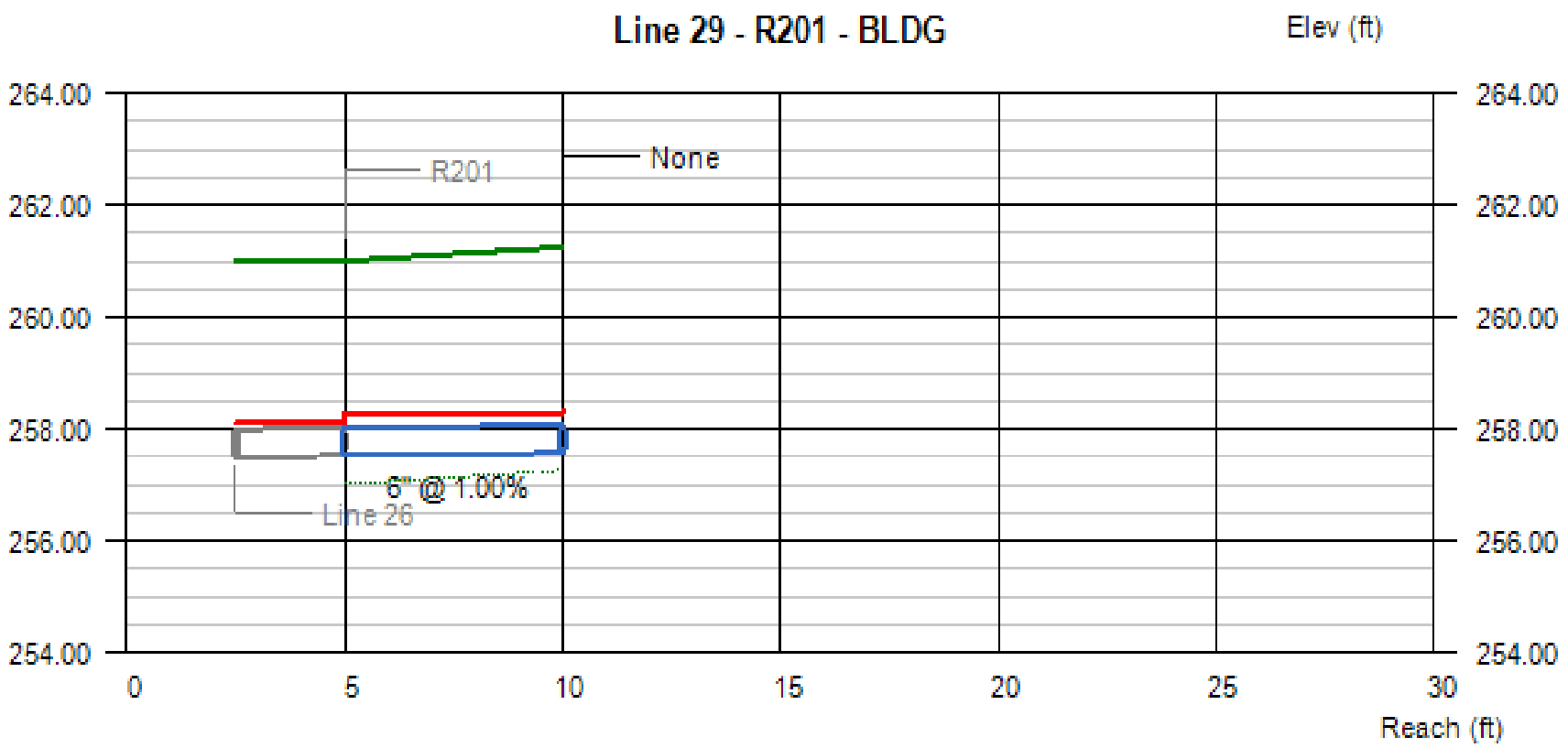
Line Profile (Line 28) - R202 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
28	0.30	258.20	258.25	0.40	0.28	0.28	258.60	258.53	258.53	1.80	2.70	2.30	2.50

Project File: | No. Lines: 138 | Run Date: 10/31/2019

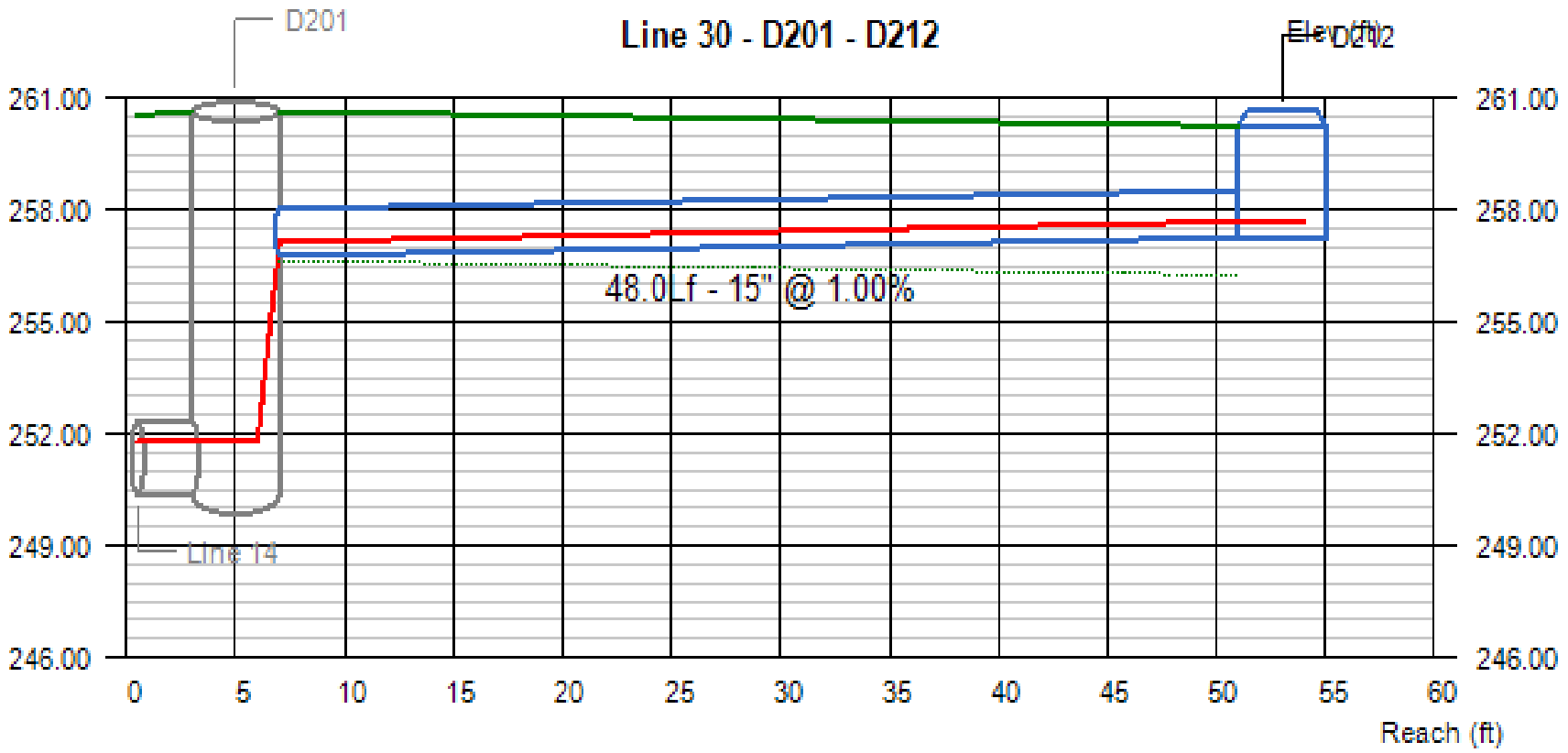
Line Profile (Line 29) - R201 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
29	0.30	257.52	257.57	0.50	0.50	0.76	258.28	258.29	258.33	1.54	1.54	2.98	3.18

Project File: | No. Lines: 138 | Run Date: 10/31/2019

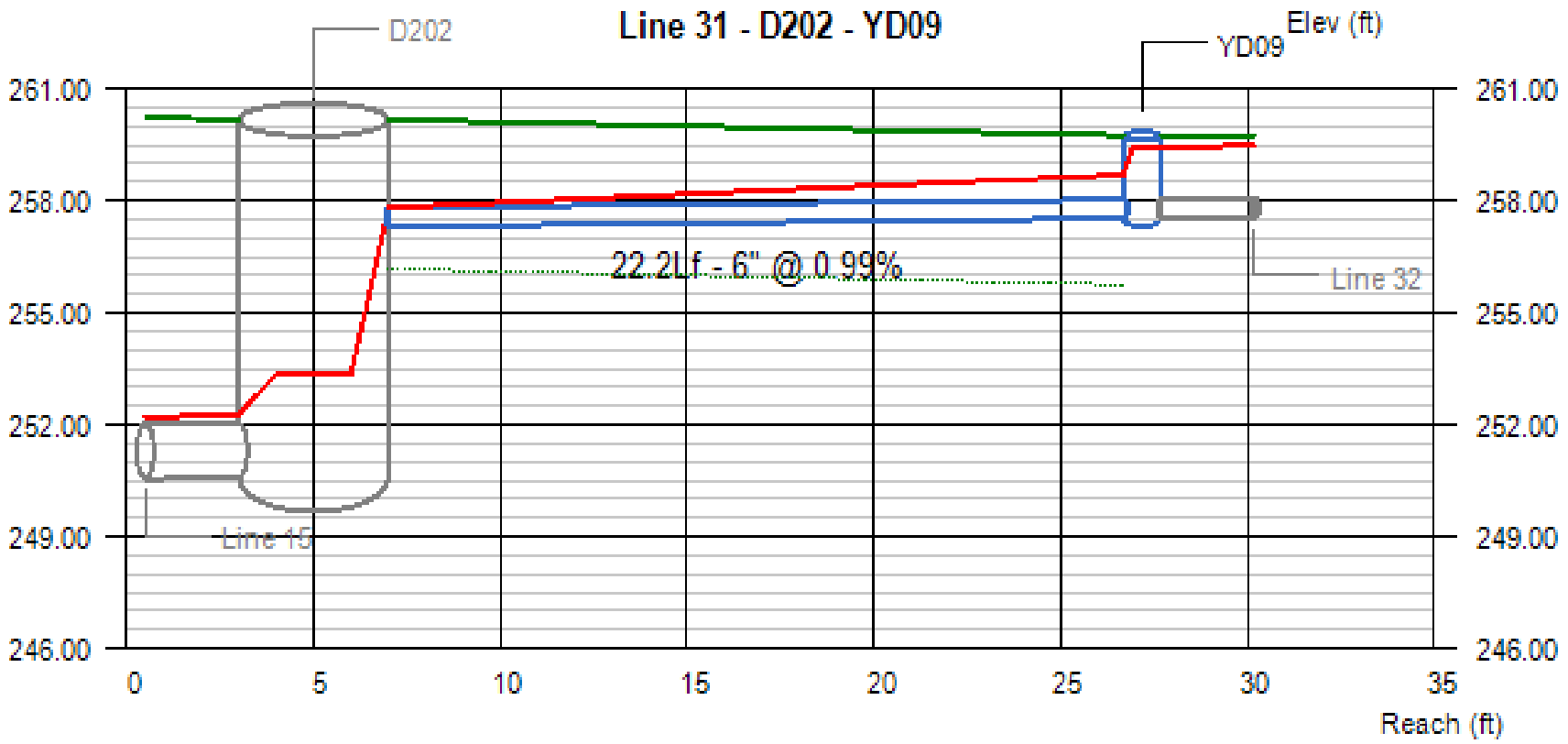
Line Profile (Line 30) - D201 - D212



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
30	1.18	256.77	257.25	0.36	0.43	0.43	257.13	257.68	257.68	4.01	3.18	2.61	1.75

Project File: | No. Lines: 138 | Run Date: 10/31/2019

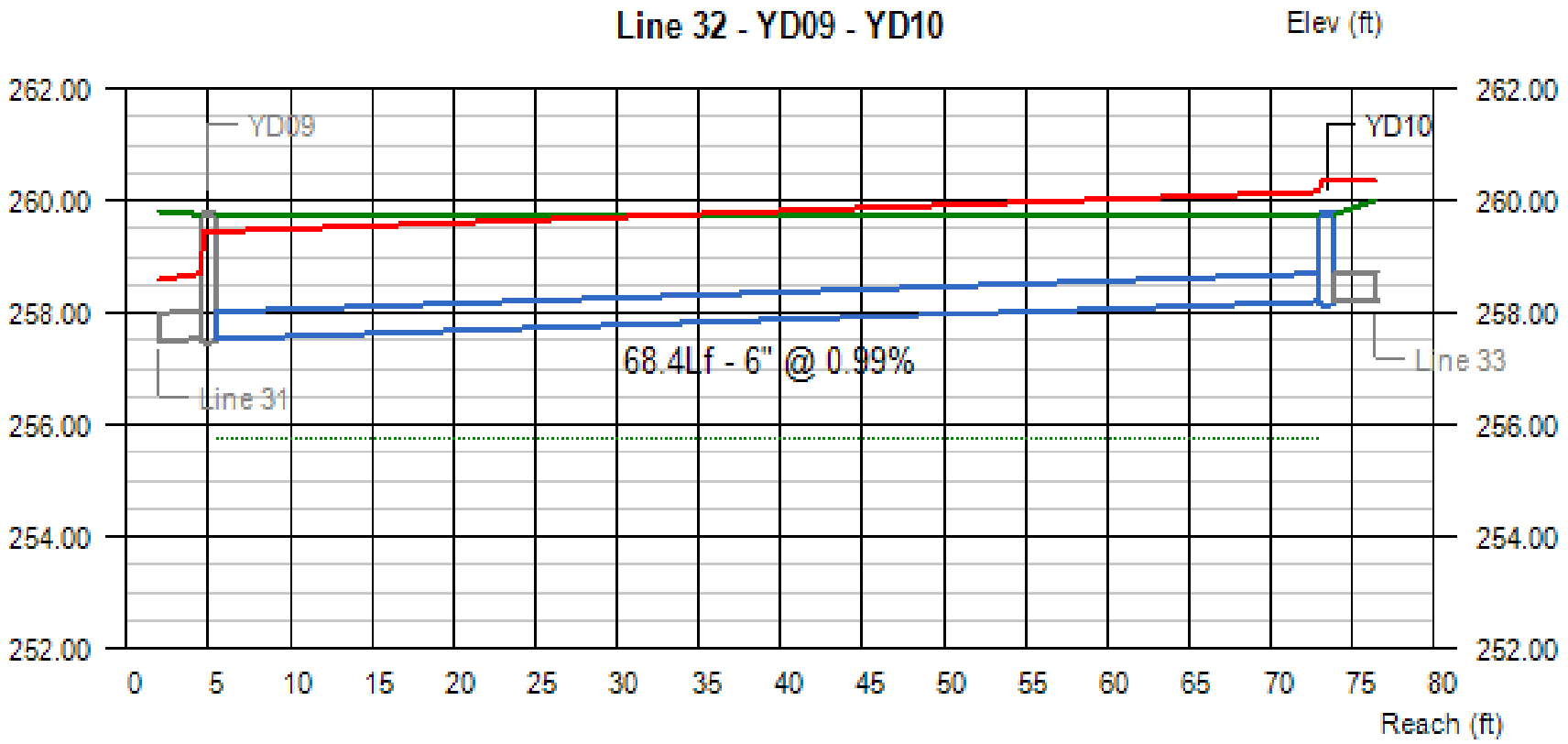
Line Profile (Line 31) - D202 - YD09



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
31	1.12	257.30	257.52	0.50	0.50	1.93	257.80	258.69	259.45	5.73	5.73	2.37	1.73

Project File: | No. Lines: 138 | Run Date: 10/31/2019

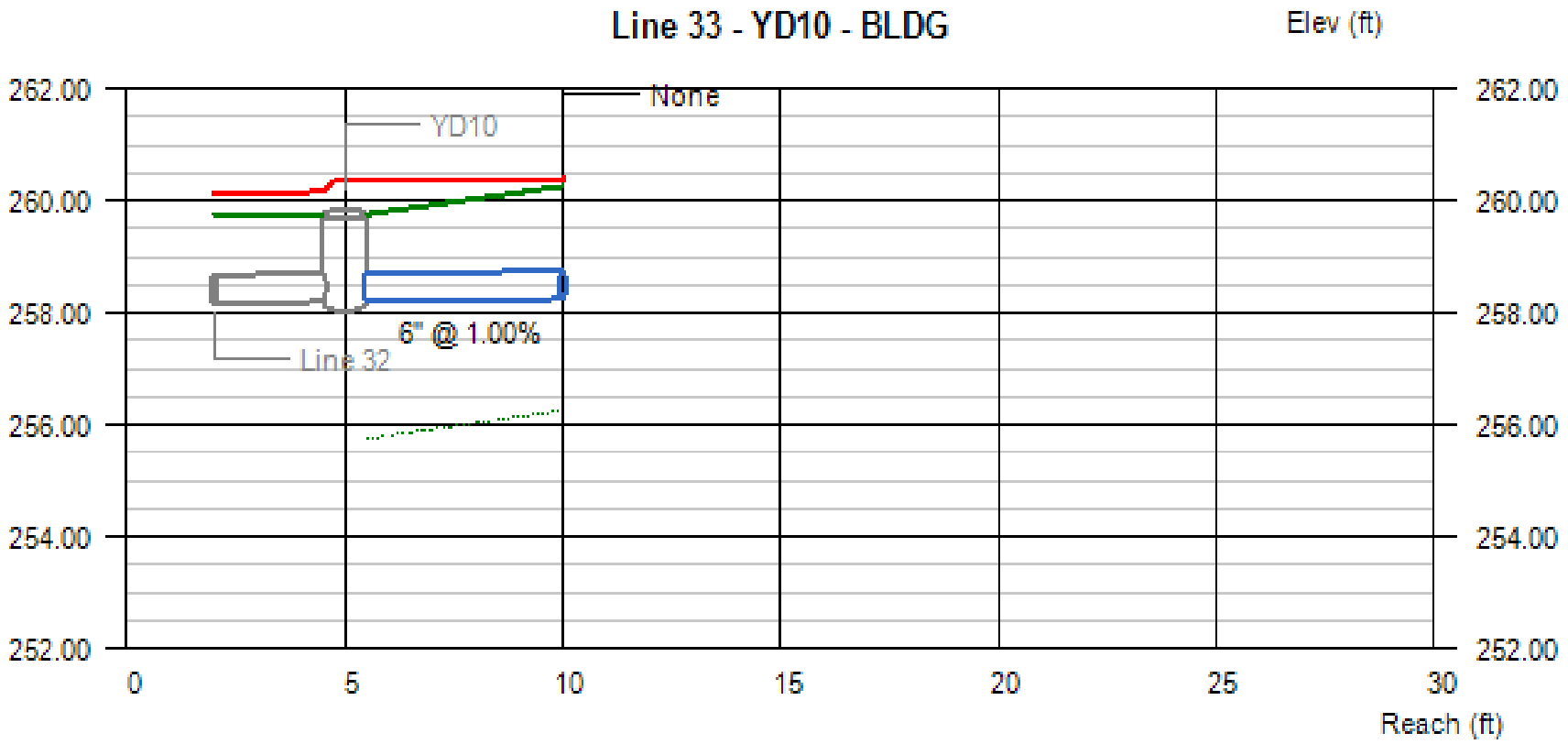
Line Profile (Line 32) - YD09 - YD10



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
32	0.57	257.52	258.20	0.50	0.50	2.15	259.45	260.15	260.35	2.90	2.89	1.73	1.05

Project File: | No. Lines: 138 | Run Date: 10/31/2019

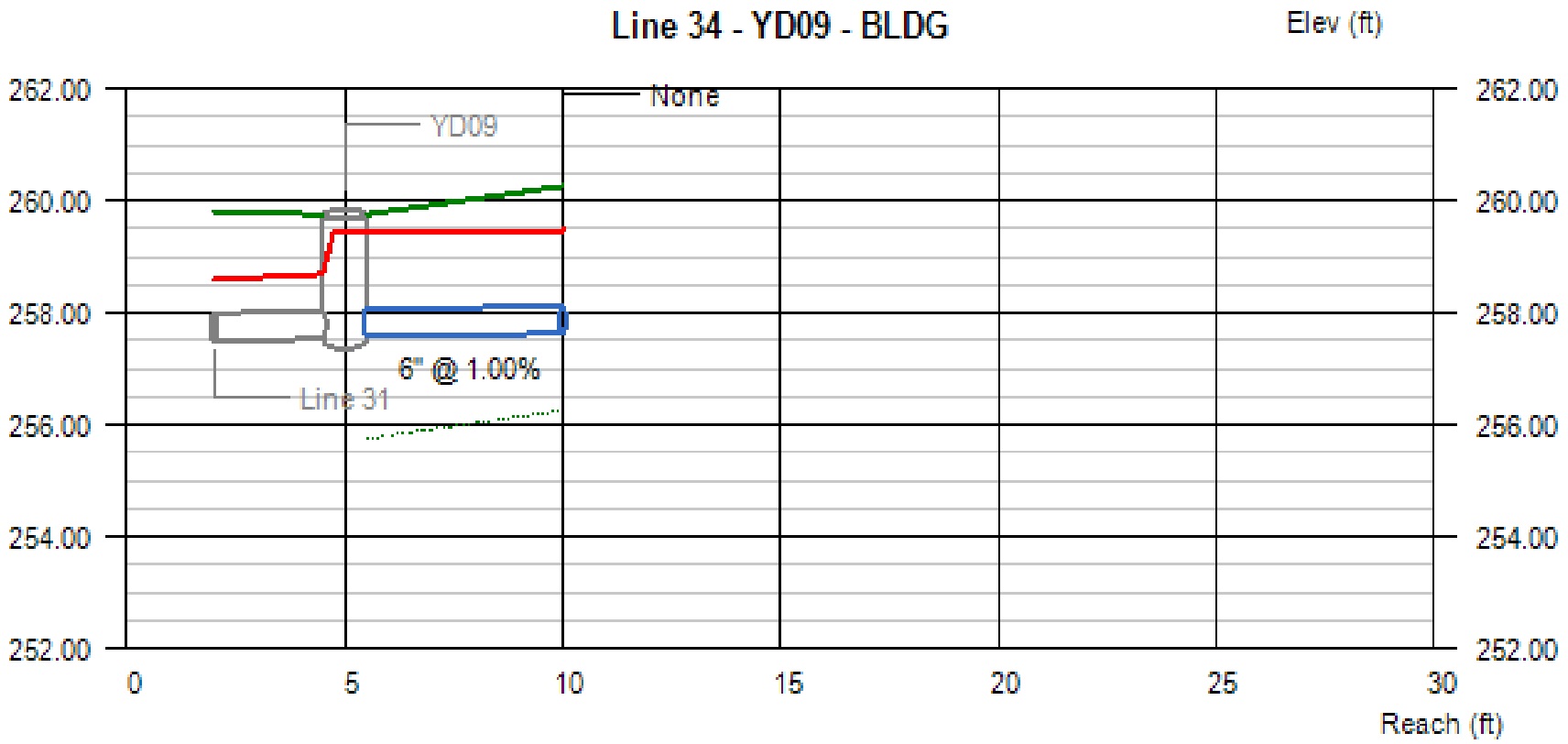
Line Profile (Line 33) - YD10 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
33	0.30	258.20	258.25	0.50	0.50	2.15	260.35	260.36	260.40	1.54	1.54	1.05	1.50

Project File: | No. Lines: 138 | Run Date: 10/31/2019

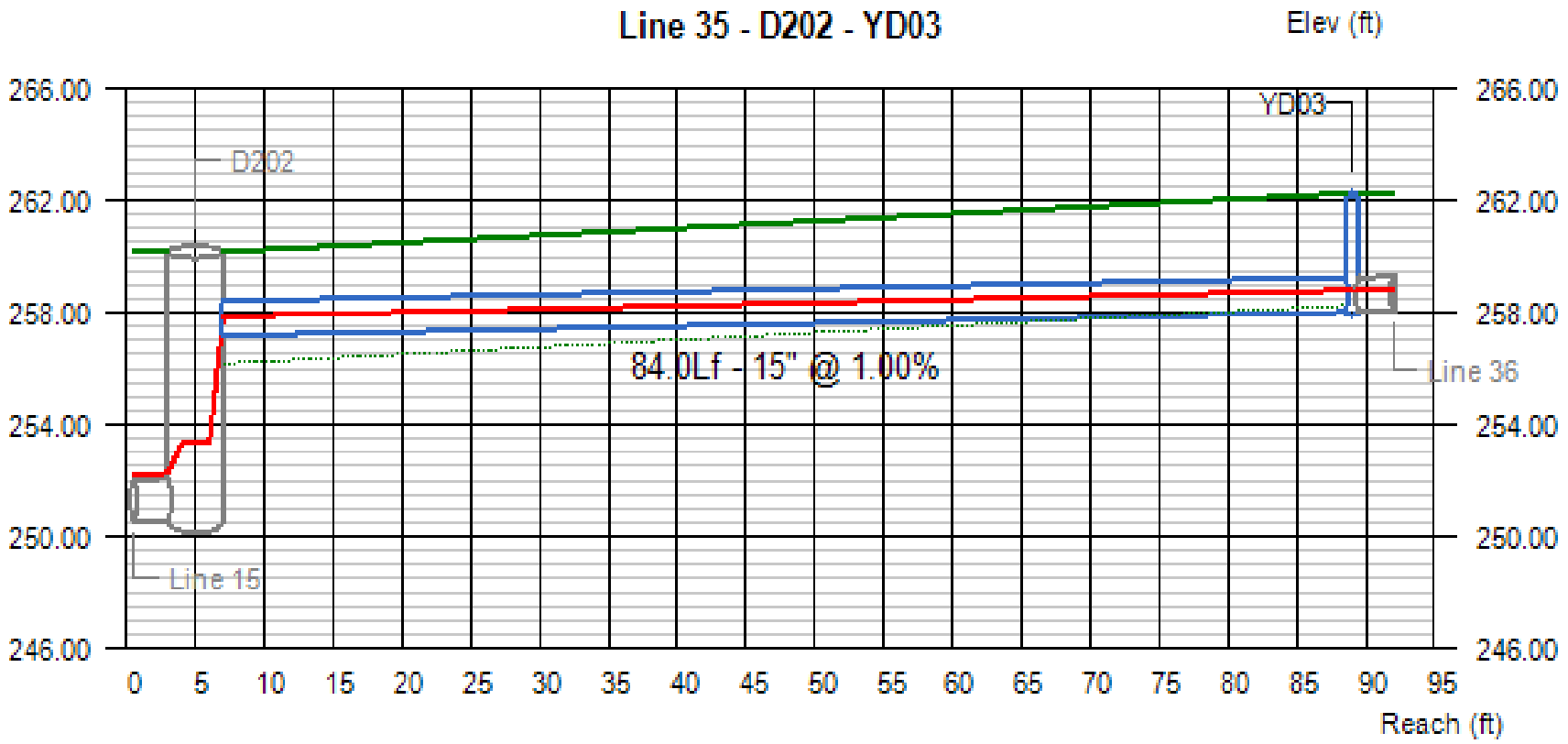
Line Profile (Line 34) - YD09 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
34	0.30	257.57	257.62	0.50	0.50	1.88	259.45	259.46	259.50	1.54	1.54	1.68	2.13

Project File: | No. Lines: 138 | Run Date: 10/31/2019

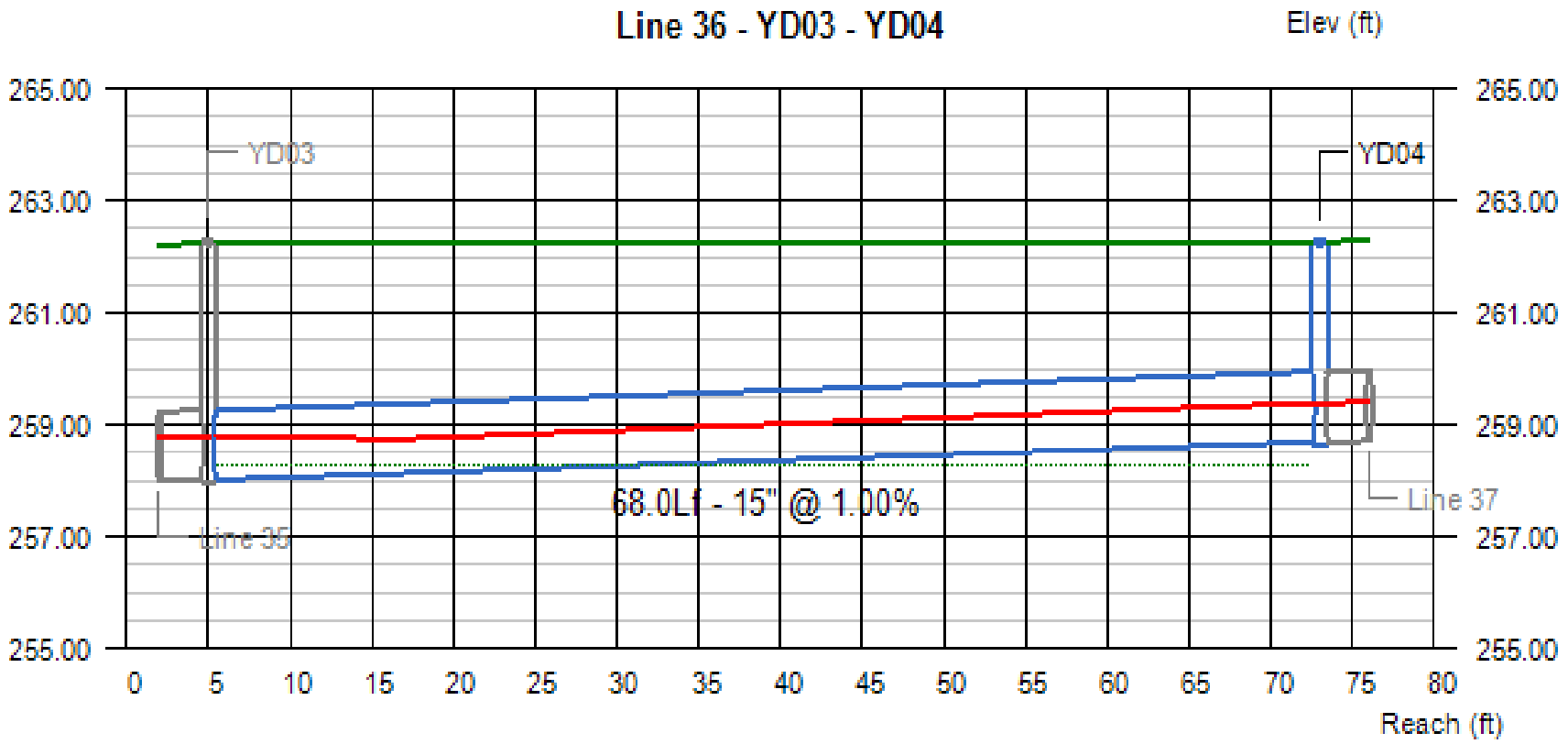
Line Profile (Line 35) - D202 - YD03



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
35	3.83	257.17	258.01	0.69	0.79	0.79	257.86	258.80	258.80	5.48	4.68	1.75	2.99

Project File:	No. Lines: 138	Run Date: 10/31/2019

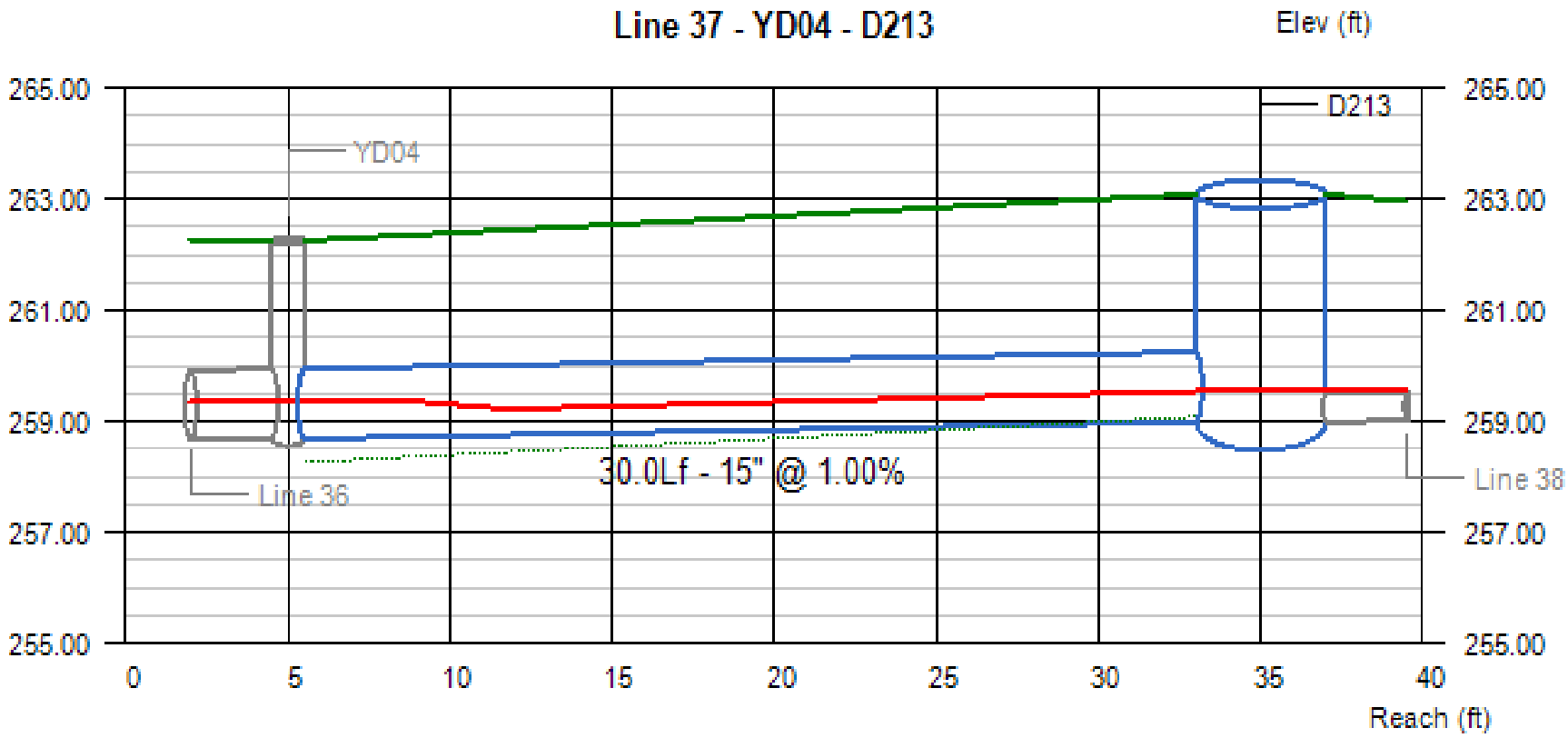
Line Profile (Line 36) - YD03 - YD04



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
36	3.02	258.01	258.69	0.79	0.70	0.70	258.80	259.39 j	259.39	3.69	4.28	2.99	2.31

Project File: | No. Lines: 138 | Run Date: 10/31/2019

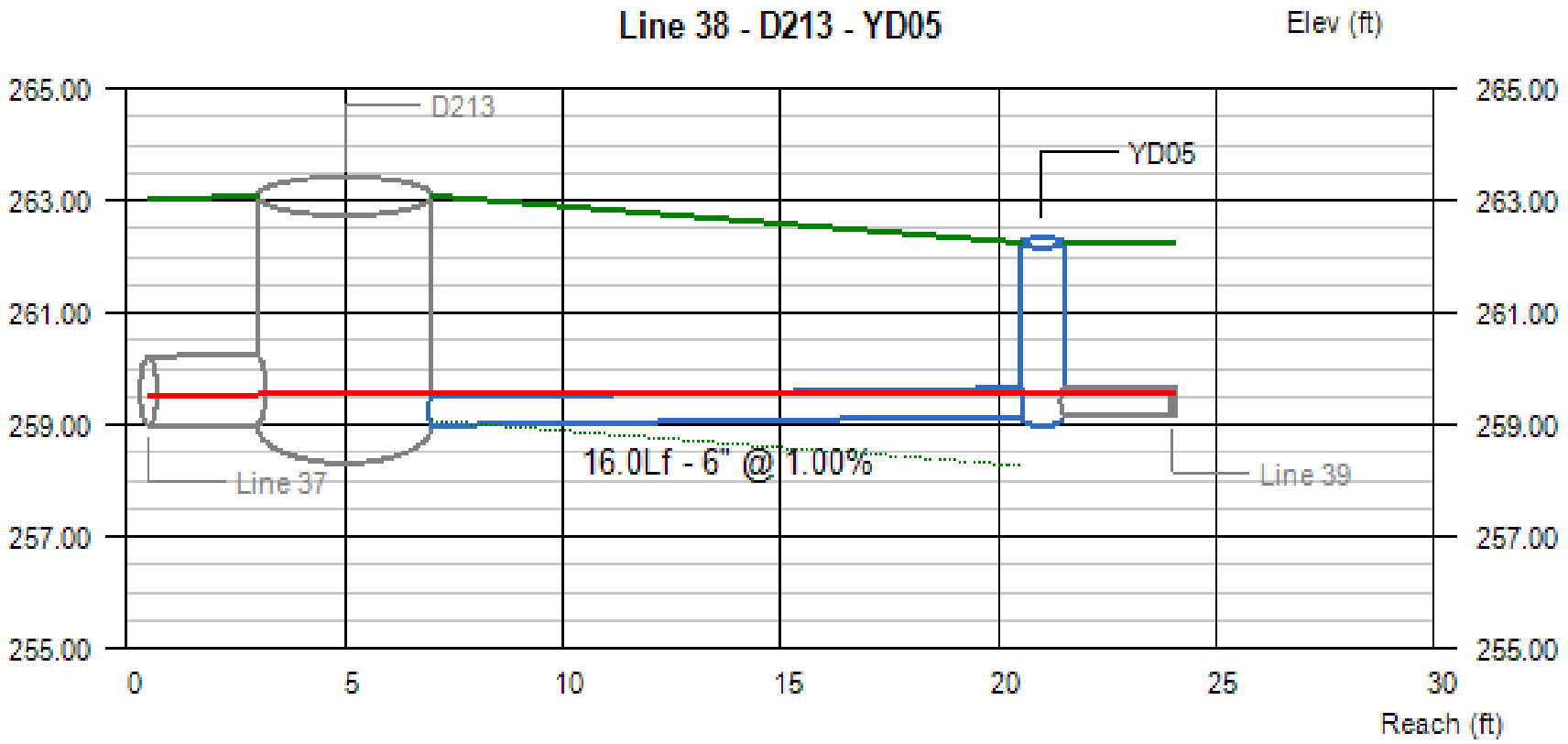
Line Profile (Line 37) - YD04 - D213



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
37	1.91	258.69	258.99	0.70	0.55	0.55	259.39	259.54 j	259.54	2.70	3.68	2.31	2.84

Project File: | No. Lines: 138 | Run Date: 10/31/2019

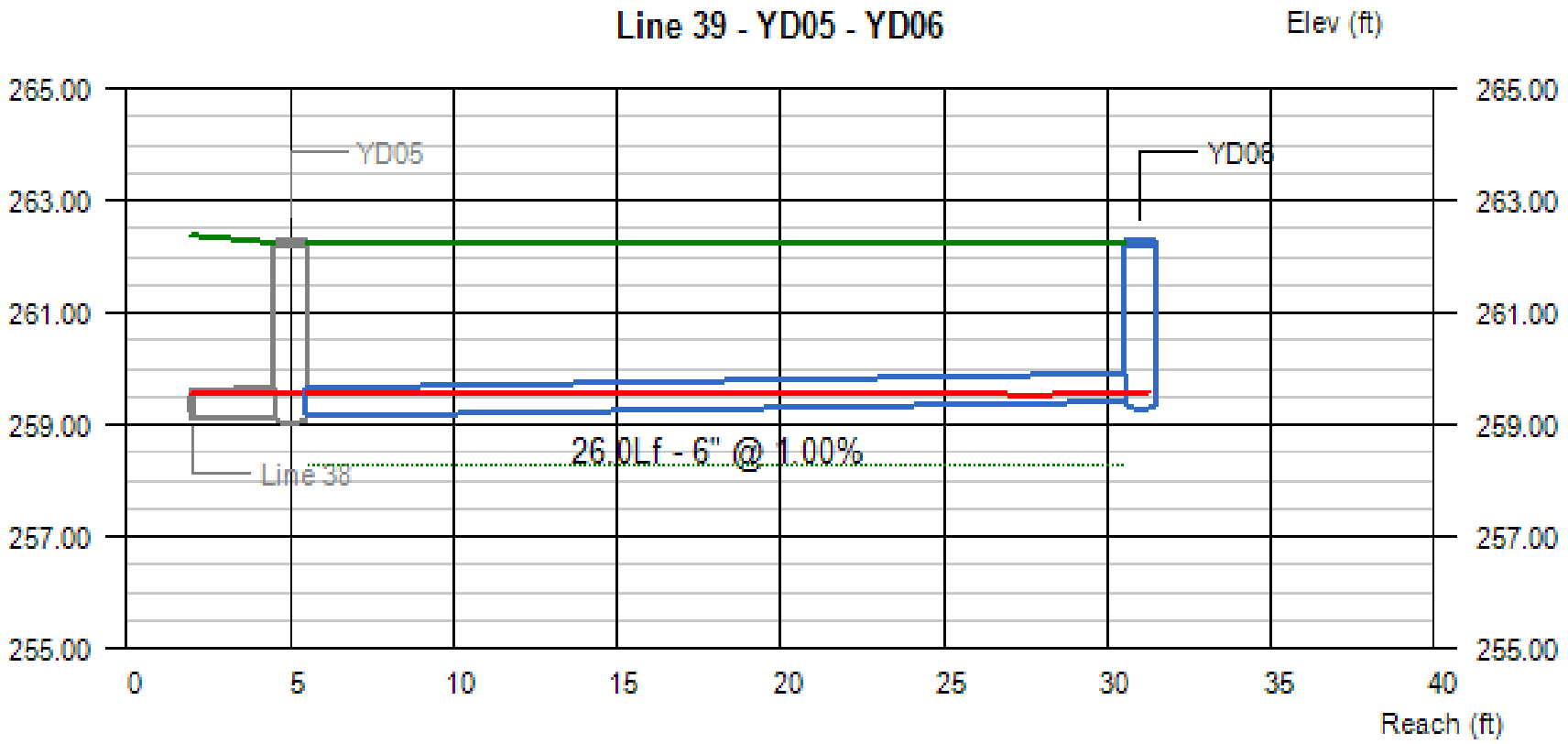
Line Profile (Line 38) - D213 - YD05



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
38	0.23	258.99	259.15	0.50	0.41	0.42	259.54	259.56	259.57	1.16	1.33	3.59	2.60

Project File: | No. Lines: 138 | Run Date: 10/31/2019

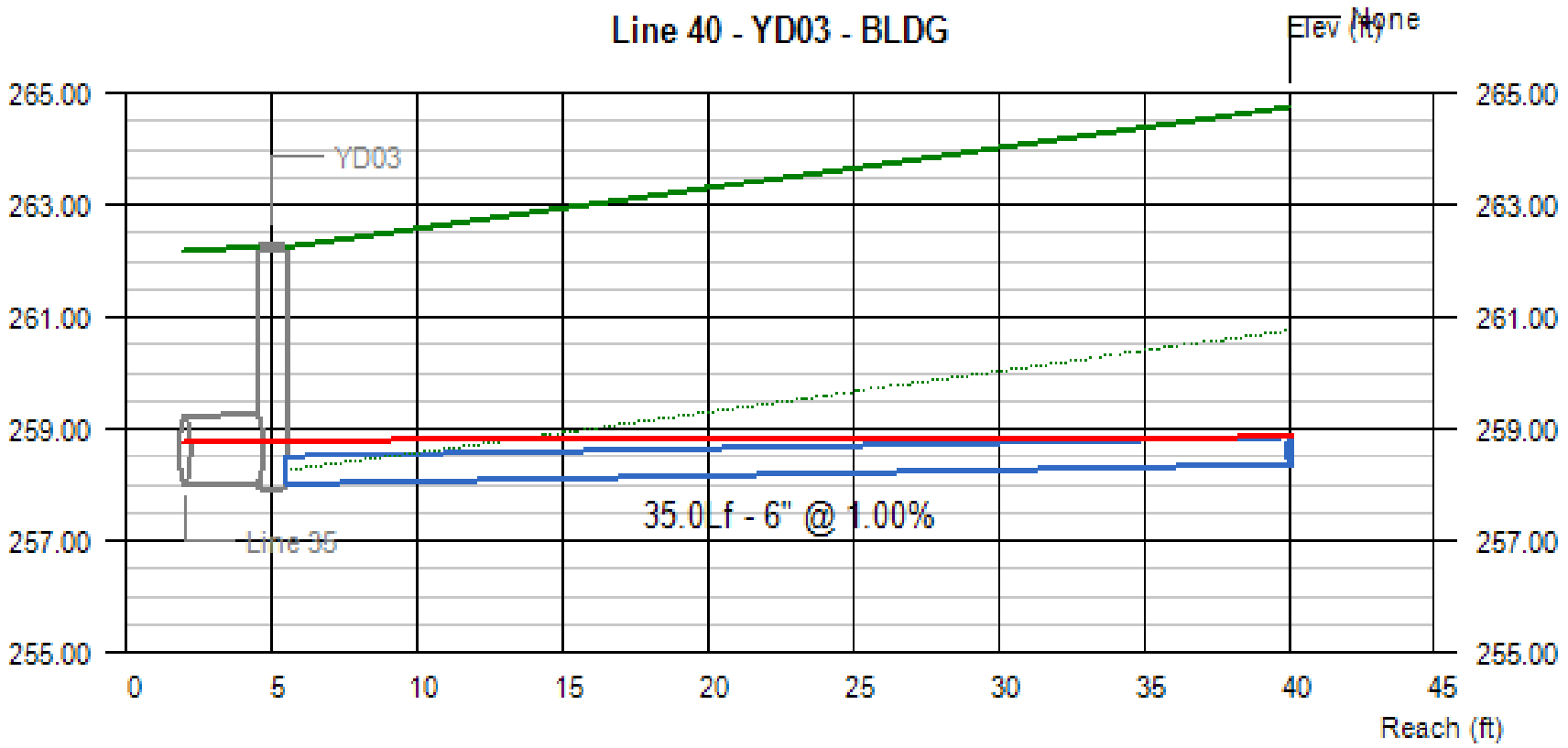
Line Profile (Line 39) - YD05 - YD06



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
39	0.12	259.15	259.41	0.42	0.17	0.17	259.57	259.58 j	259.58	0.65	1.99	2.60	2.34

Project File: | No. Lines: 138 | Run Date: 10/31/2019

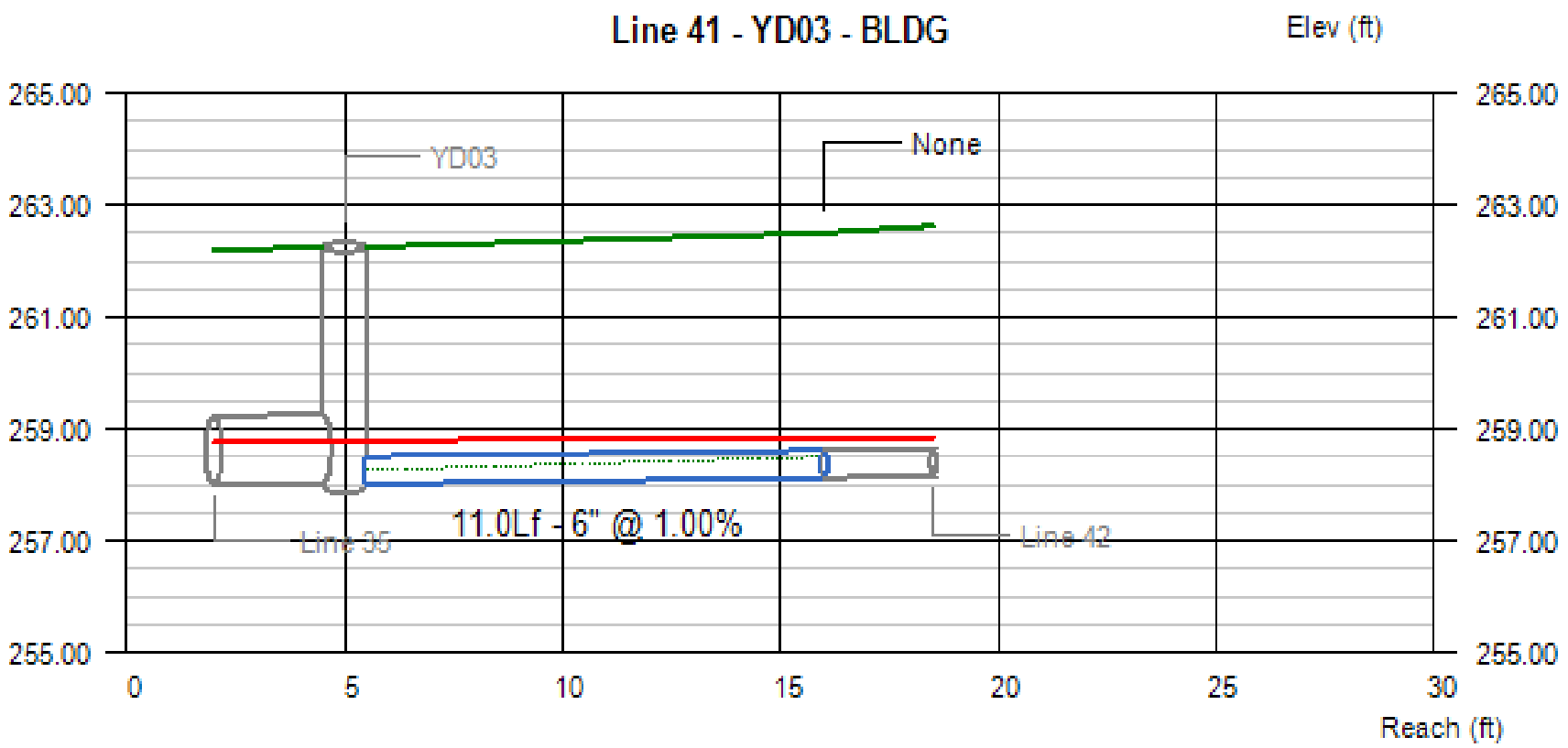
Line Profile (Line 40) - YD03 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
40	0.30	258.01	258.36	0.50	0.50	0.54	258.80	258.86	258.90	1.54	1.54	3.74	5.89

Project File: | No. Lines: 138 | Run Date: 10/31/2019

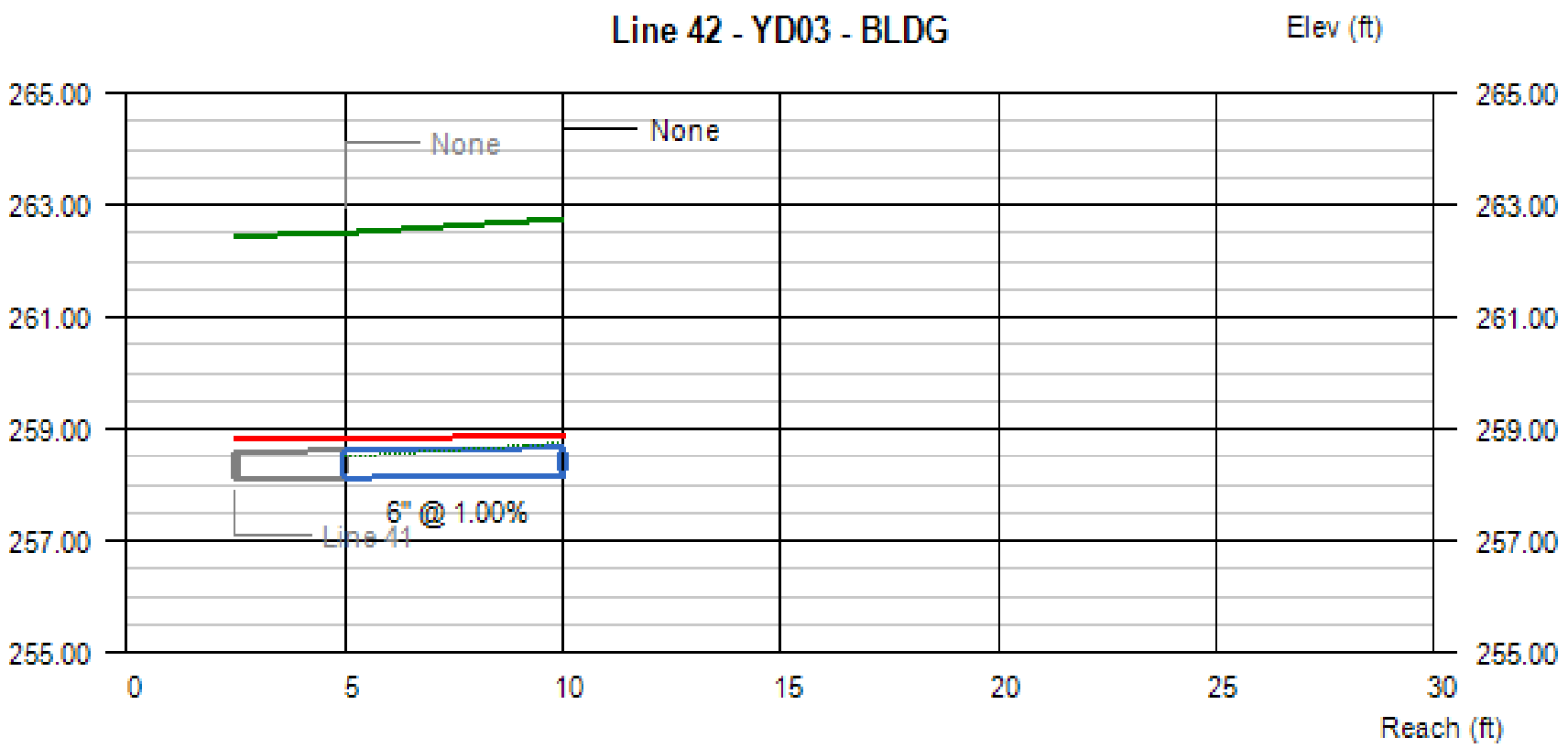
Line Profile (Line 41) - YD03 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
41	0.30	258.01	258.12	0.50	0.50	0.73	258.80	258.83	258.85	1.54	1.54	3.74	3.88

Project File: | No. Lines: 138 | Run Date: 10/31/2019

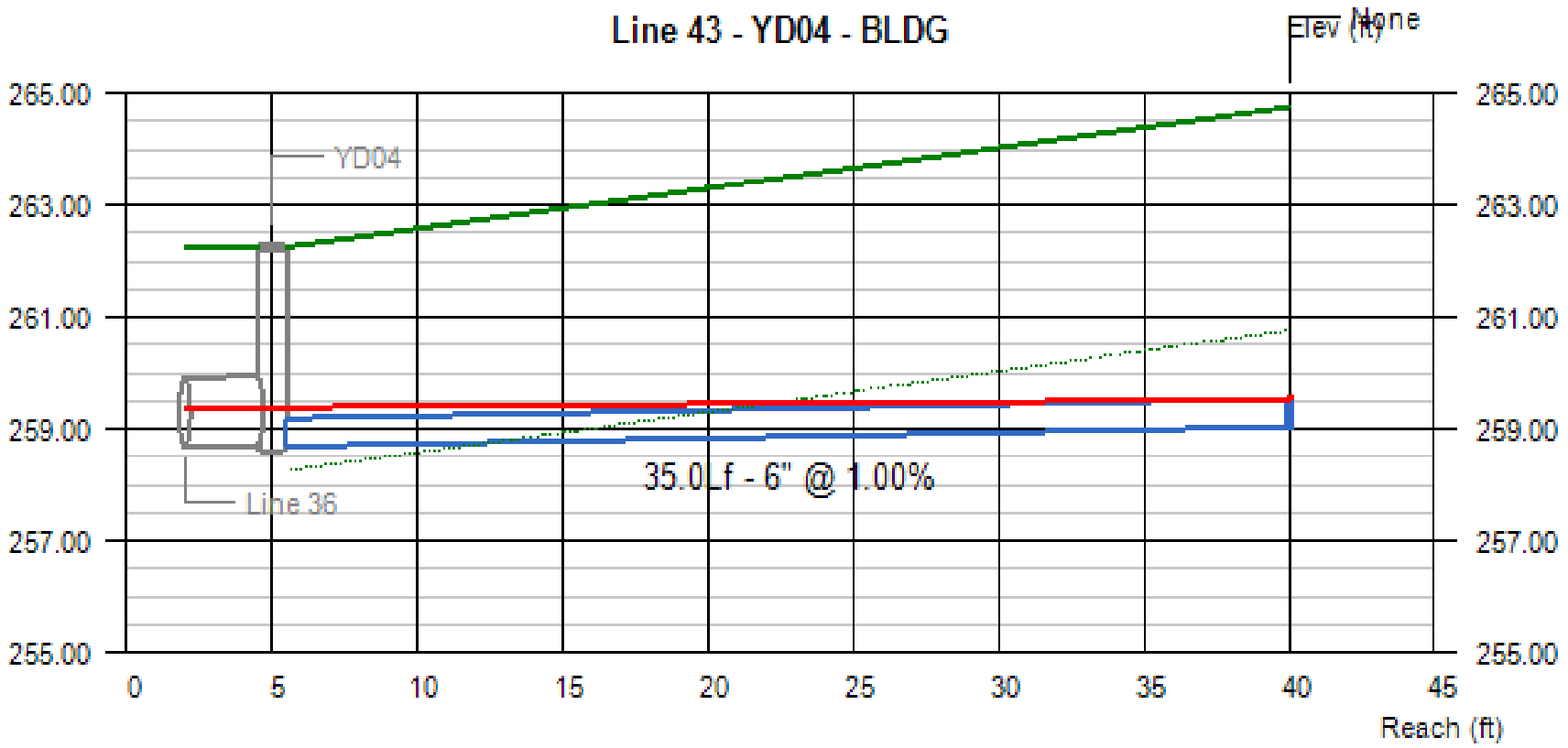
Line Profile (Line 42) - YD03 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
42	0.30	258.12	258.17	0.50	0.50	0.73	258.85	258.86	258.90	1.54	1.54	3.88	4.08

Project File: | No. Lines: 138 | Run Date: 10/31/2019

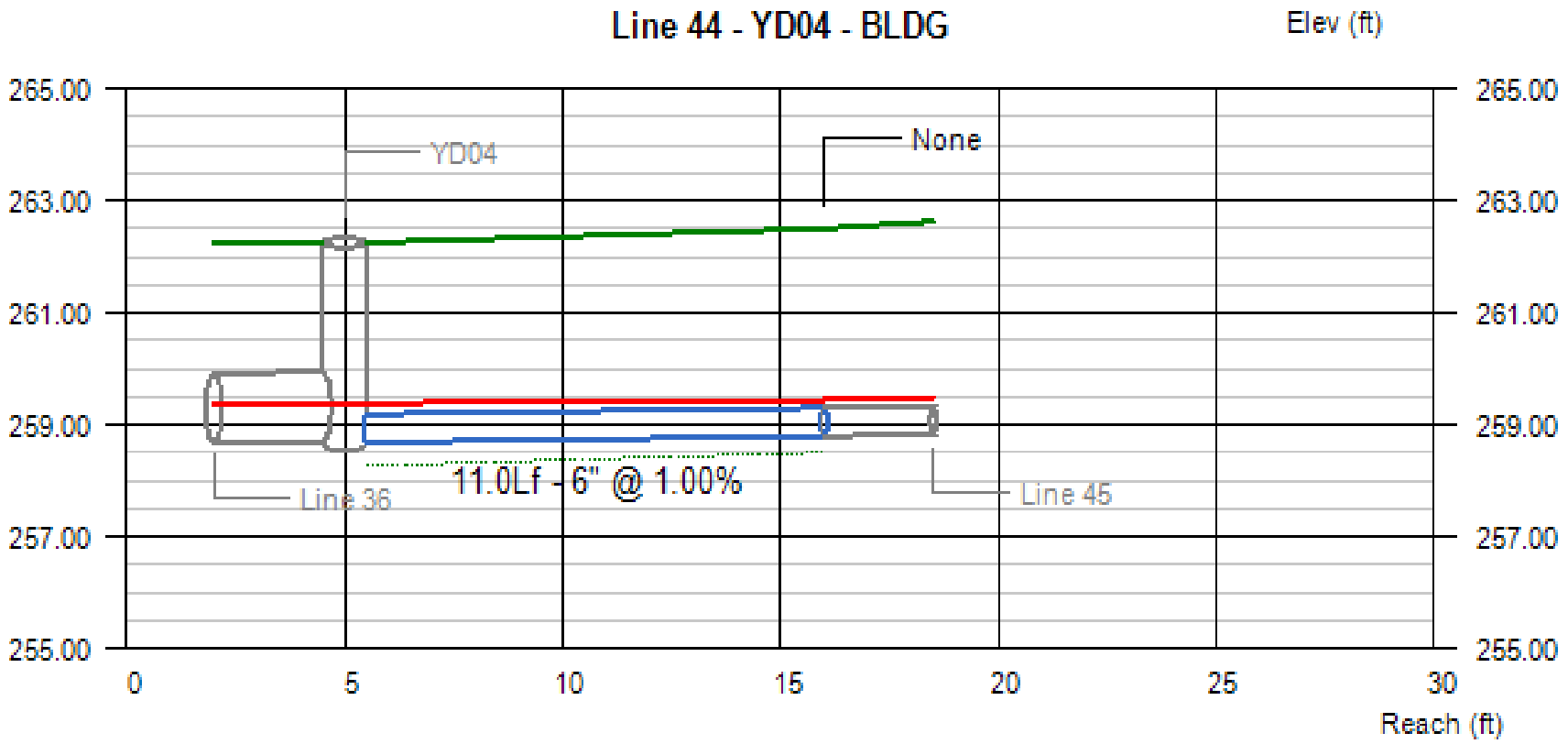
Line Profile (Line 43) - YD04 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
43	0.36	258.69	259.04	0.50	0.48	0.54	259.39	259.52	259.58	1.85	1.86	3.06	5.21

Project File: | No. Lines: 138 | Run Date: 10/31/2019

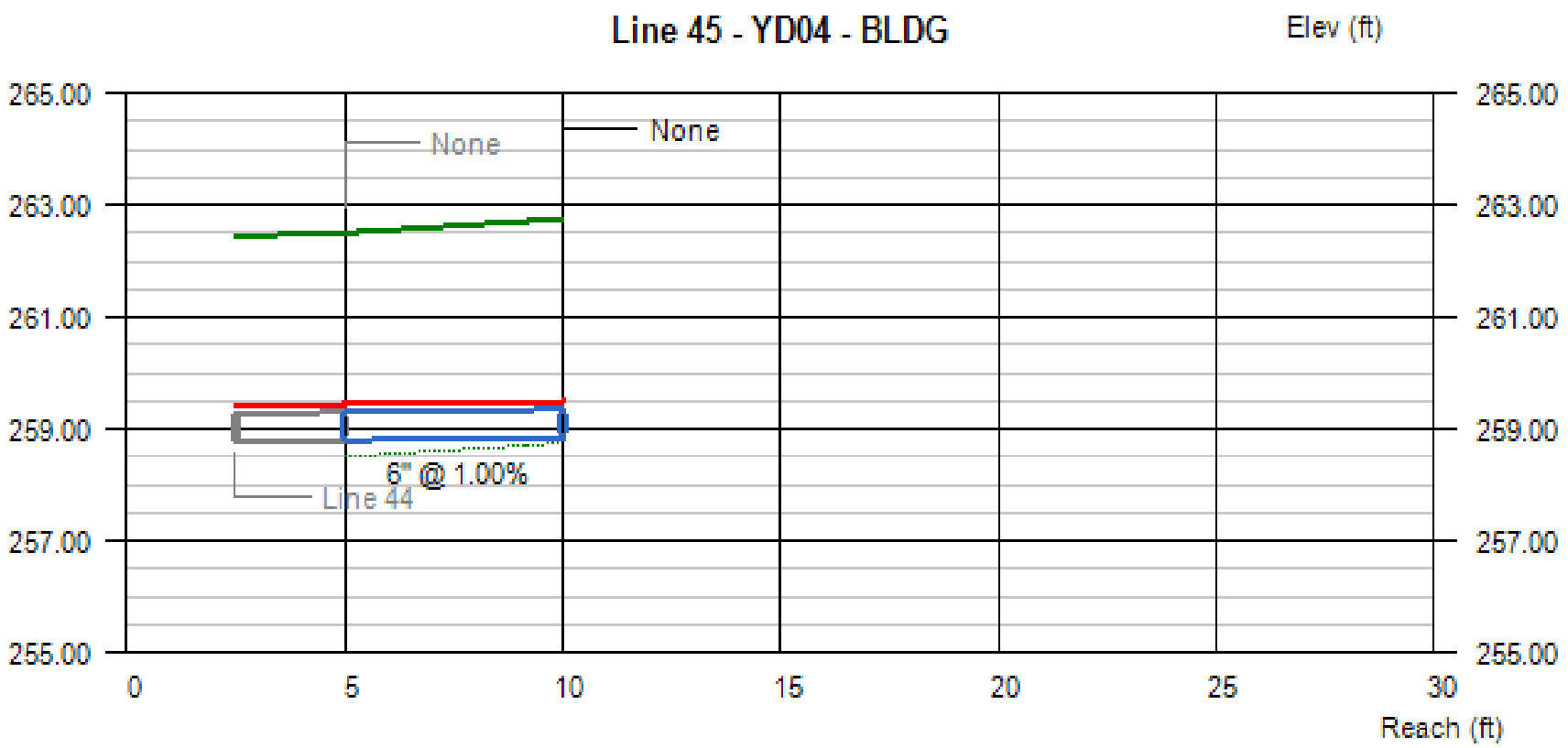
Line Profile (Line 44) - YD04 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
44	0.36	258.69	258.80	0.50	0.50	0.66	259.39	259.43	259.46	1.84	1.84	3.06	3.20

Project File: | No. Lines: 138 | Run Date: 10/31/2019

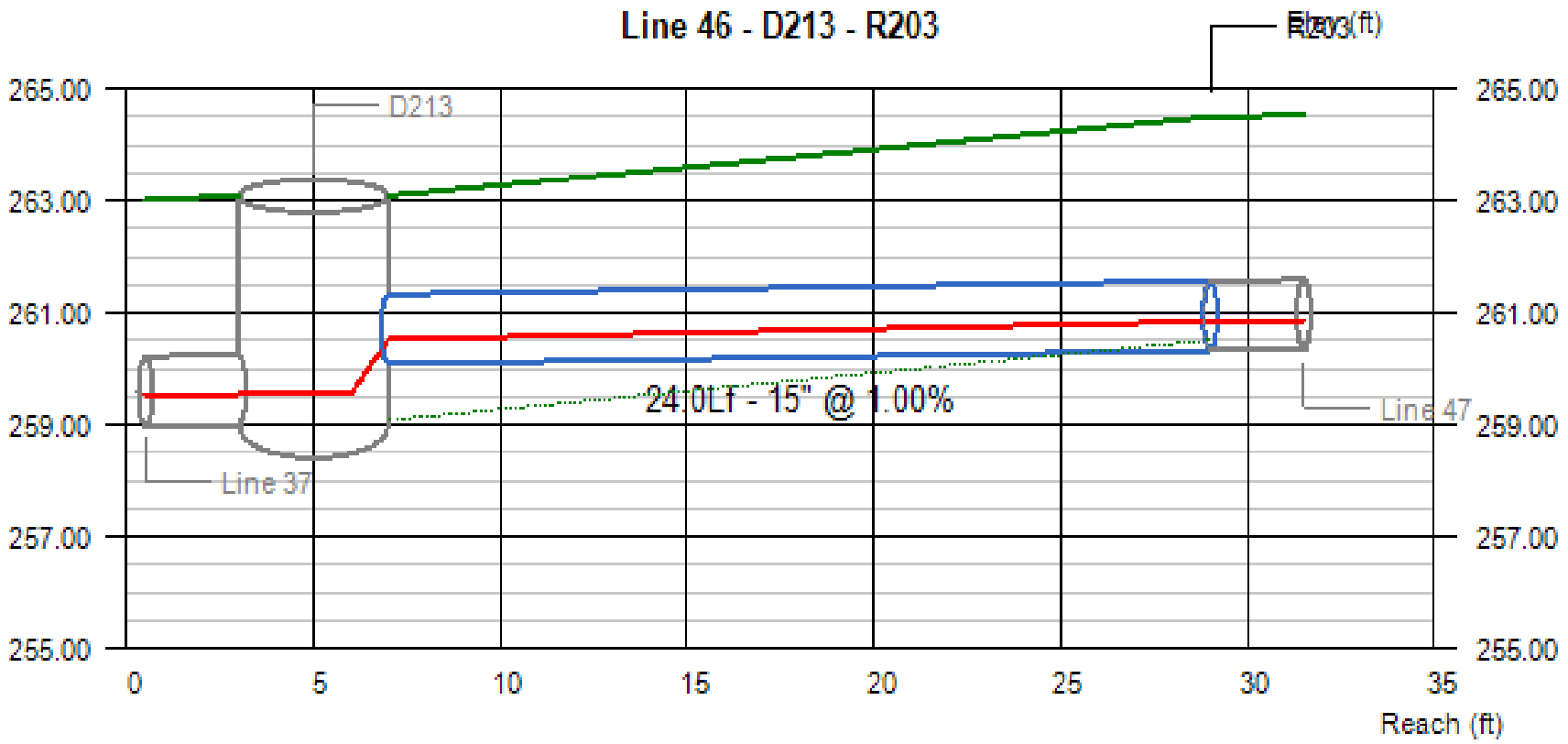
Line Profile (Line 45) - YD04 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
45	0.36	258.80	258.85	0.50	0.50	0.68	259.46	259.48	259.53	1.85	1.85	3.20	3.40

Project File: | No. Lines: 138 | Run Date: 10/31/2019

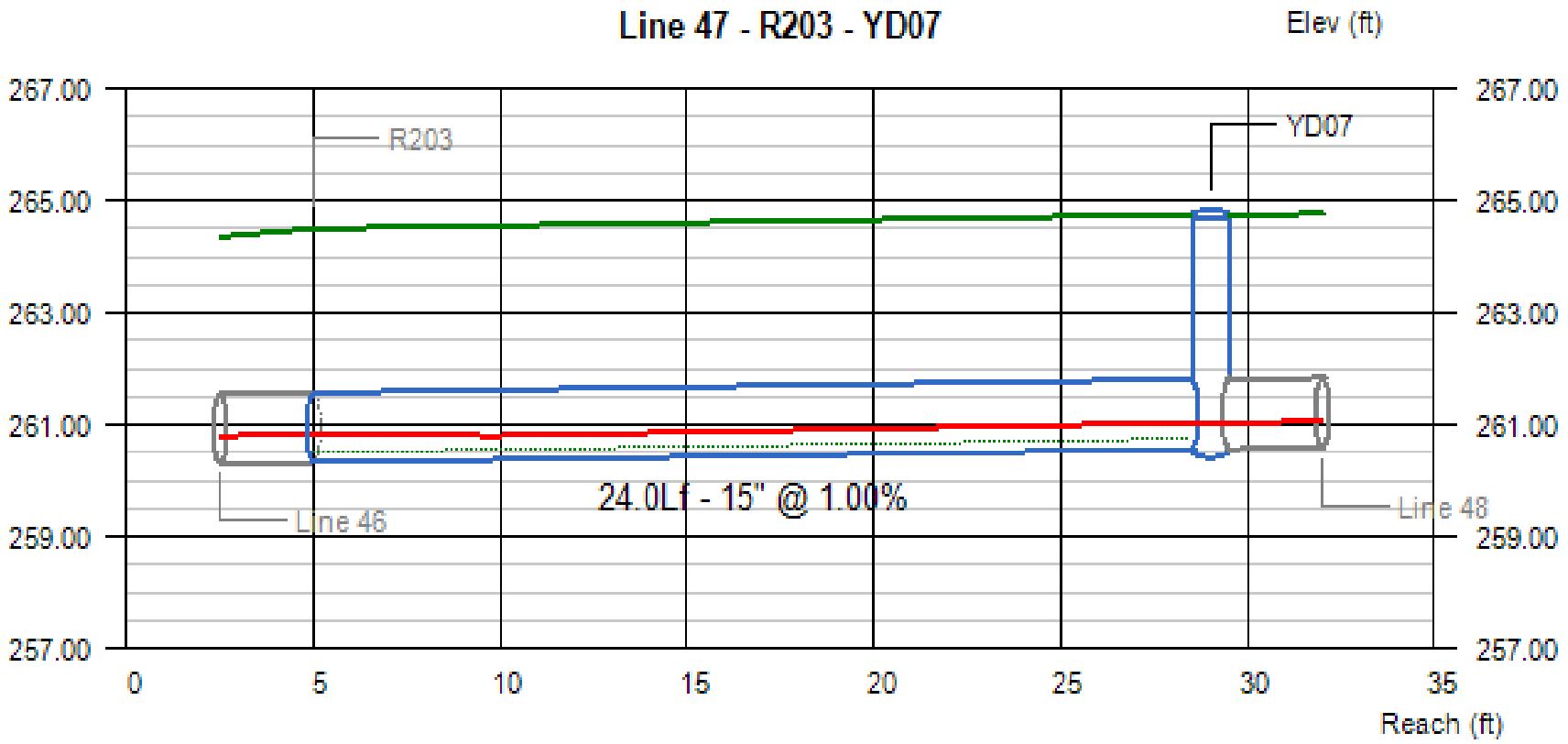
Line Profile (Line 46) - D213 - R203



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
46	1.69	260.08	260.32	0.44	0.52	0.52	260.52	260.84	260.84	4.43	3.54	1.75	2.93

Project File: | No. Lines: 138 | Run Date: 10/31/2019

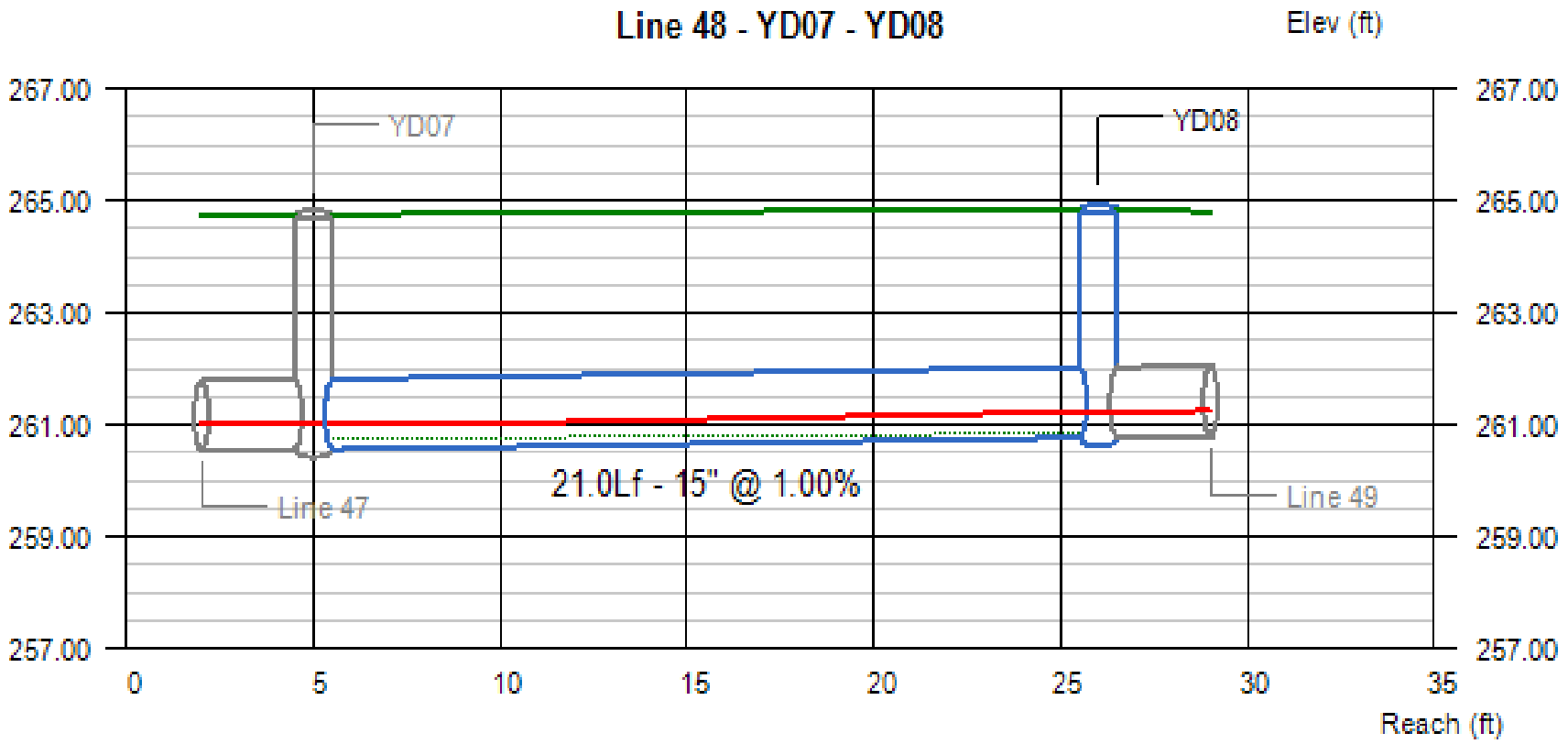
Line Profile (Line 47) - R203 - YD07



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
47	1.46	260.32	260.56	0.52	0.48	0.48	260.84	261.04 j	261.04	3.05	3.38	2.93	2.94

Project File: | No. Lines: 138 | Run Date: 10/31/2019

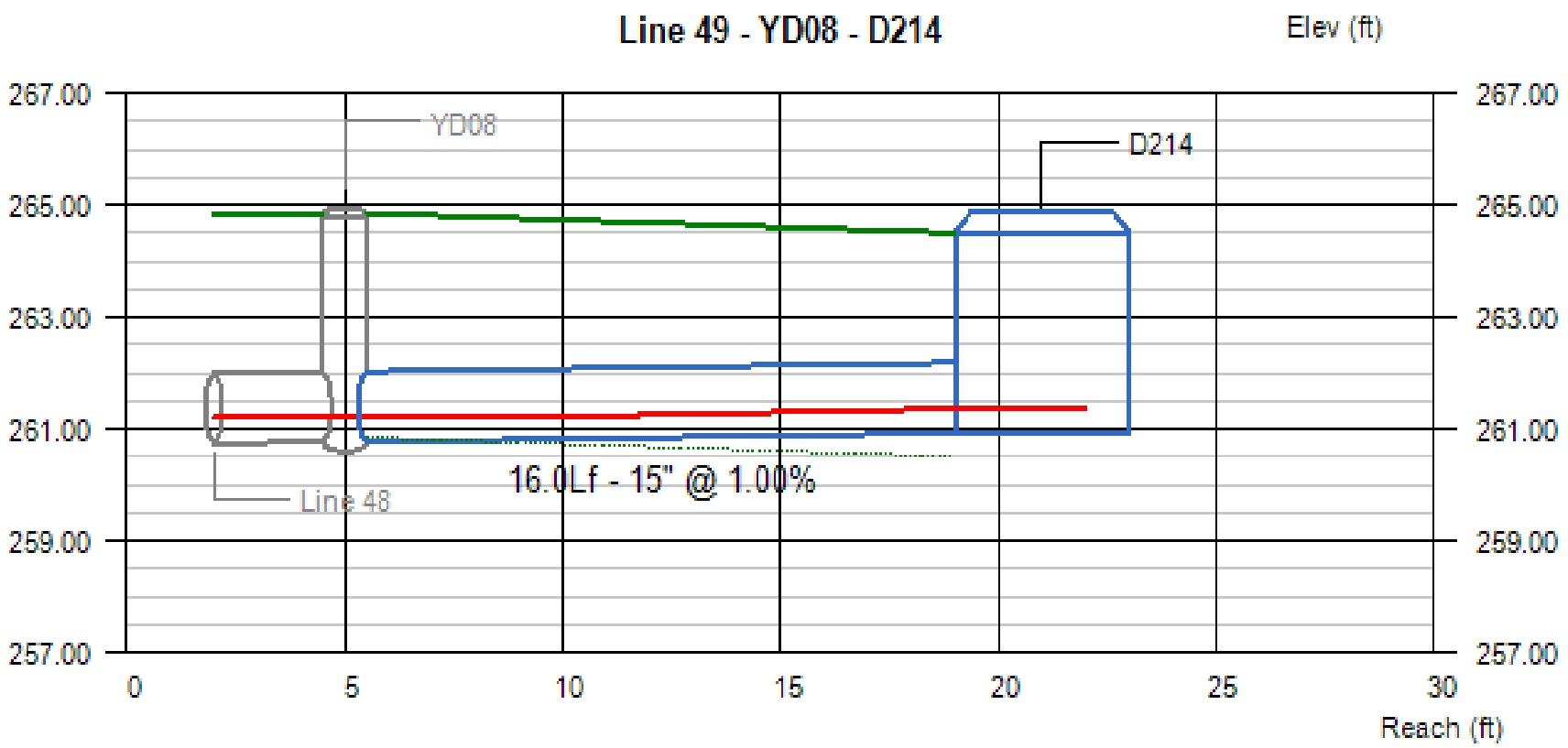
Line Profile (Line 48) - YD07 - YD08



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
48	1.36	260.56	260.77	0.48	0.46	0.46	261.04	261.23 j	261.23	3.15	3.31	2.94	2.83

Project File: | No. Lines: 138 | Run Date: 10/31/2019

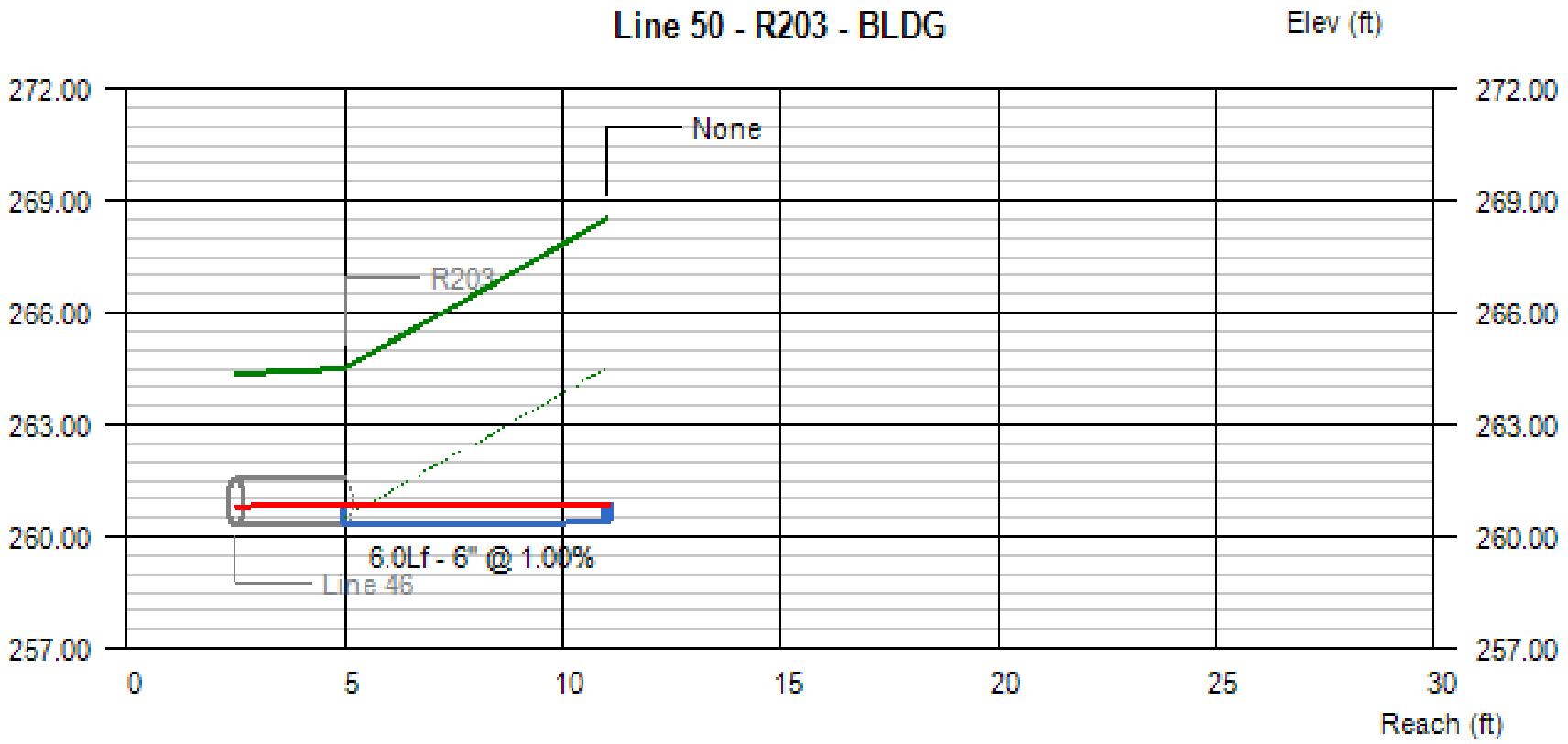
Line Profile (Line 49) - YD08 - D214



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
49	1.20	260.77	260.93	0.46	0.43	0.43	261.23	261.36 j	261.36	2.94	3.20	2.83	2.32

Project File: | No. Lines: 138 | Run Date: 10/31/2019

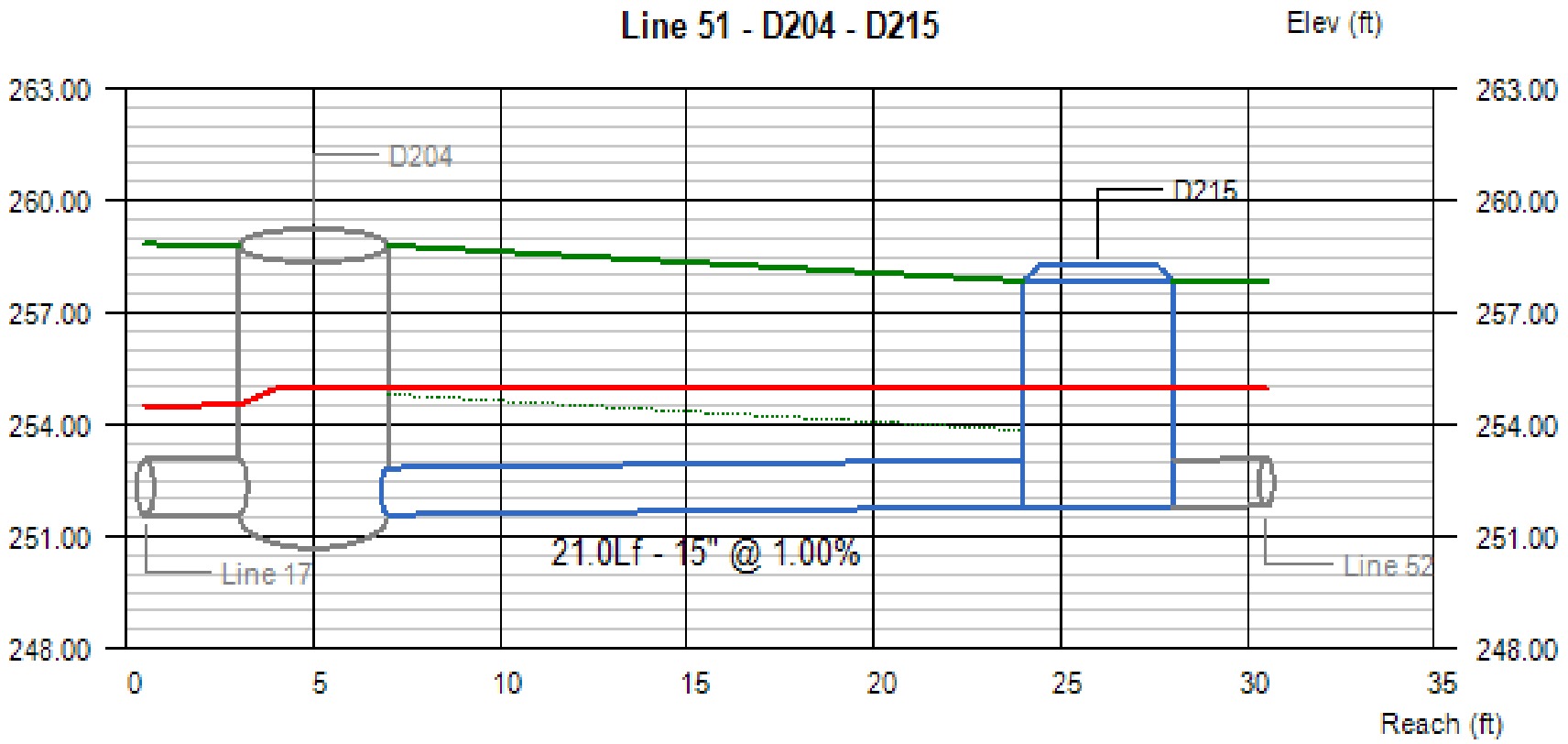
Line Profile (Line 50) - R203 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
50	0.24	260.32	260.38	0.50	0.46	0.49	260.84	260.84	260.87	1.23	1.27	3.68	7.62

Project File: | No. Lines: 138 | Run Date: 10/31/2019

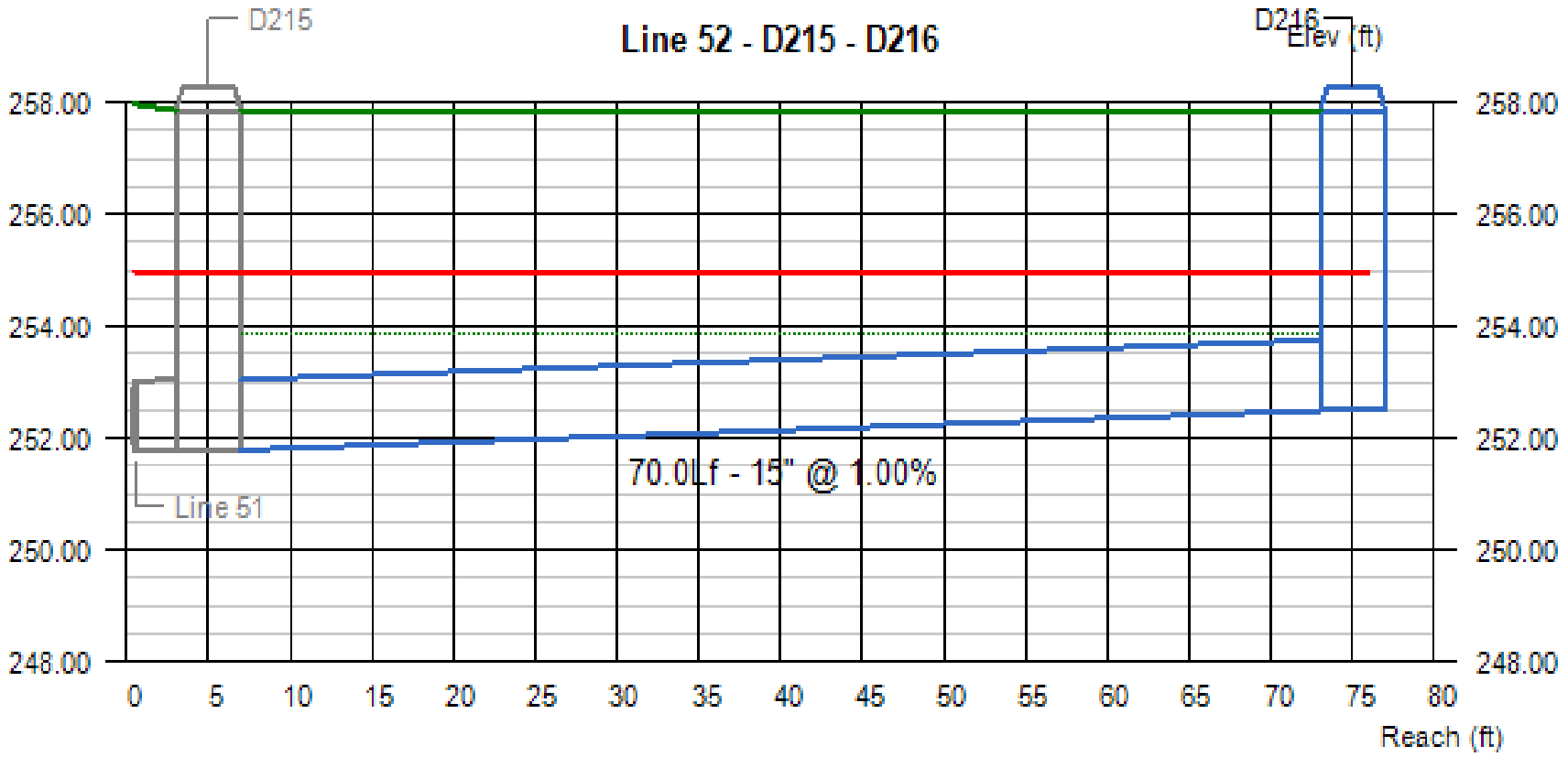
Line Profile (Line 51) - D204 - D215



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
51	0.90	251.58	251.79	1.25	1.25	3.18	254.96	254.97	254.97	0.73	0.73	5.97	4.81

Project File: | No. Lines: 138 | Run Date: 10/31/2019

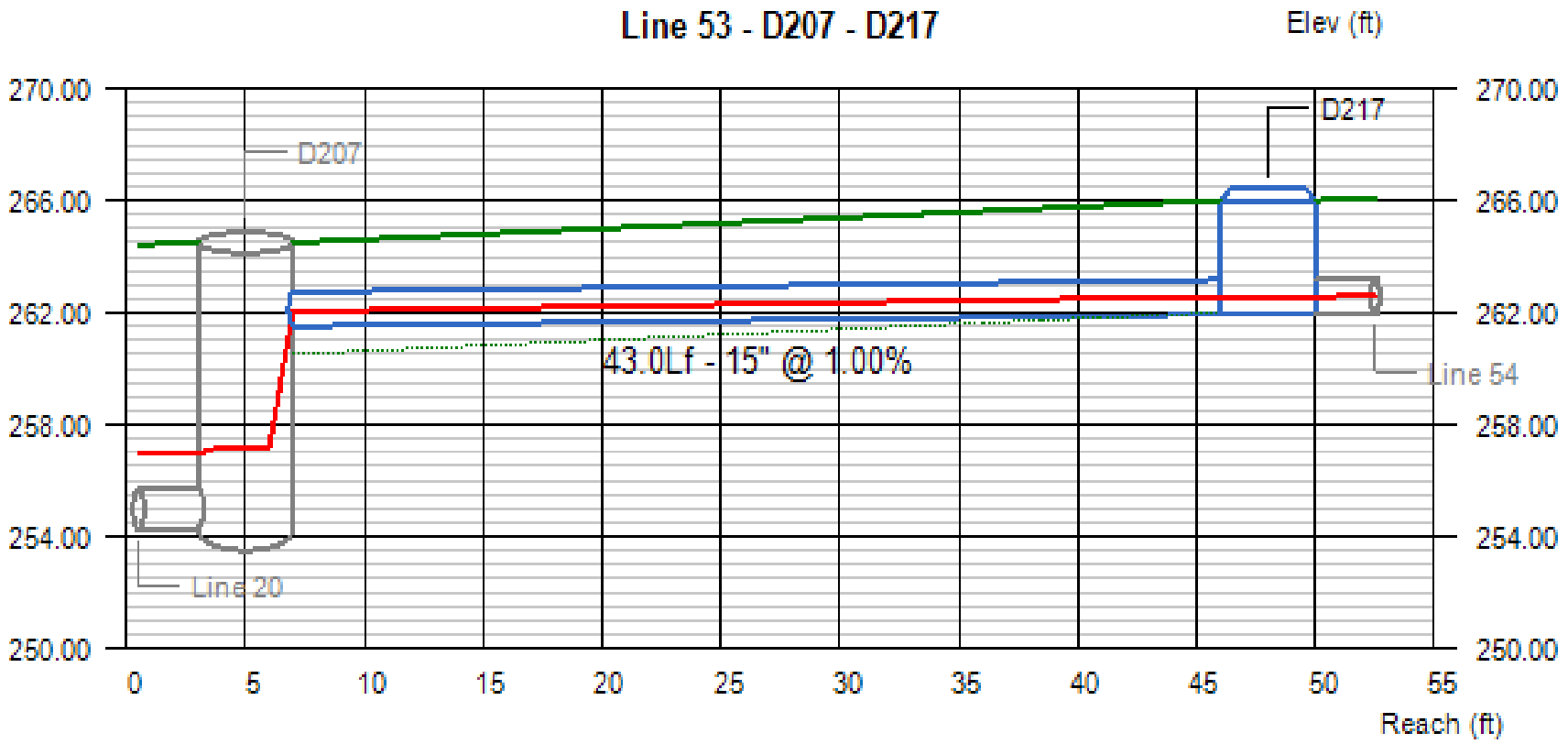
Line Profile (Line 52) - D215 - D216



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
52	0.41	251.79	252.49	1.25	1.25	2.49	254.97	254.97	254.98	0.34	0.34	4.81	4.11

Project File: | No. Lines: 138 | Run Date: 10/31/2019

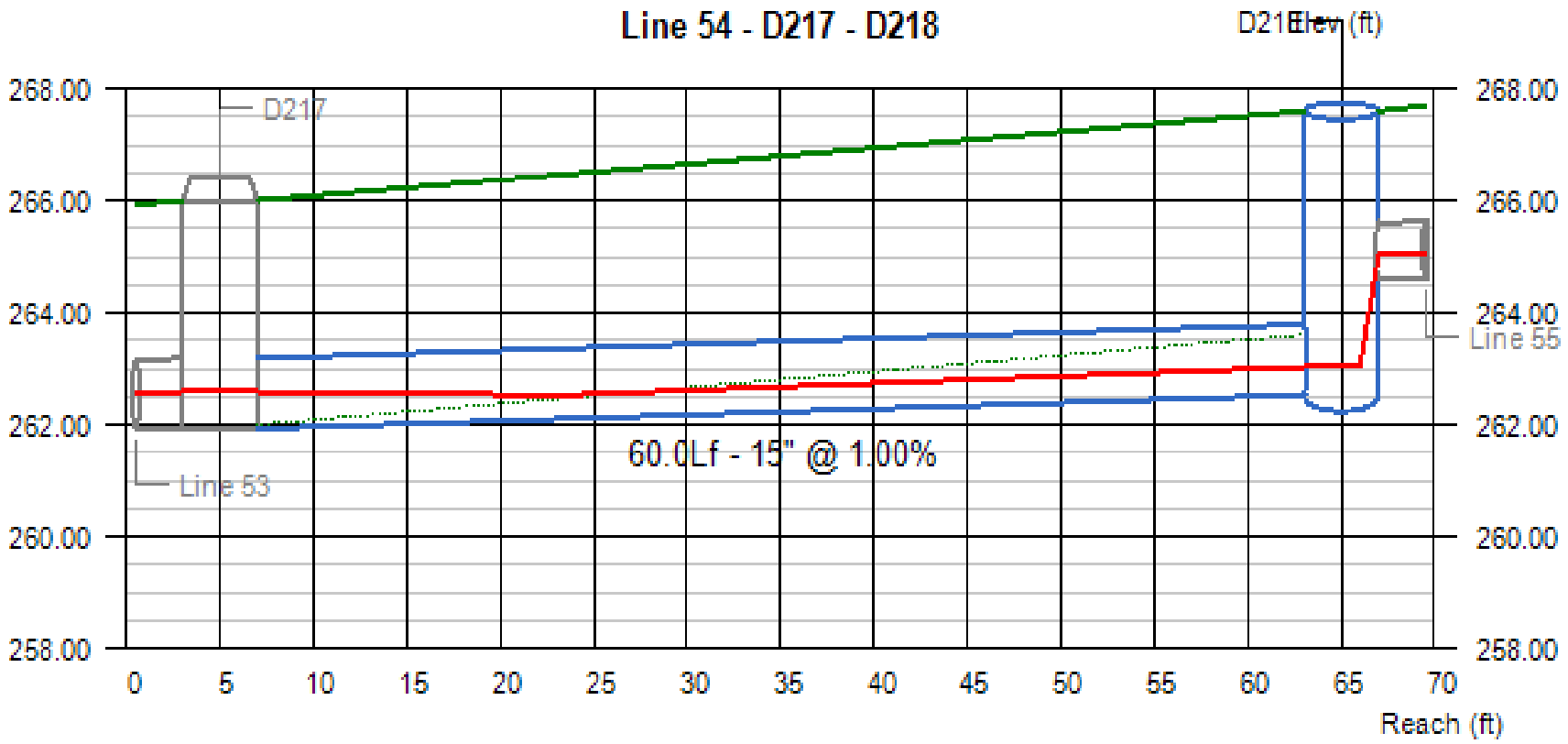
Line Profile (Line 53) - D207 - D217



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
53	2.68	261.50	261.93	0.56	0.66	0.66	262.06	262.59	262.59	5.02	4.11	1.75	2.82

Project File: | No. Lines: 138 | Run Date: 10/31/2019

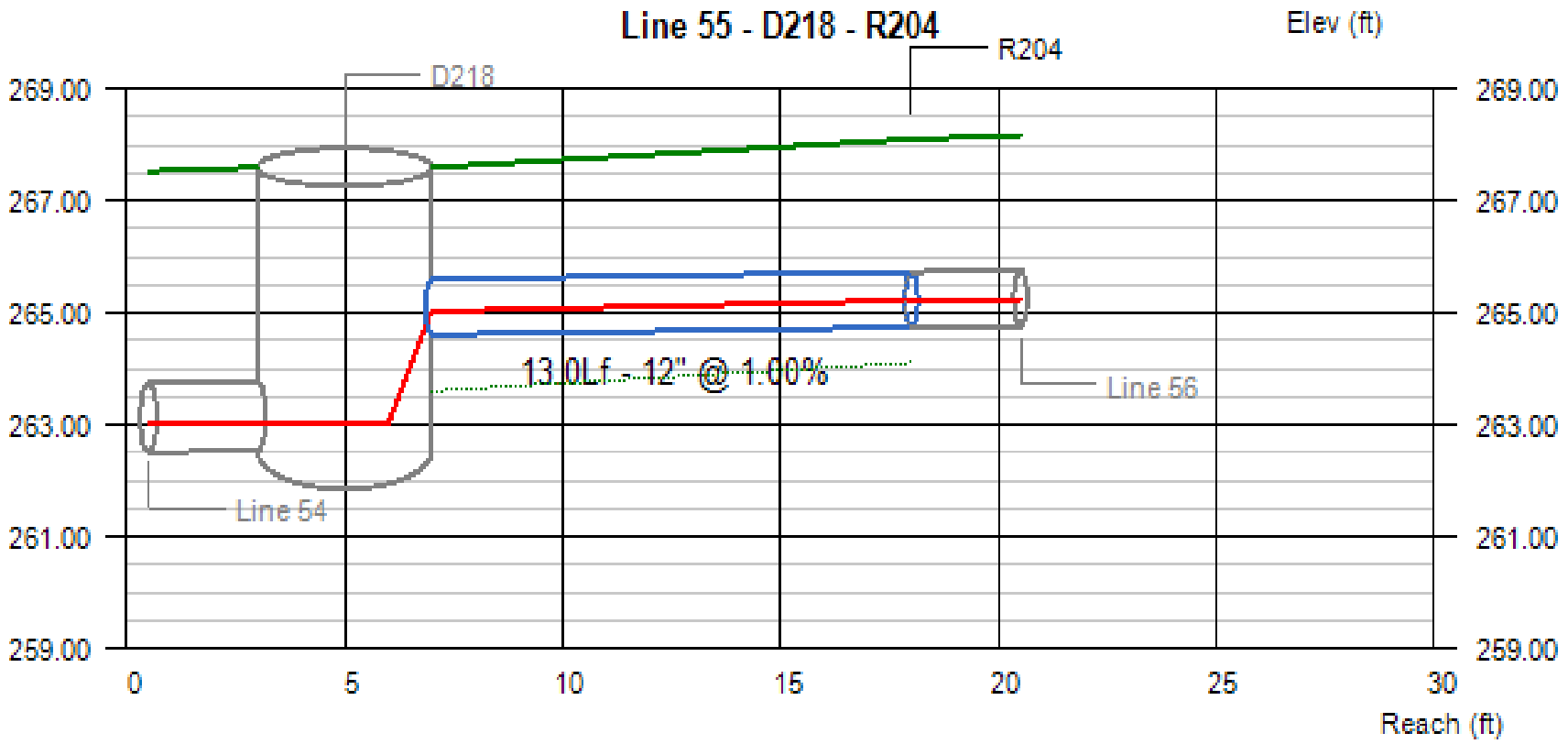
Line Profile (Line 54) - D217 - D218



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
54	1.57	261.93	262.53	0.66	0.50	0.50	262.59	263.03 j	263.03	2.41	3.46	2.82	3.82

Project File: | No. Lines: 138 | Run Date: 10/31/2019

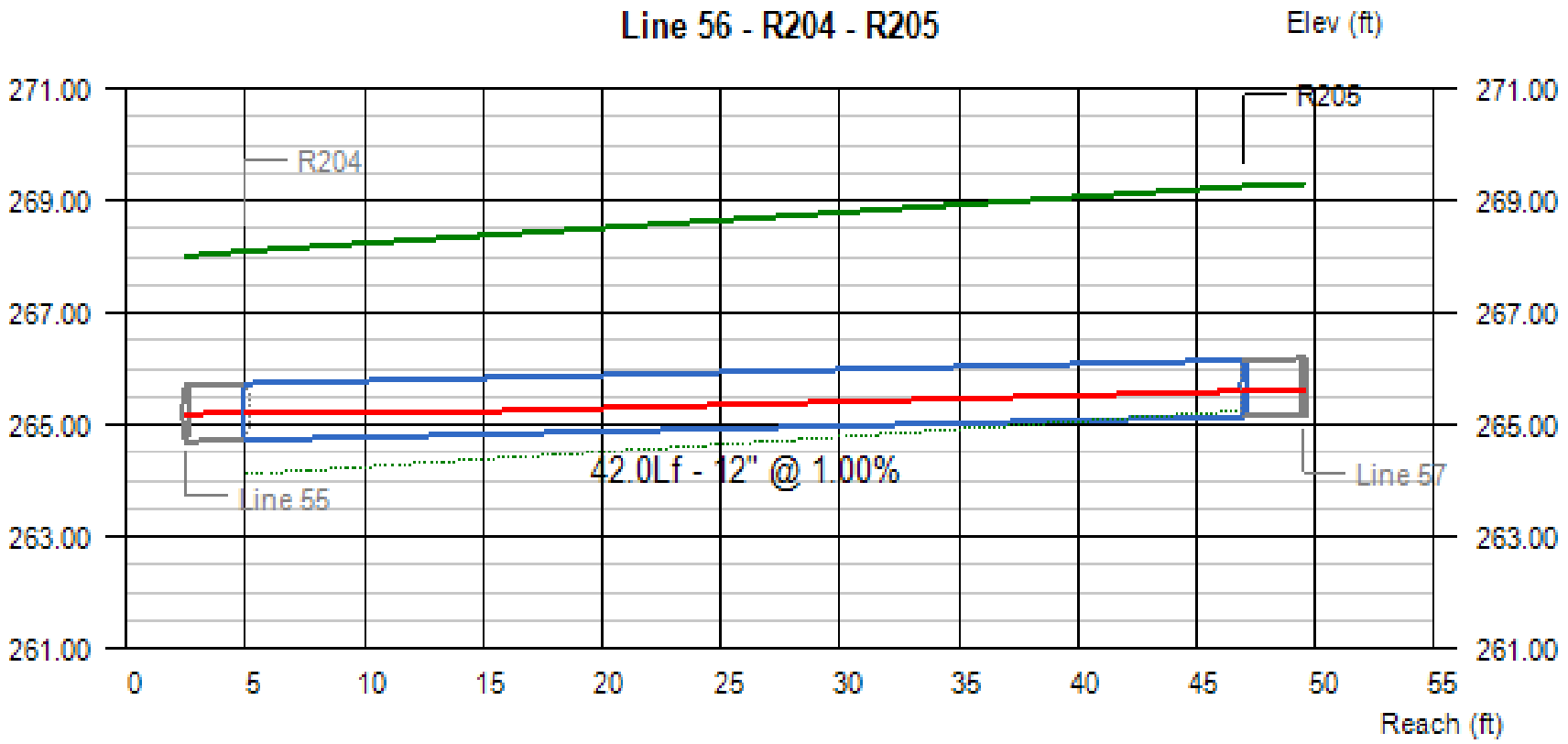
Line Profile (Line 55) - D218 - R204



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
55	1.37	264.60	264.73	0.43	0.49	0.49	265.03	265.22	265.22	4.23	3.53	2.00	2.37

Project File: | No. Lines: 138 | Run Date: 10/31/2019

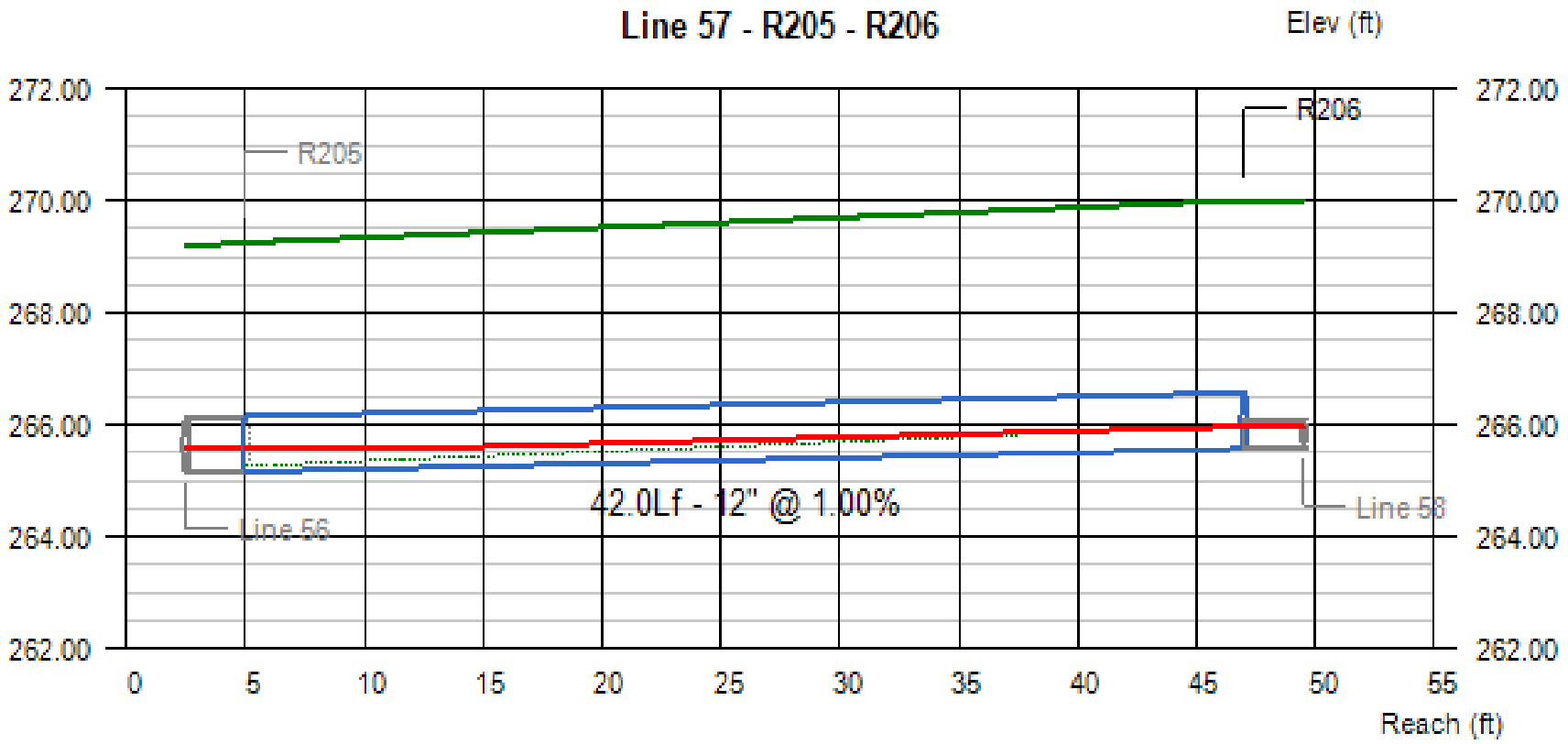
Line Profile (Line 56) - R204 - R205



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
56	1.14	264.73	265.15	0.49	0.45	0.45	265.22	265.60 j	265.60	2.95	3.33	2.37	3.10

Project File: | No. Lines: 138 | Run Date: 10/31/2019

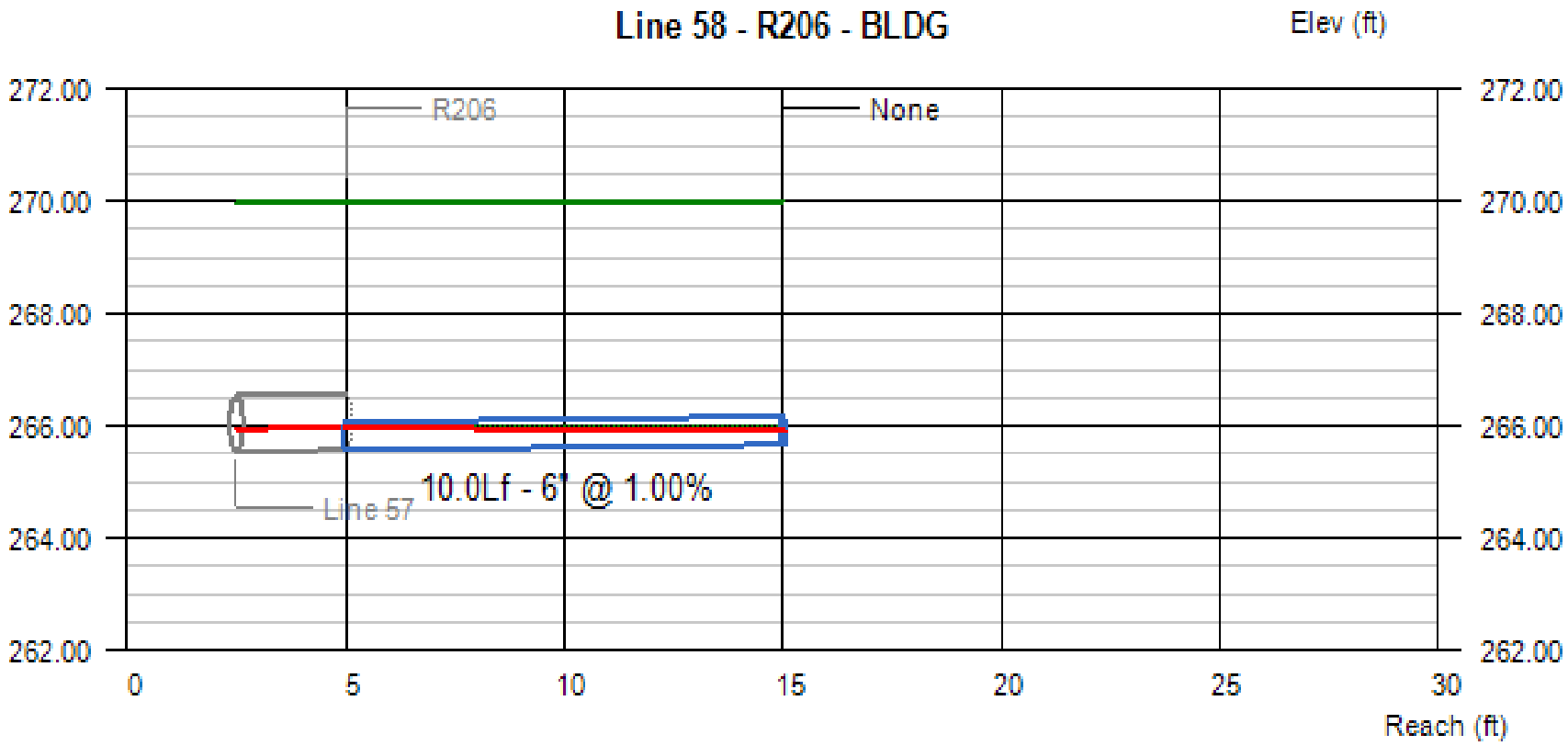
Line Profile (Line 57) - R205 - R206



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
57	0.91	265.15	265.57	0.45	0.40	0.40	265.60	265.97 j	265.97	2.66	3.11	3.10	3.43

Project File: | No. Lines: 138 | Run Date: 10/31/2019

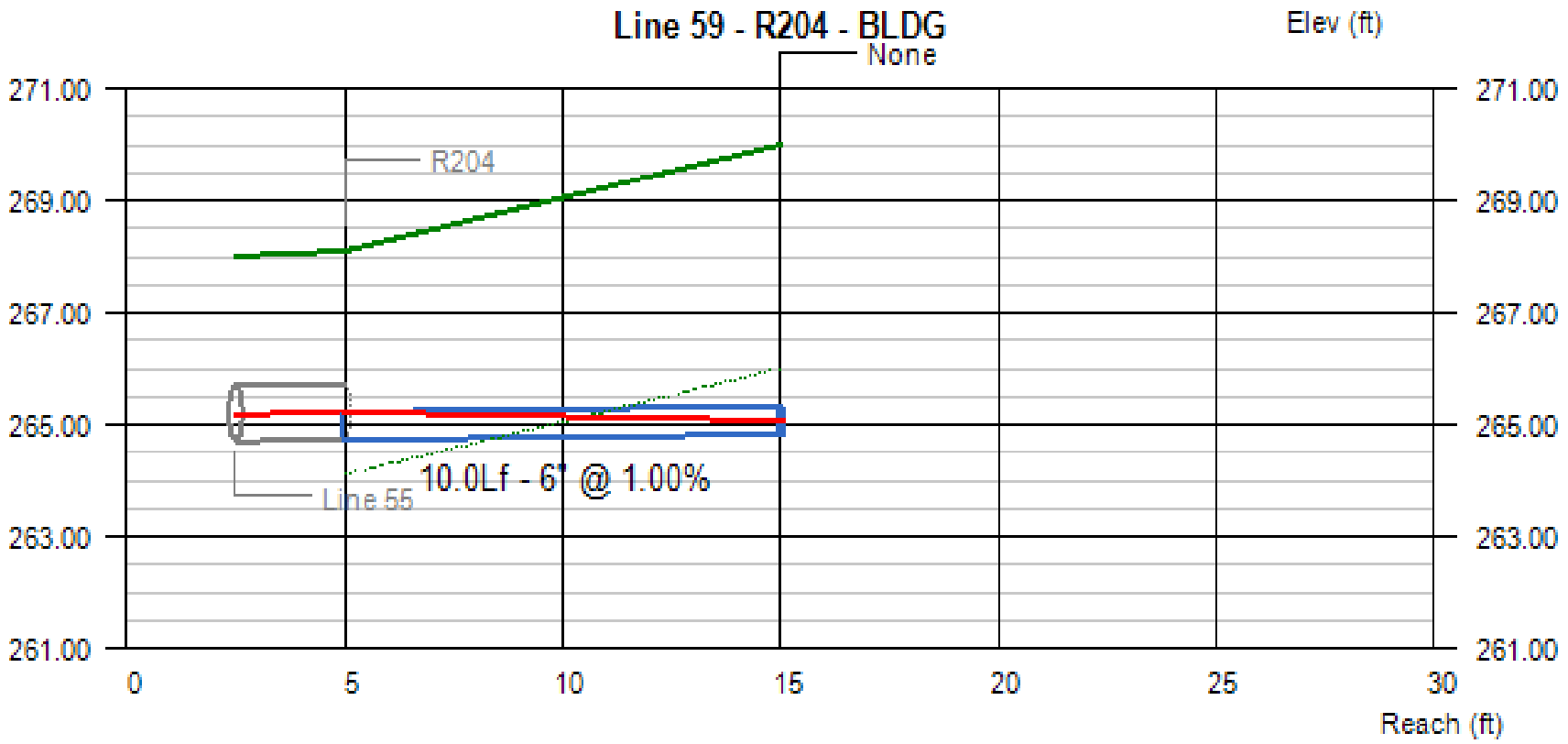
Line Profile (Line 58) - R206 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
58	0.24	265.57	265.67	0.40	0.25	0.25	265.97	265.92	265.92	1.44	2.50	3.93	3.83

Project File: | No. Lines: 138 | Run Date: 10/31/2019

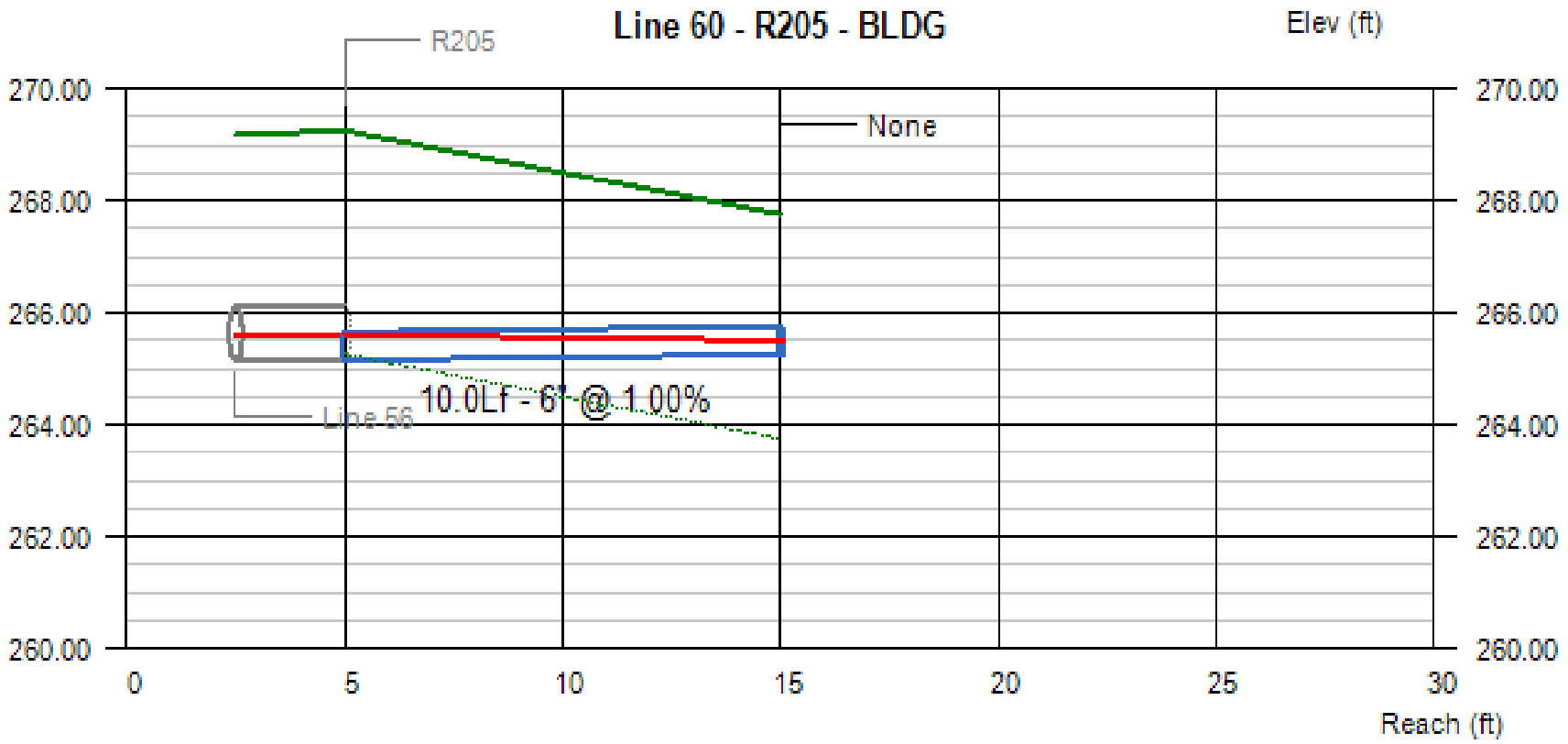
Line Profile (Line 59) - R204 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
59	0.24	264.73	264.83	0.49	0.25	0.25	265.22	265.08	265.08	1.23	2.50	2.87	4.67

Project File: | No. Lines: 138 | Run Date: 10/31/2019

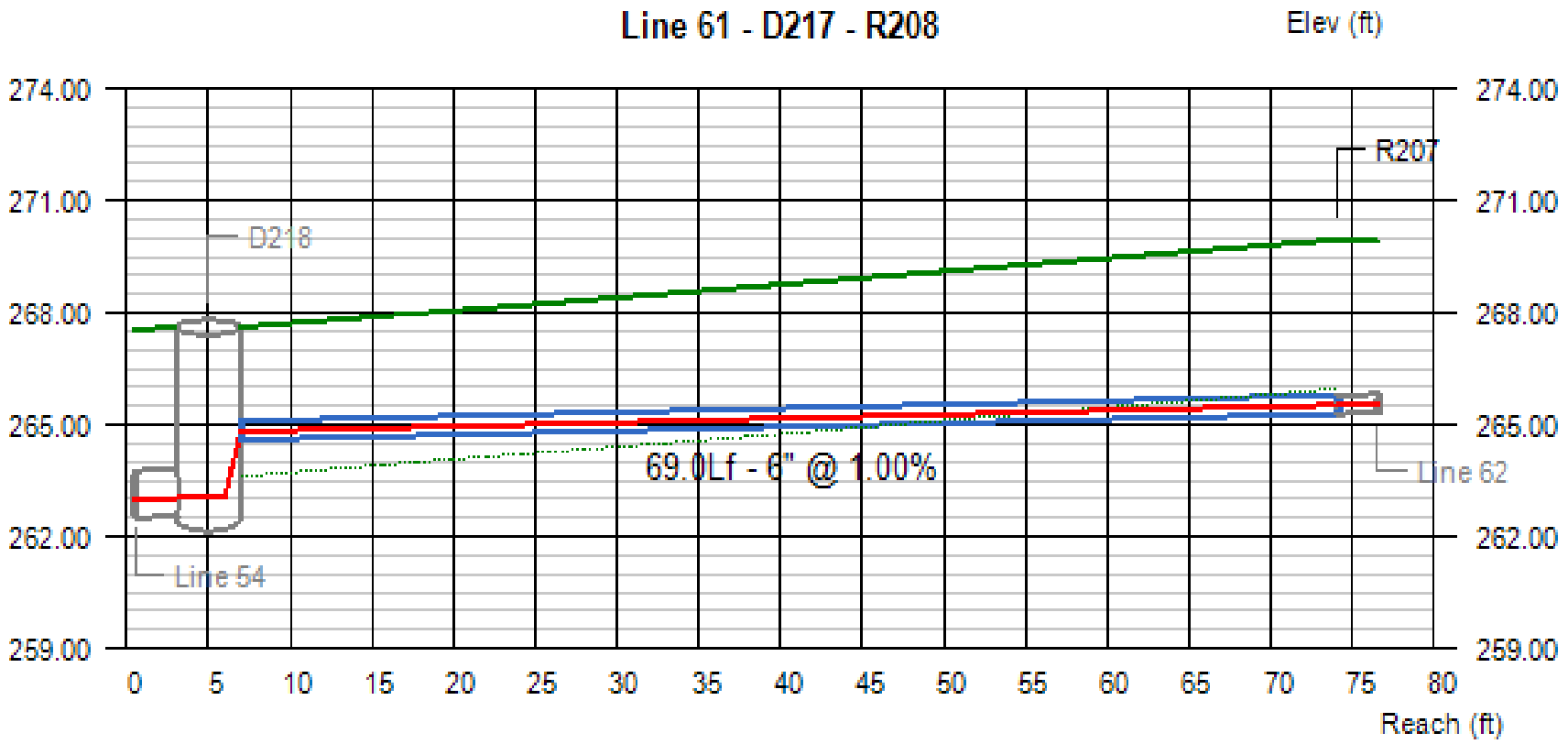
Line Profile (Line 60) - R205 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
60	0.24	265.15	265.25	0.45	0.25	0.25	265.60	265.50	265.50	1.30	2.50	3.60	2.00

Project File: | No. Lines: 138 | Run Date: 10/31/2019

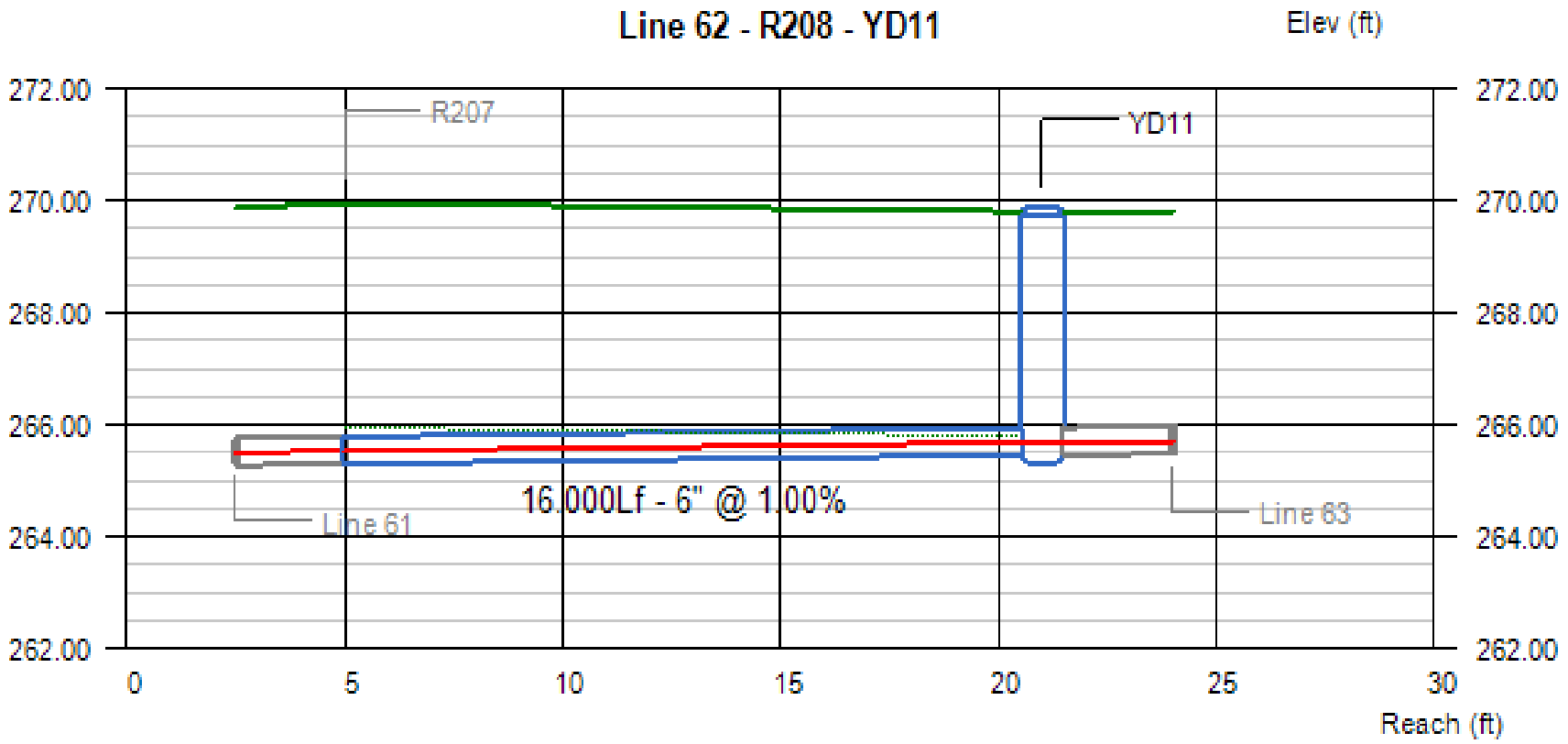
Line Profile (Line 61) - D217 - R208



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
61	0.22	264.60	265.29	0.22	0.24	0.24	264.82	265.53	265.53	2.70	2.44	2.50	4.16

Project File: | No. Lines: 138 | Run Date: 10/31/2019

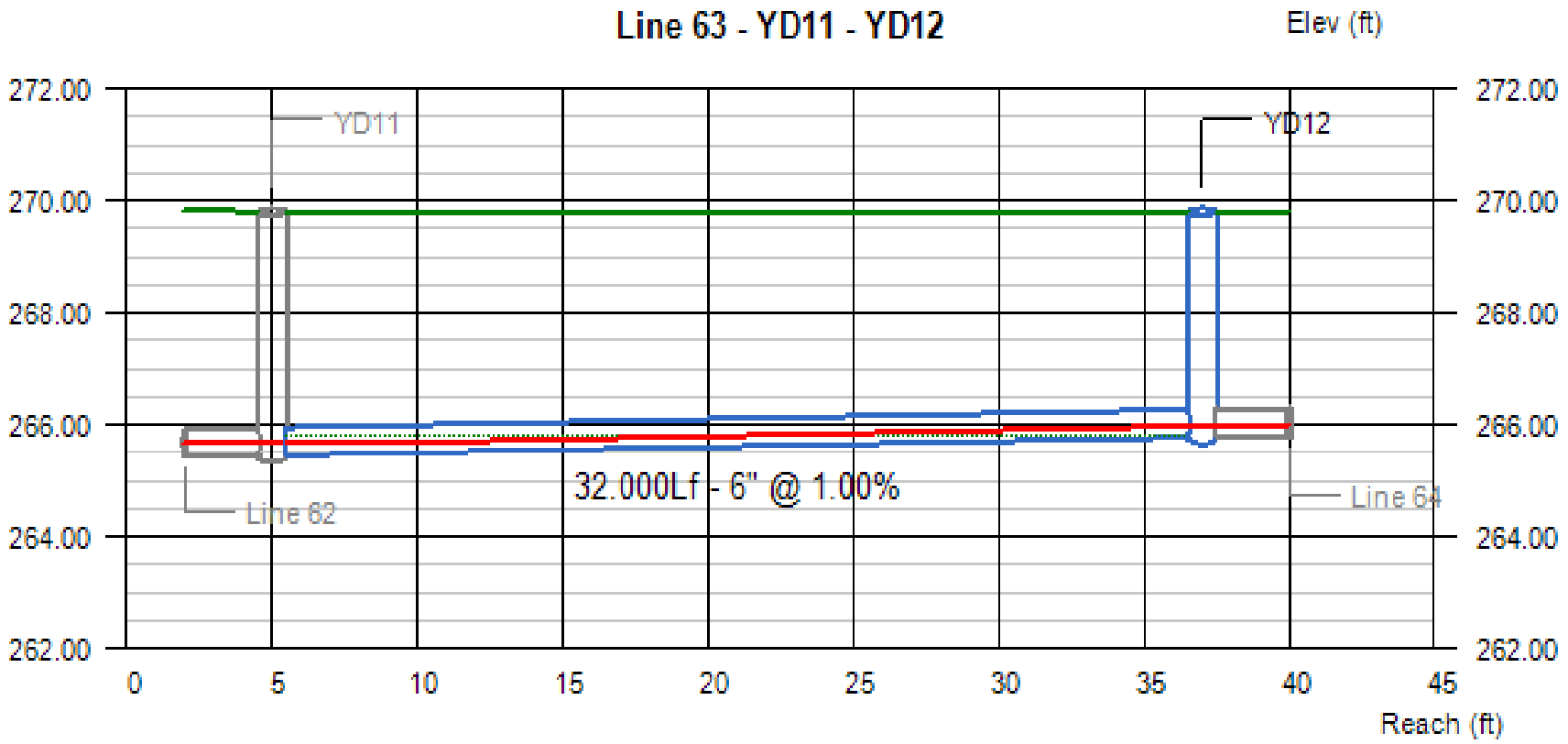
Line Profile (Line 62) - R208 - YD11



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
62	0.23	265.29	265.45	0.24	0.24	0.24	265.53	265.69	265.69	2.45	2.44	4.16	3.85

Project File: | No. Lines: 138 | Run Date: 10/31/2019

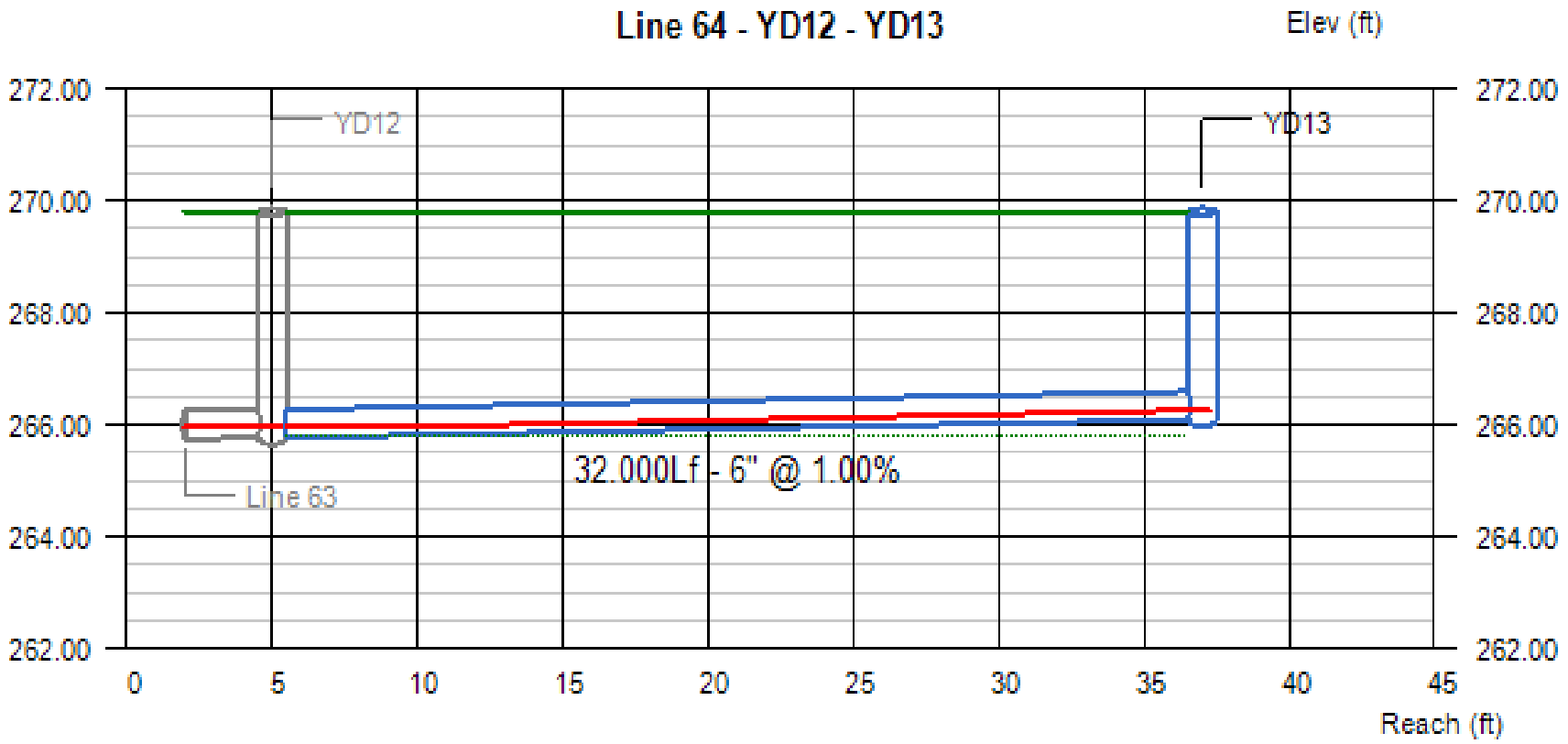
Line Profile (Line 63) - YD11 - YD12



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
63	0.17	265.45	265.77	0.24	0.21	0.21	265.69	265.98 j	265.98	1.85	2.24	3.85	3.53

Project File: | No. Lines: 138 | Run Date: 10/31/2019

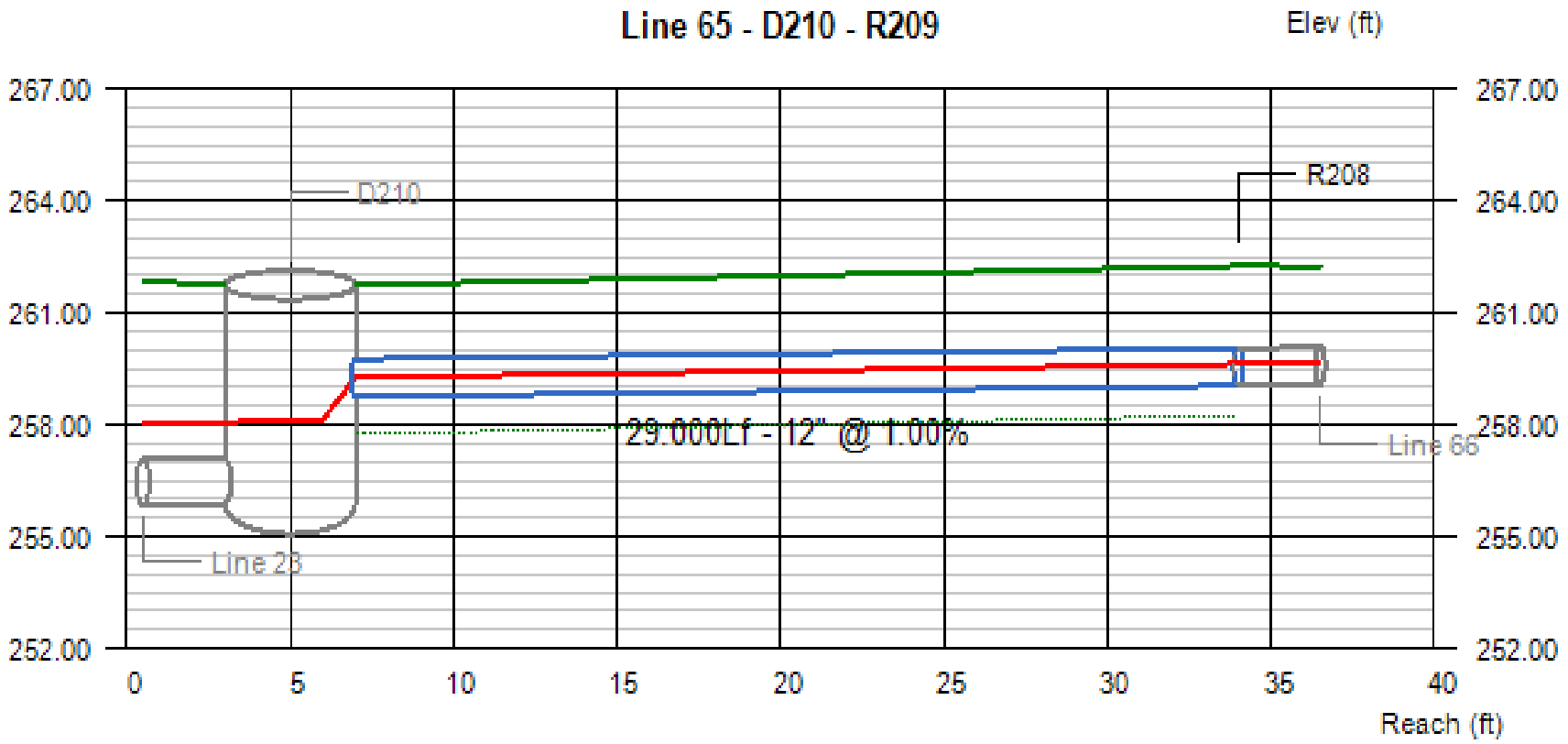
Line Profile (Line 64) - YD12 - YD13



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
64	0.11	265.77	266.09	0.21	0.17	0.17	265.98	266.26 j	266.26	1.50	1.99	3.53	3.21

Project File: | No. Lines: 138 | Run Date: 10/31/2019

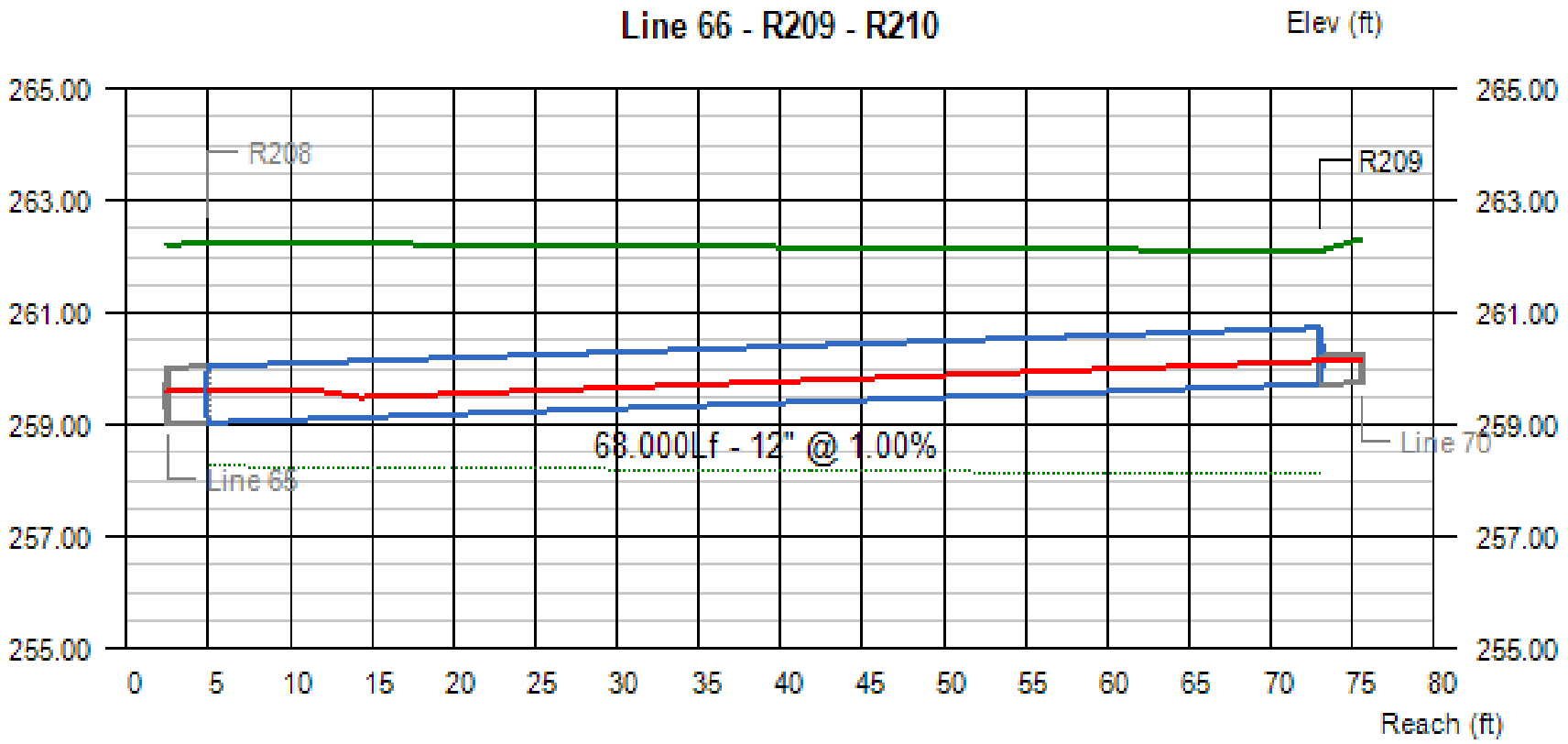
Line Profile (Line 65) - D210 - R209



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
65	1.84	258.75	259.04	0.51	0.58	0.58	259.26	259.62	259.62	4.57	3.92	2.00	2.21

Project File: | No. Lines: 138 | Run Date: 10/31/2019

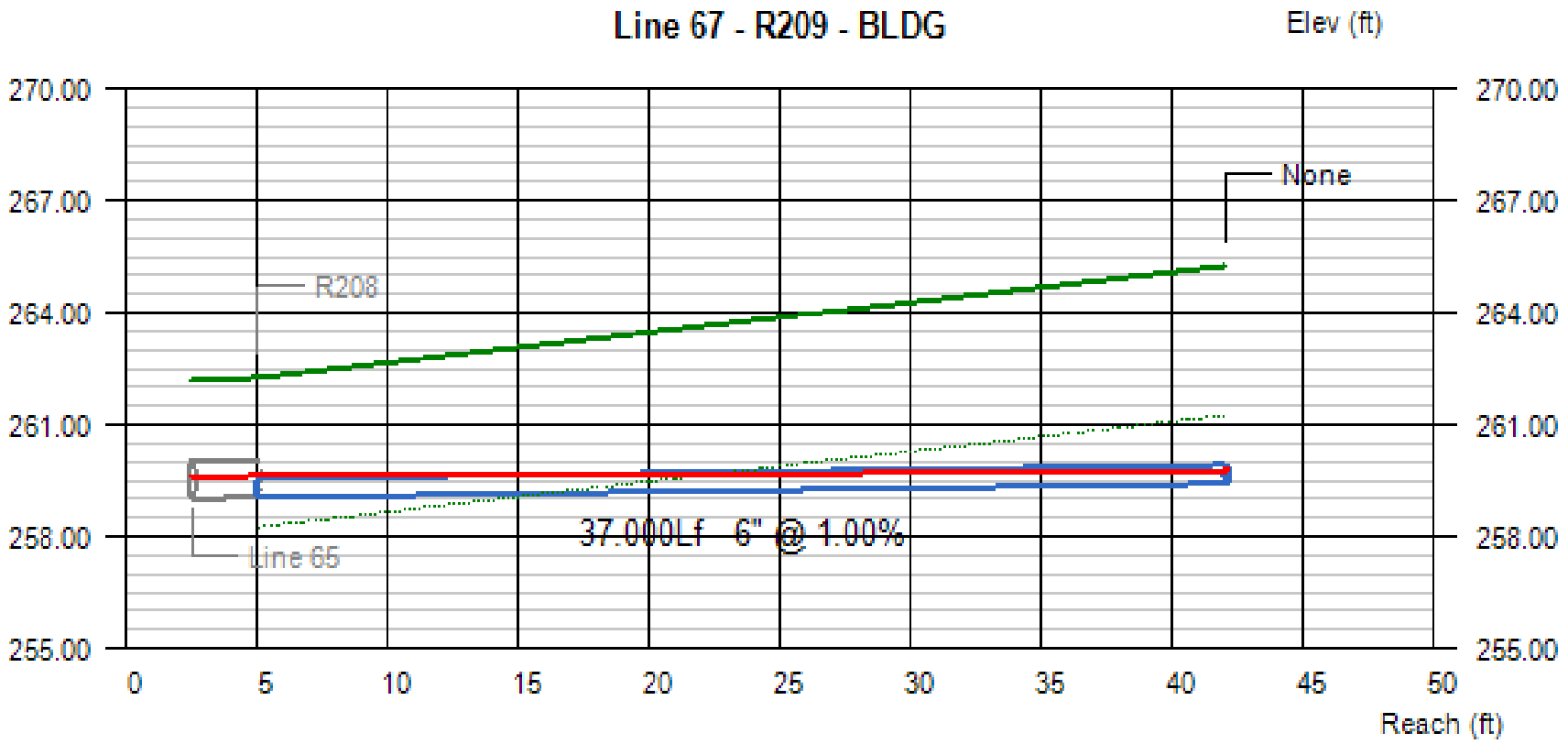
Line Profile (Line 66) - R209 - R210



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
66	0.96	259.04	259.72	0.58	0.41	0.41	259.62	260.13 j	260.13	2.04	3.16	2.21	1.38

Project File:	No. Lines: 138	Run Date: 10/31/2019

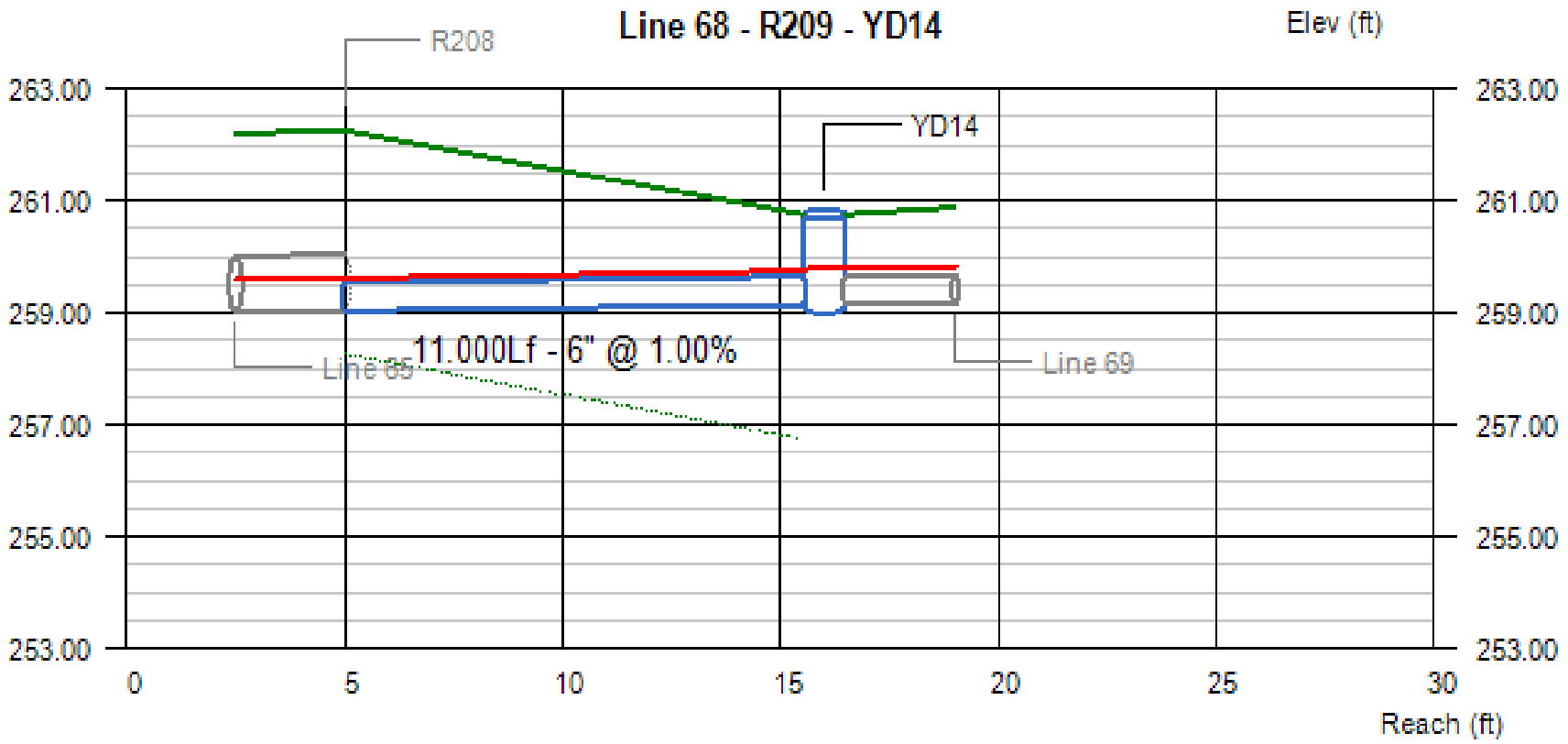
Line Profile (Line 67) - R209 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
67	0.30	259.04	259.41	0.50	0.32	0.40	259.62	259.73	259.81	1.54	2.30	2.71	5.34

Project File: | No. Lines: 138 | Run Date: 10/31/2019

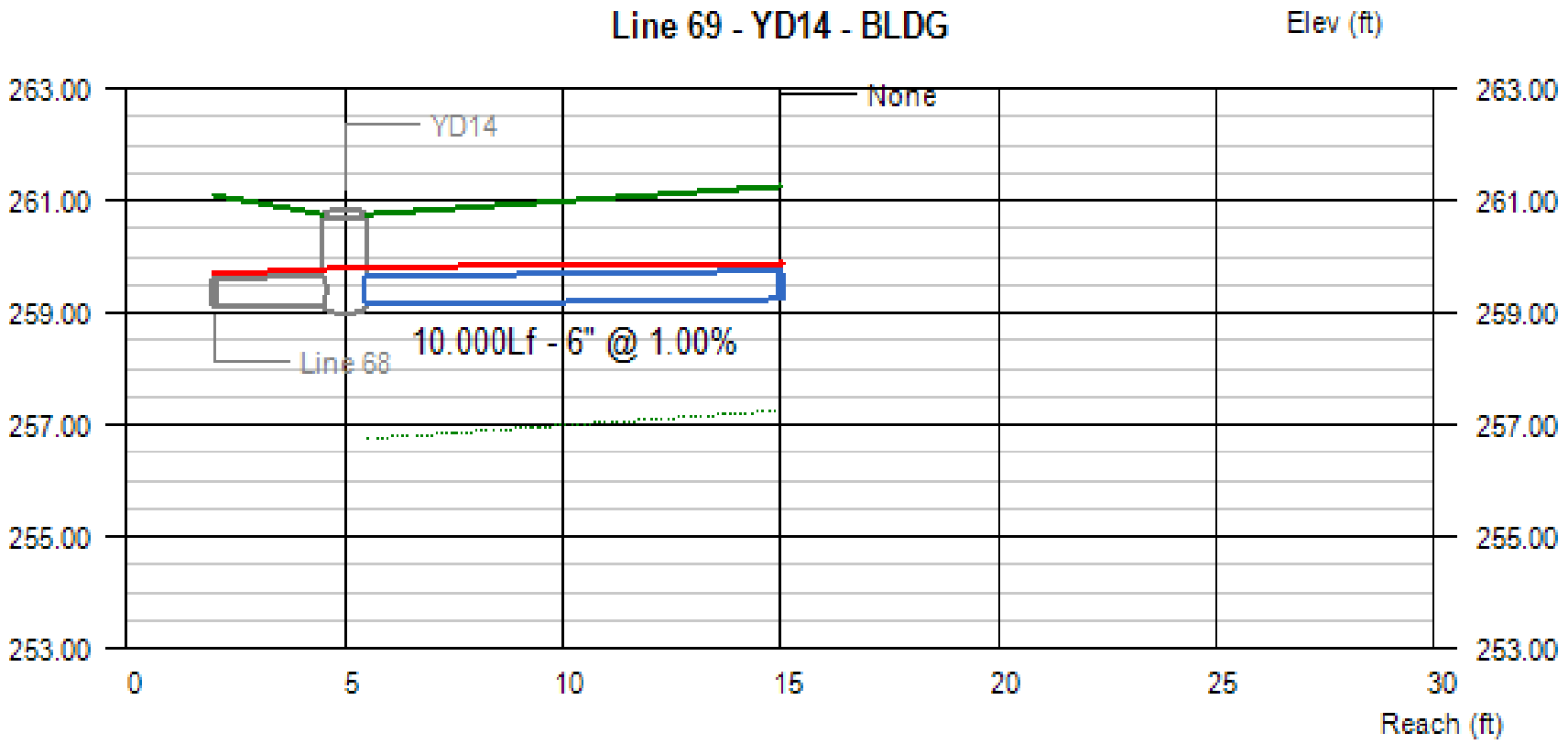
Line Profile (Line 68) - R209 - YD14



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
68	0.61	259.04	259.15	0.50	0.50	0.67	259.62	259.75	259.82	3.12	3.12	2.71	1.10

Project File: | No. Lines: 138 | Run Date: 10/31/2019

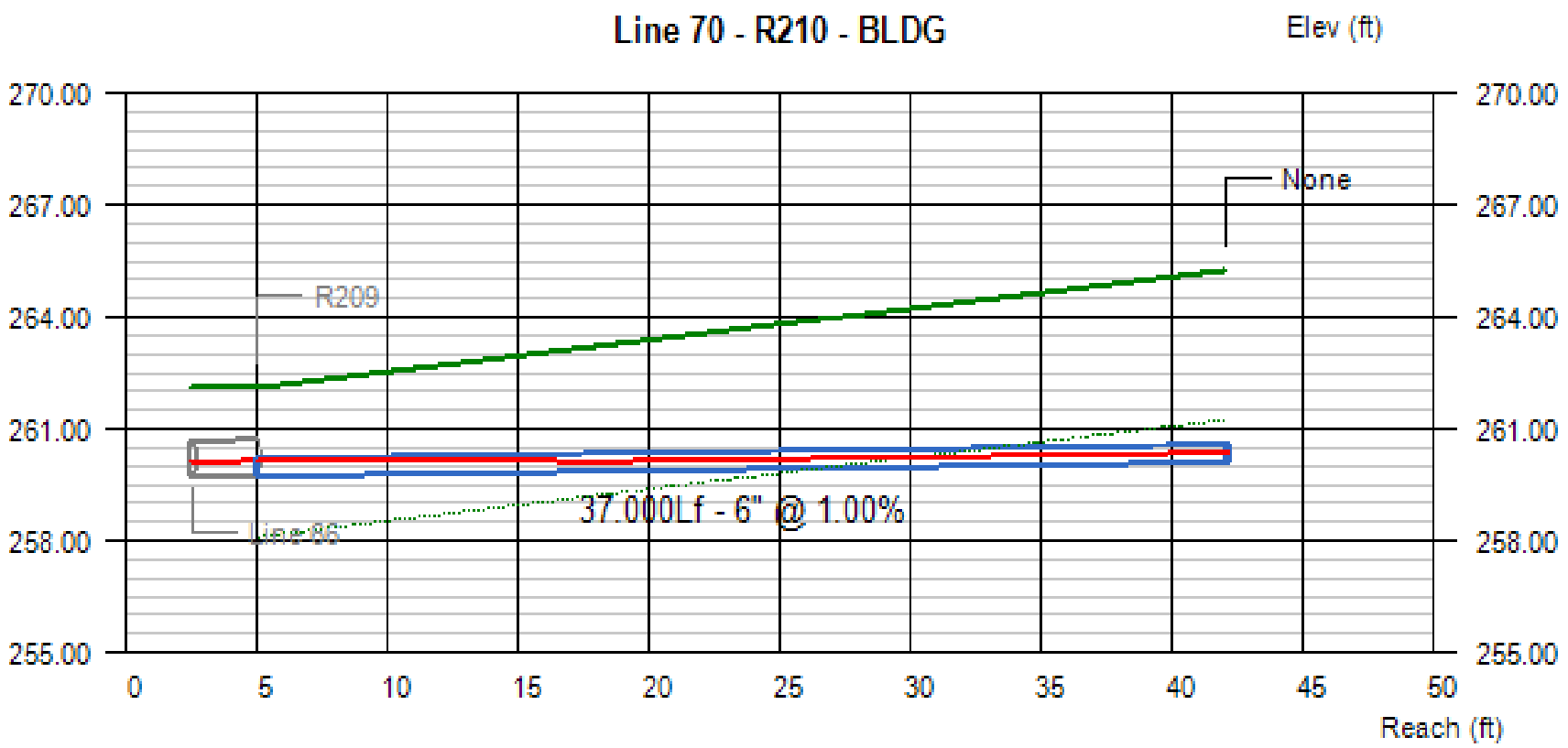
Line Profile (Line 69) - YD14 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
69	0.30	259.15	259.25	0.50	0.50	0.64	259.82	259.85	259.89	1.54	1.54	1.10	1.50

Project File: | No. Lines: 138 | Run Date: 10/31/2019

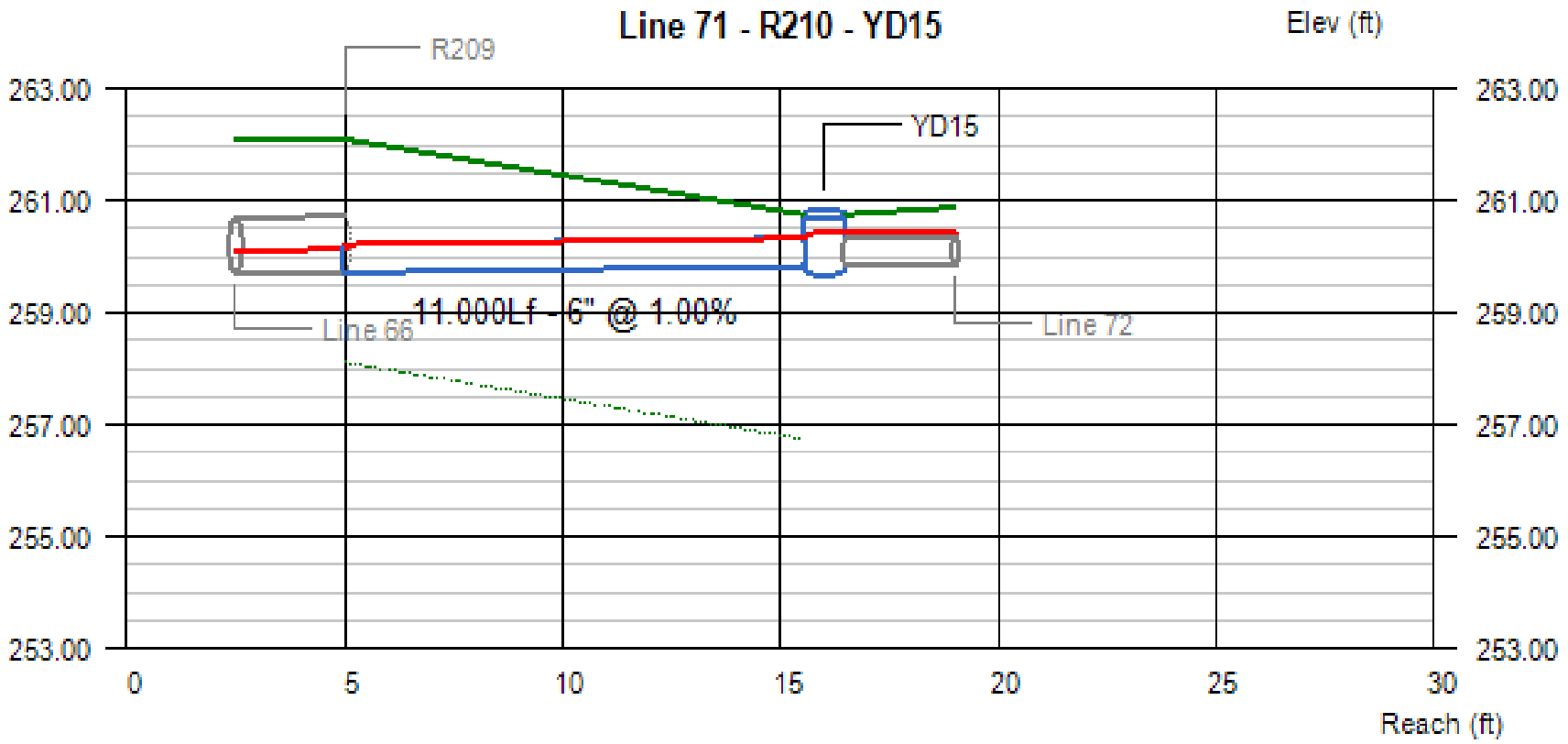
Line Profile (Line 70) - R210 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
70	0.30	259.72	260.09	0.41	0.28	0.28	260.13	260.37 j	260.37	1.75	2.70	1.88	4.66

Project File: | No. Lines: 138 | Run Date: 10/31/2019

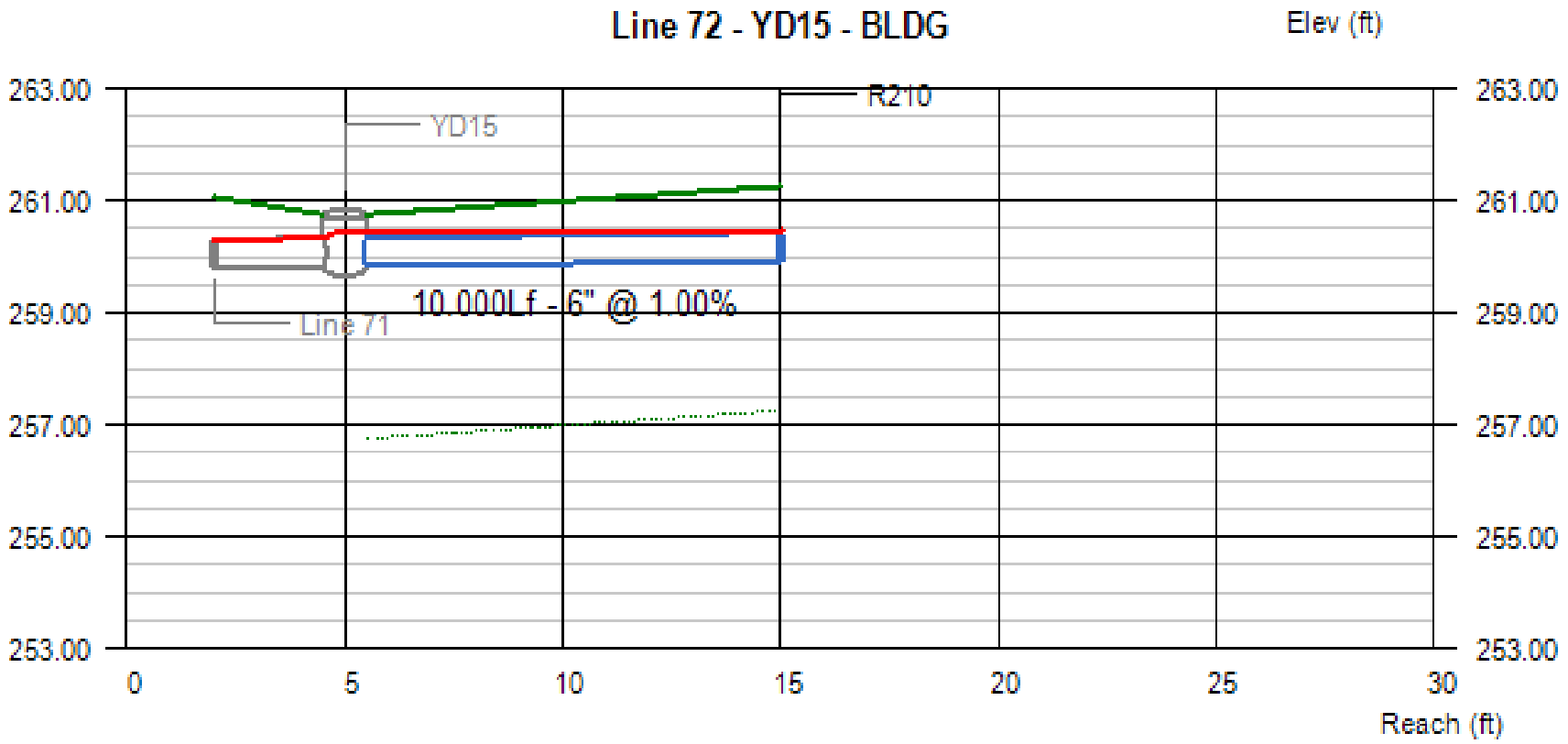
Line Profile (Line 71) - R210 - YD15



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
71	0.66	259.72	259.83	0.50	0.50	0.59	260.22	260.33	260.42	3.39	3.39	1.88	0.42

Project File: | No. Lines: 138 | Run Date: 10/31/2019

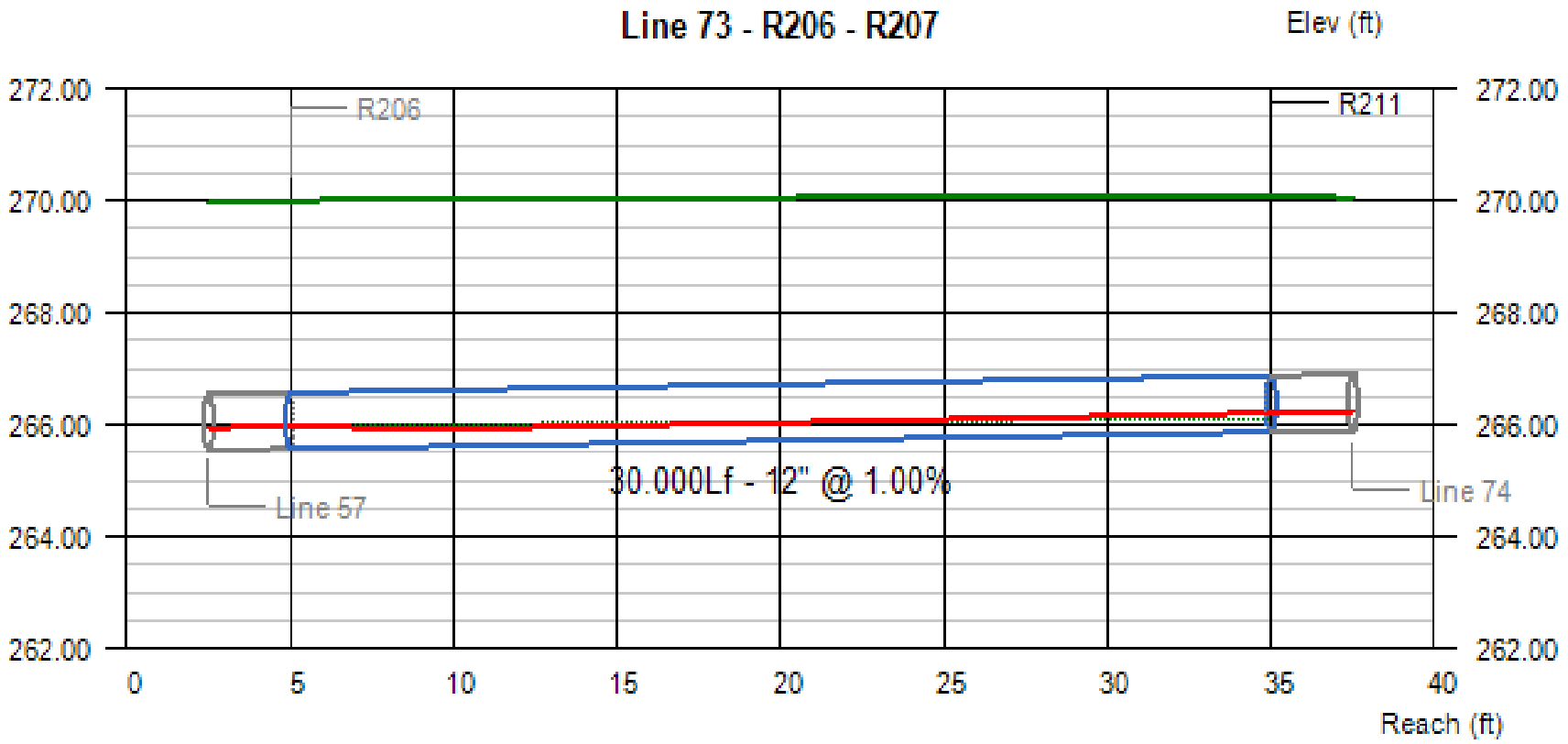
Line Profile (Line 72) - YD15 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
72	0.30	259.83	259.93	0.50	0.50	0.54	260.42	260.43	260.47	1.54	1.54	0.42	0.82

Project File: | No. Lines: 138 | Run Date: 10/31/2019

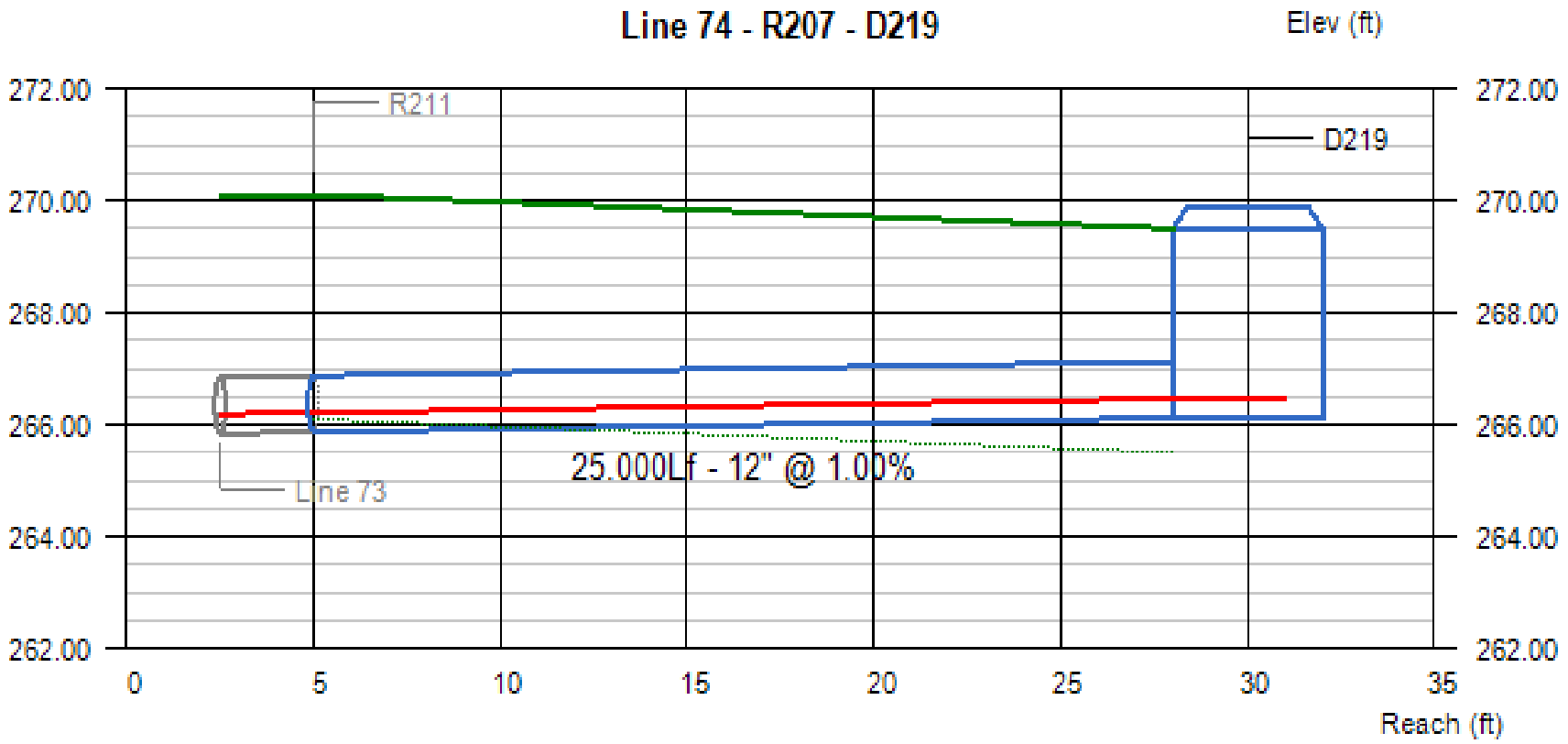
Line Profile (Line 73) - R206 - R207



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
73	0.67	265.57	265.87	0.40	0.34	0.34	265.97	266.21 j	266.21	2.31	2.84	3.43	3.23

Project File: | No. Lines: 138 | Run Date: 10/31/2019

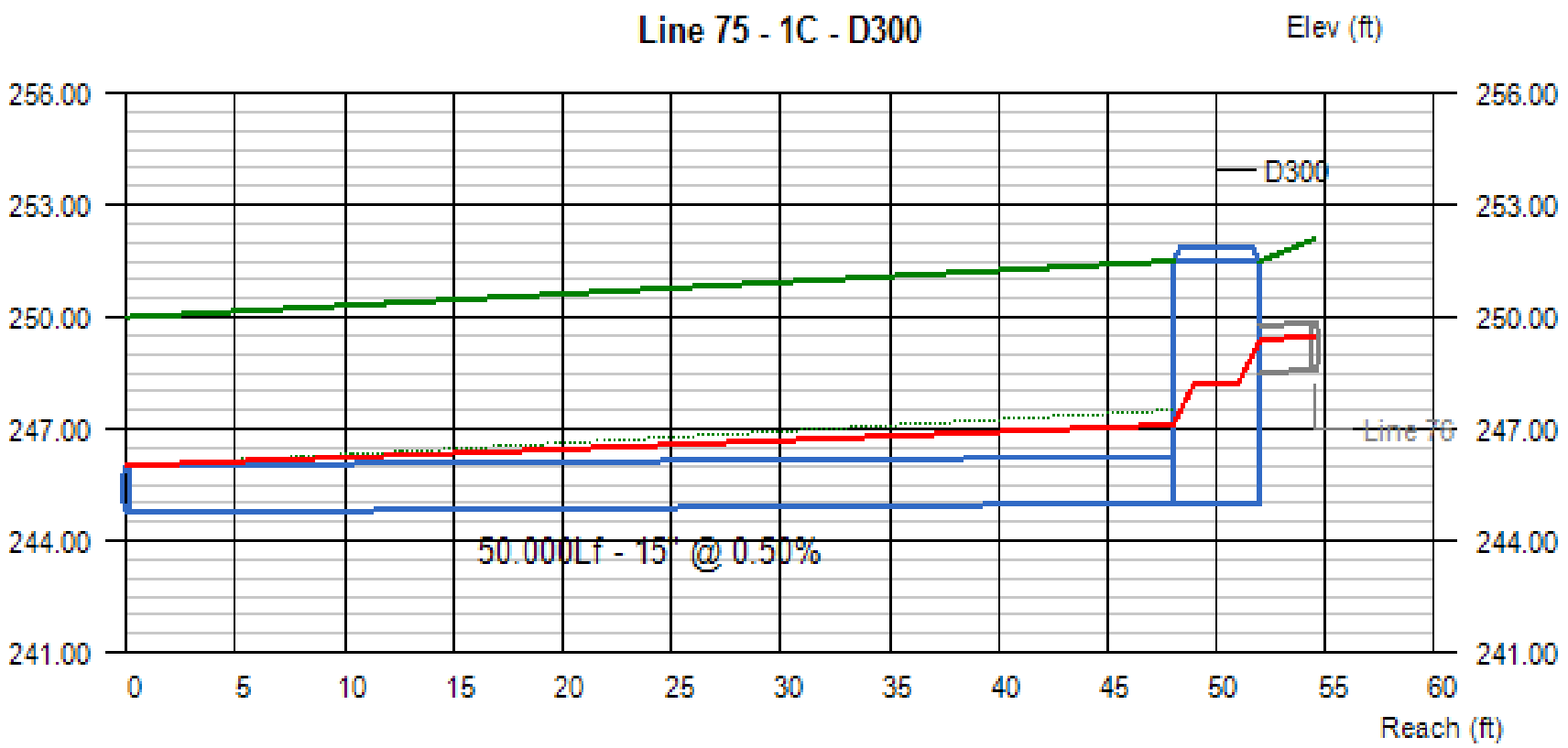
Line Profile (Line 74) - R207 - D219



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
74	0.68	265.87	266.12	0.34	0.34	0.34	266.21	266.46	266.46	2.86	2.85	3.23	2.38

Project File: | No. Lines: 138 | Run Date: 10/31/2019

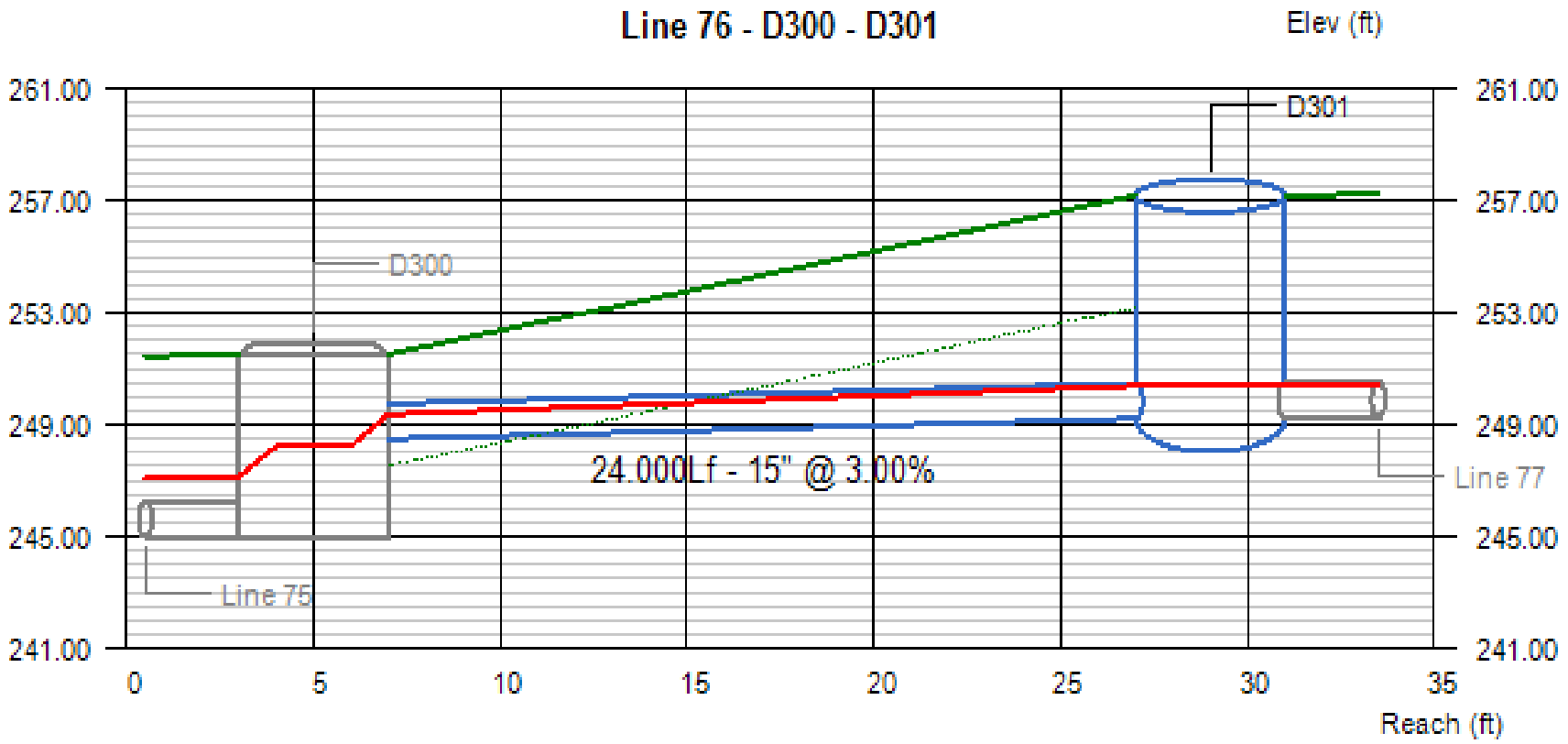
Line Profile (Line 75) - 1C - D300



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
75	9.63	244.75	245.00	1.25	1.25	3.23	246.00	247.11	248.23	7.85	7.85	4.00	5.25

Project File: | No. Lines: 138 | Run Date: 10/31/2019

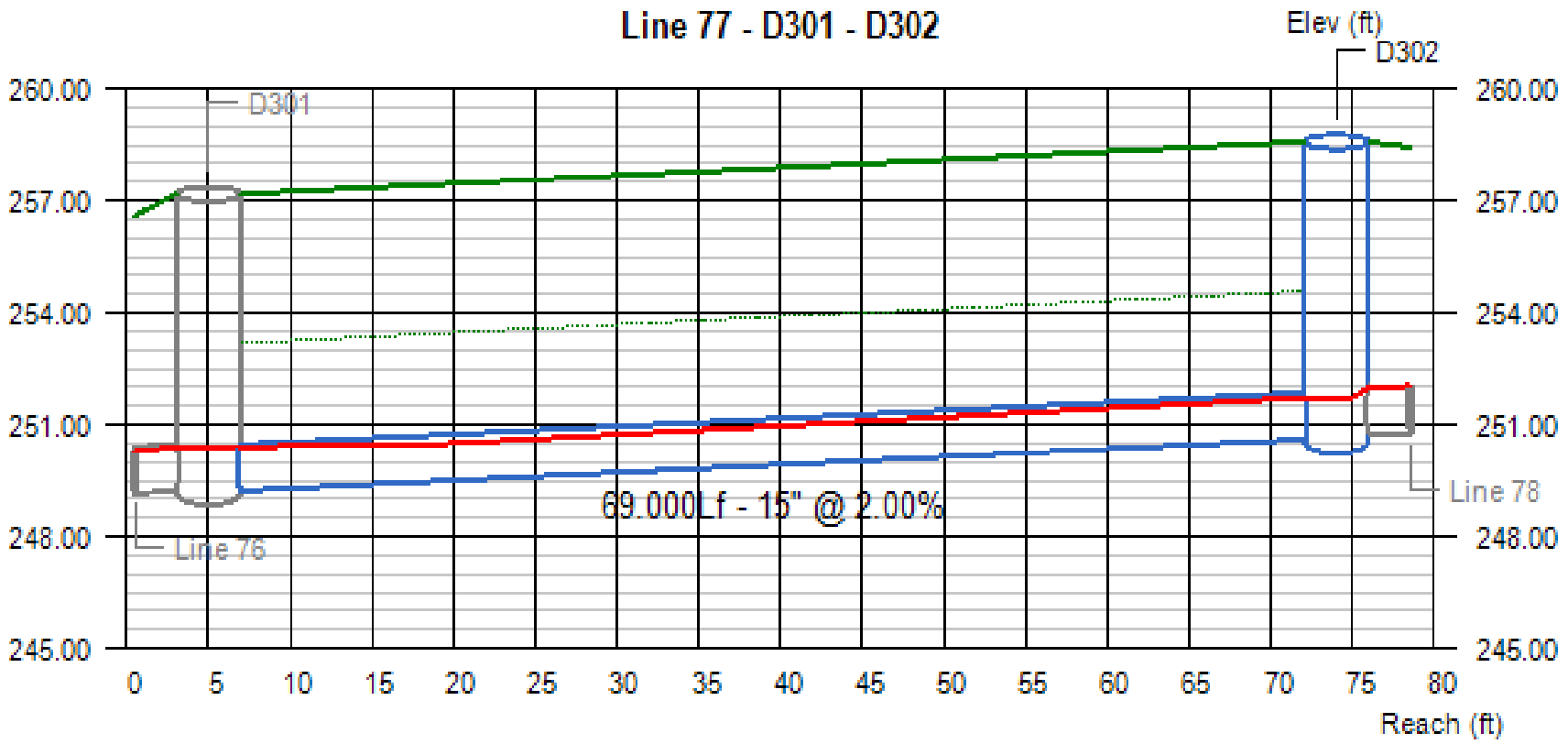
Line Profile (Line 76) - D300 - D301



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
76	9.31	248.50	249.22	0.87	1.16	1.16	249.37	250.39	250.39	10.19	7.82	1.75	6.70

Project File: | No. Lines: 138 | Run Date: 10/31/2019

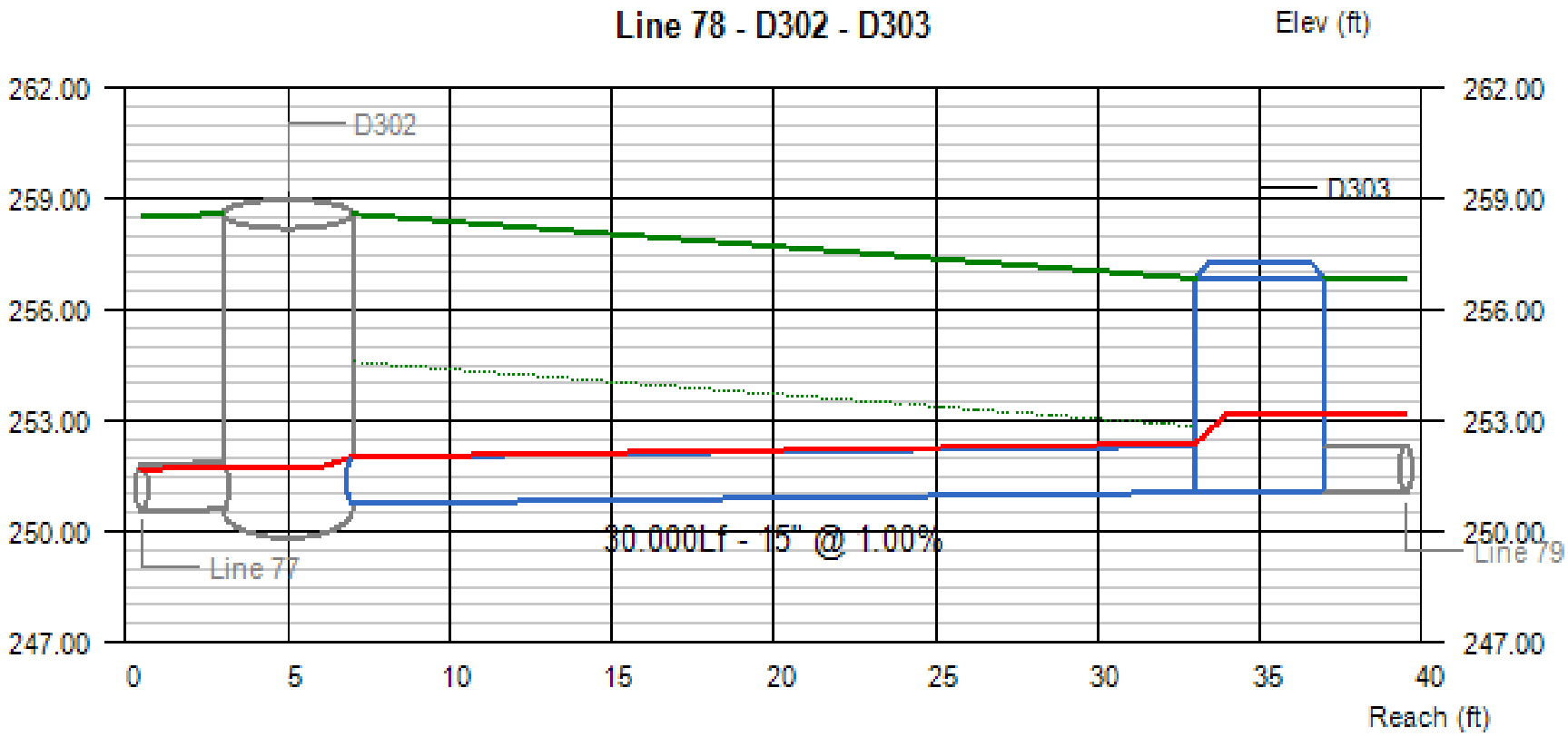
Line Profile (Line 77) - D301 - D302



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
77	8.15	249.22	250.60	1.16	1.12	1.12	250.39	251.72 j	251.72	6.85	7.02	6.70	6.73

Project File: | No. Lines: 138 | Run Date: 10/31/2019

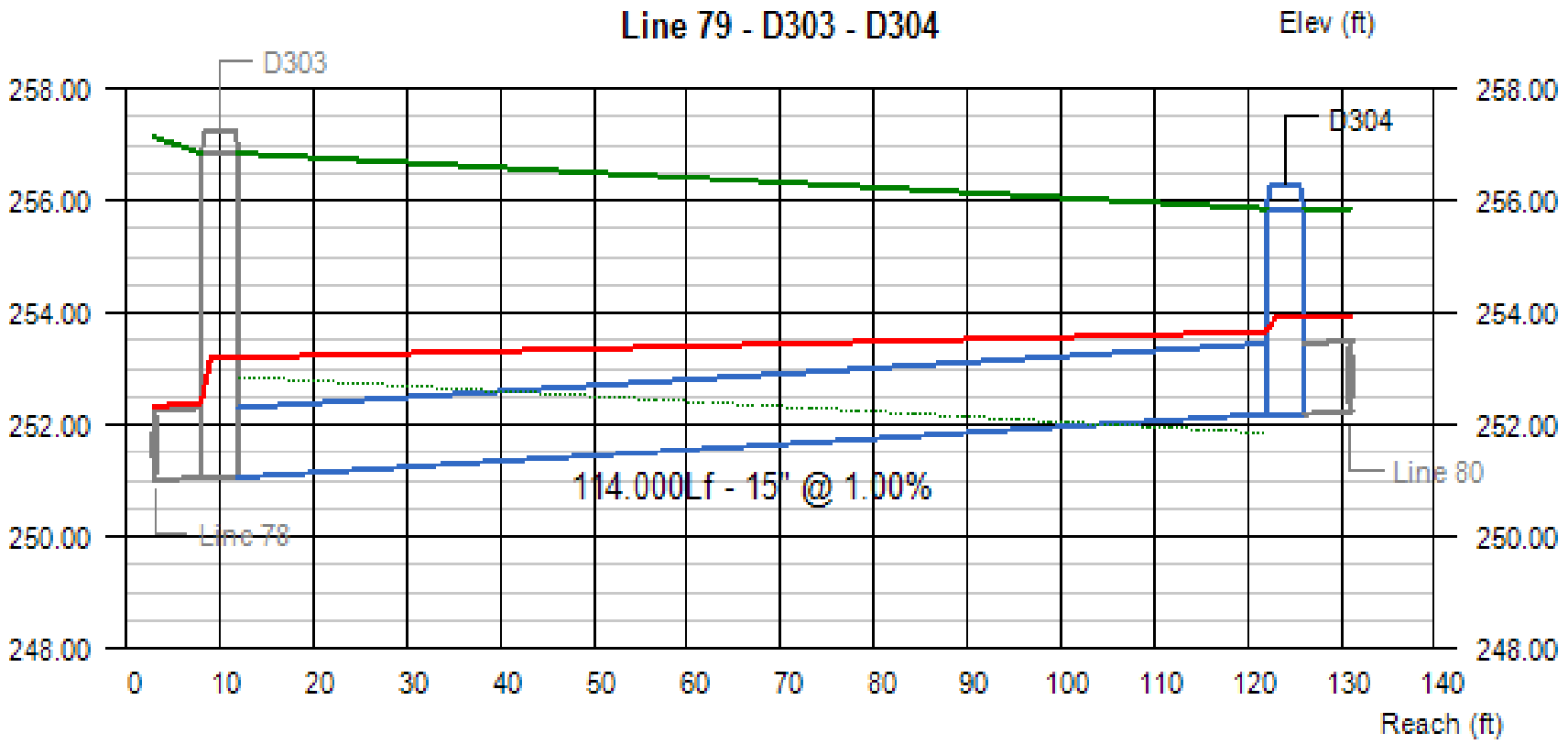
Line Profile (Line 78) - D302 - D303



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
78	7.36	250.75	251.05	1.25	1.25	2.14	252.00	252.39	253.19	6.00	5.99	6.58	4.55

Project File: | No. Lines: 138 | Run Date: 10/31/2019

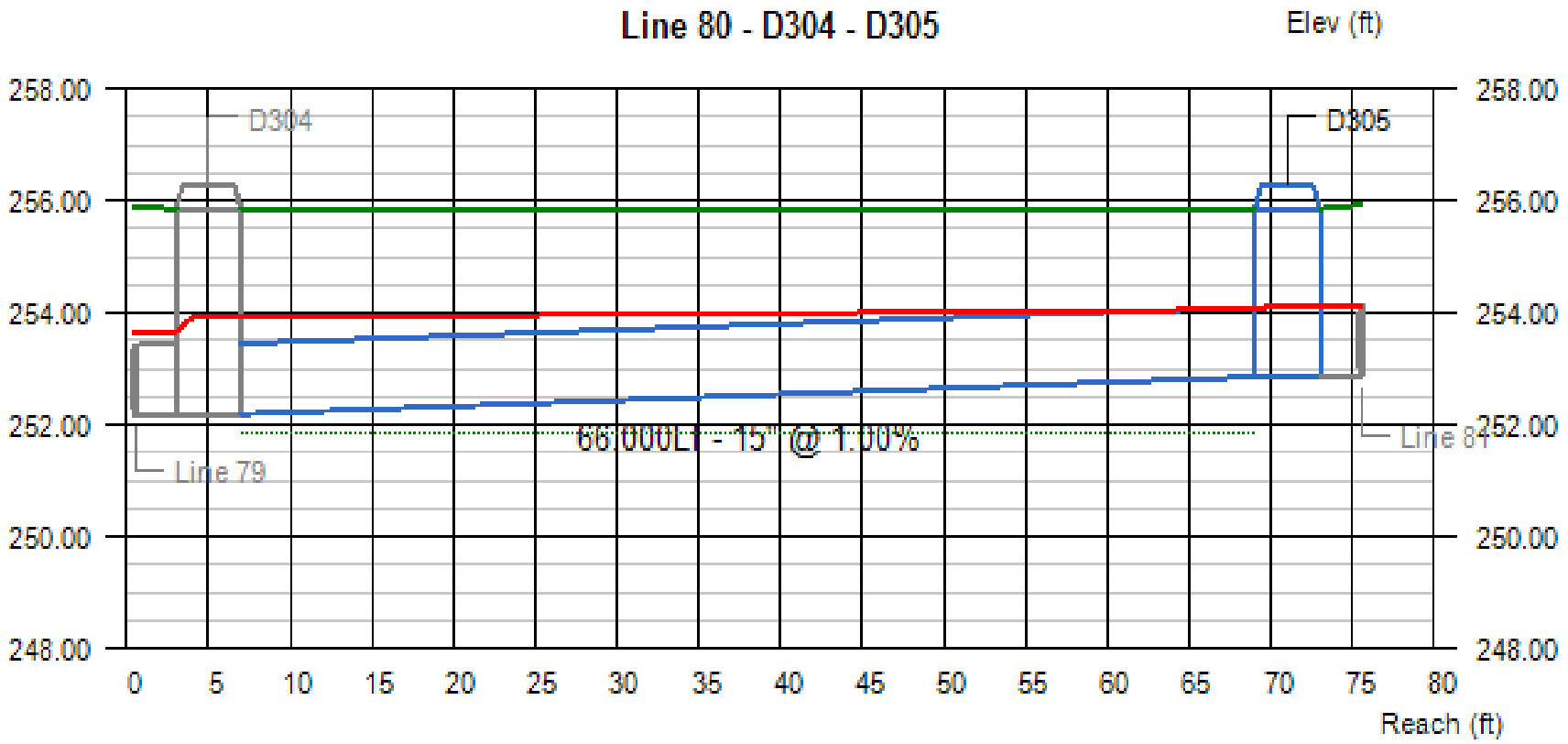
Line Profile (Line 79) - D303 - D304



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
79	4.08	251.05	252.19	1.25	1.25	1.72	253.19	253.65	253.91	3.33	3.32	4.55	2.41

Project File: | No. Lines: 138 | Run Date: 10/31/2019

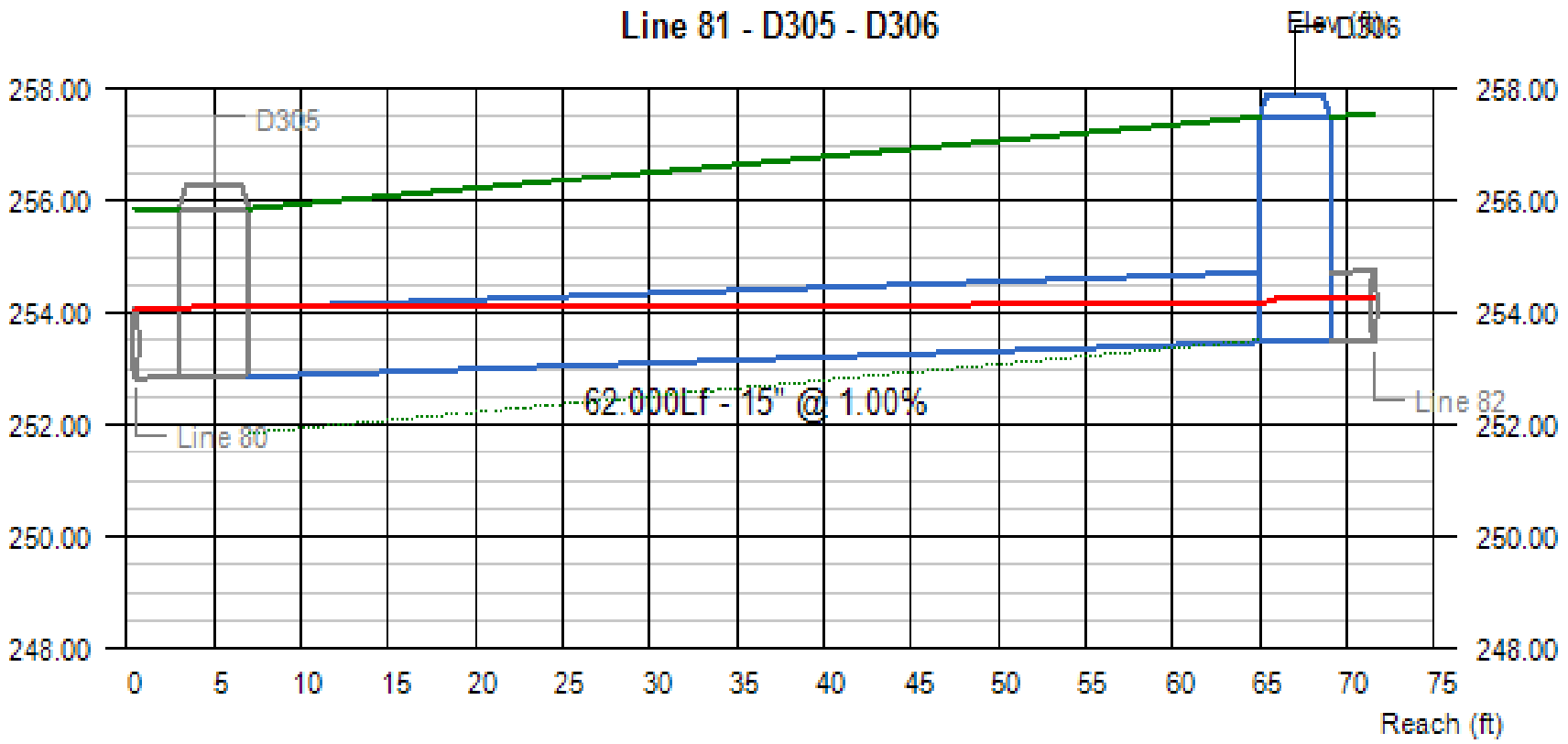
Line Profile (Line 80) - D304 - D305



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
80	3.24	252.19	252.85	1.25	1.21	1.27	253.91	254.06	254.12	2.64	2.67	2.41	1.75

Project File:	No. Lines: 138	Run Date: 10/31/2019

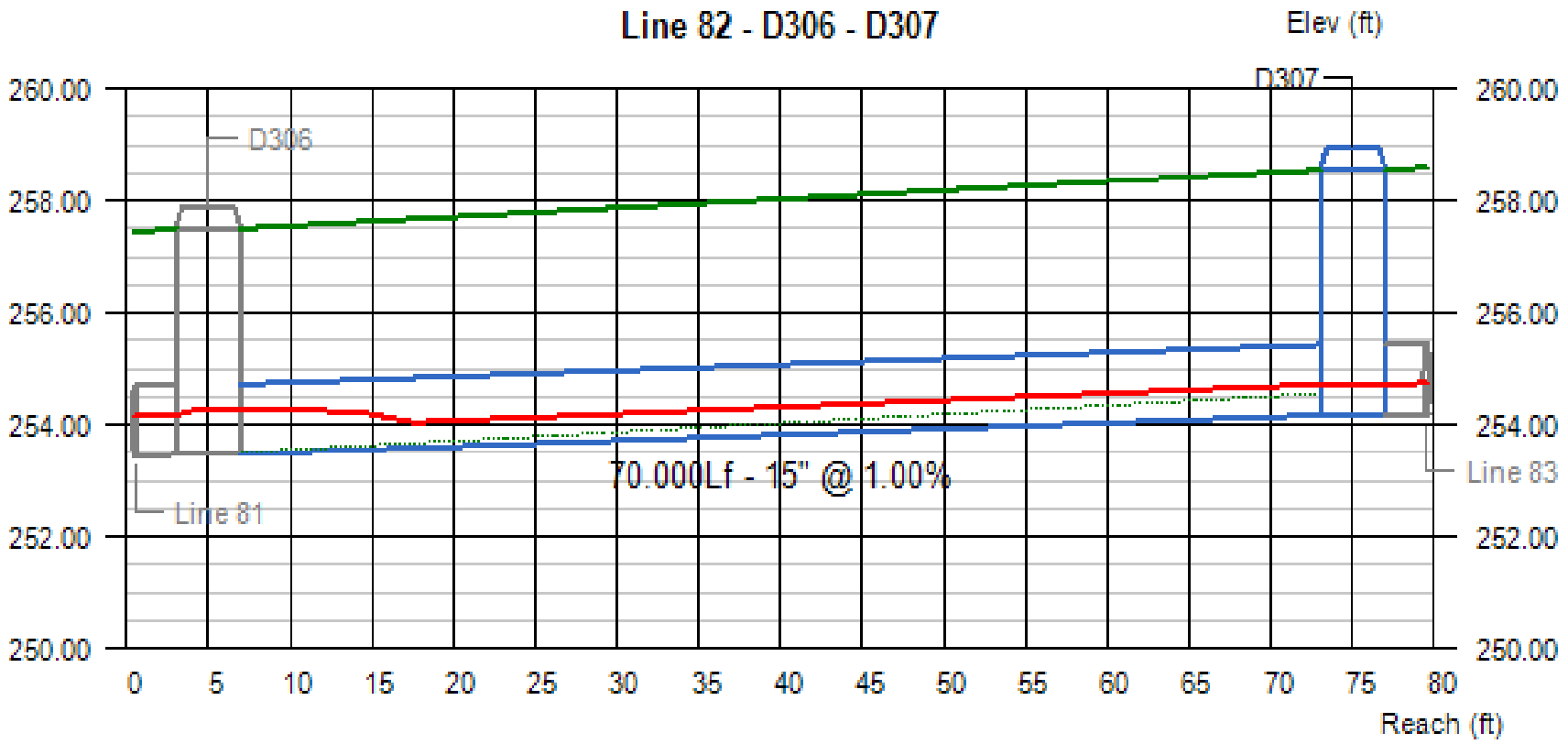
Line Profile (Line 81) - D305 - D306



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
81	2.44	252.85	253.47	1.25	0.69	0.79	254.12	254.16	254.26	1.99	3.51	1.75	2.78

Project File: | No. Lines: 138 | Run Date: 10/31/2019

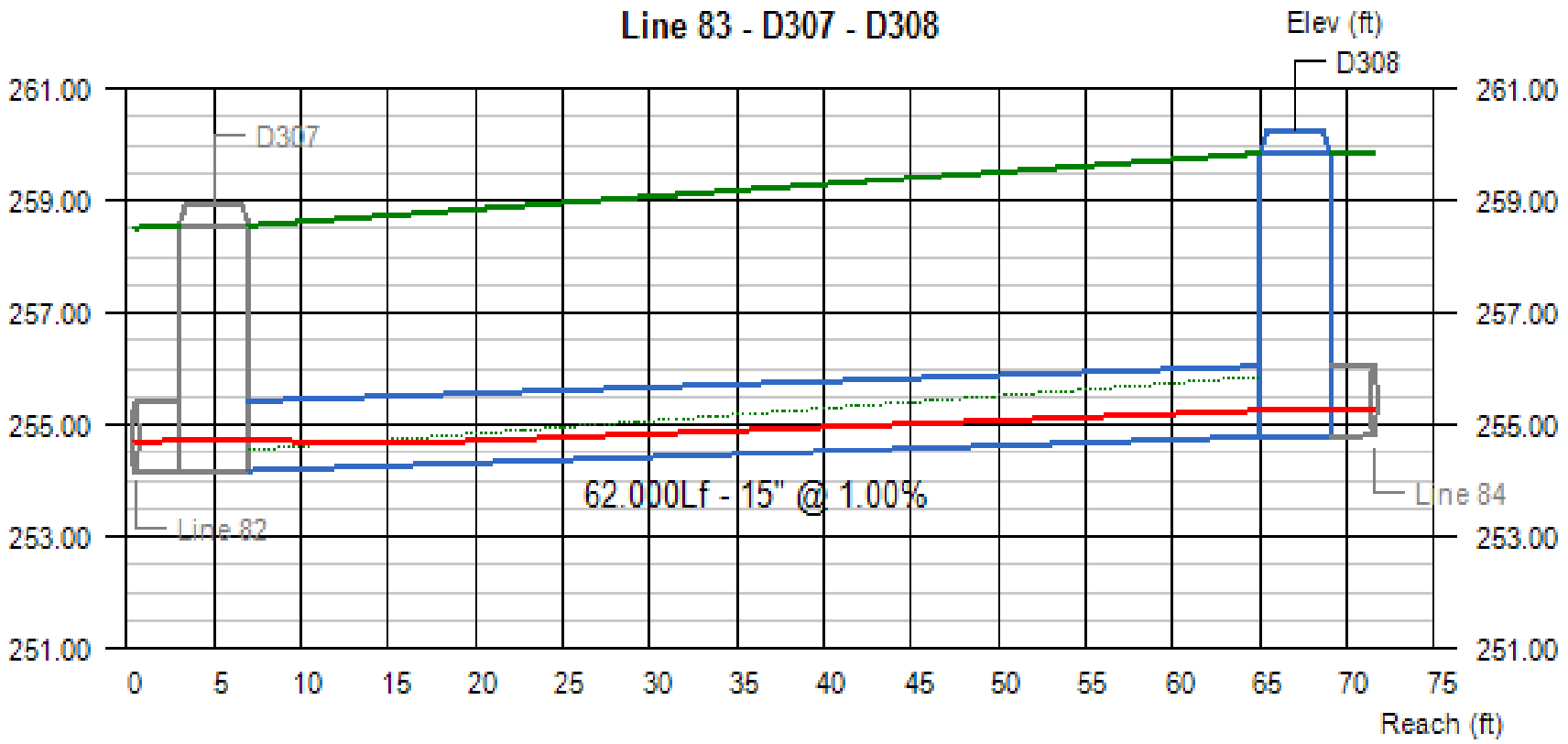
Line Profile (Line 82) - D306 - D307



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
82	1.89	253.47	254.17	0.79	0.55	0.55	254.26	254.72 j	254.72	2.33	3.67	2.78	3.13

Project File: | No. Lines: 138 | Run Date: 10/31/2019

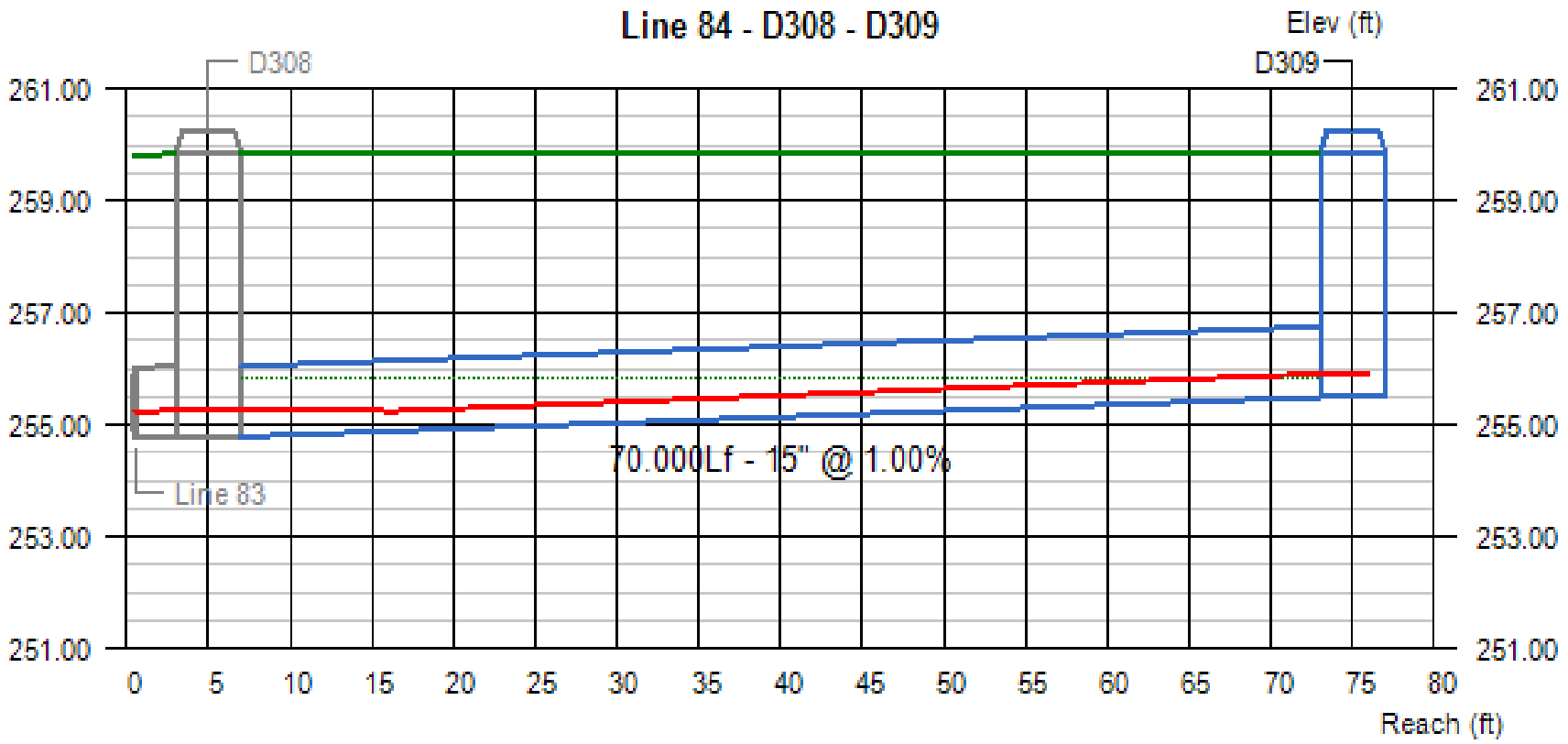
Line Profile (Line 83) - D307 - D308



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
83	1.40	254.17	254.79	0.55	0.47	0.47	254.72	255.26 j	255.26	2.70	3.34	3.13	3.81

Project File: | No. Lines: 138 | Run Date: 10/31/2019

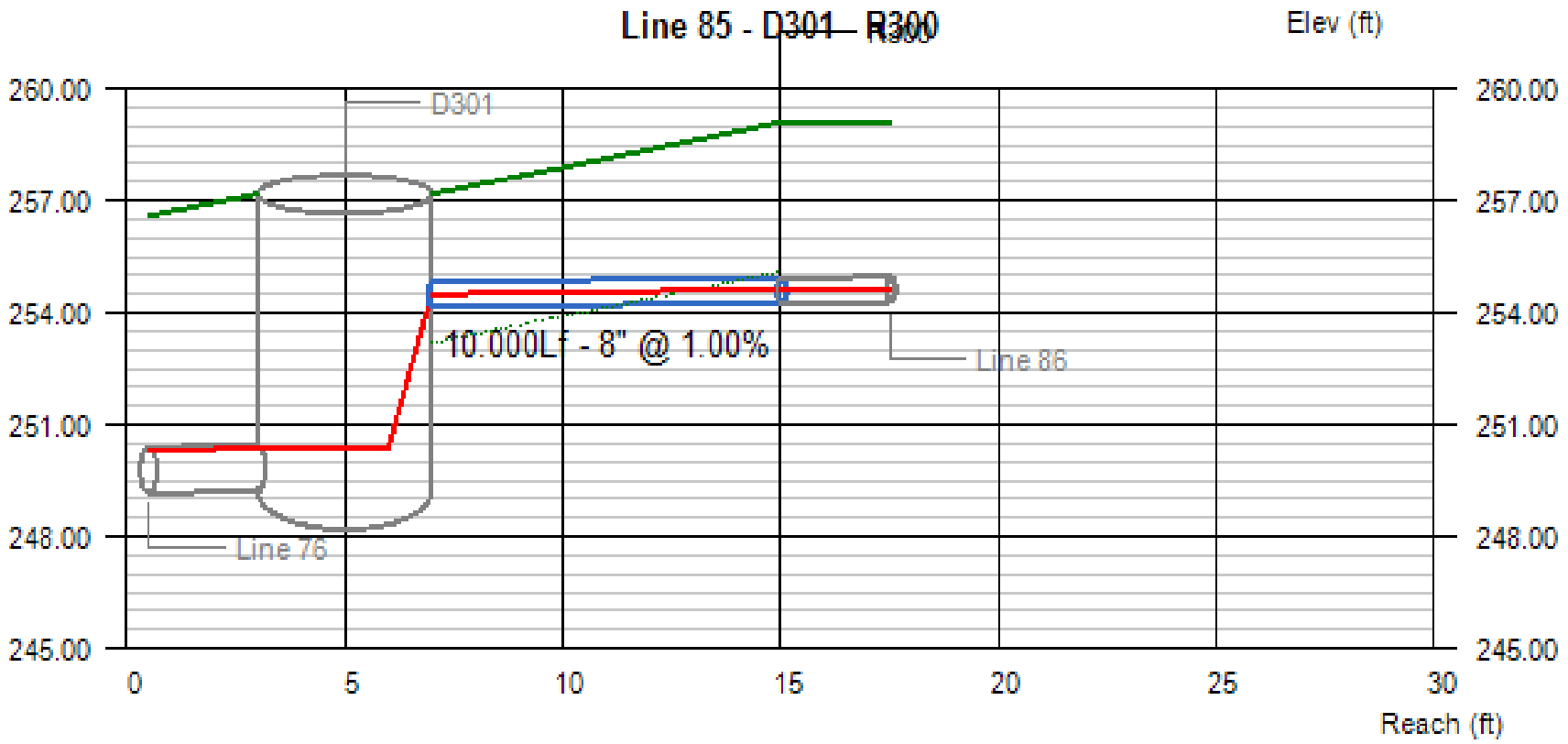
Line Profile (Line 84) - D308 - D309



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
84	1.12	254.79	255.49	0.47	0.42	0.42	255.26	255.91 j	255.91	2.68	3.13	3.81	3.11

Project File: | No. Lines: 138 | Run Date: 10/31/2019

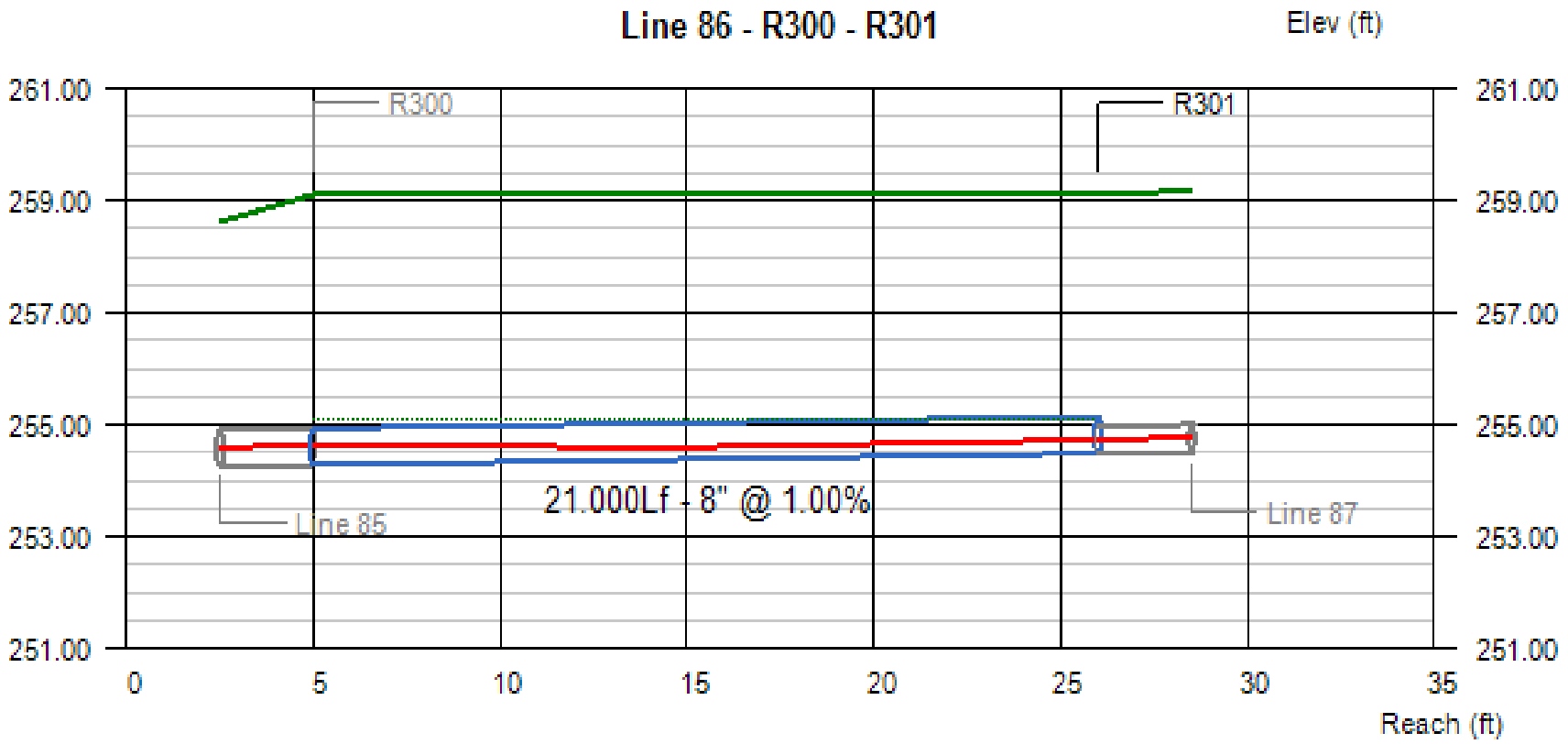
Line Profile (Line 85) - D301 - R300



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
85	0.60	254.17	254.27	0.33	0.36	0.36	254.50	254.63	254.63	3.45	3.07	2.33	4.16

Project File: | No. Lines: 138 | Run Date: 10/31/2019

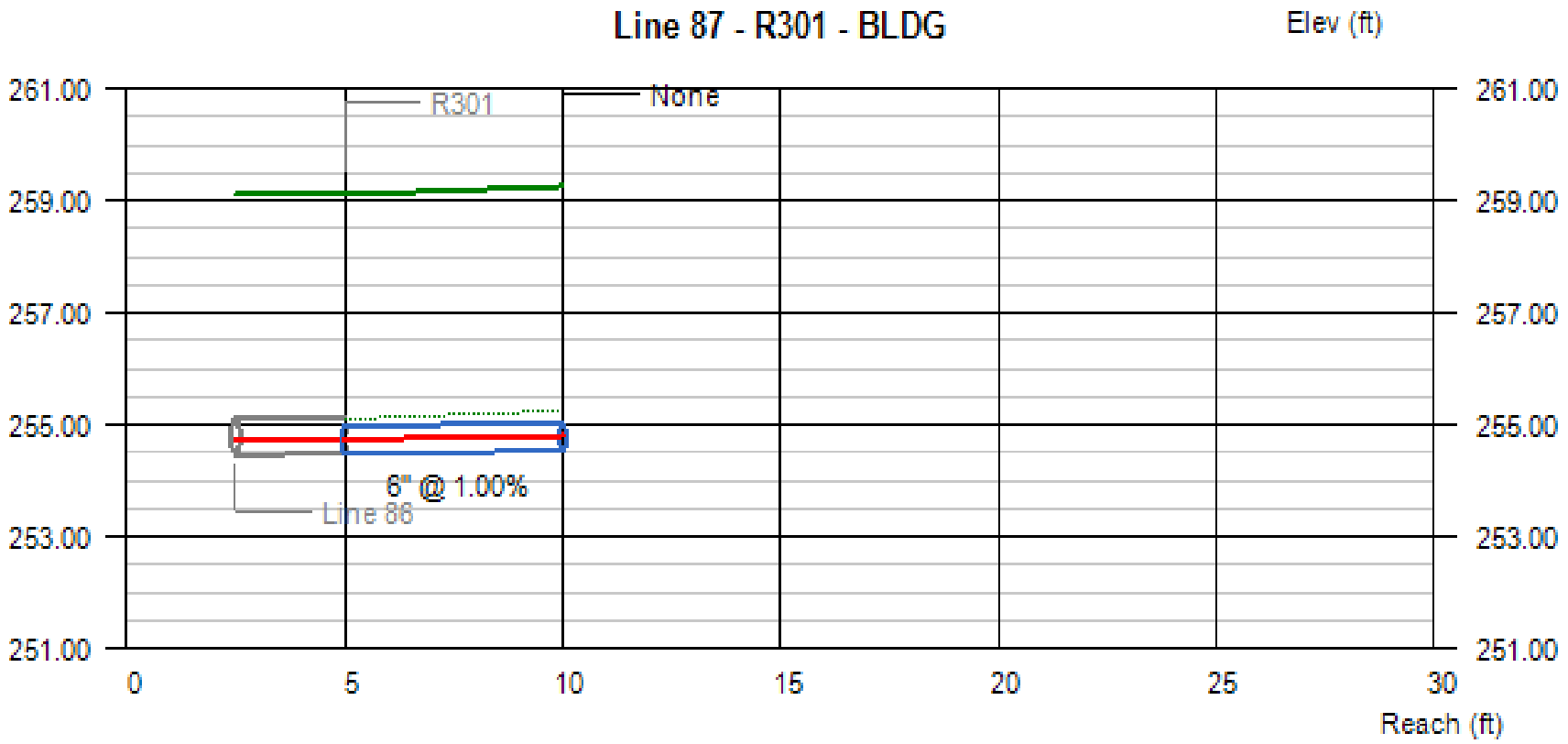
Line Profile (Line 86) - R300 - R301



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
86	0.30	254.27	254.48	0.36	0.25	0.25	254.63	254.73 j	254.73	1.56	2.47	4.16	3.95

Project File: | No. Lines: 138 | Run Date: 10/31/2019

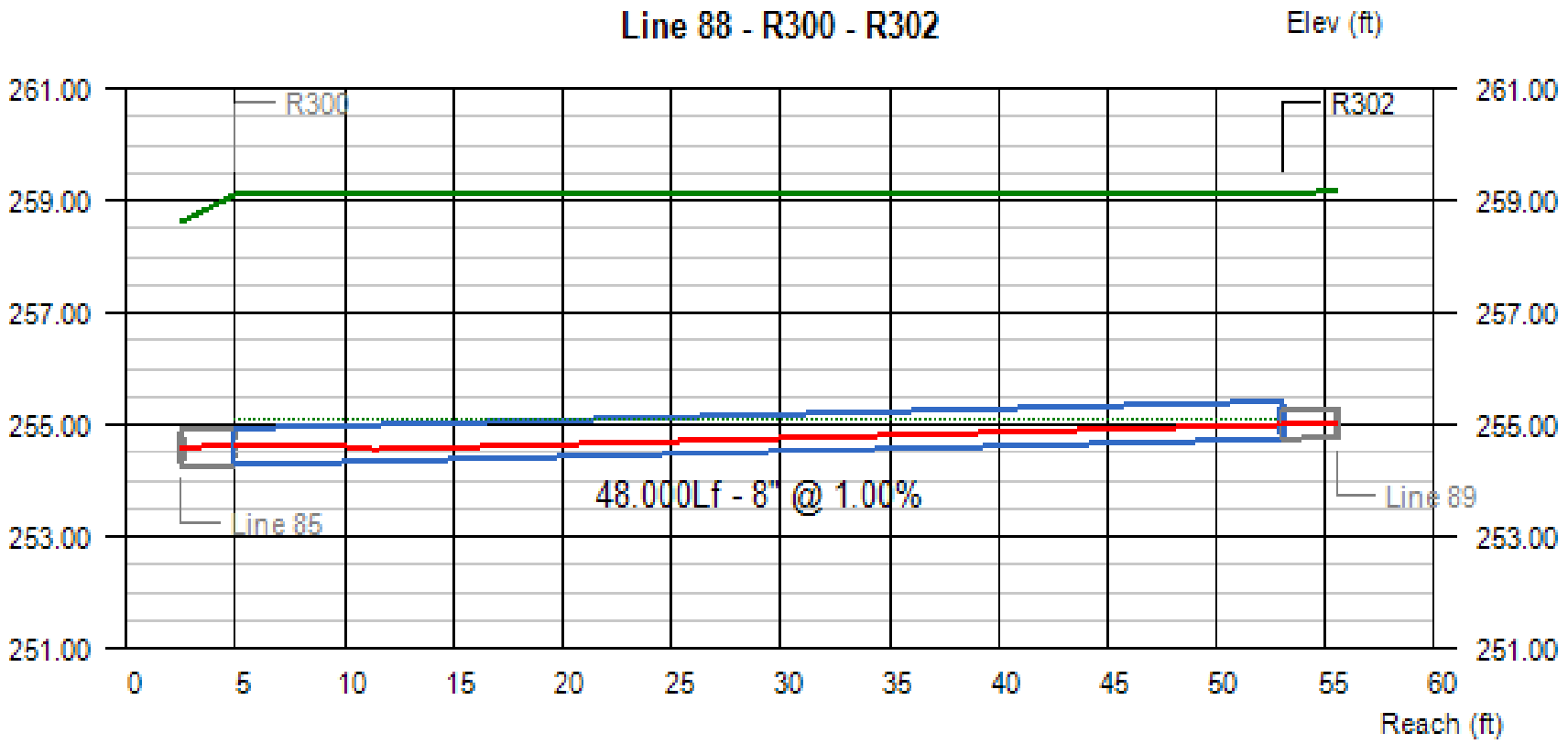
Line Profile (Line 87) - R301 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
87	0.30	254.48	254.53	0.26	0.28	0.28	254.74	254.81	254.81	2.91	2.70	4.12	4.22

Project File: | No. Lines: 138 | Run Date: 10/31/2019

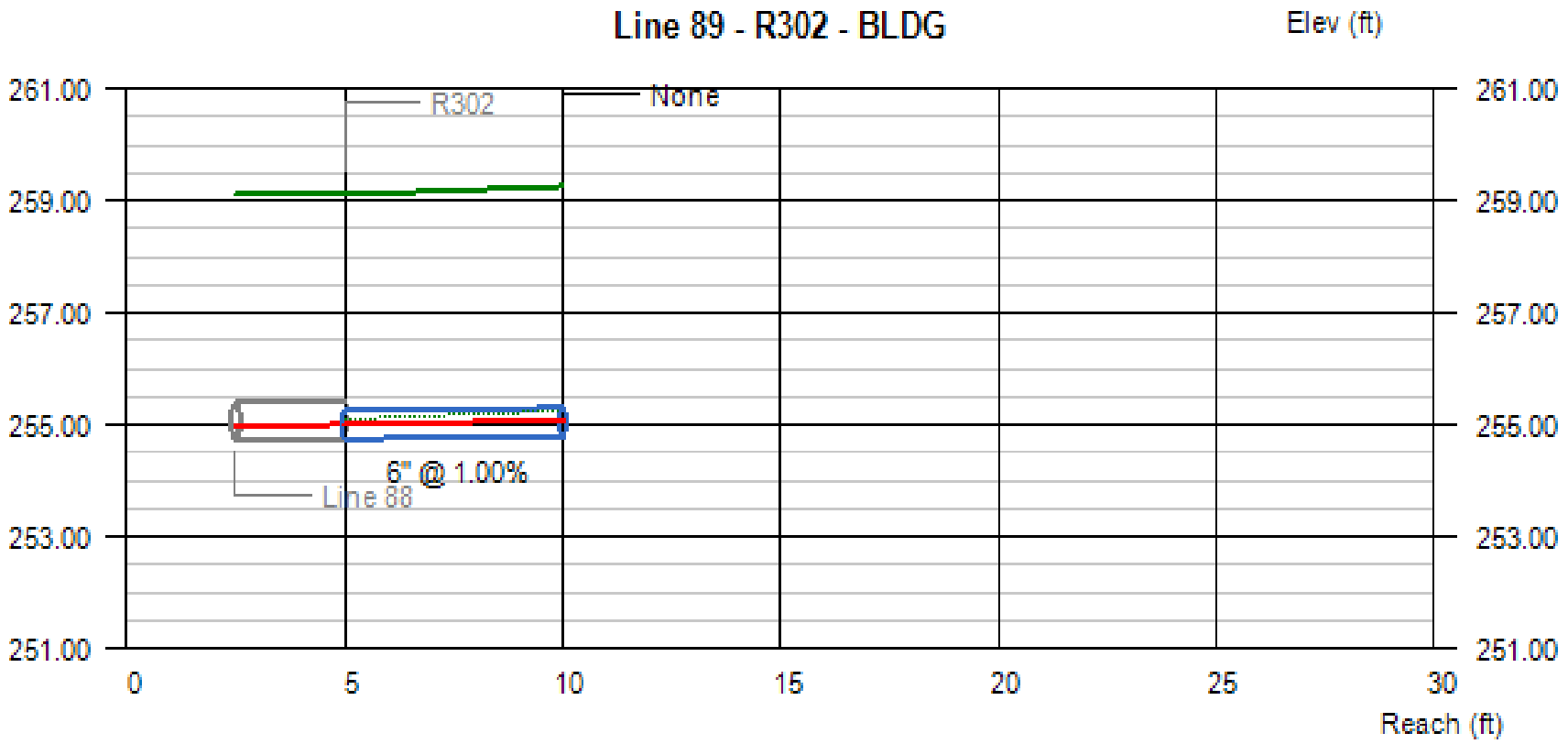
Line Profile (Line 88) - R300 - R302



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
88	0.30	254.27	254.75	0.36	0.25	0.25	254.63	255.00 j	255.00	1.56	2.47	4.16	3.68

Project File: | No. Lines: 138 | Run Date: 10/31/2019

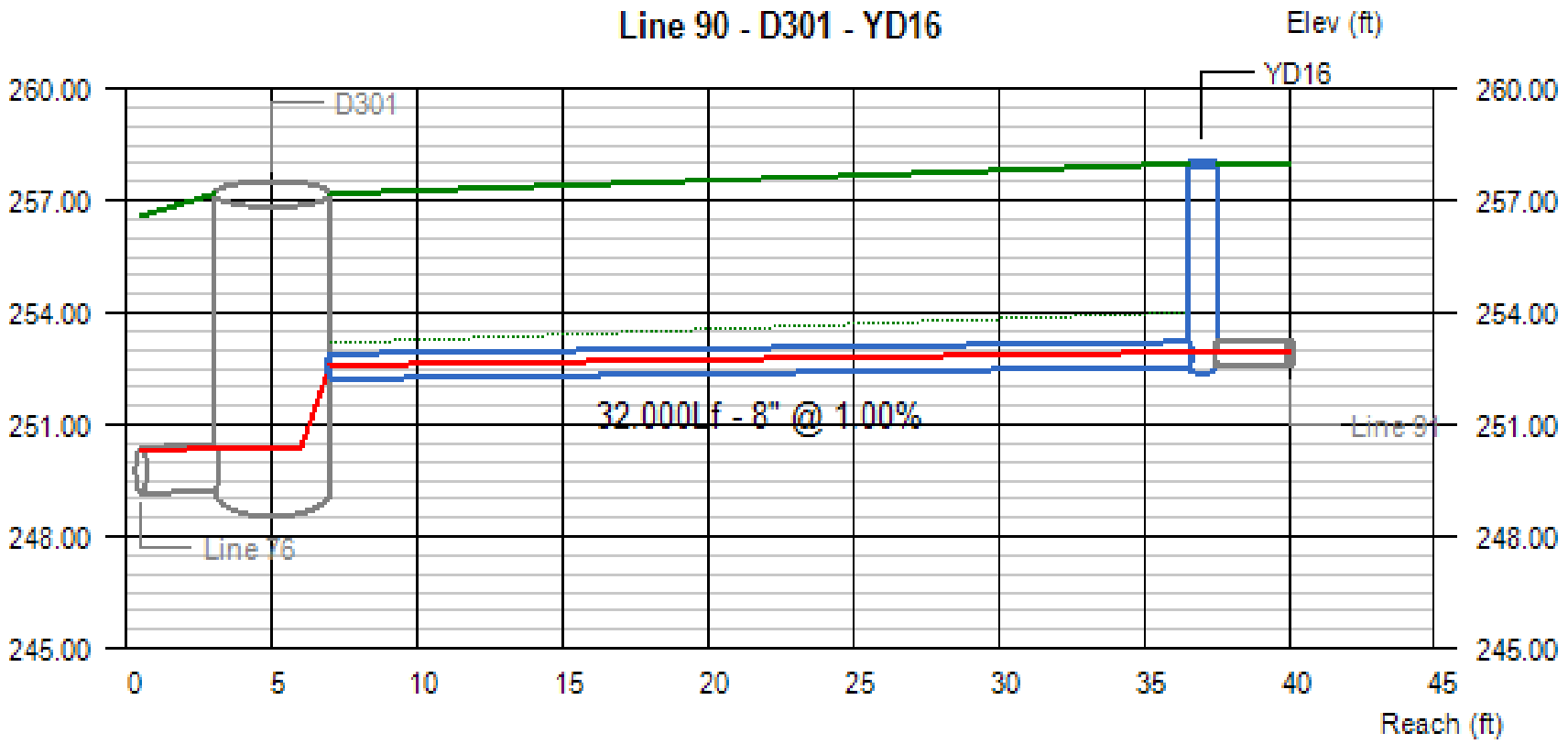
Line Profile (Line 89) - R302 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
89	0.30	254.75	254.80	0.26	0.28	0.28	255.01	255.08	255.08	2.91	2.70	3.85	3.95

Project File: | No. Lines: 138 | Run Date: 10/31/2019

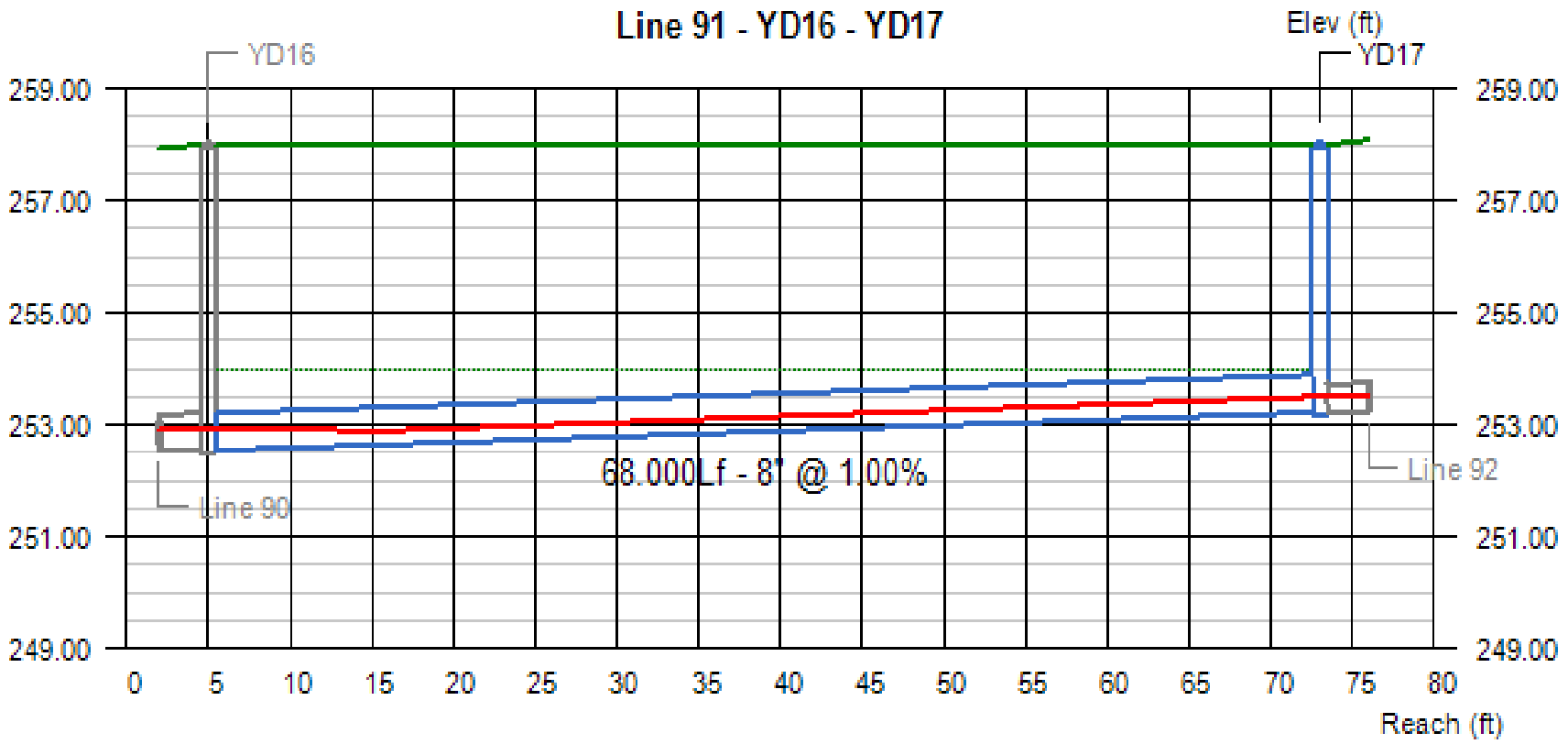
Line Profile (Line 90) - D301 - YD16



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
90	0.69	252.22	252.54	0.36	0.39	0.39	252.58	252.93	252.93	3.58	3.24	4.28	4.79

Project File: | No. Lines: 138 | Run Date: 10/31/2019

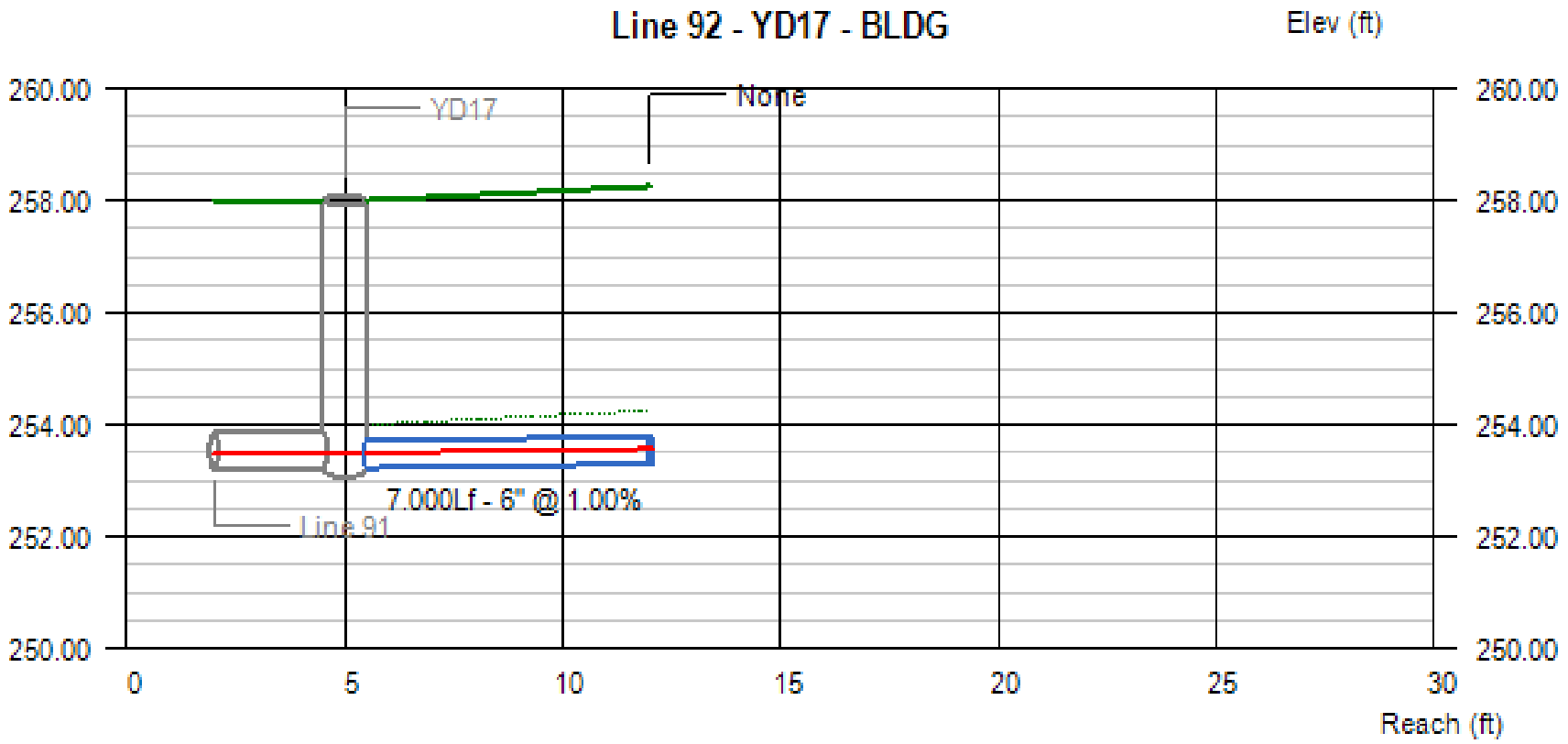
Line Profile (Line 91) - YD16 - YD17



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
91	0.35	252.54	253.22	0.39	0.28	0.28	252.93	253.50 j	253.50	1.65	2.59	4.79	4.11

Project File: | No. Lines: 138 | Run Date: 10/31/2019

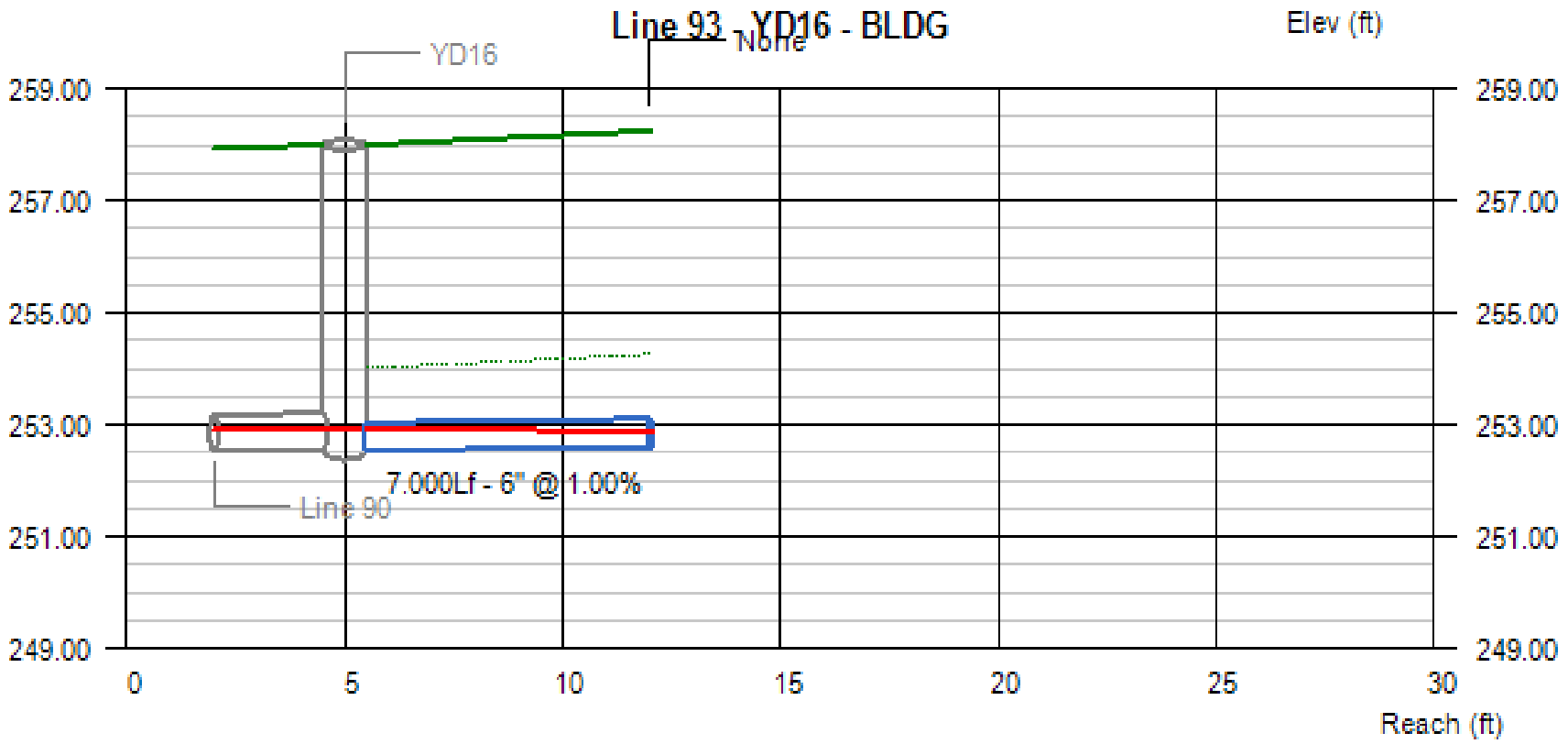
Line Profile (Line 92) - YD17 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
92	0.30	253.22	253.29	0.28	0.28	0.28	253.50	253.57	253.57	2.72	2.70	4.28	4.46

Project File: | No. Lines: 138 | Run Date: 10/31/2019

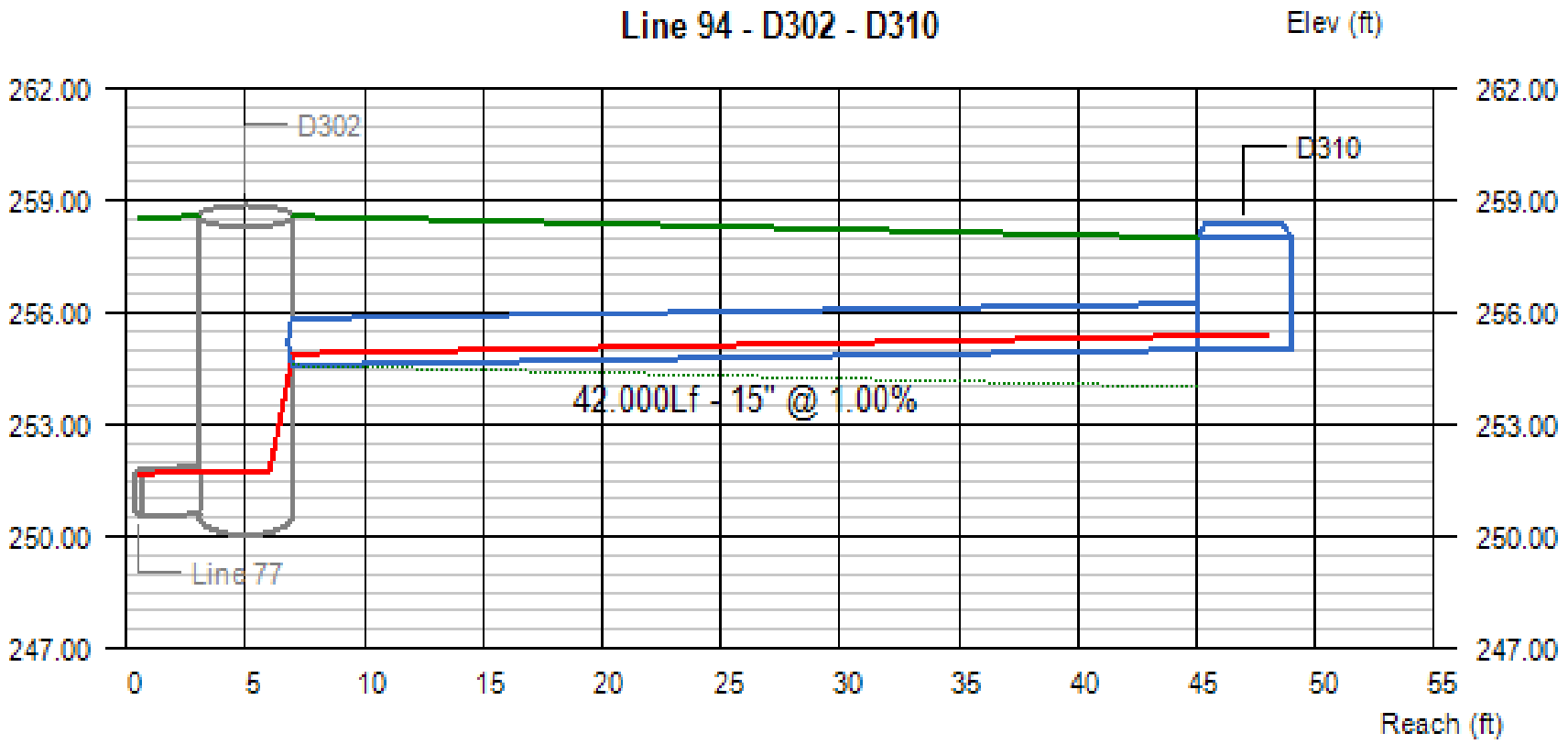
Line Profile (Line 93) - YD16 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
93	0.30	252.54	252.61	0.39	0.28	0.28	252.93	252.89	252.89	1.83	2.70	4.96	5.14

Project File: | No. Lines: 138 | Run Date: 10/31/2019

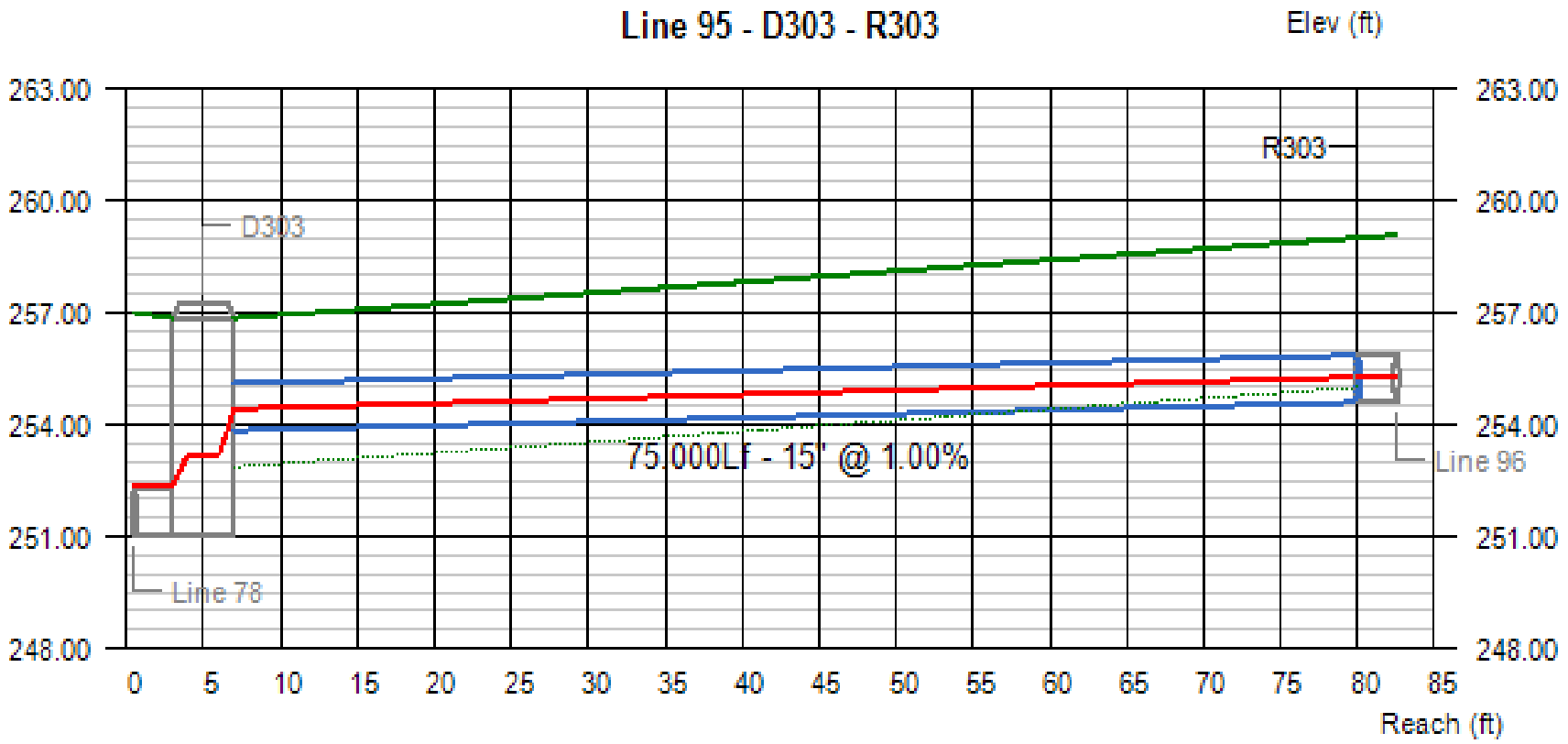
Line Profile (Line 94) - D302 - D310



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
94	0.89	254.58	255.00	0.31	0.37	0.37	254.89	255.37	255.37	3.69	2.93	2.75	1.75

Project File: | No. Lines: 138 | Run Date: 10/31/2019

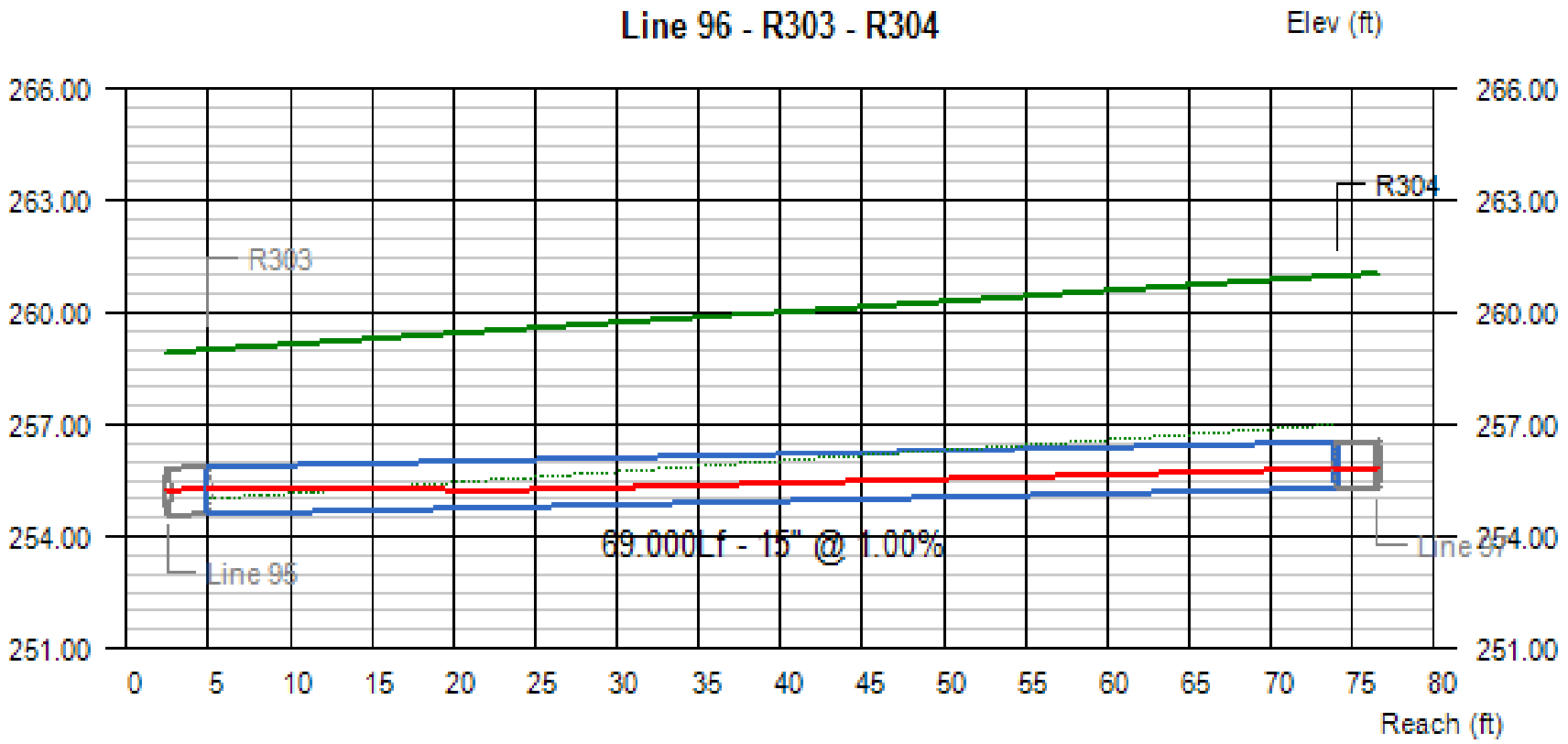
Line Profile (Line 95) - D303 - R303



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
95	2.78	253.85	254.60	0.57	0.67	0.67	254.42	255.27	255.27	5.06	4.16	1.75	3.15

Project File: | No. Lines: 138 | Run Date: 10/31/2019

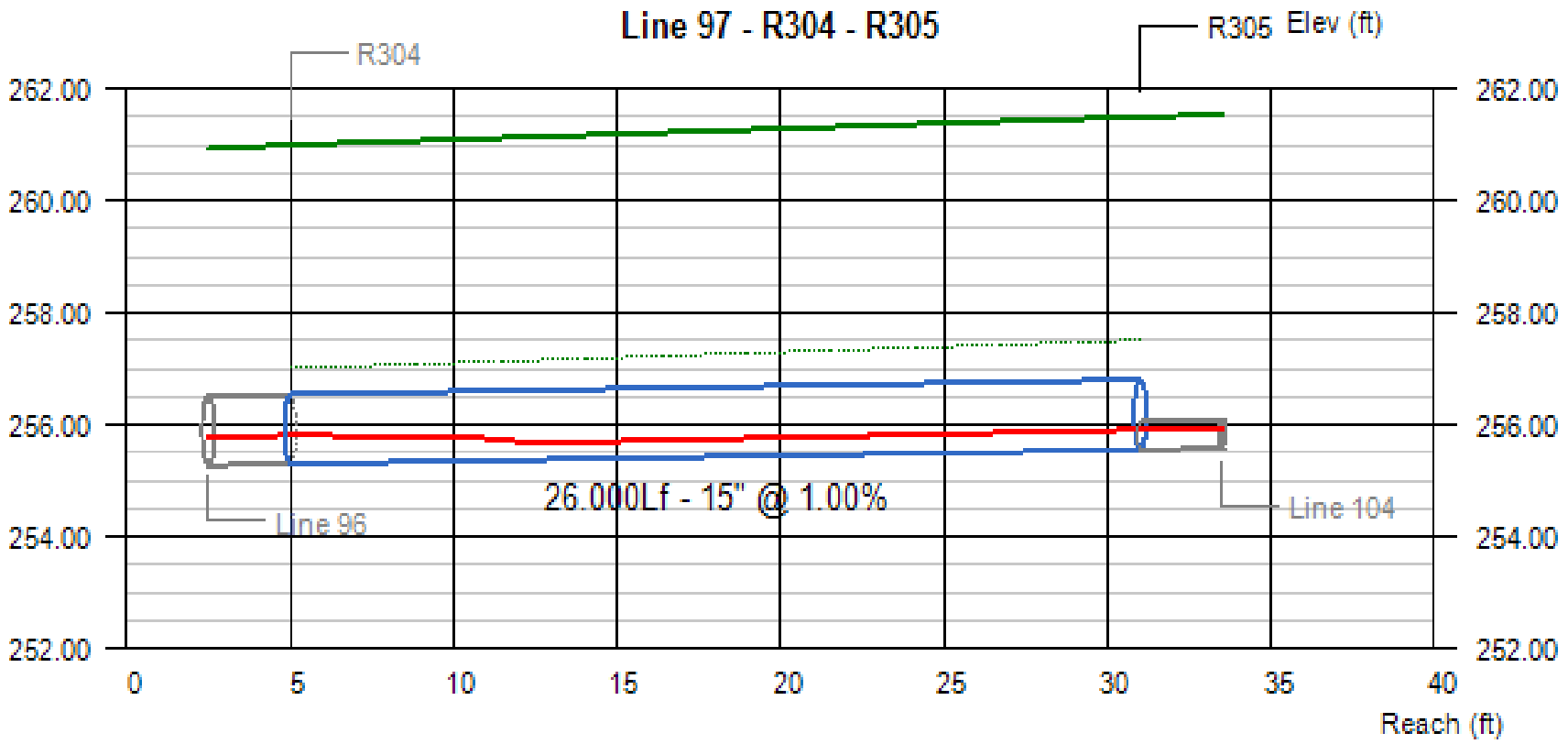
Line Profile (Line 96) - R303 - R304



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
96	1.71	254.60	255.29	0.67	0.52	0.52	255.27	255.81 j	255.81	2.57	3.55	3.15	4.46

Project File: | No. Lines: 138 | Run Date: 10/31/2019

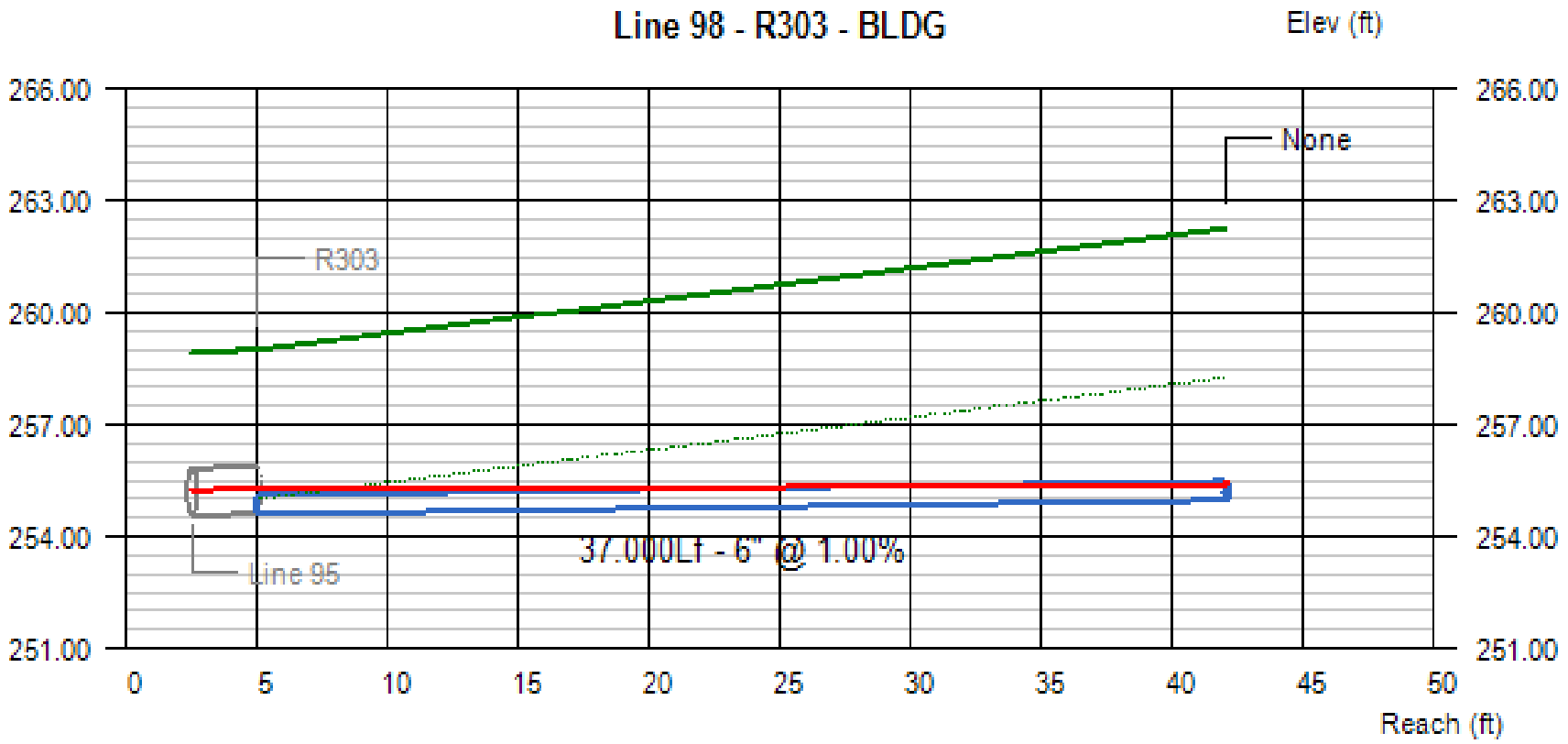
Line Profile (Line 97) - R304 - R305



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
97	0.87	255.29	255.55	0.52	0.36	0.36	255.81	255.91 j	255.91	1.80	2.91	4.46	4.70

Project File: | No. Lines: 138 | Run Date: 10/31/2019

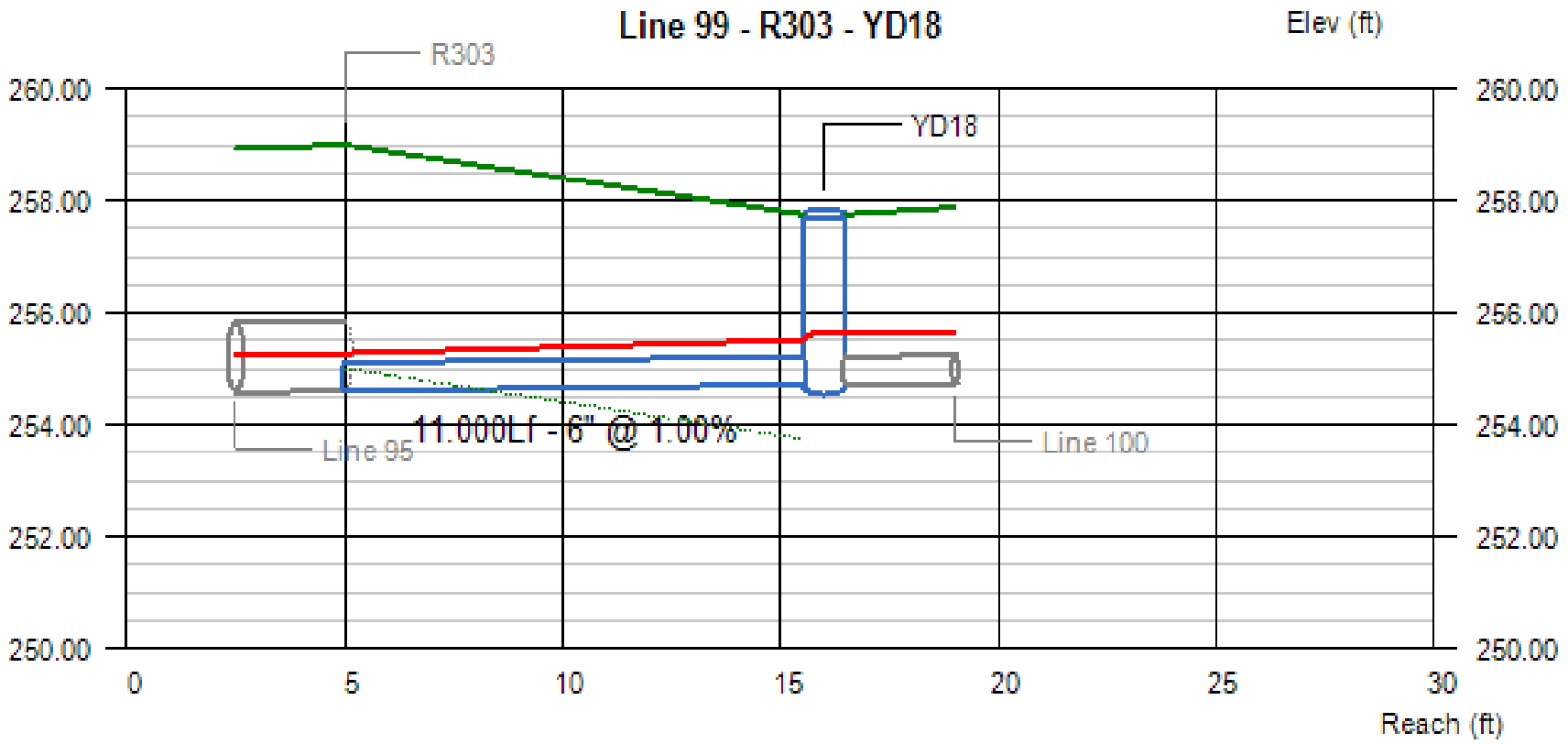
Line Profile (Line 98) - R303 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
98	0.30	254.60	254.97	0.50	0.40	0.45	255.27	255.37	255.42	1.54	1.81	3.90	6.78

Project File: | No. Lines: 138 | Run Date: 10/31/2019

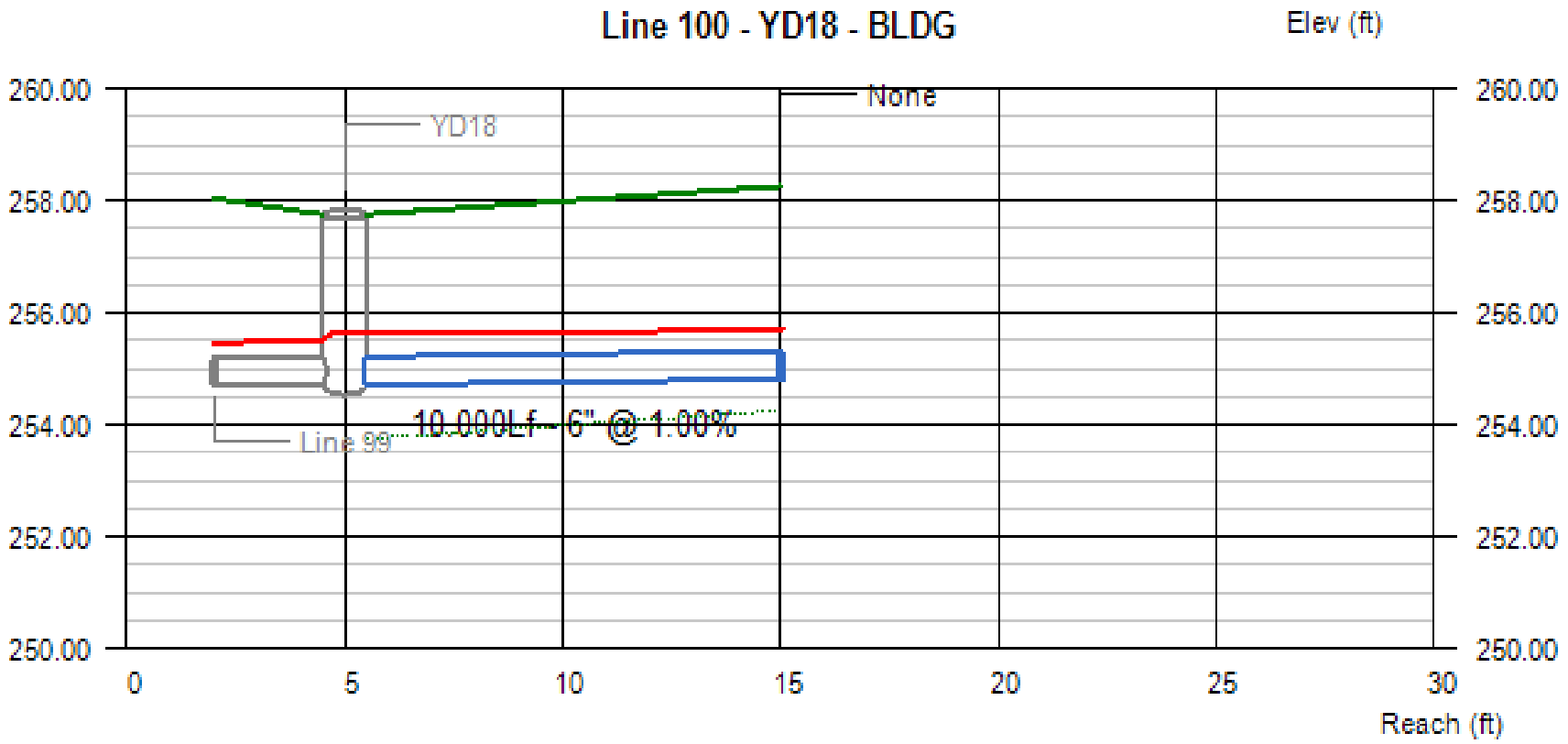
Line Profile (Line 99) - R303 - YD18



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
99	0.82	254.60	254.71	0.50	0.50	0.93	255.27	255.50	255.64	4.18	4.18	3.90	2.54

Project File: | No. Lines: 138 | Run Date: 10/31/2019

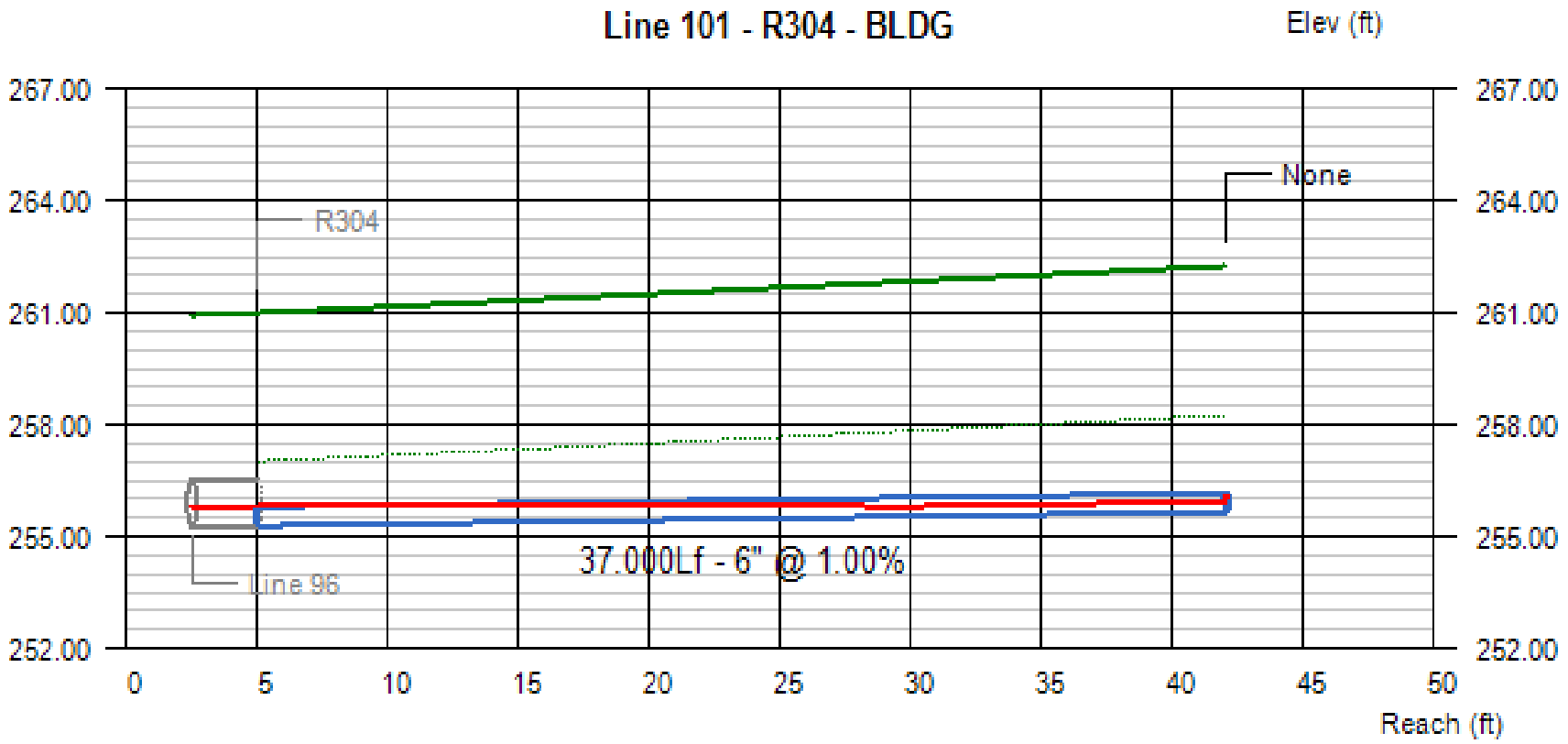
Line Profile (Line 100) - YD18 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
100	0.30	254.71	254.81	0.50	0.50	0.90	255.64	255.67	255.71	1.54	1.54	2.54	2.94

Project File: | No. Lines: 138 | Run Date: 10/31/2019

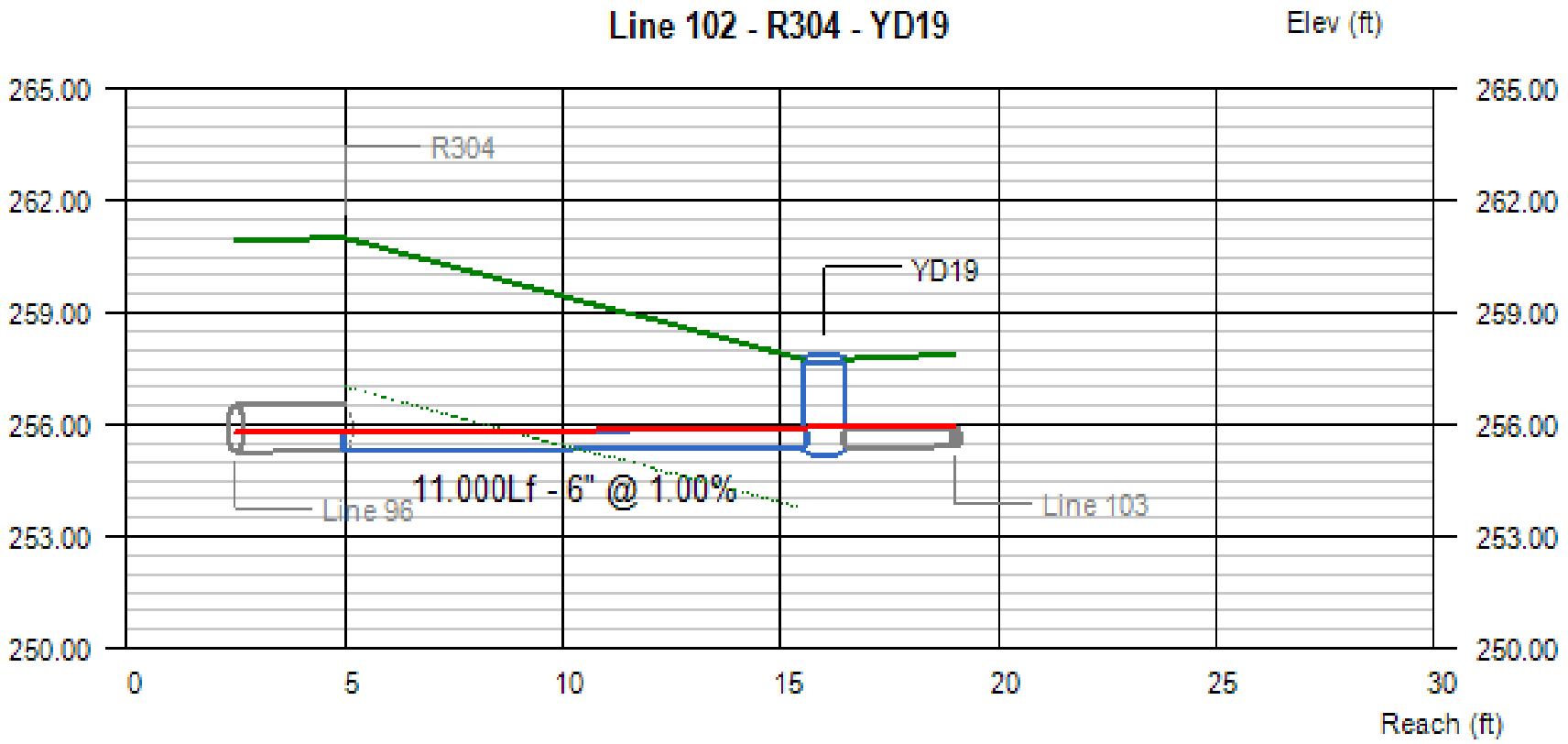
Line Profile (Line 101) - R304 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
101	0.30	255.29	255.66	0.50	0.28	0.39	255.81	255.94 j	256.05	1.54	2.68	5.21	6.09

Project File: | No. Lines: 138 | Run Date: 10/31/2019

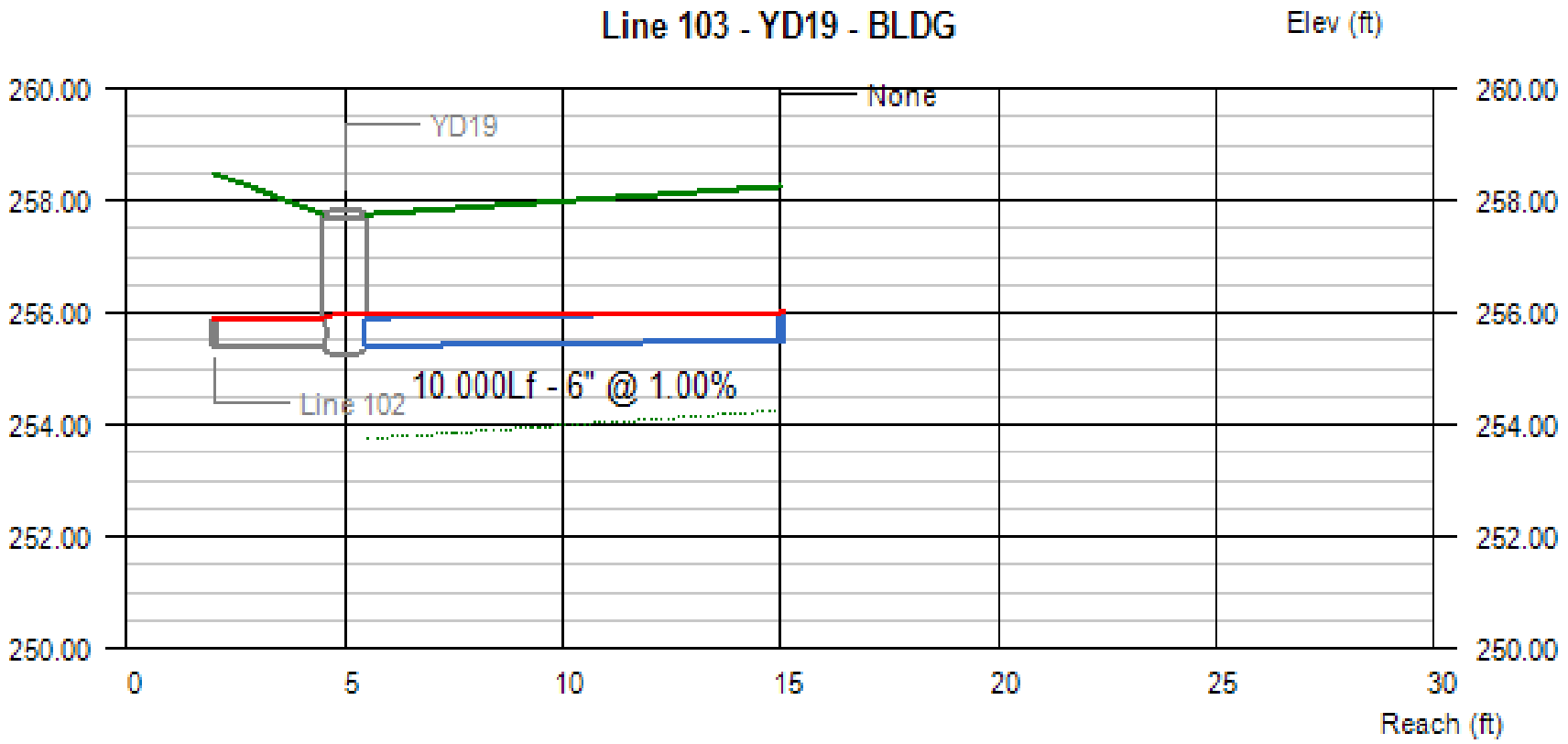
Line Profile (Line 102) - R304 - YD19



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
102	0.57	255.29	255.40	0.50	0.50	0.56	255.81	255.90	255.96	2.91	2.91	5.21	1.85

Project File: | No. Lines: 138 | Run Date: 10/31/2019

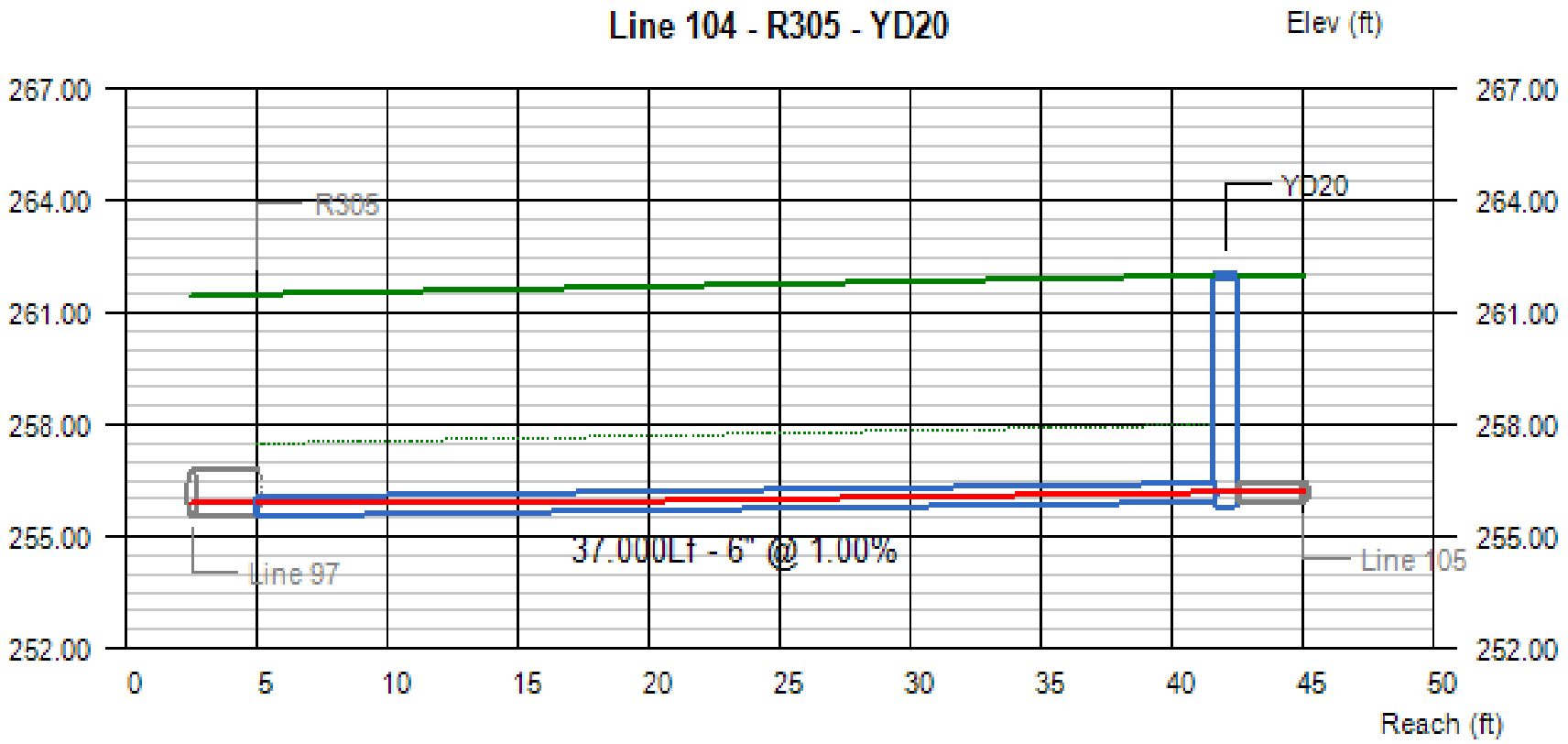
Line Profile (Line 103) - YD19 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
103	0.30	255.40	255.50	0.50	0.49	0.53	255.96	255.99	256.03	1.54	1.54	1.85	2.25

Project File: | No. Lines: 138 | Run Date: 10/31/2019

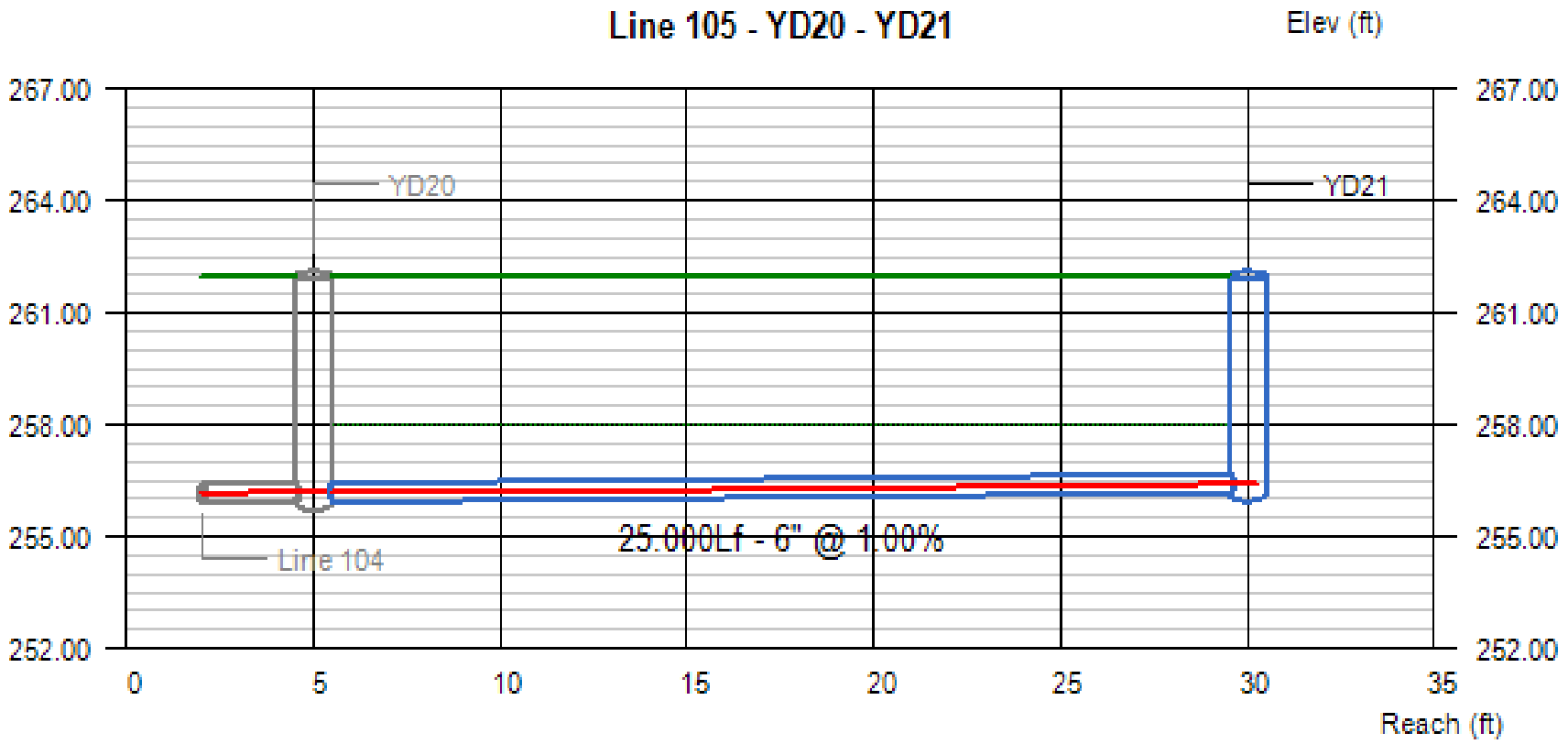
Line Profile (Line 104) - R305 - YD20



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
104	0.27	255.55	255.92	0.36	0.26	0.26	255.91	256.18 j	256.18	1.76	2.59	5.45	5.58

Project File: | No. Lines: 138 | Run Date: 10/31/2019

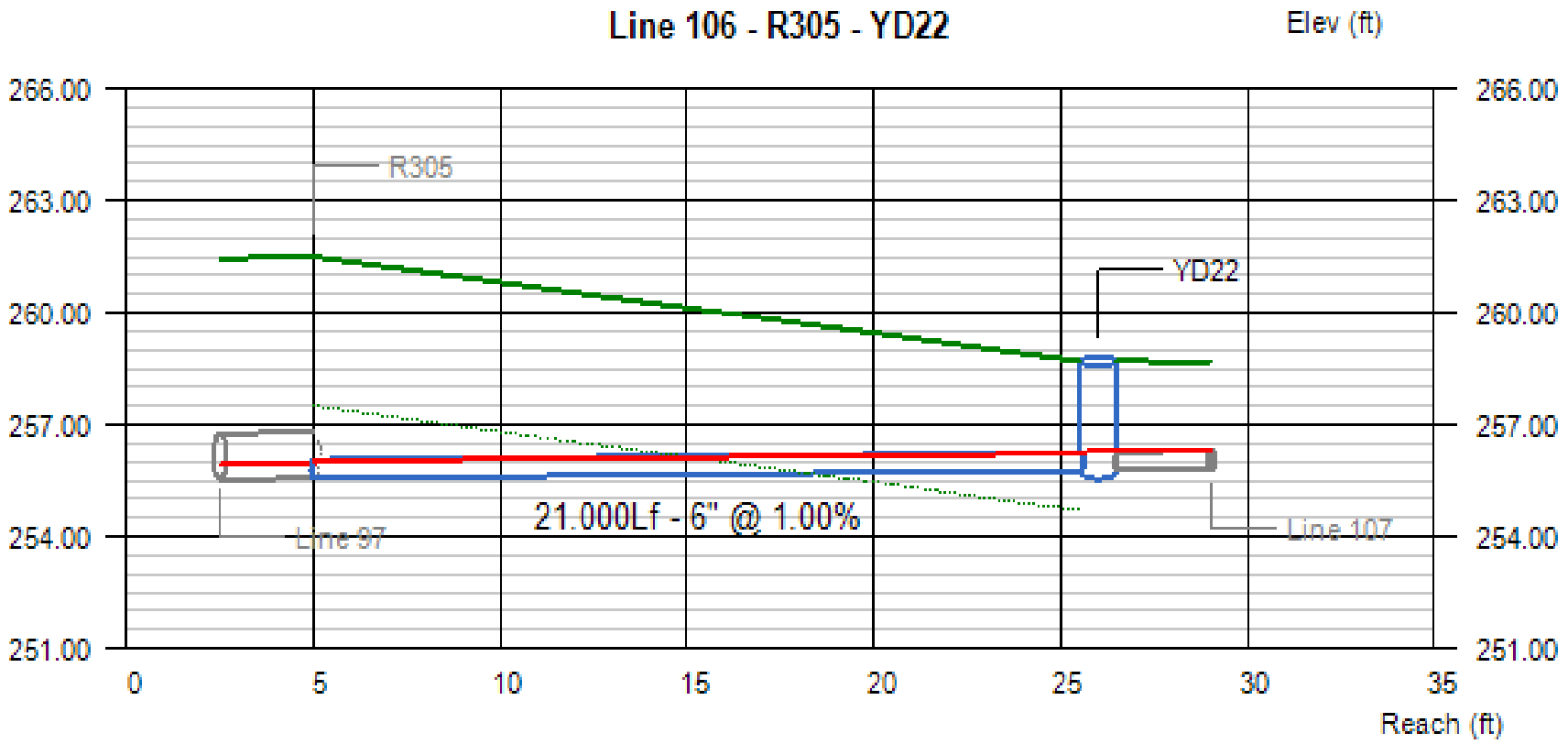
Line Profile (Line 105) - YD20 - YD21



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
105	0.22	255.92	256.17	0.26	0.23	0.23	256.18	256.40 j	256.40	2.10	2.42	5.58	5.33

Project File: | No. Lines: 138 | Run Date: 10/31/2019

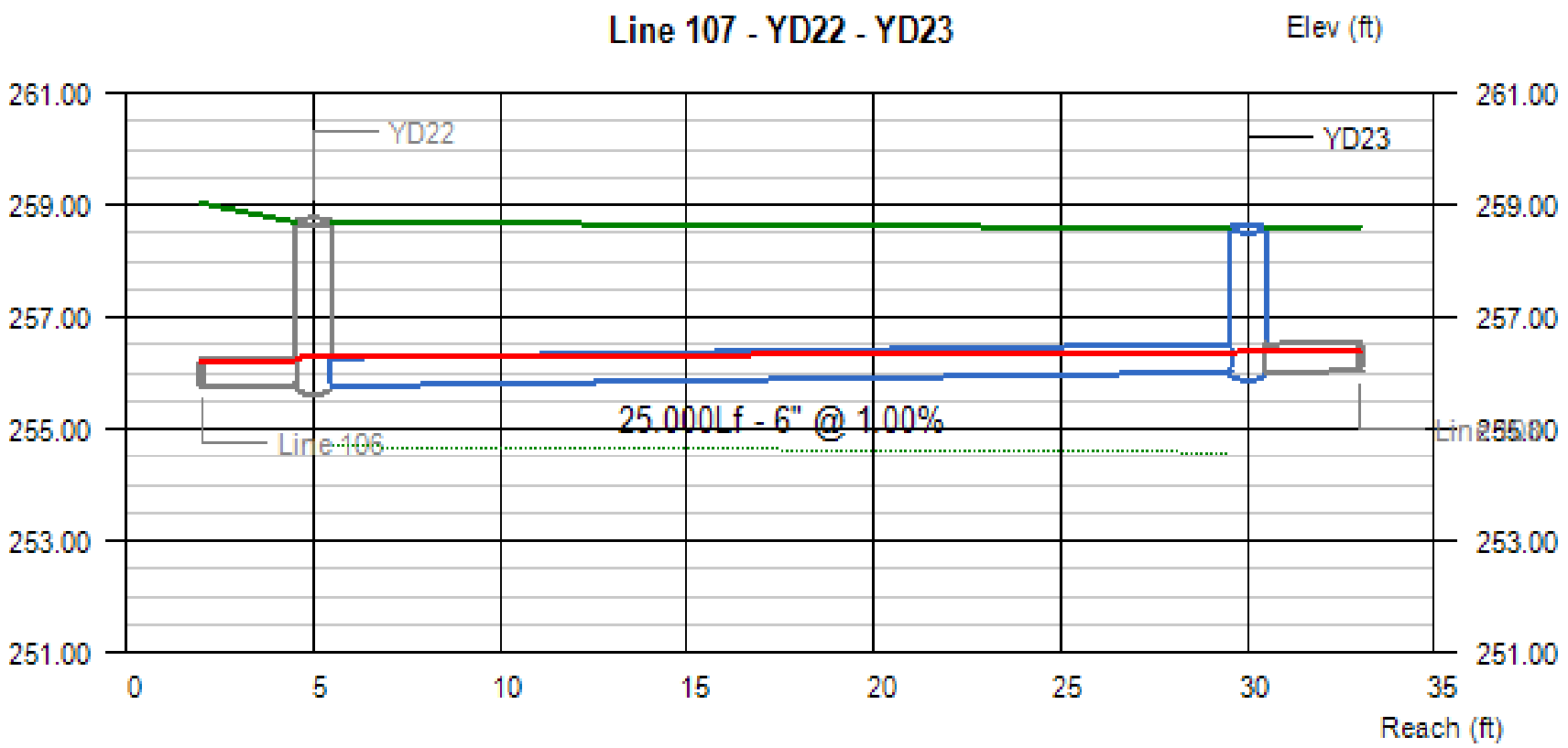
Line Profile (Line 106) - R305 - YD22



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
106	0.60	255.55	255.76	0.46	0.46	0.54	256.01	256.22	256.30	3.19	3.19	5.45	2.43

Project File: | No. Lines: 138 | Run Date: 10/31/2019

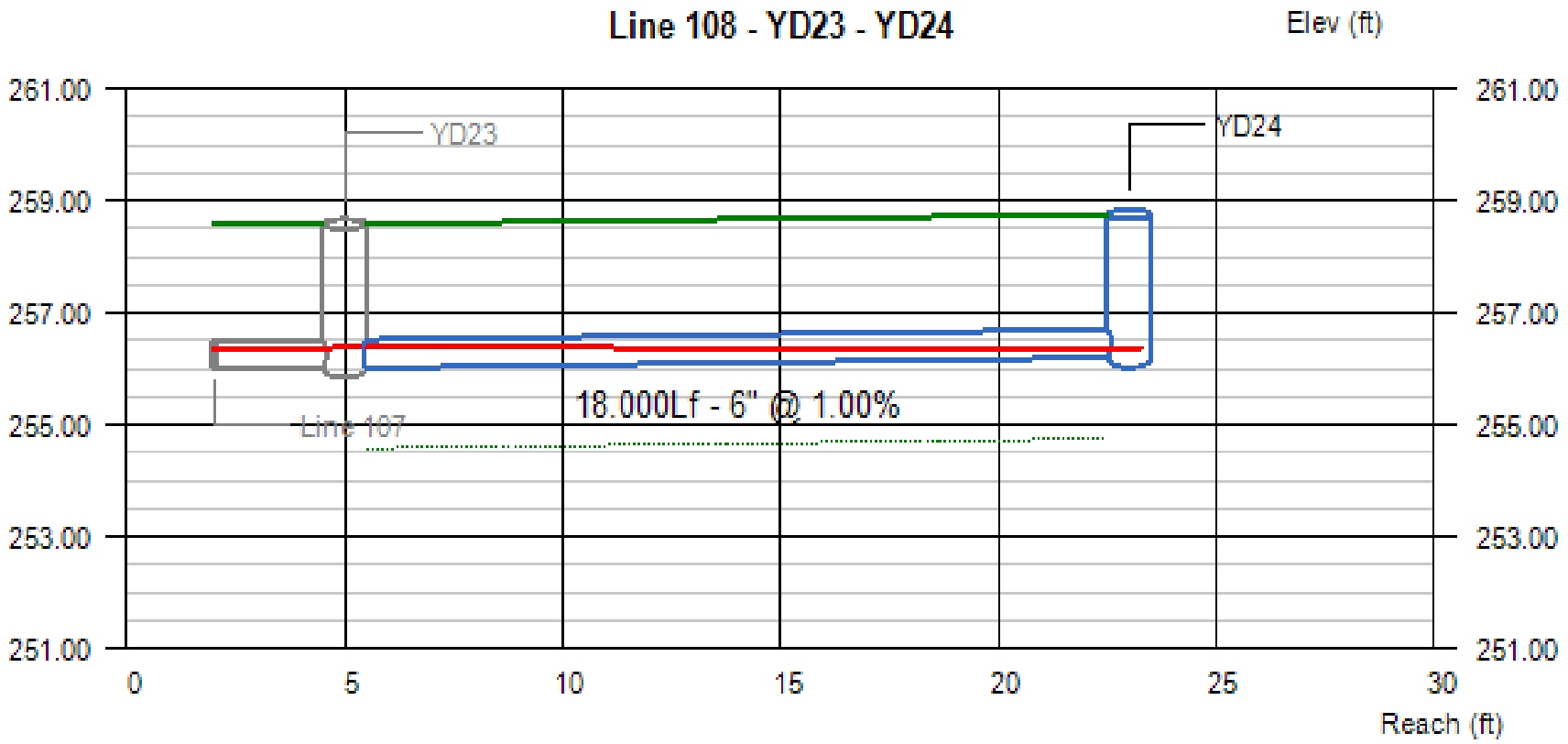
Line Profile (Line 107) - YD22 - YD23



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
107	0.27	255.76	256.01	0.50	0.33	0.36	256.30	256.34	256.37	1.37	1.93	2.43	2.07

Project File: | No. Lines: 138 | Run Date: 10/31/2019

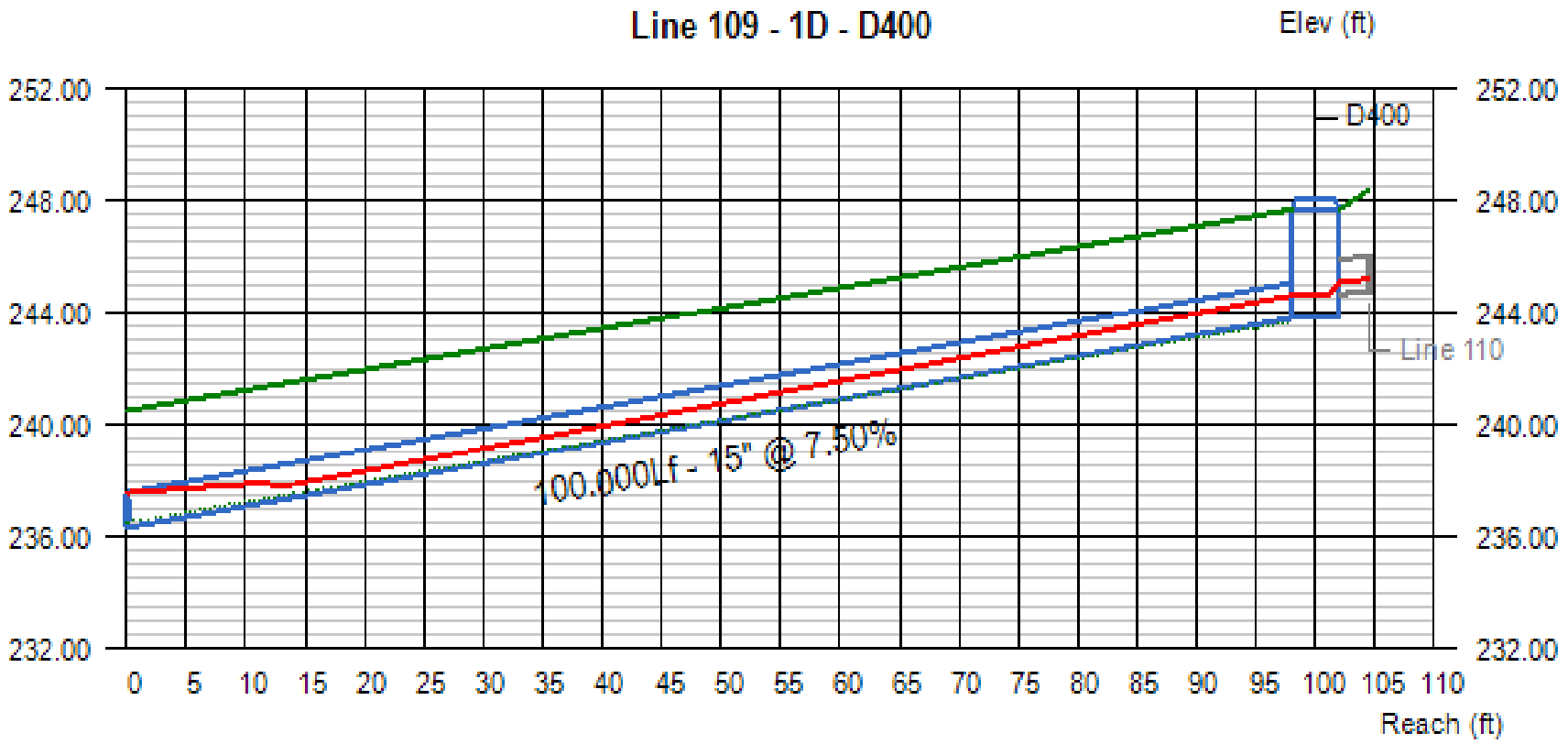
Line Profile (Line 108) - YD23 - YD24



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
108	0.11	256.01	256.19	0.36	0.17	0.17	256.37	256.36	256.36	0.74	1.98	2.07	2.06

Project File: | No. Lines: 138 | Run Date: 10/31/2019

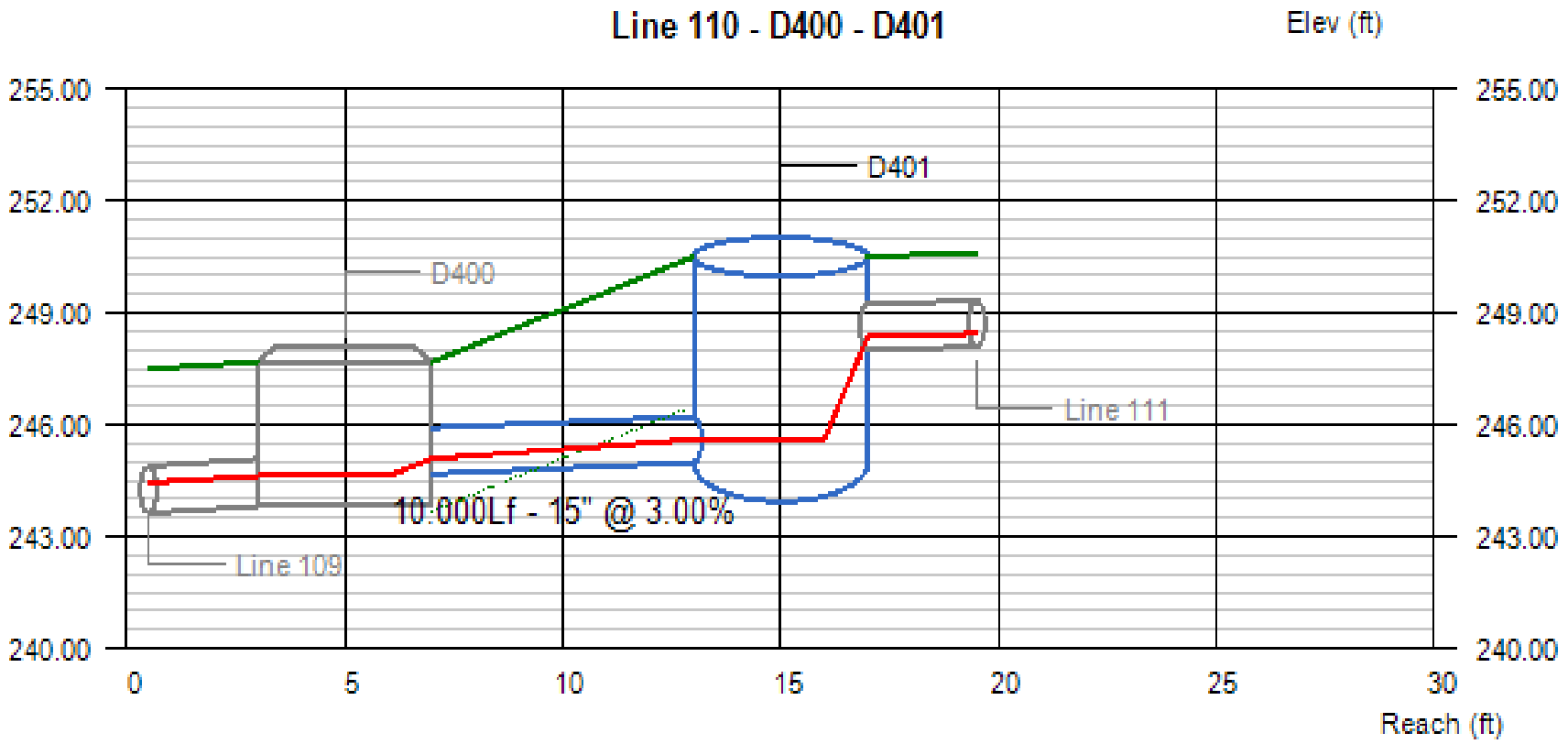
Line Profile (Line 109) - 1D - D400



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
109	3.96	236.31	243.81	1.25	0.80	0.80	237.56	244.61 j	244.61	3.22	4.74	2.94	2.61

Project File: | No. Lines: 138 | Run Date: 10/31/2019

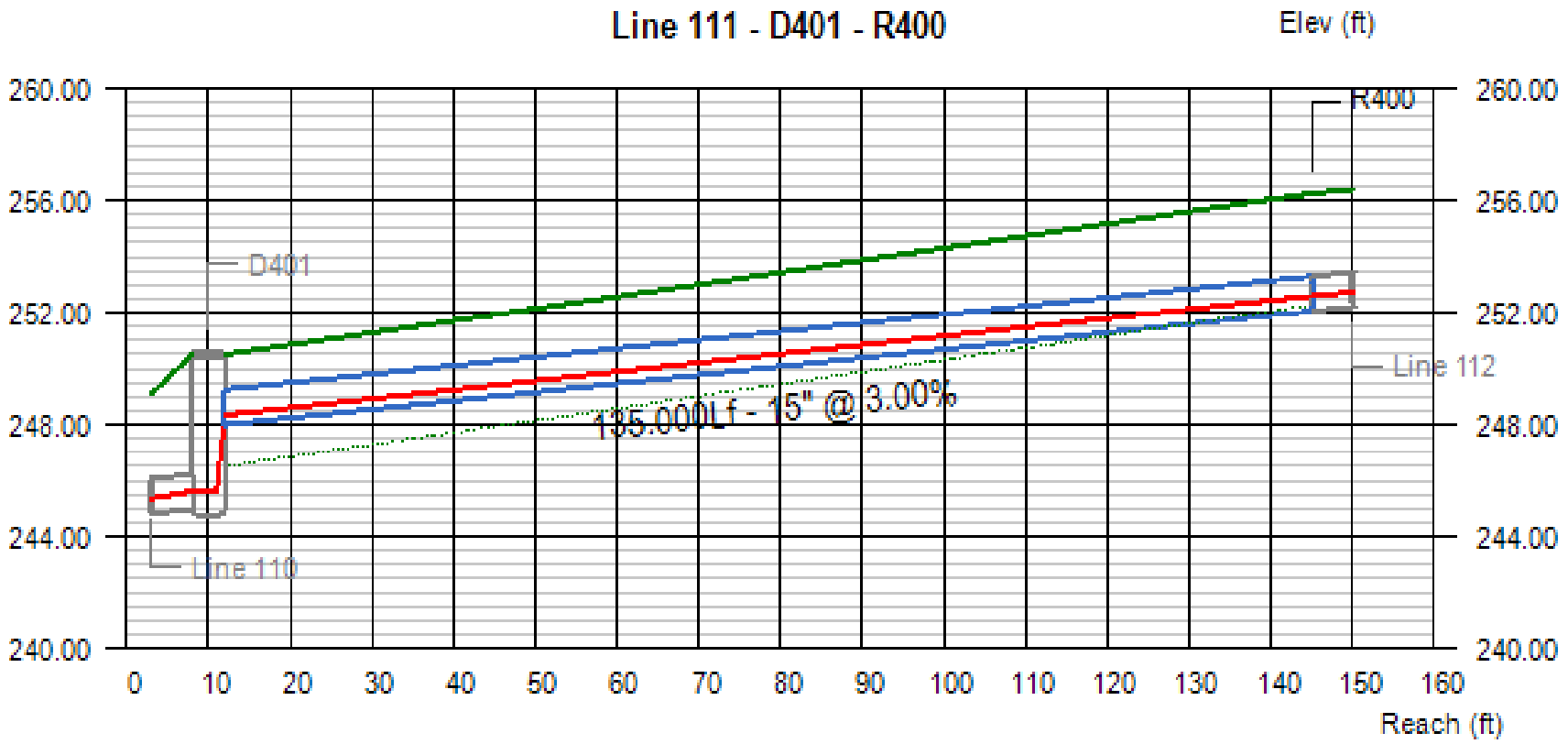
Line Profile (Line 110) - D400 - D401



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
110	2.56	244.67	244.97	0.41	0.64	0.64	245.08	245.61	245.61	7.39	4.04	1.75	4.28

Project File: | No. Lines: 138 | Run Date: 10/31/2019

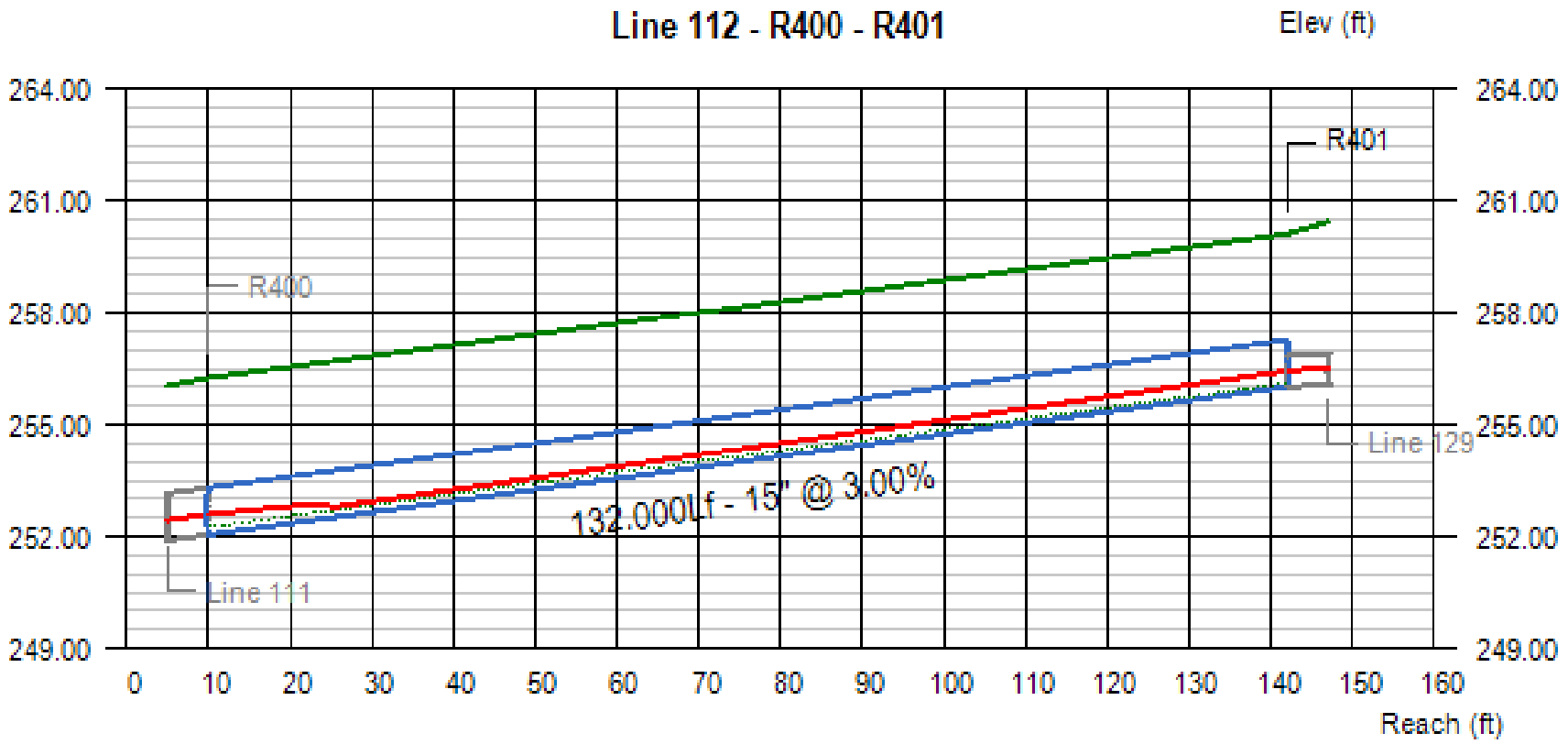
Line Profile (Line 111) - D401 - R400



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
111	1.88	248.00	252.05	0.35	0.55	0.55	248.35	252.60	252.60	6.77	3.66	1.25	2.95

Project File: | No. Lines: 138 | Run Date: 10/31/2019

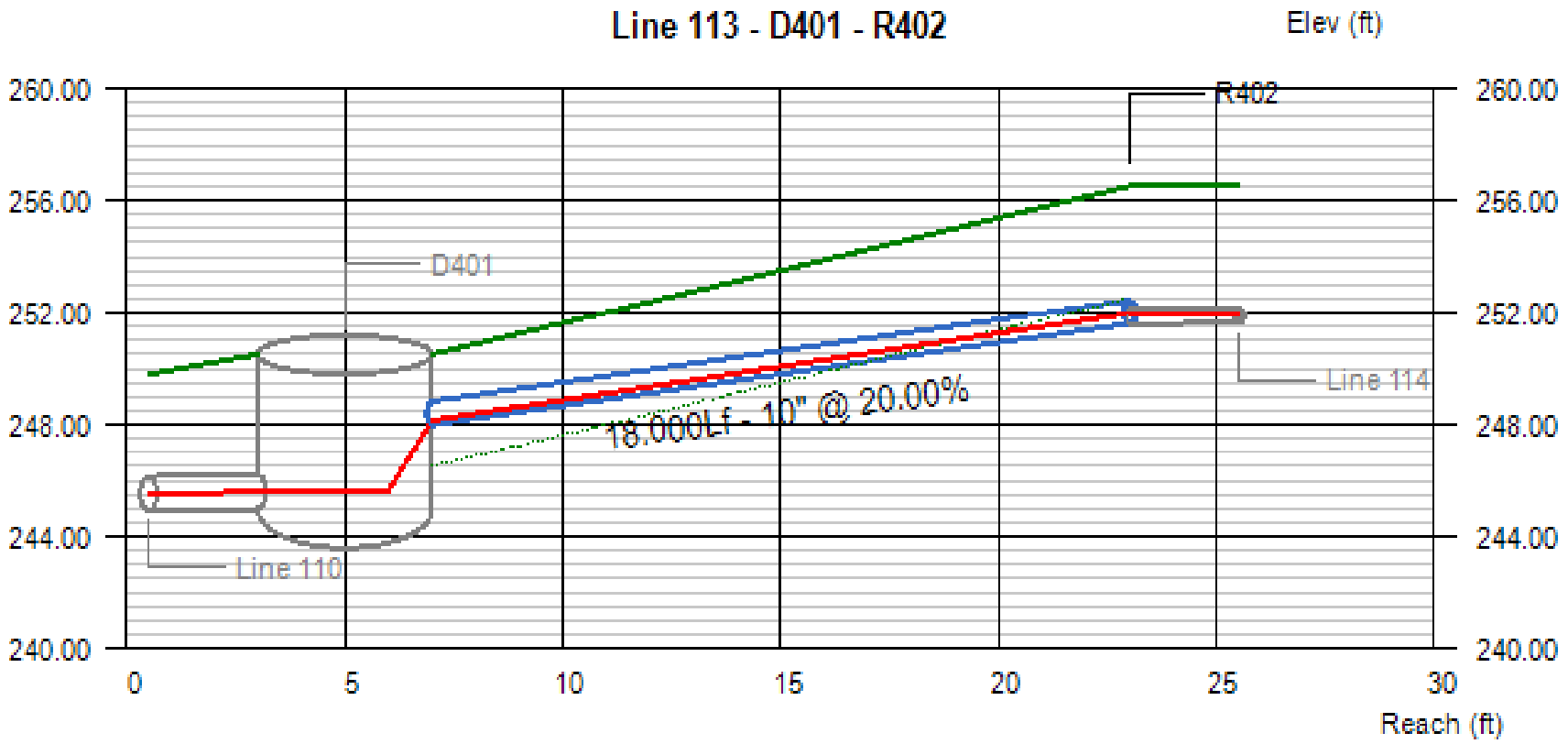
Line Profile (Line 112) - R400 - R401



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
112	1.17	252.05	256.01	0.55	0.43	0.43	252.60	256.44 j	256.44	2.27	3.17	2.95	2.84

Project File: | No. Lines: 138 | Run Date: 10/31/2019

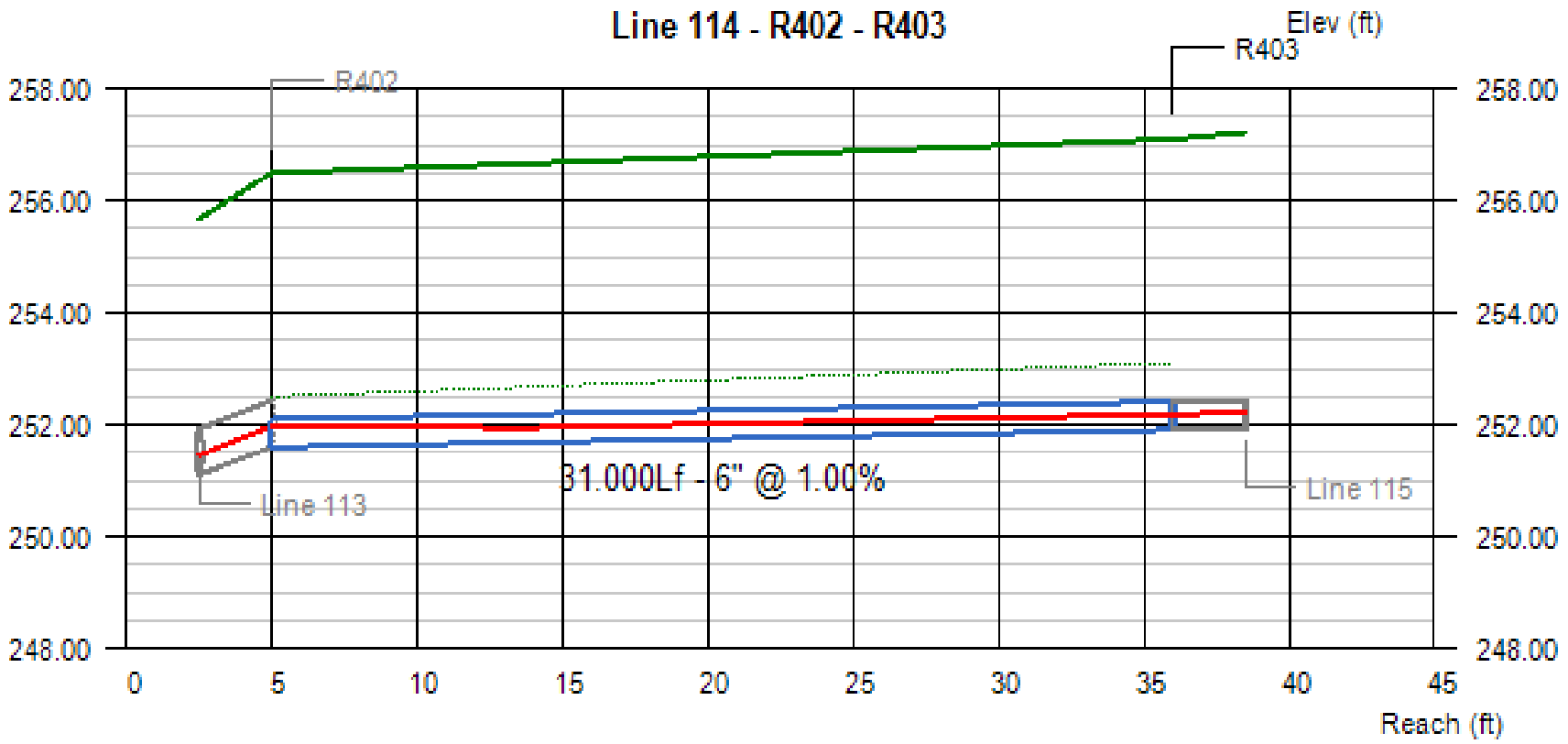
Line Profile (Line 113) - D401 - R402



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
113	0.75	248.00	251.60	0.16	0.38	0.38	248.16	251.98	251.98	10.59	3.07	1.67	4.07

Project File: | No. Lines: 138 | Run Date: 10/31/2019

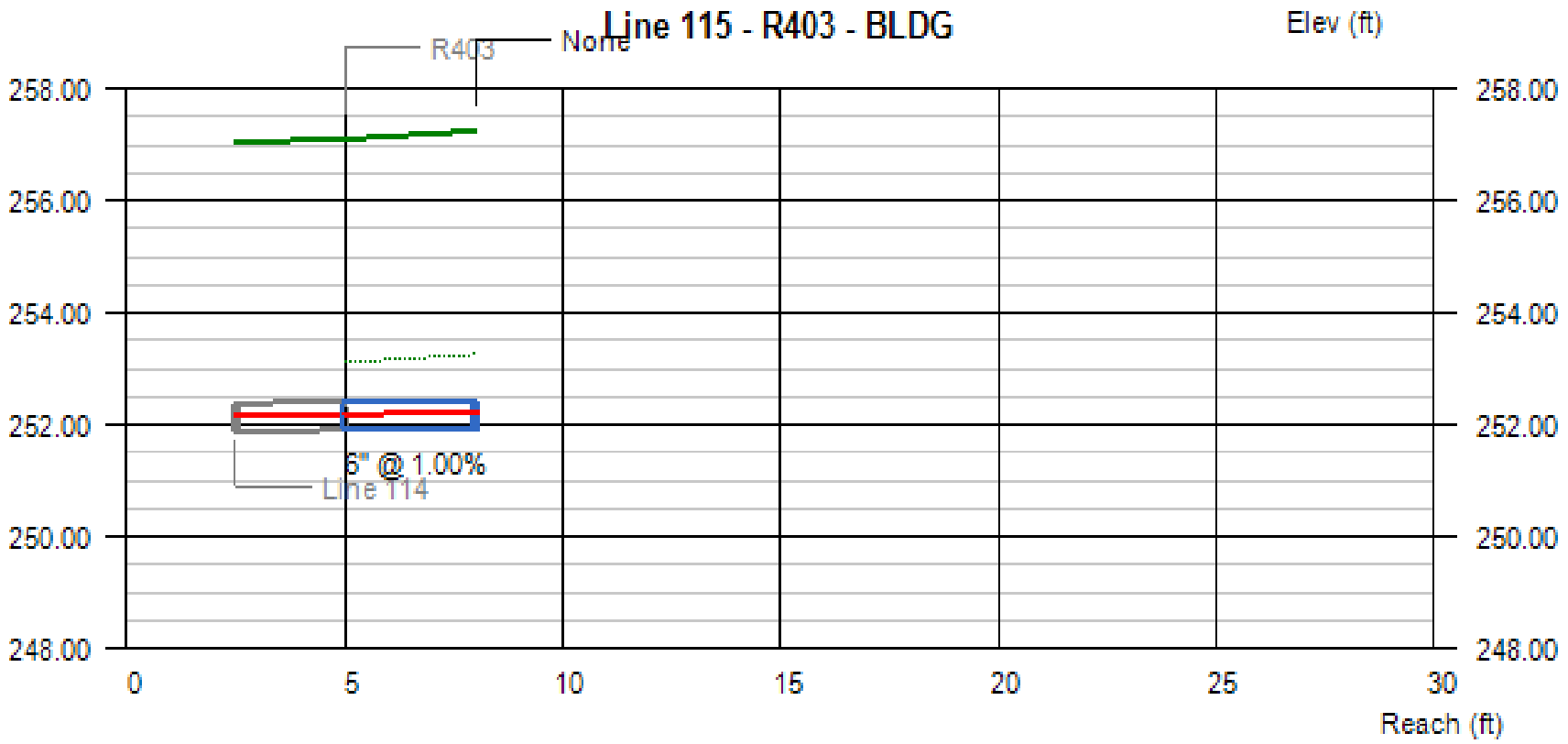
Line Profile (Line 114) - R402 - R403



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
114	0.30	251.60	251.91	0.38	0.28	0.28	251.98	252.19 j	252.19	1.88	2.70	4.40	4.69

Project File: | No. Lines: 138 | Run Date: 10/31/2019

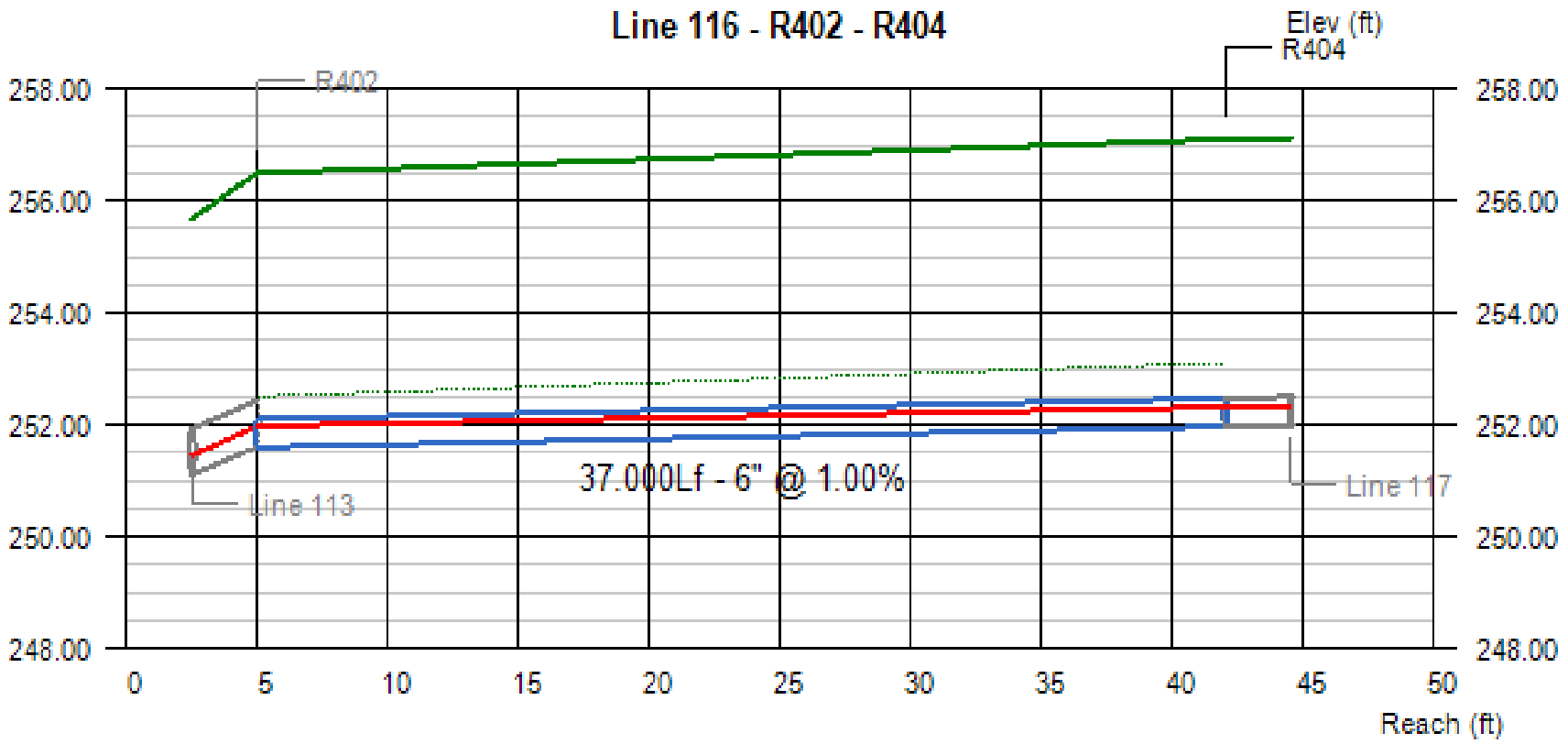
Line Profile (Line 115) - R403 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
115	0.30	251.91	251.94	0.28	0.28	0.28	252.19	252.22	252.22	2.70	2.70	4.69	4.81

Project File: | No. Lines: 138 | Run Date: 10/31/2019

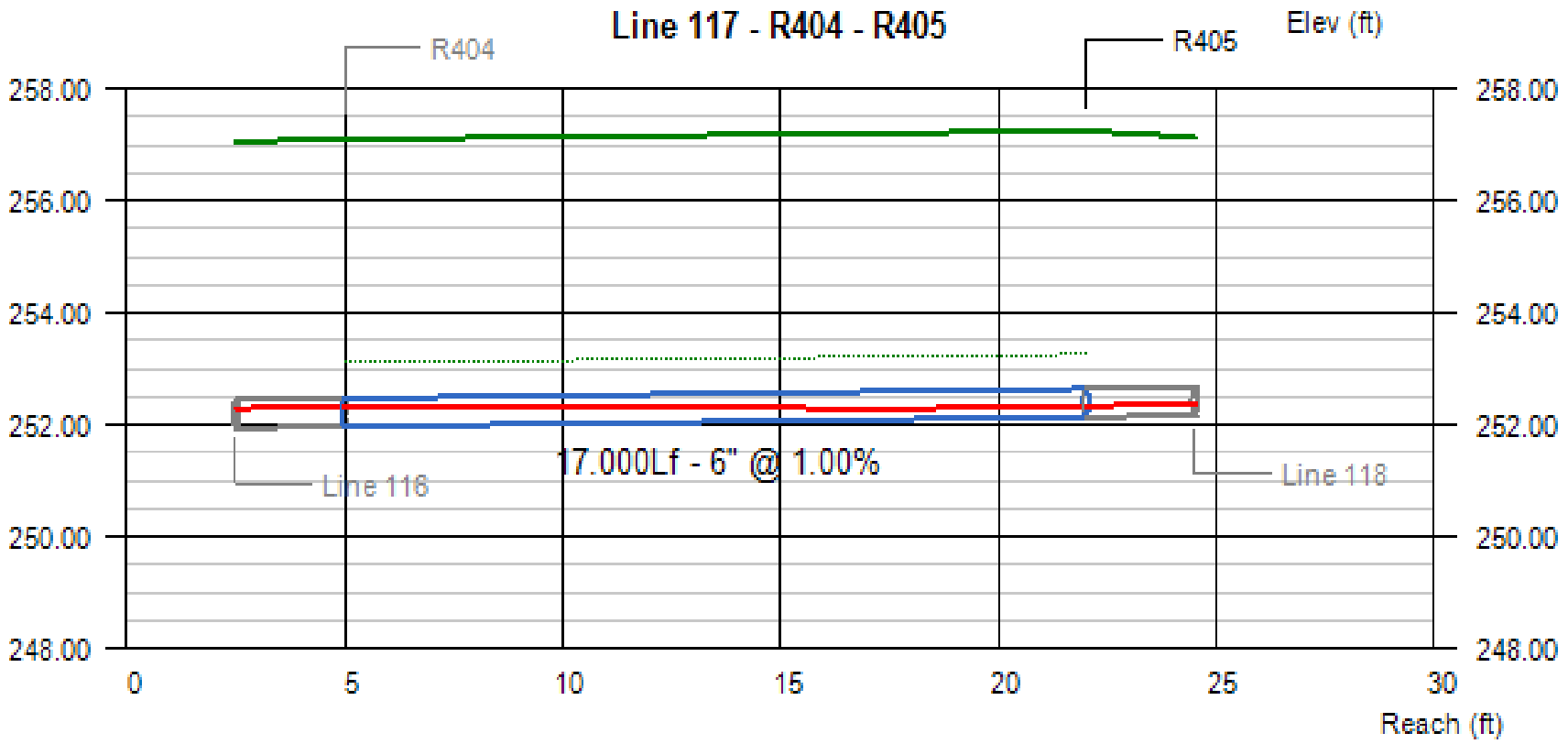
Line Profile (Line 116) - R402 - R404



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
116	0.46	251.60	251.97	0.38	0.34	0.34	251.98	252.31	252.31	2.84	3.17	4.40	4.63

Project File: | No. Lines: 138 | Run Date: 10/31/2019

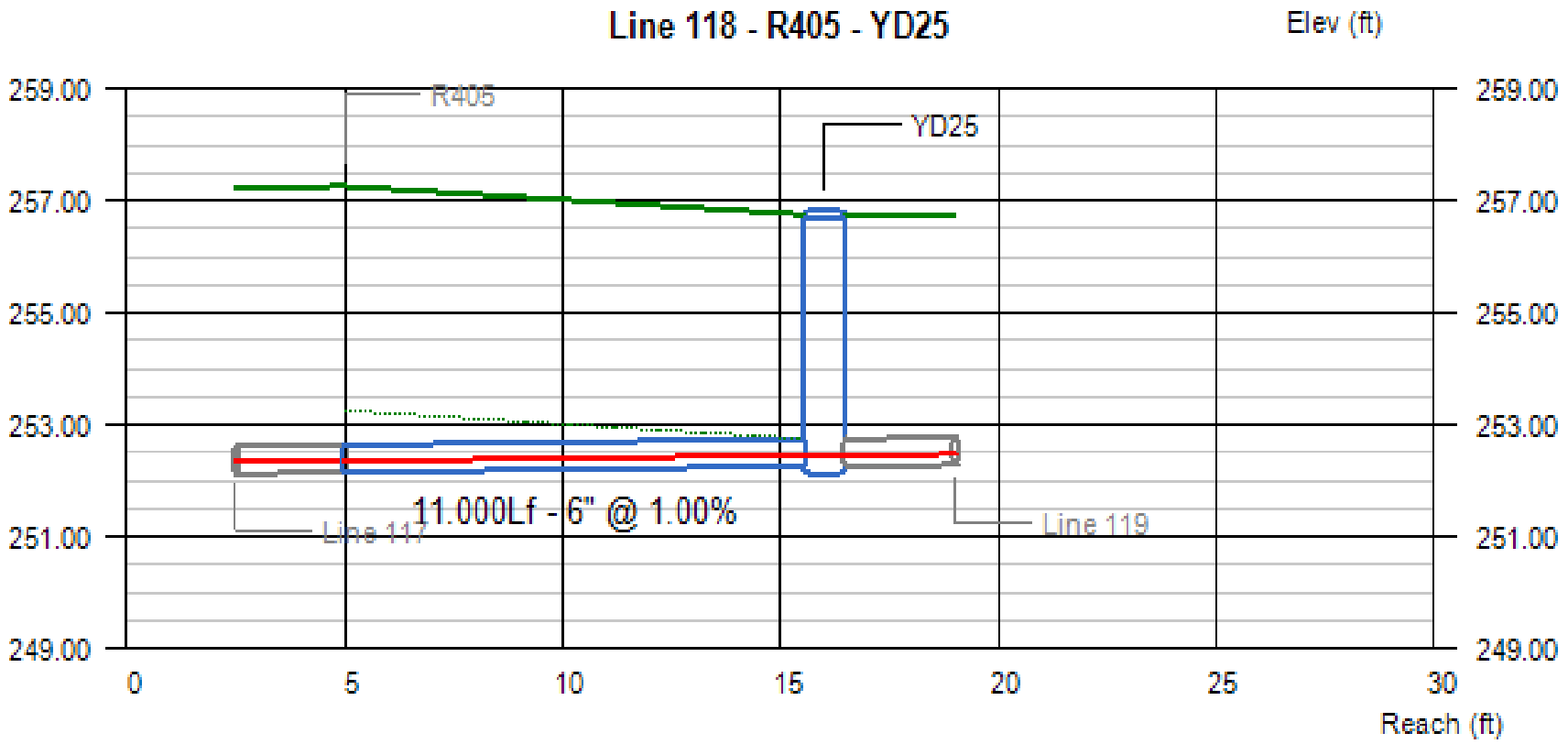
Line Profile (Line 117) - R404 - R405



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
117	0.16	251.97	252.14	0.34	0.20	0.20	252.31	252.34 j	252.34	1.11	2.19	4.63	4.61

Project File: | No. Lines: 138 | Run Date: 10/31/2019

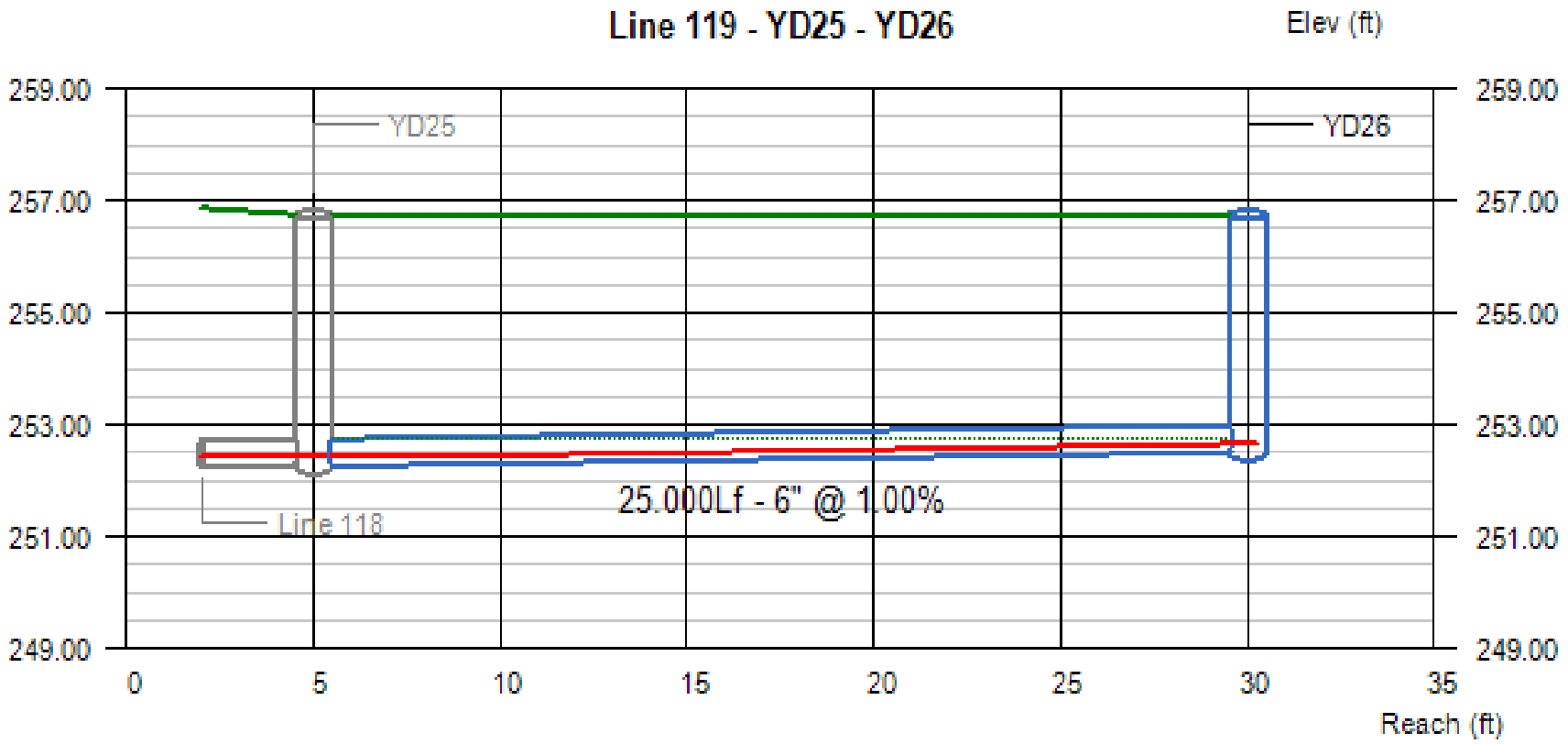
Line Profile (Line 118) - R405 - YD25



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
118	0.16	252.14	252.25	0.20	0.20	0.20	252.34	252.45	252.45	2.20	2.19	4.61	4.00

Project File: | No. Lines: 138 | Run Date: 10/31/2019

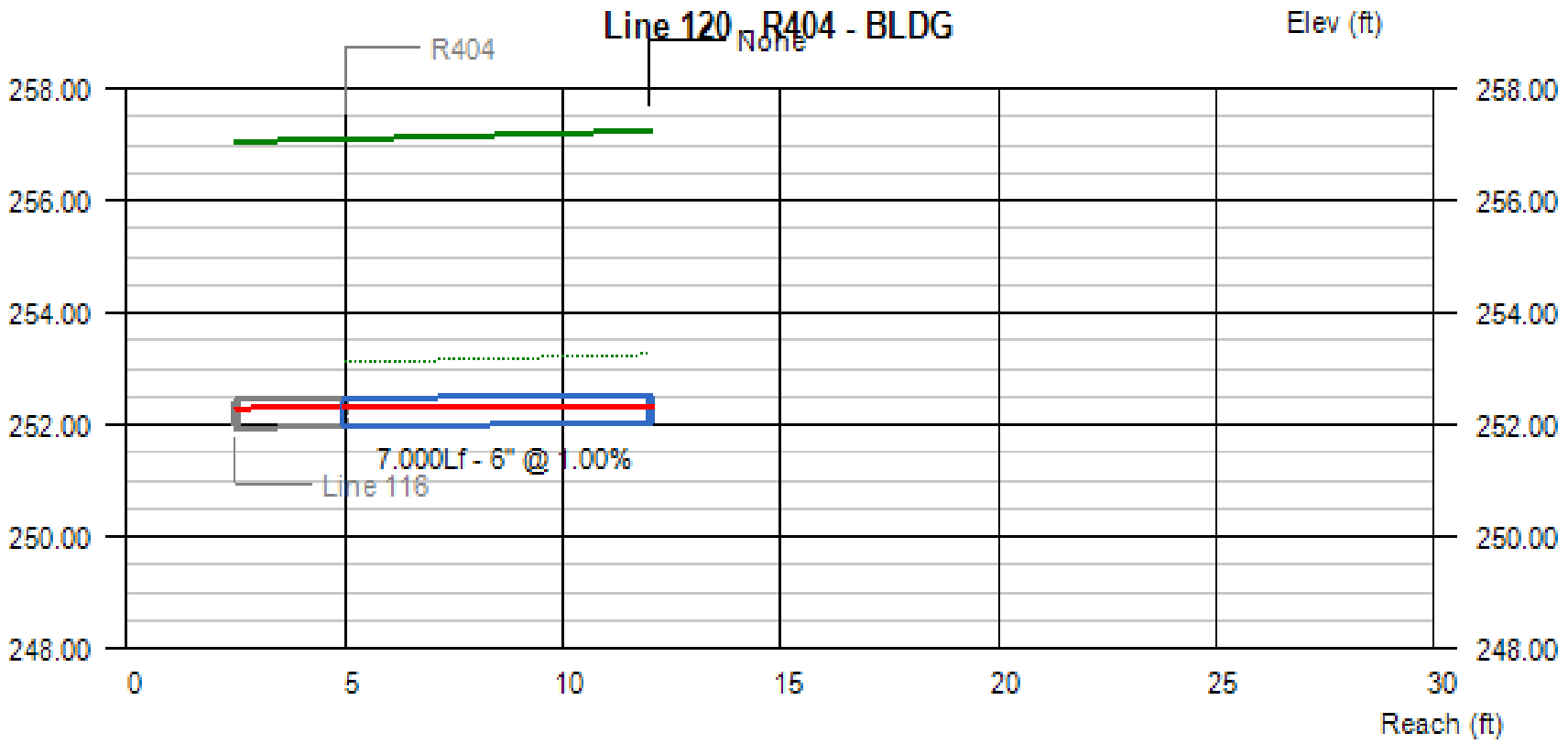
Line Profile (Line 119) - YD25 - YD26



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
119	0.11	252.25	252.50	0.20	0.16	0.16	252.45	252.66 j	252.66	1.52	1.97	4.00	3.75

Project File: | No. Lines: 138 | Run Date: 10/31/2019

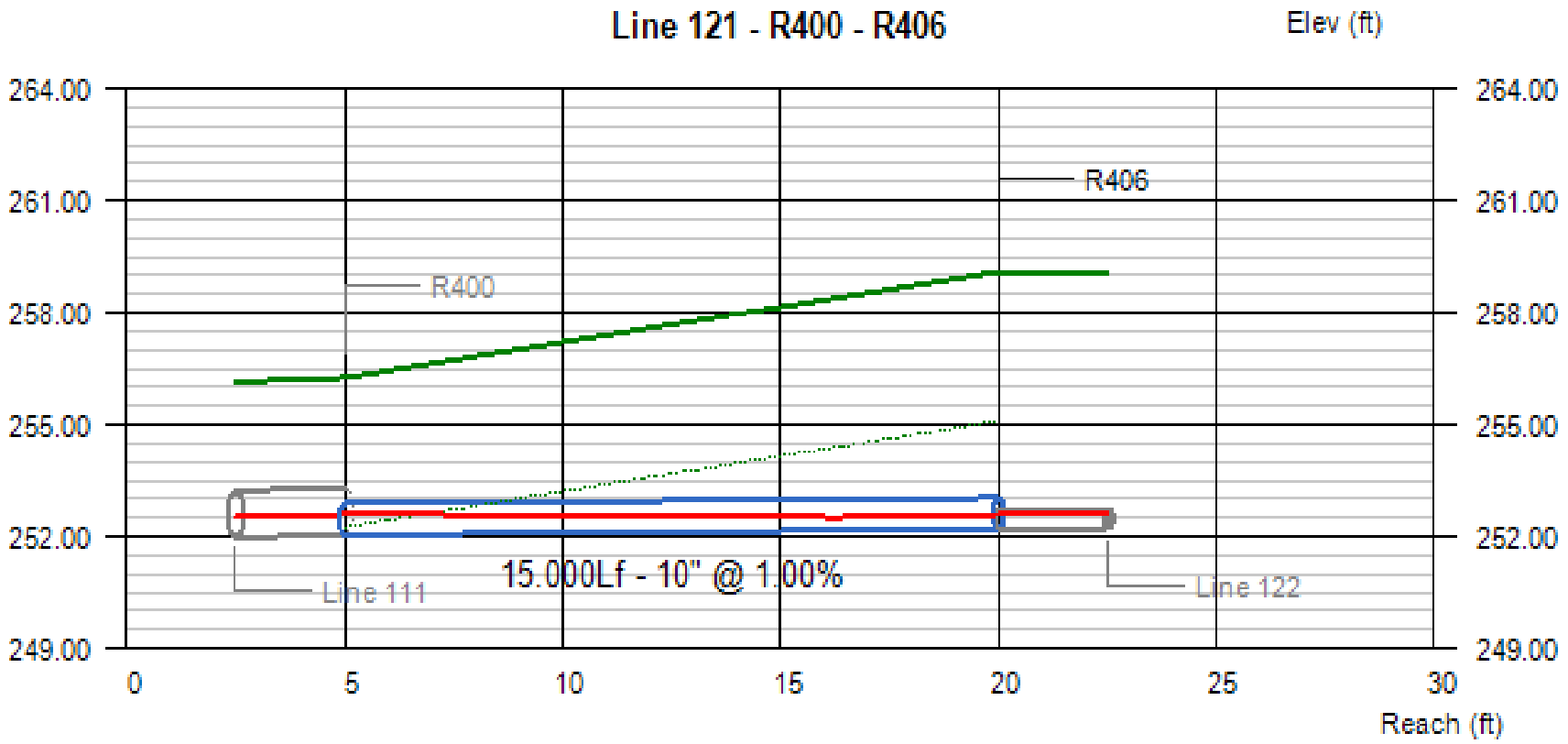
Line Profile (Line 120) - R404 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
120	0.30	251.97	252.04	0.34	0.28	0.28	252.31	252.32	252.32	2.10	2.70	4.63	4.71

Project File: | No. Lines: 138 | Run Date: 10/31/2019

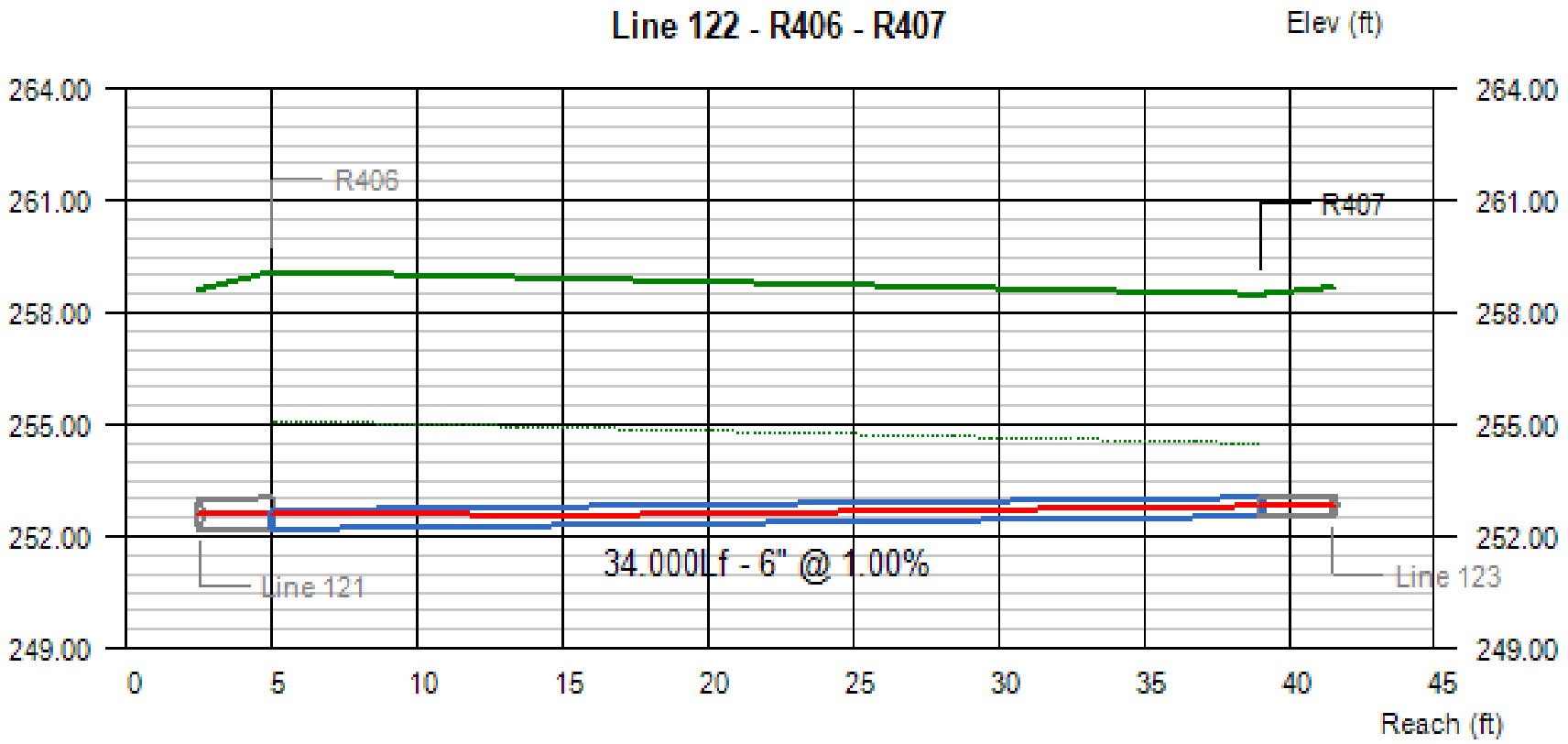
Line Profile (Line 121) - R400 - R406



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
121	0.78	252.05	252.20	0.55	0.39	0.39	252.60	252.59 j	252.59	2.05	3.11	3.37	6.07

Project File: | No. Lines: 138 | Run Date: 10/31/2019

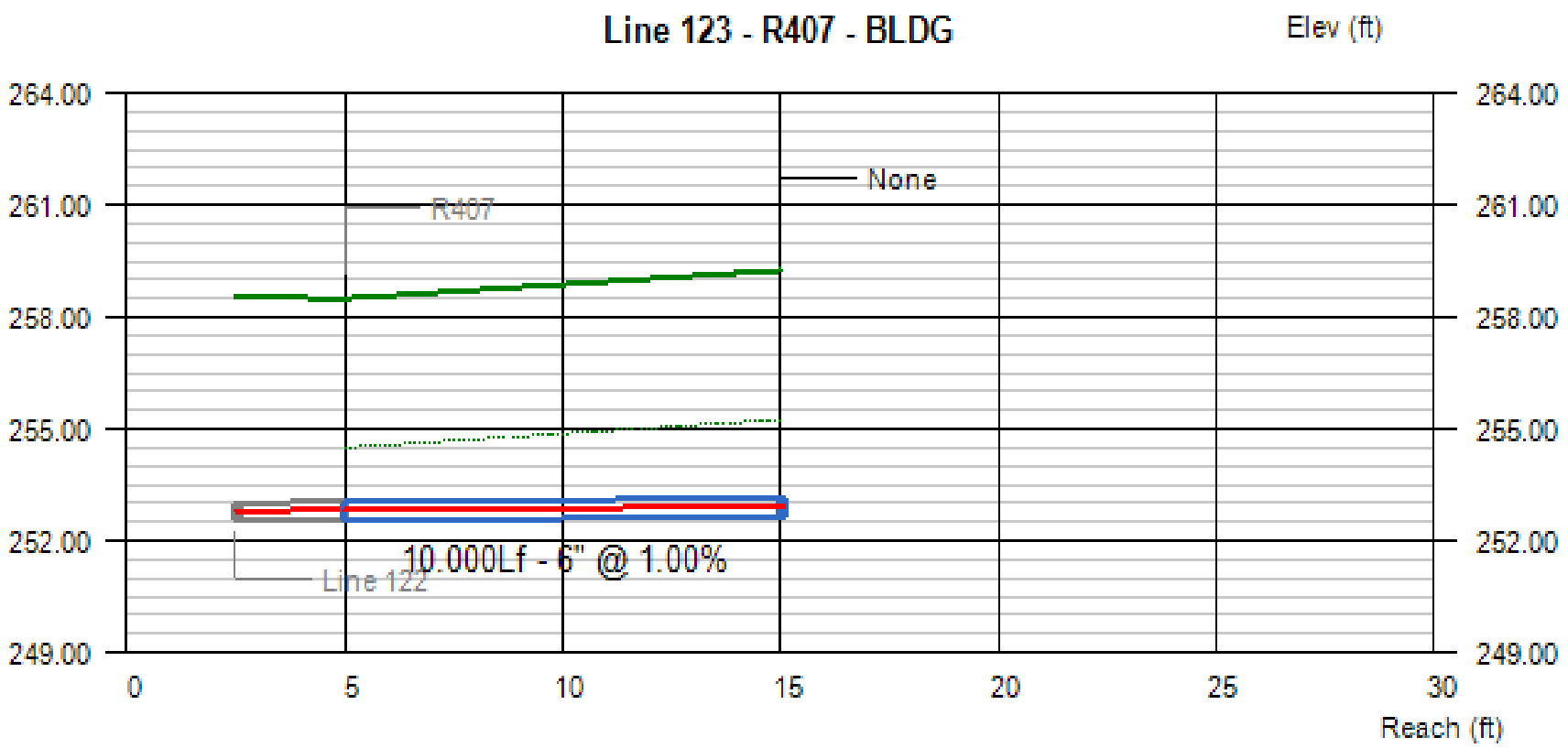
Line Profile (Line 122) - R406 - R407



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
122	0.30	252.20	252.54	0.39	0.28	0.28	252.59	252.82 j	252.82	1.84	2.70	6.40	5.46

Project File: | No. Lines: 138 | Run Date: 10/31/2019

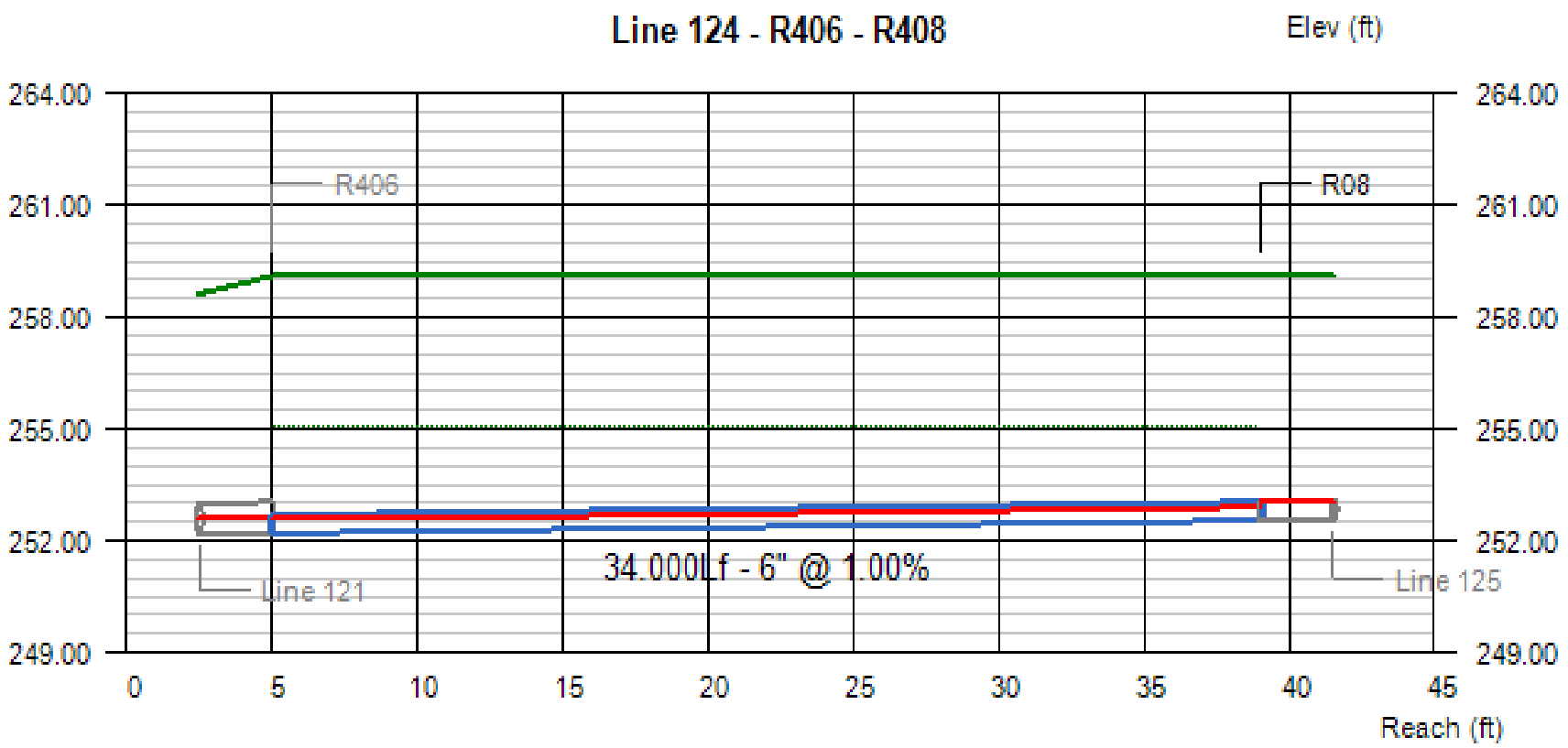
Line Profile (Line 123) - R407 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
123	0.30	252.54	252.64	0.28	0.28	0.28	252.82	252.92	252.92	2.70	2.70	5.46	6.11

Project File: | No. Lines: 138 | Run Date: 10/31/2019

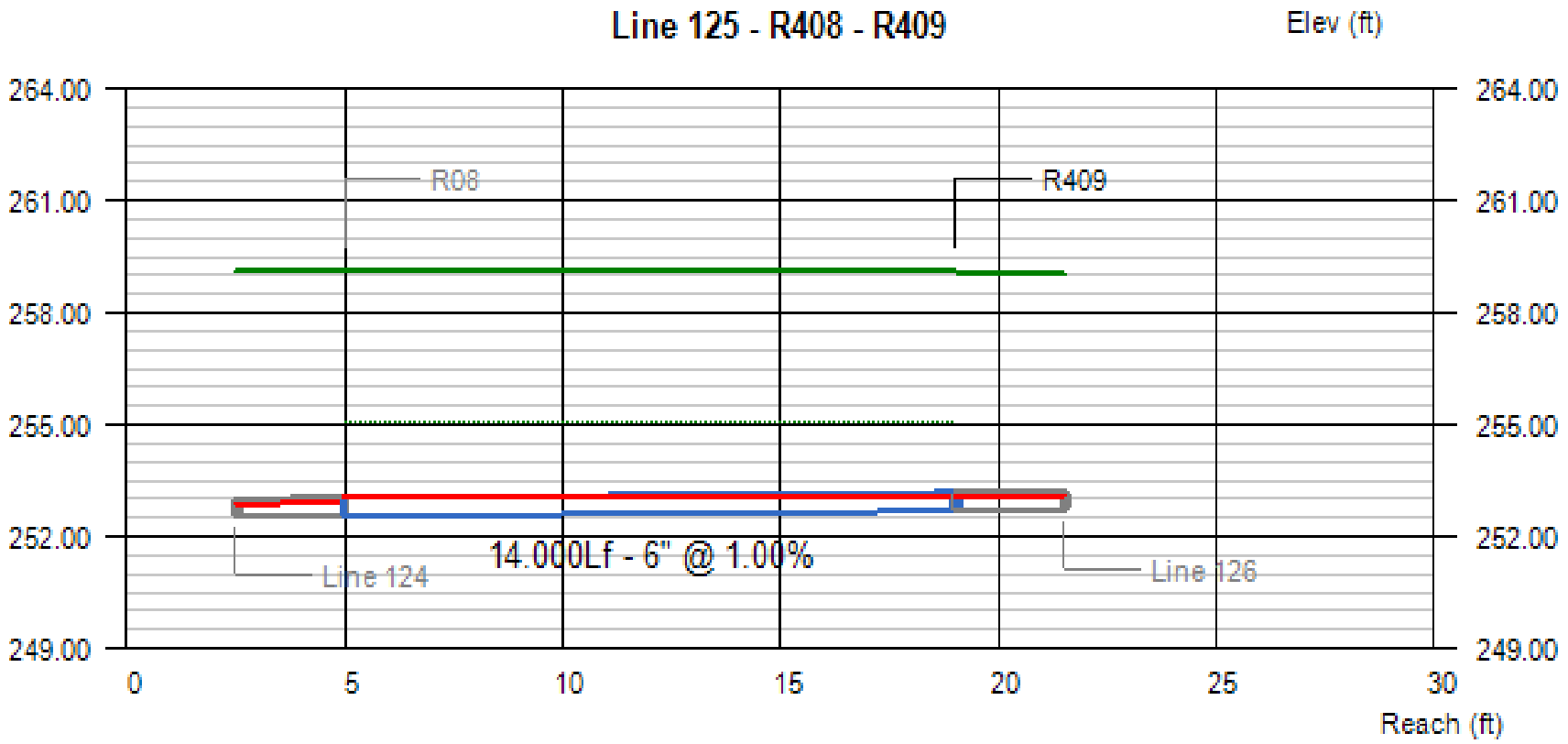
Line Profile (Line 124) - R406 - R408



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
124	0.49	252.20	252.54	0.39	0.36	0.52	252.59	252.90 j	253.06	2.96	3.24	6.40	6.06

Project File: | No. Lines: 138 | Run Date: 10/31/2019

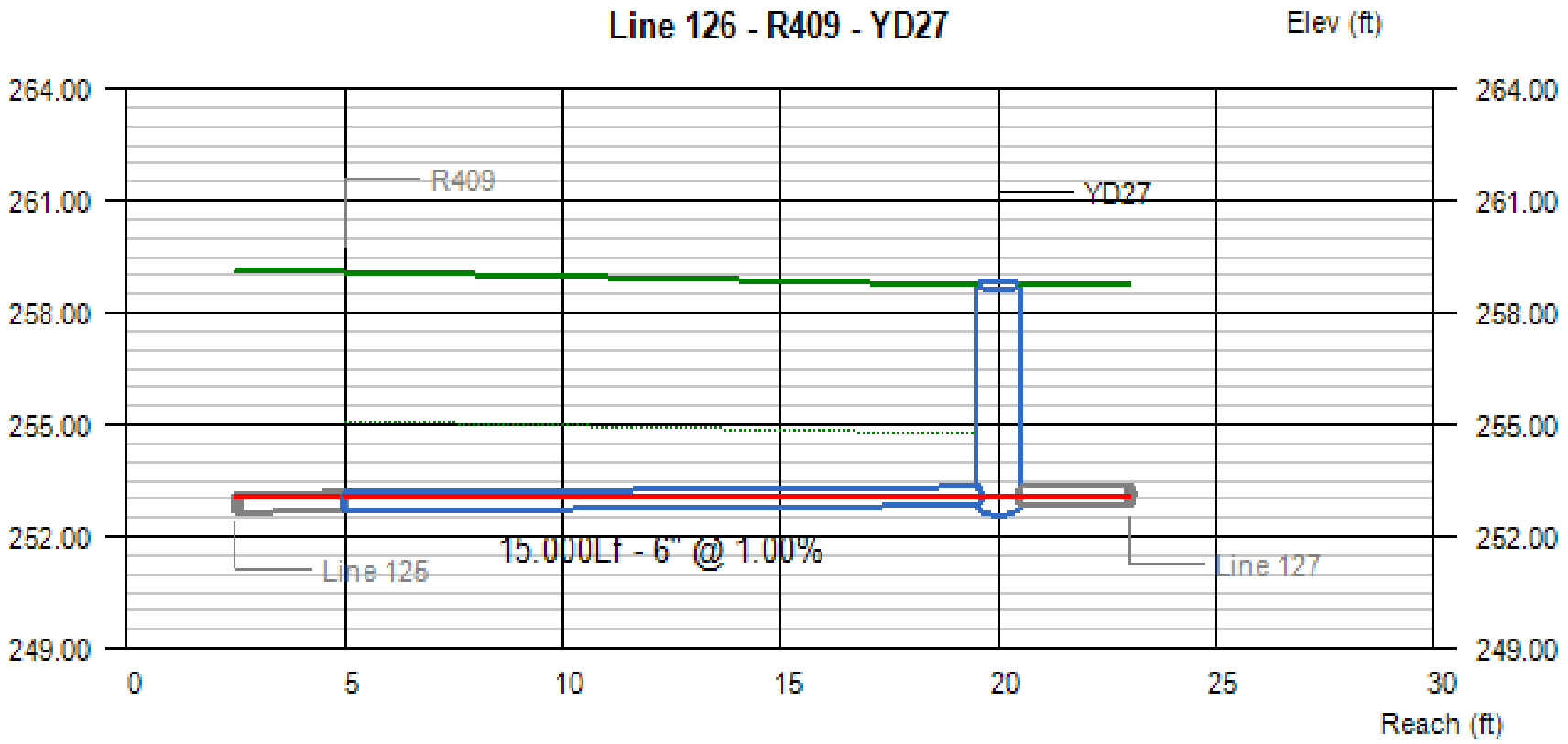
Line Profile (Line 125) - R408 - R409



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
125	0.19	252.54	252.68	0.50	0.39	0.41	253.06	253.07	253.09	0.97	1.16	6.06	5.92

Project File: | No. Lines: 138 | Run Date: 10/31/2019

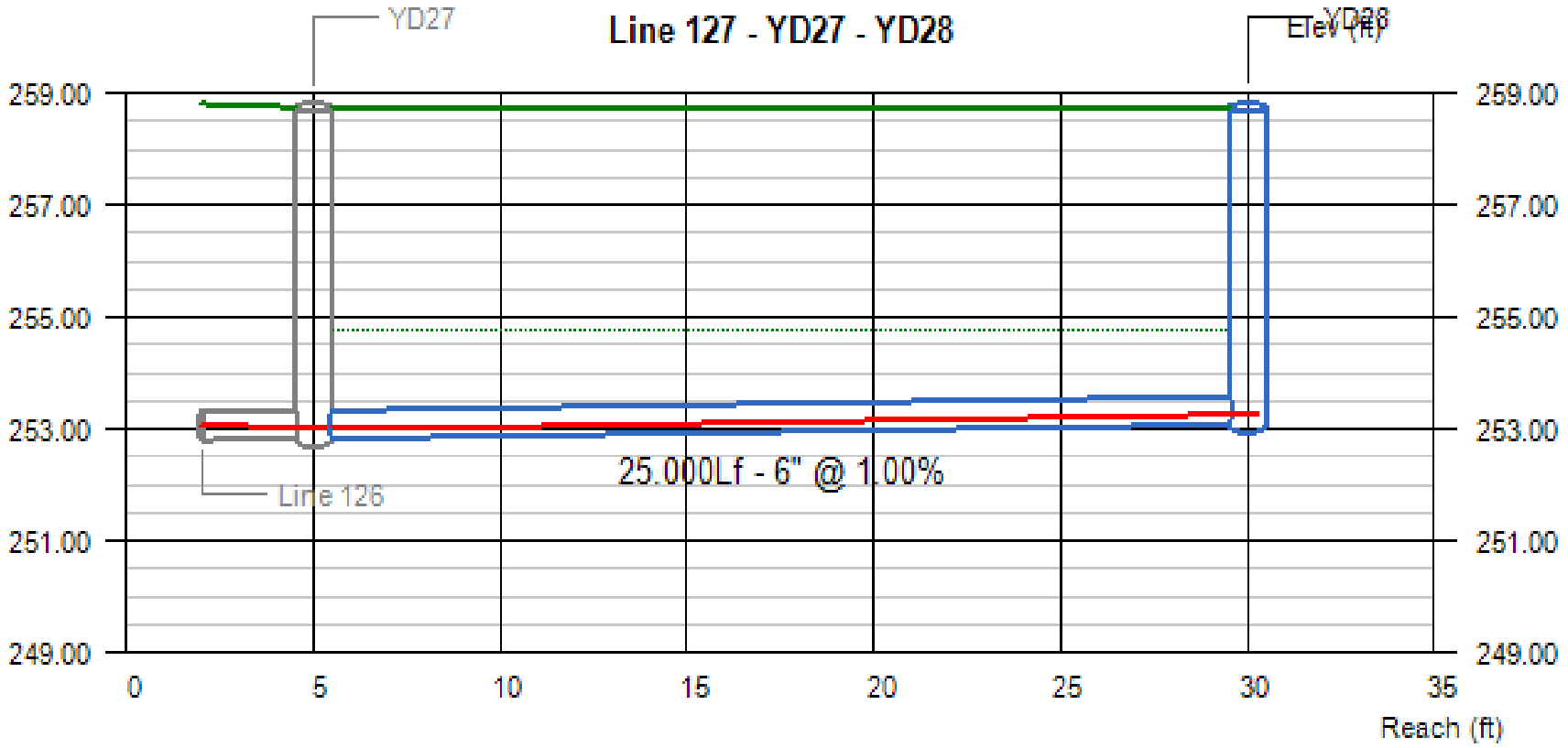
Line Profile (Line 126) - R409 - YD27



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
126	0.19	252.68	252.83	0.41	0.22	0.22	253.09	253.05	253.05	1.12	2.32	5.92	5.42

Project File: | No. Lines: 138 | Run Date: 10/31/2019

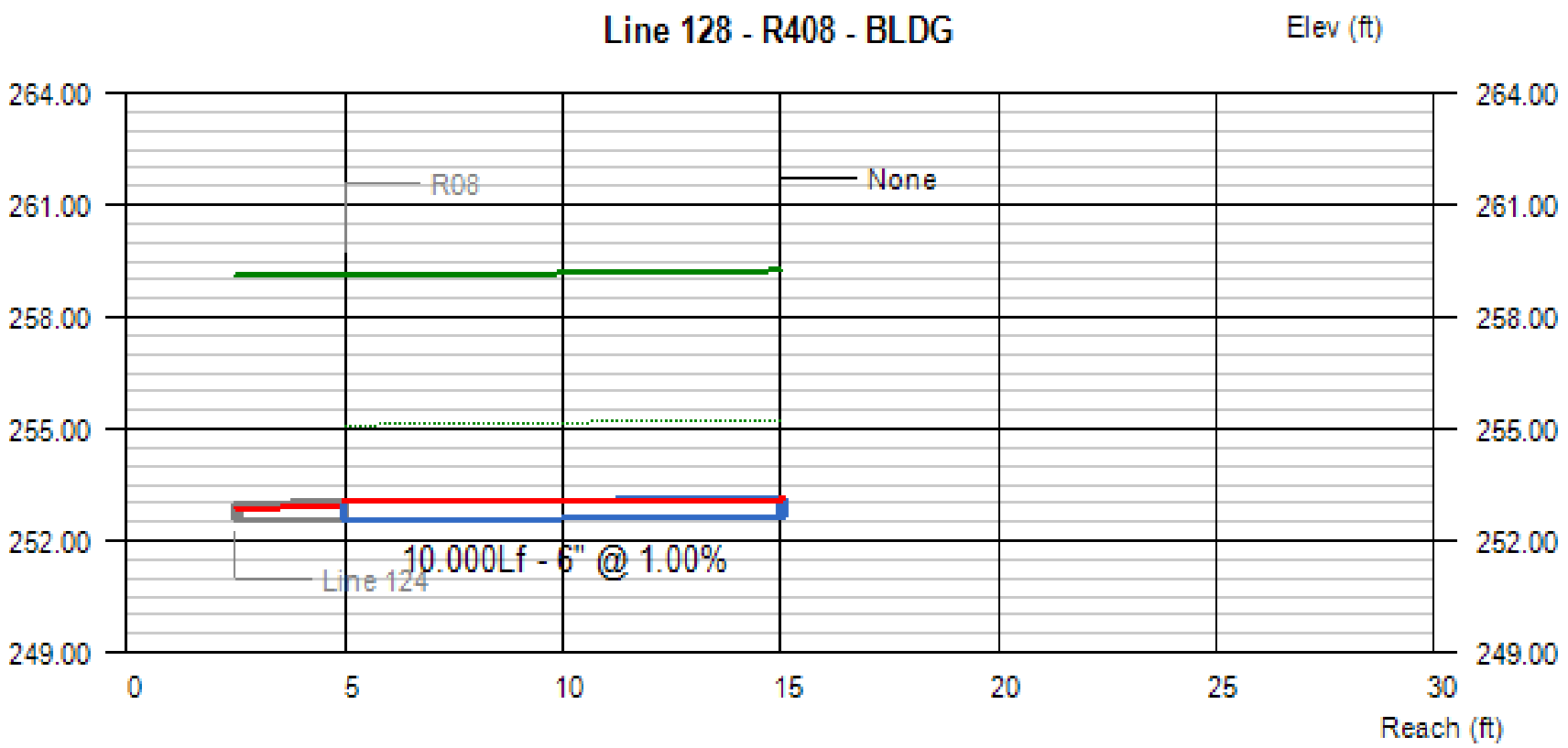
Line Profile (Line 127) - YD27 - YD28



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
127	0.13	252.83	253.08	0.22	0.18	0.18	253.05	253.26 j	253.26	1.57	2.06	5.42	5.17

Project File: | No. Lines: 138 | Run Date: 10/31/2019

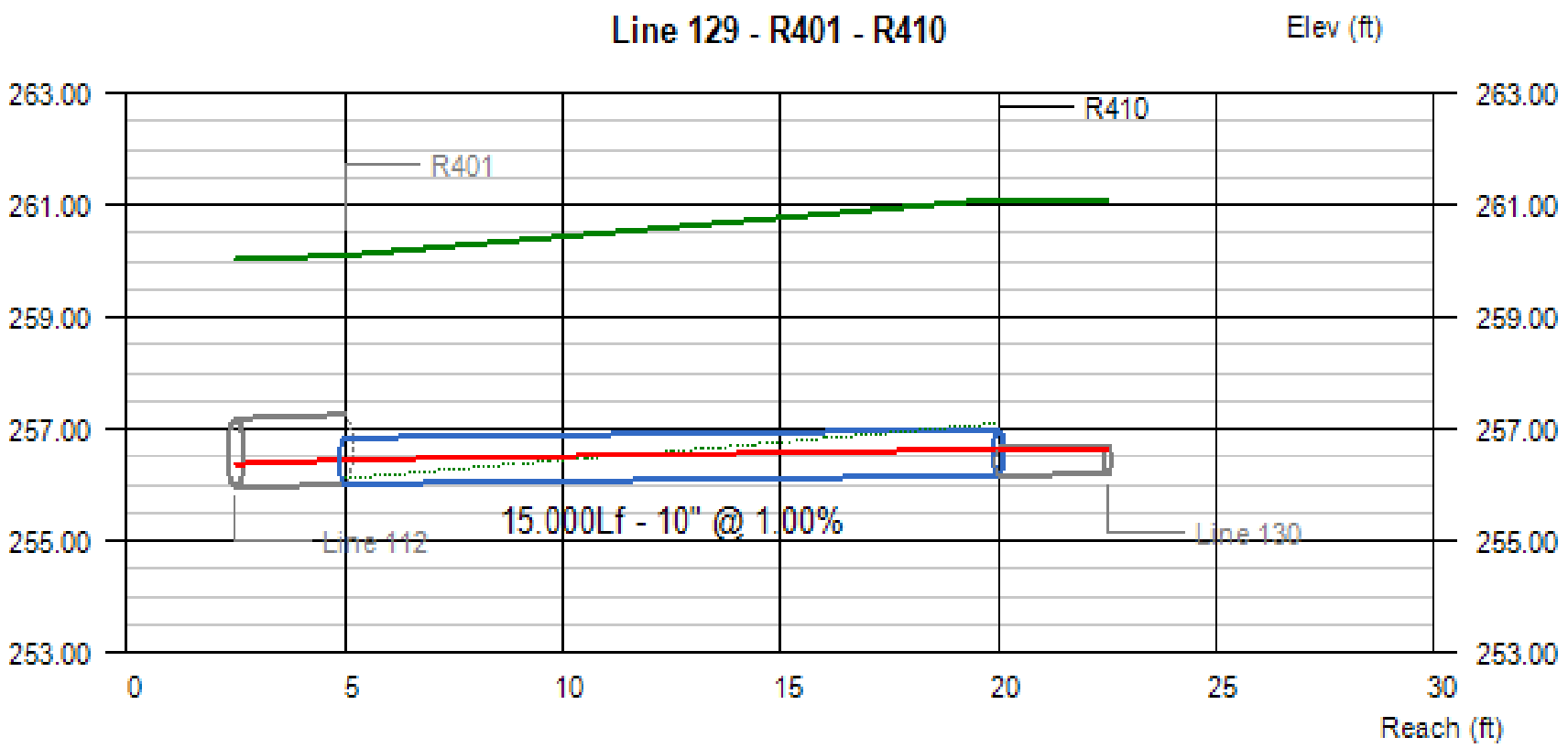
Line Profile (Line 128) - R408 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
128	0.30	252.54	252.64	0.50	0.44	0.48	253.06	253.08	253.12	1.54	1.65	6.06	6.11

Project File: | No. Lines: 138 | Run Date: 10/31/2019

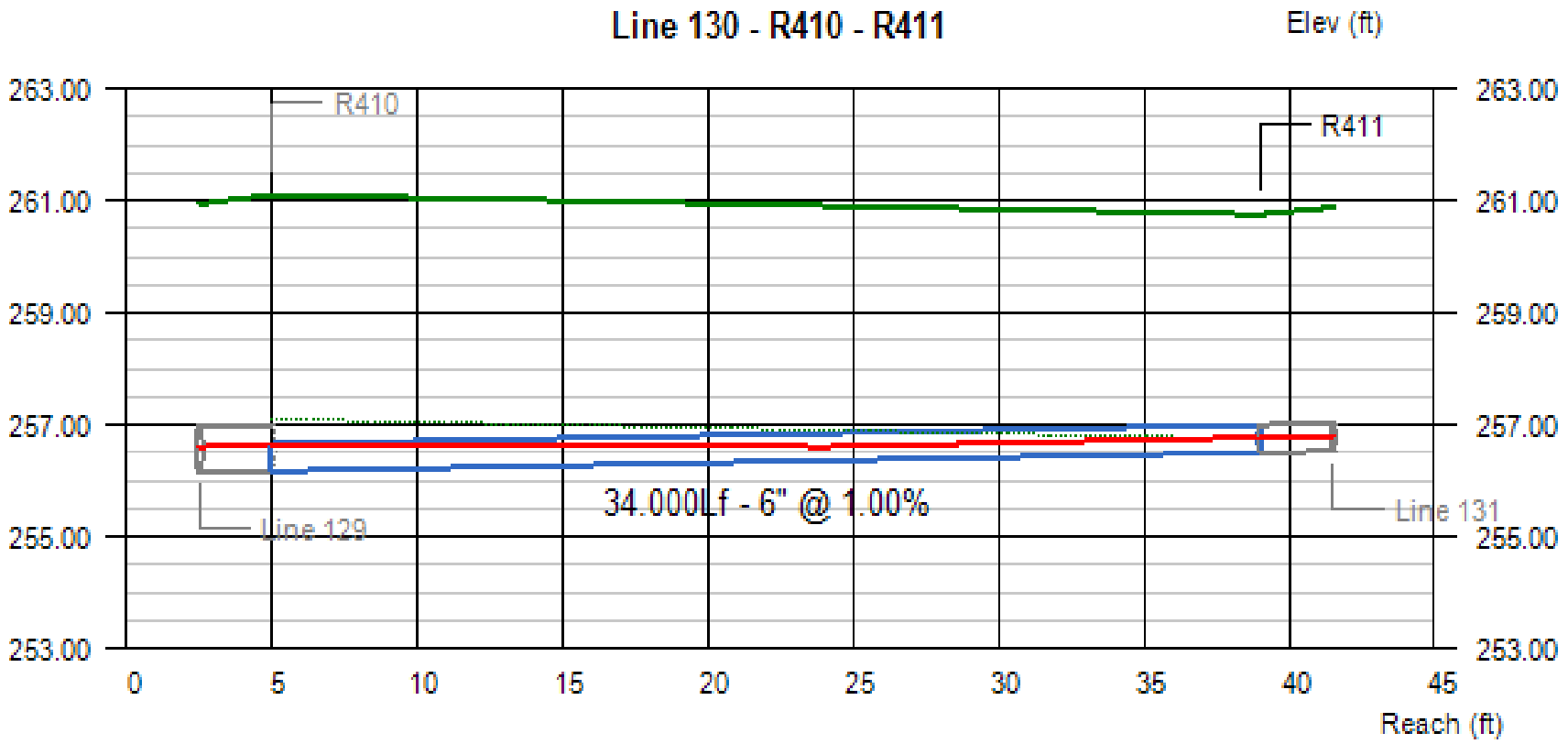
Line Profile (Line 129) - R401 - R410



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
129	1.17	256.01	256.16	0.43	0.48	0.48	256.44	256.64	256.64	4.08	3.58	3.26	4.11

Project File: | No. Lines: 138 | Run Date: 10/31/2019

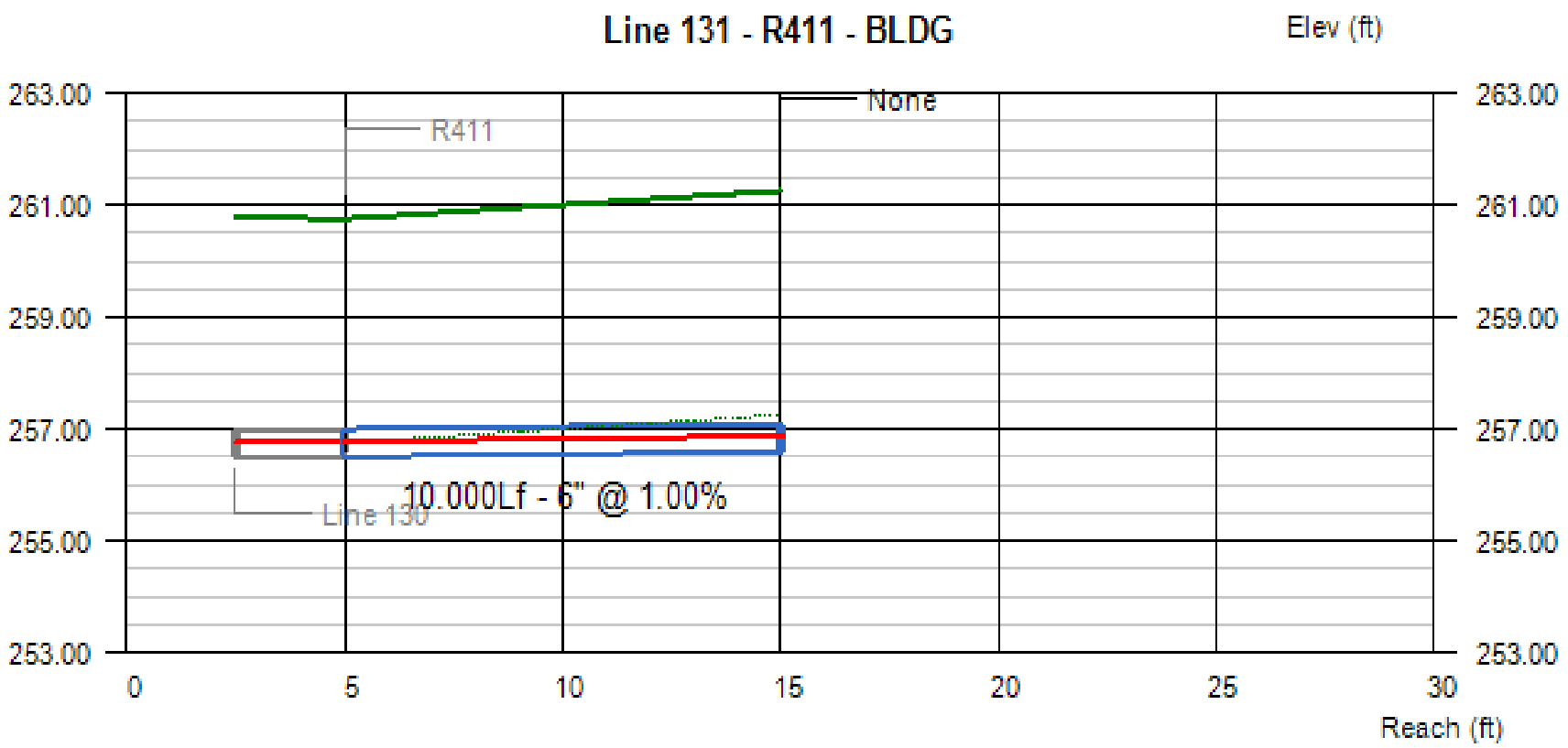
Line Profile (Line 130) - R410 - R411



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
130	0.30	256.16	256.50	0.48	0.28	0.28	256.64	256.78 j	256.78	1.55	2.70	4.44	3.75

Project File: | No. Lines: 138 | Run Date: 10/31/2019

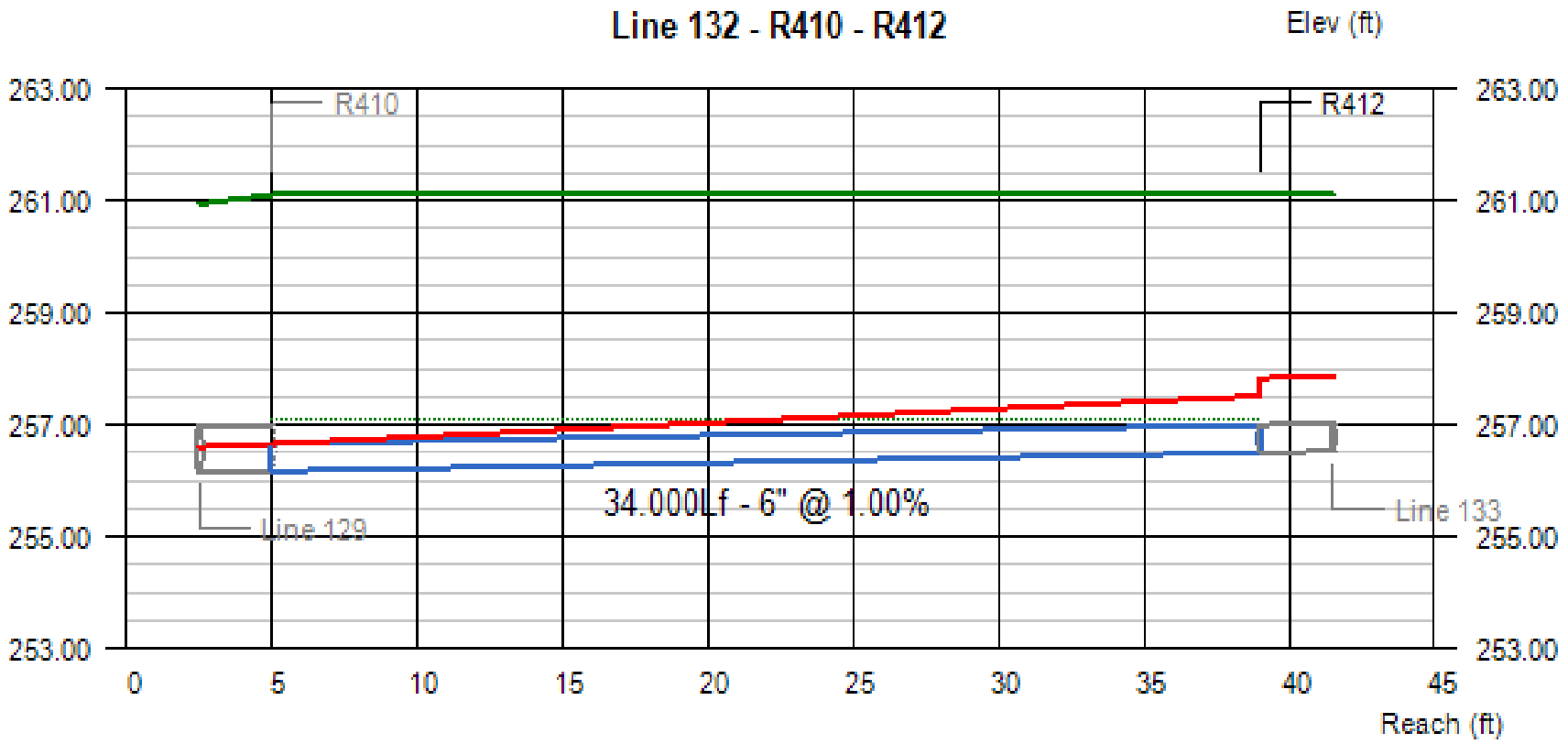
Line Profile (Line 131) - R411 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
131	0.30	256.50	256.60	0.28	0.28	0.28	256.78	256.88	256.88	2.70	2.70	3.75	4.15

Project File: | No. Lines: 138 | Run Date: 10/31/2019

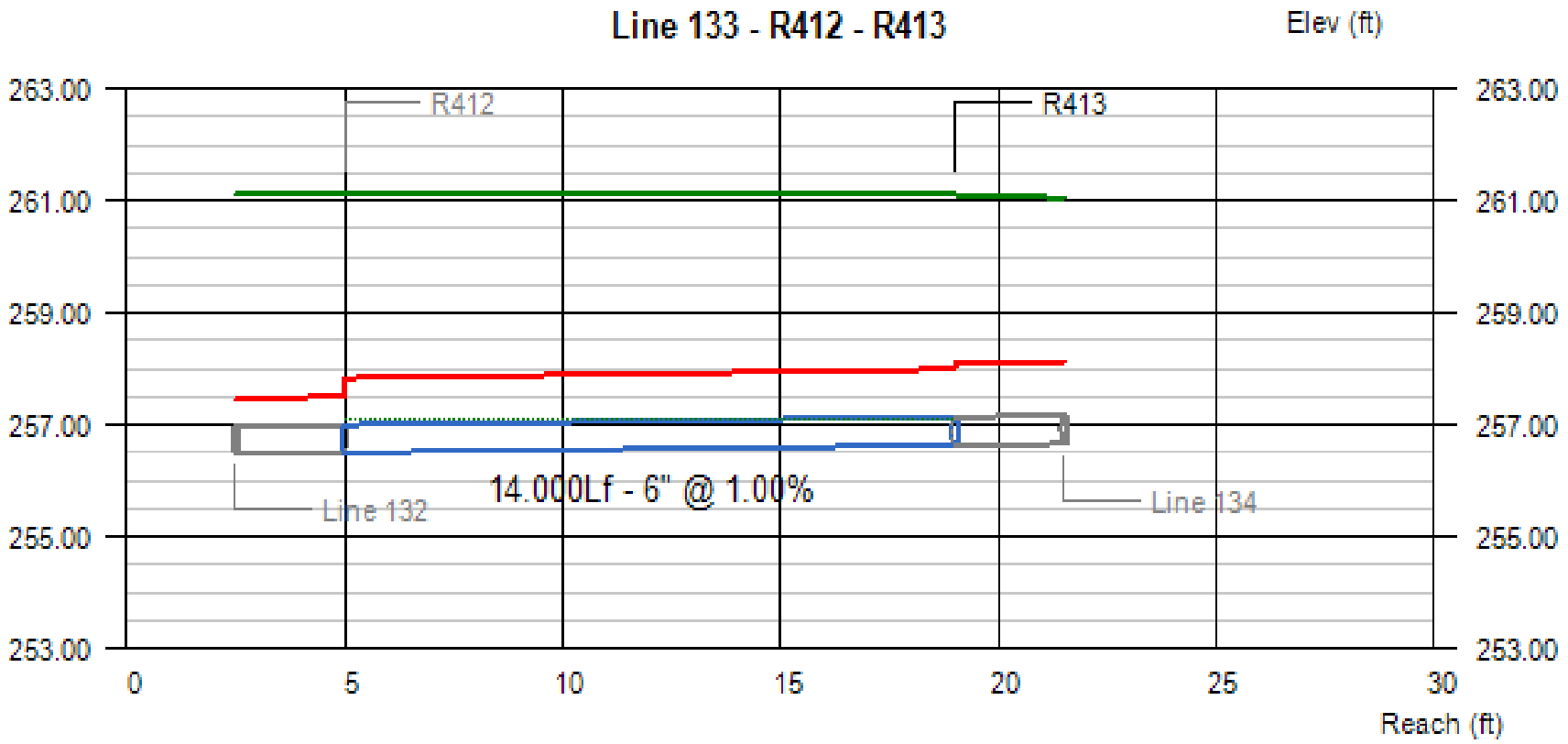
Line Profile (Line 132) - R410 - R412



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
132	0.89	256.16	256.50	0.50	0.50	1.33	256.66	257.51	257.83	4.52	4.52	4.44	4.10

Project File: | No. Lines: 138 | Run Date: 10/31/2019

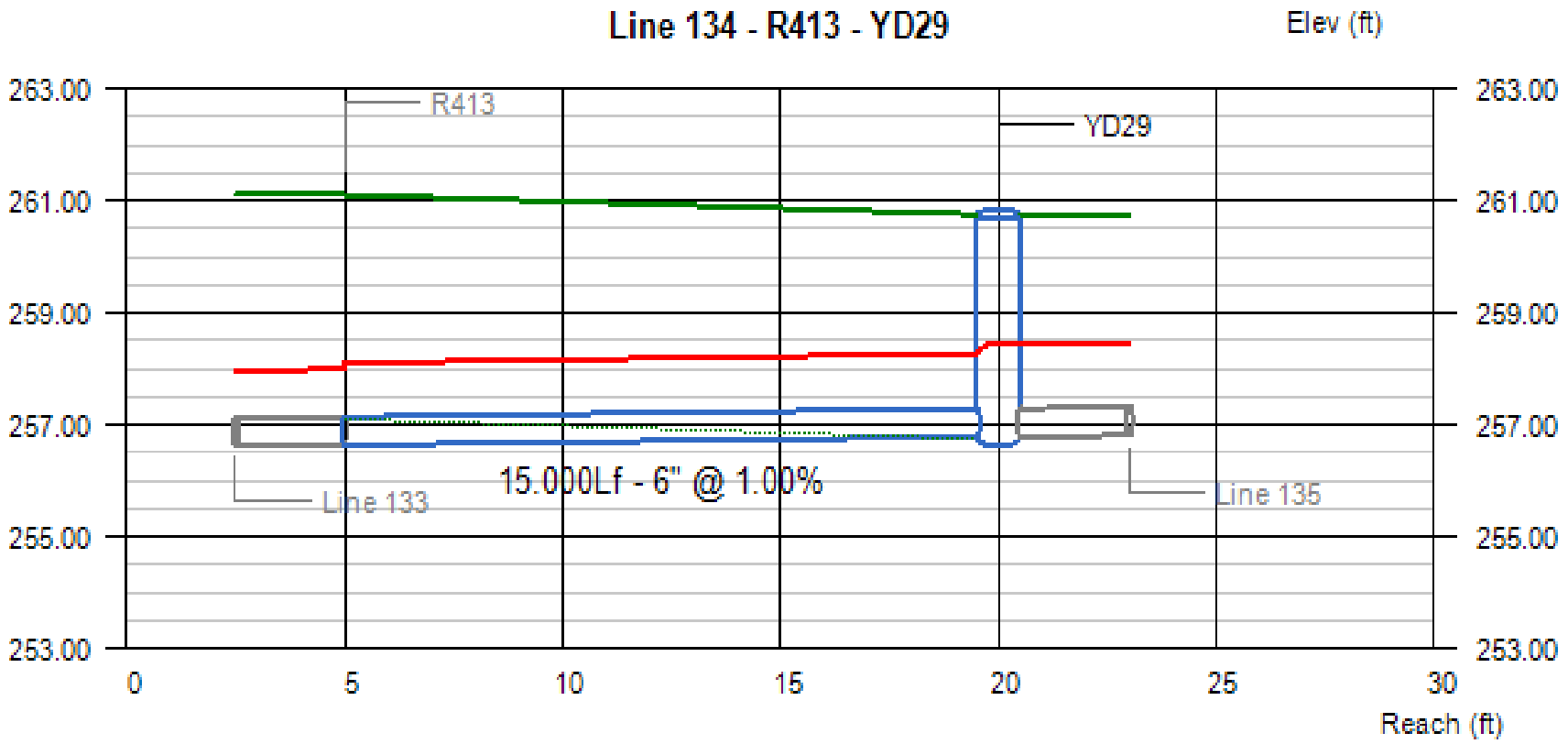
Line Profile (Line 133) - R412 - R413



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
133	0.60	256.50	256.64	0.50	0.50	1.46	257.83	257.99	258.10	3.05	3.05	4.10	3.96

Project File: | No. Lines: 138 | Run Date: 10/31/2019

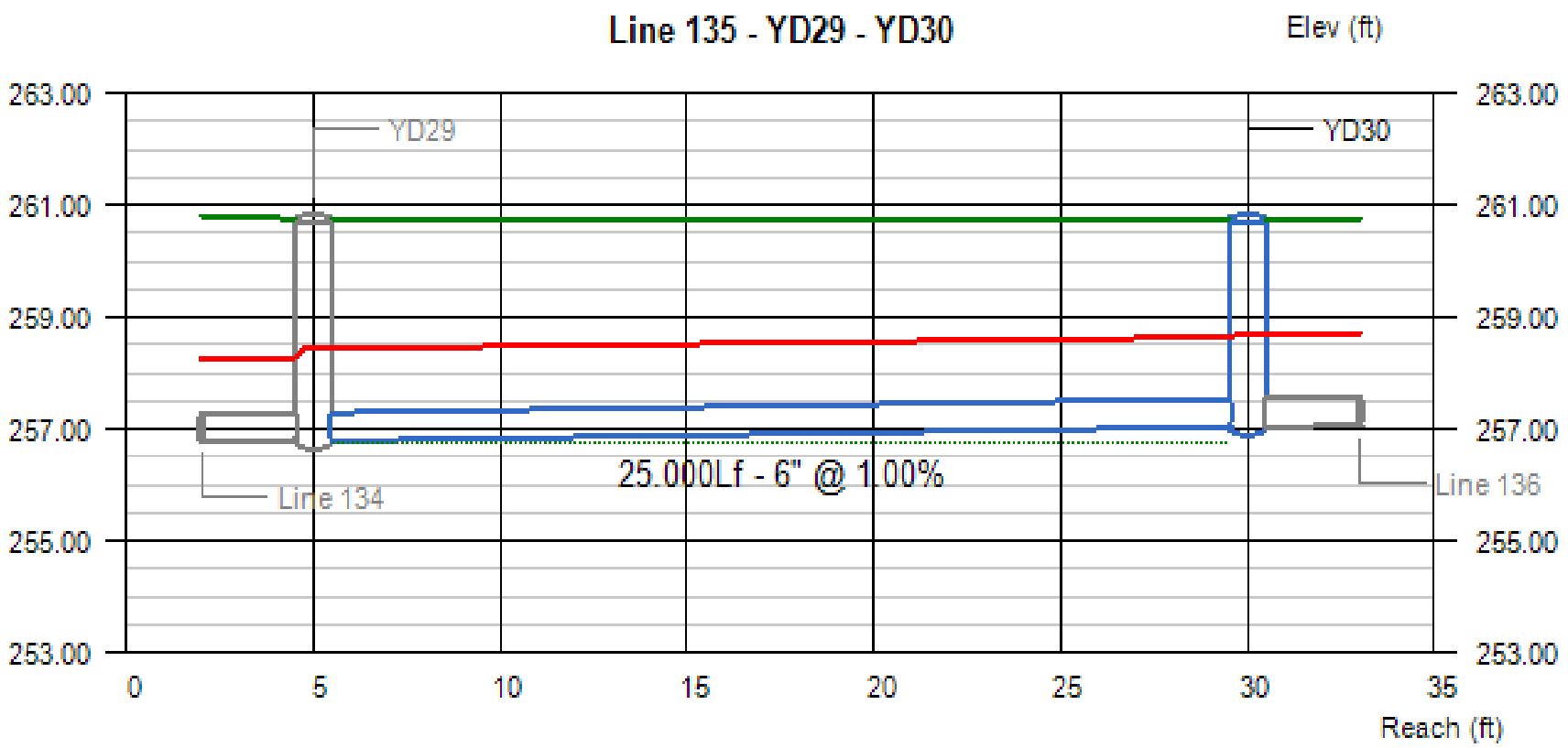
Line Profile (Line 134) - R413 - YD29



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
134	0.60	256.64	256.79	0.50	0.50	1.64	258.10	258.27	258.43	3.06	3.06	3.96	3.46

Project File: | No. Lines: 138 | Run Date: 10/31/2019

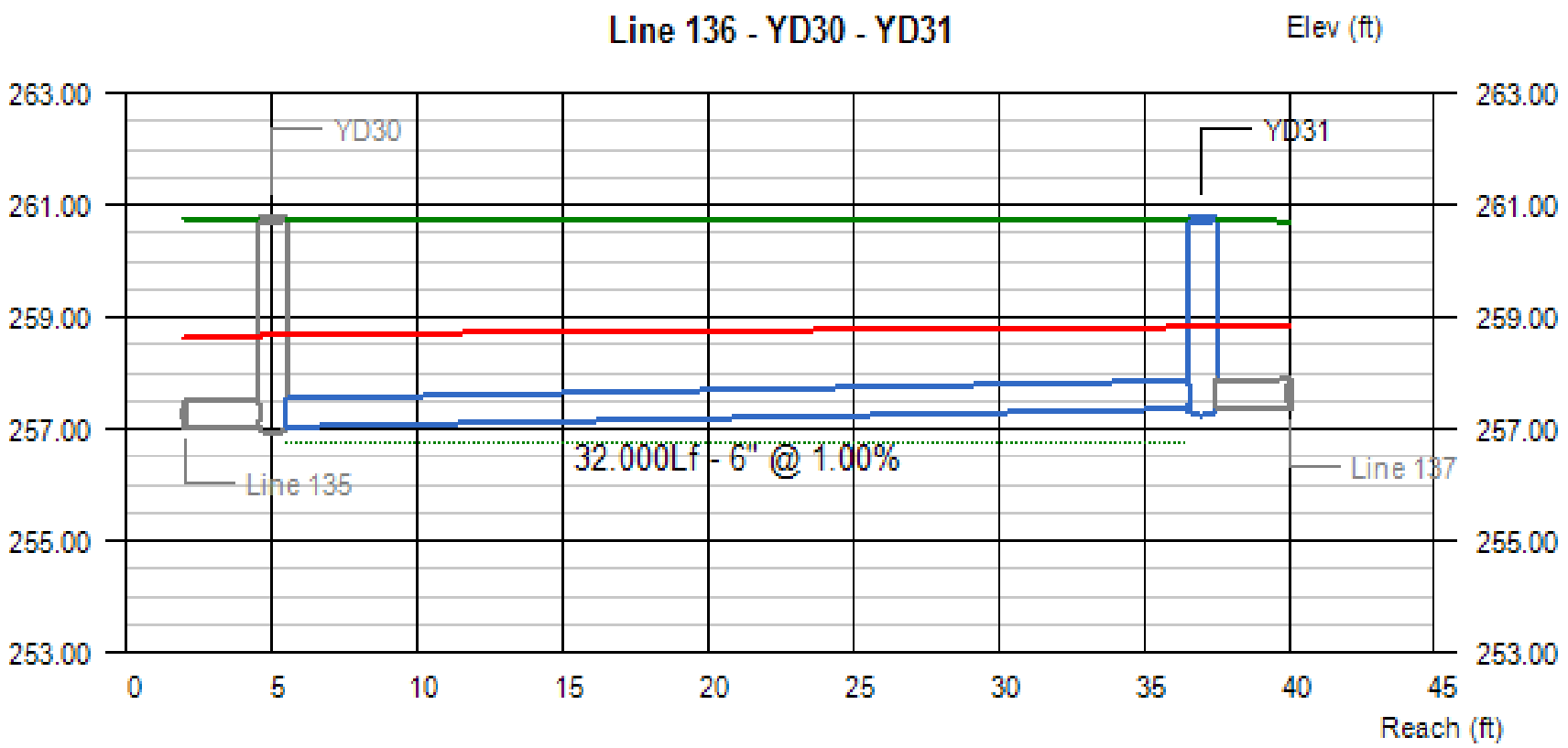
Line Profile (Line 135) - YD29 - YD30



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
135	0.50	256.79	257.04	0.50	0.50	1.64	258.43	258.63	258.68	2.56	2.56	3.46	3.21

Project File: | No. Lines: 138 | Run Date: 10/31/2019

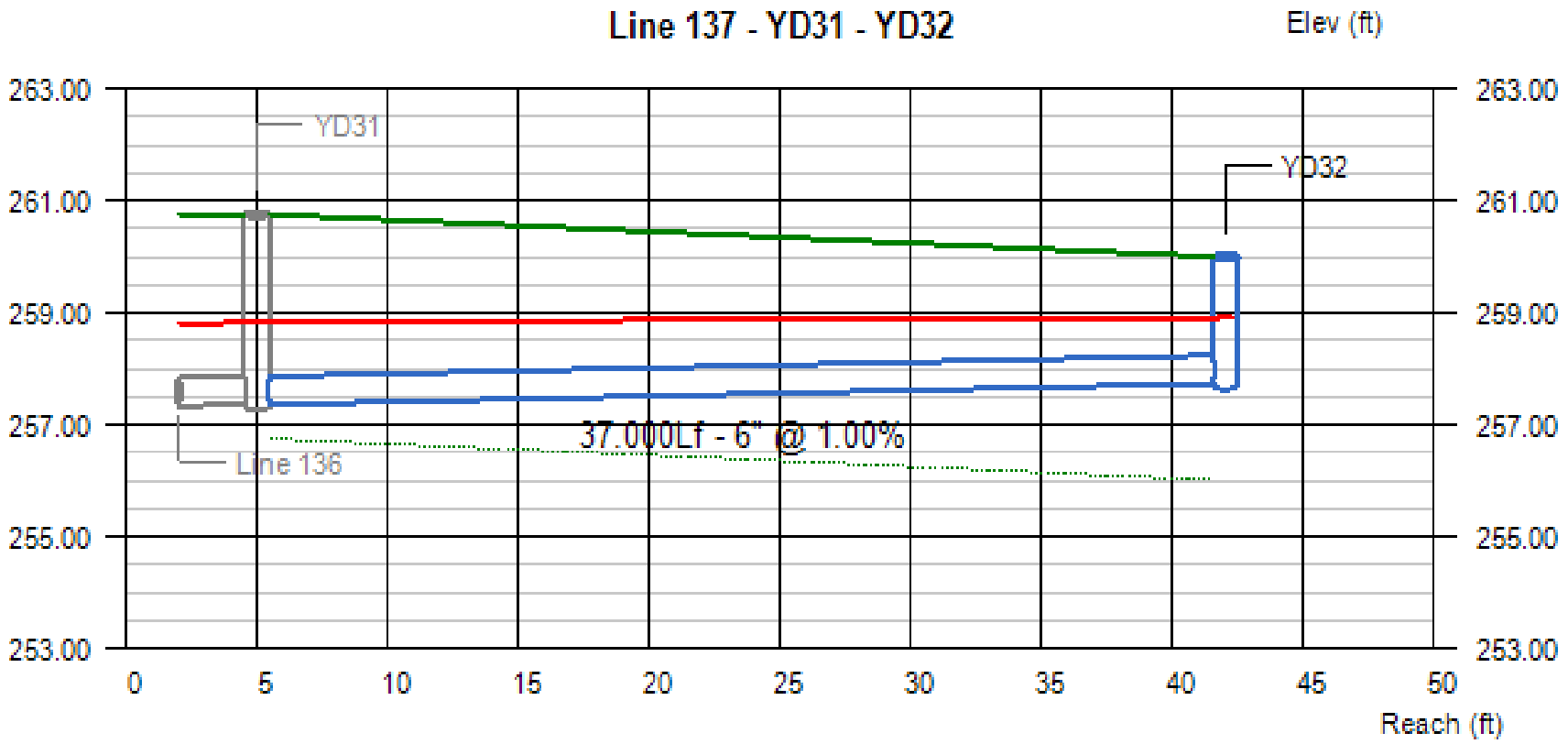
Line Profile (Line 136) - YD30 - YD31



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
136	0.35	257.04	257.36	0.50	0.50	1.48	258.68	258.81	258.84	1.80	1.80	3.21	2.89

Project File: | No. Lines: 138 | Run Date: 10/31/2019

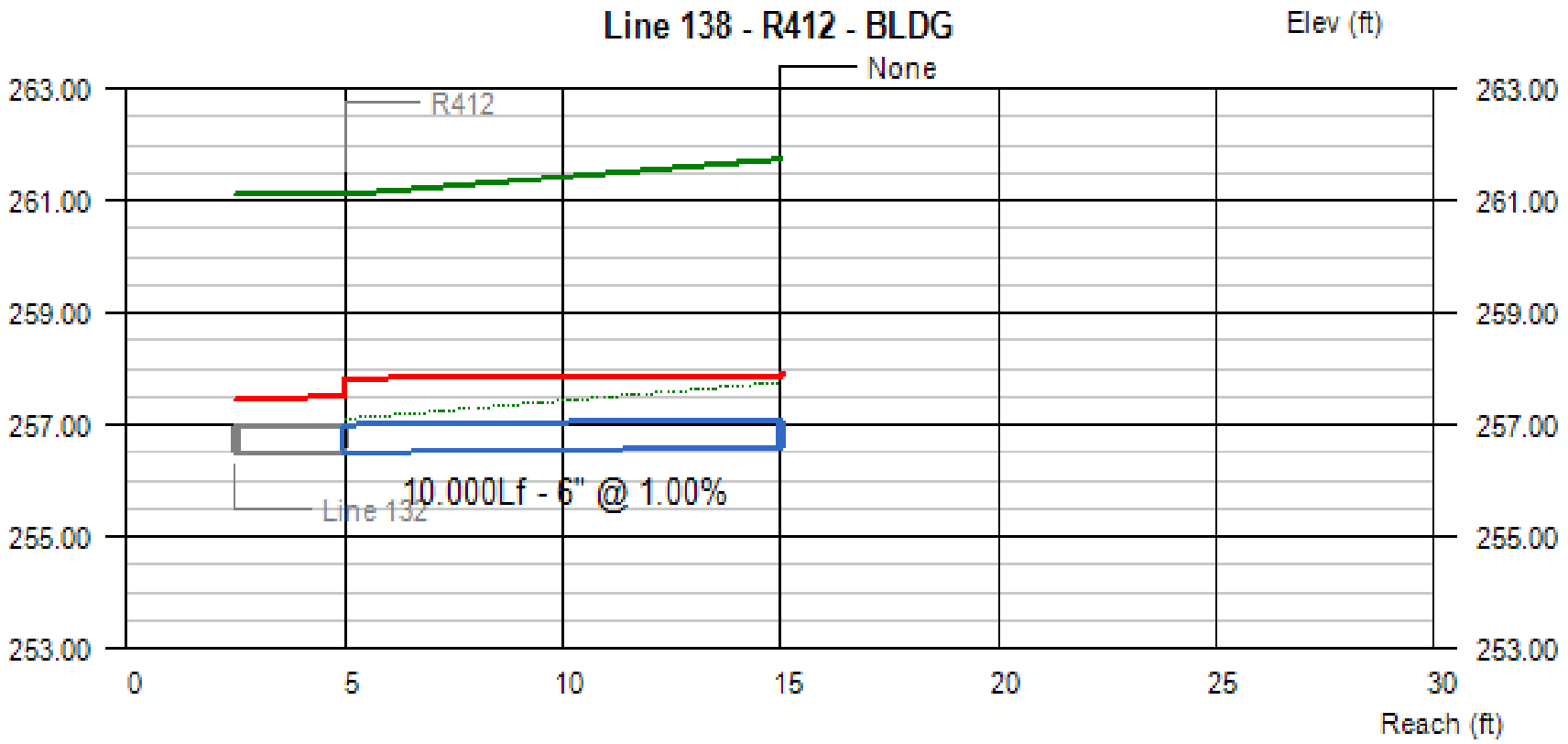
Line Profile (Line 137) - YD31 - YD32



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
137	0.21	257.36	257.73	0.50	0.50	1.17	258.84	258.89	258.90	1.05	1.05	2.89	1.77

Project File: | No. Lines: 138 | Run Date: 10/31/2019

Line Profile (Line 138) - R412 - BLDG



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
138	0.30	256.50	256.60	0.50	0.50	1.29	257.83	257.86	257.89	1.54	1.54	4.10	4.65

Project File: | No. Lines: 138 | Run Date: 10/31/2019

APPENDIX D
DRAINAGE AREA MAPS

INVENTORY

SHEET 1 OF 3: EXISTING DRAINAGE AREA MAP

SHEET 2 OF 3: PROPOSED DRAINAGE AREA MAP

SHEET 3 OF 3: PROPOSED INLET AREA MAP

AREA E-1A		
43,147	SF =	IMPERVIOUS AREAS
9,429	SF =	GRASS, GOOD (HSG D)
52,576	SF =	TOTAL AREA

AREA E-1C		
78,544	SF =	IMPERVIOUS AREAS
353	SF =	GRAVEL, GOOD (HSG D)
1,330	SF =	GRASS, GOOD (HSG D)
80,227	SF =	TOTAL AREA

AREA E-1B		
141,668	SF =	IMPERVIOUS AREAS
141,668	SF =	TOTAL AREA

AREA E-1D		
43,589	SF =	IMPERVIOUS AREAS
9,345	SF =	GRASS, GOOD (HSG D)
52,934	SF =	TOTAL AREA

SYMBOL	DESCRIPTION
	EXISTING DRAINAGE AREA
	SOIL TYPE BOUNDARY
	EXISTING GRASSED AREA

STONE HOUSE ROAD
(50' WIDE PER REFERENCED SURVEY BY CARL B. SCHERZER)

CENTERLINE DIVISION AVENUE
DIVISION
(50' WIDE PER TAX MAP - SEE DBK. 3151 PG. 287)

USBENB: URBEN LAND-FENN (HSG C)
PeaC: FENN CHANNERY SILT LOAM (HSG B)

12" RCP

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

ISSUE	DATE	BY	DESCRIPTION
01	10/30/2019	DD	FOR MUNICIPAL SUBMISSION

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DRAINAGE AREA MAPS

ENCLAVE AT MILLINGTON

PROPOSED MIXED-USE MULTI-FAMILY AND COMMERCIAL DEVELOPMENT

BLOCK 13201, LOT 1 & BLOCK 10100, LOT 7.01
SOUTH SIDE OF LONG HILL
TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

CHARLES D. OLIVO, P.E.
NEW JERSEY LICENSE No. 46719
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

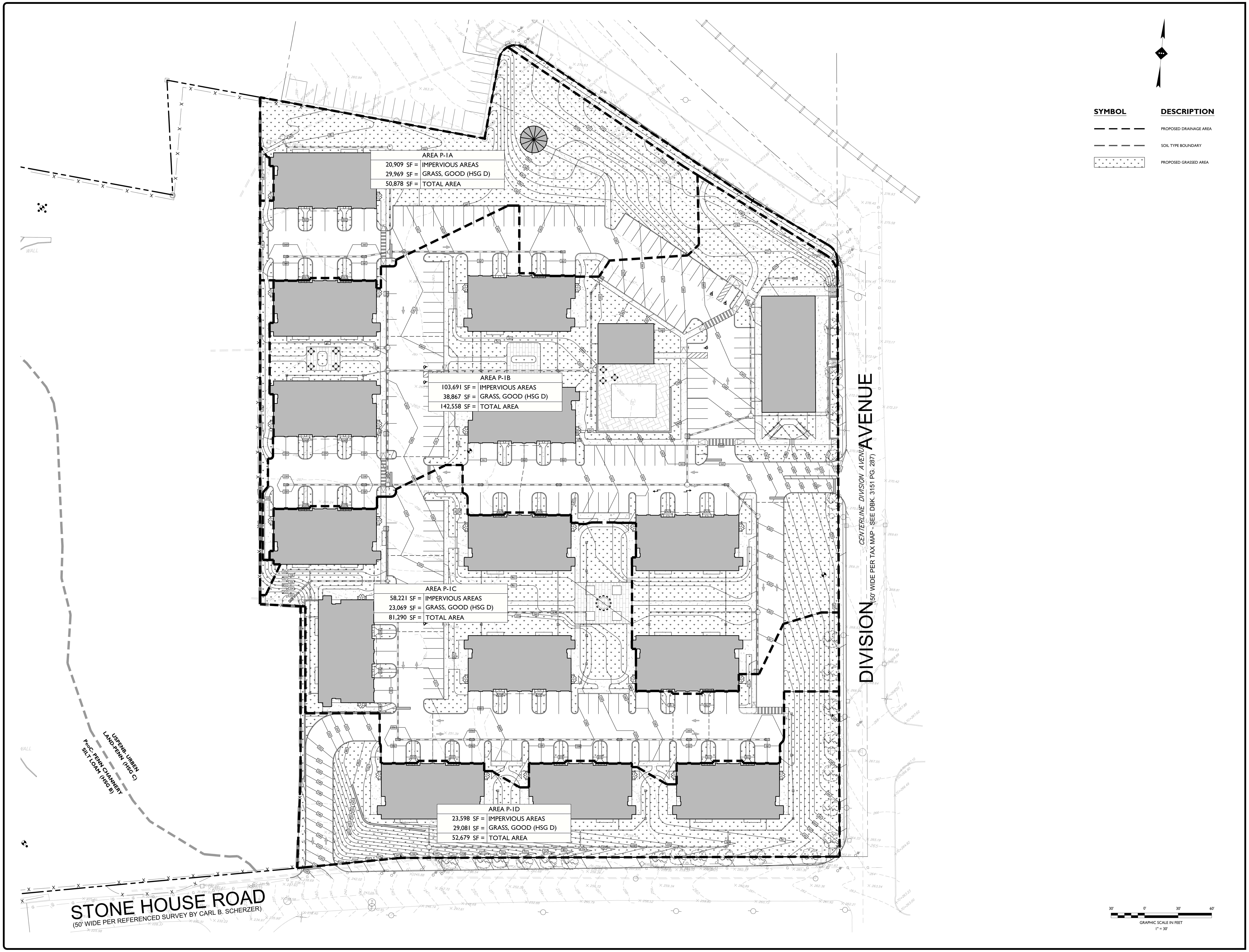
SCALE: 1" = 30' | PROJECT ID: T-17298

TITLE:

EXISTING DRAINAGE AREA MAP

DRAWING:

1 OF 3



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DRAINAGE AREA MAPS

ENCLAVE AT MILLINGTON

PROPOSED MIXED-USE MULTI-FAMILY AND COMMERCIAL DEVELOPMENT

BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01
50 DIVISION AVENUE
TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

CHARLES D. OLIVO, P.E.
NEW JERSEY LICENSE No. 46719
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design

SCALE: 1" = 30' | PROJECT ID: T-17298

TITLE:

PROPOSED DRAINAGE AREA MAP

DRAWING:

DRAINAGE AREA MAPS

ENCLAVE AT MILLINGTON

PROPOSED MIXED-USE MULTI-FAMILY AND COMMERCIAL DEVELOPMENT

BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01
50 DIVISION AVENUE
TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

CHARLES D. OLIVO, P.E.
NEW JERSEY LICENSE No. 46719
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: T-17218

TITLE: PROPOSED INLET AREA MAP

DRAWING: 3 OF 3

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ISSUE	DATE	BY	DESCRIPTION
01	10/30/2019	DD	FOR MUNICIPAL SUBMISSION

SYMBOL — DESCRIPTION

- PROPOSED INLET AREA
- SOIL TYPE BOUNDARY
- PROPOSED GRASSED AREA

GRAPHIC SCALE IN FEET
1" = 30'

DIVISION AVENUE
(60' WIDE PER TAX MAP - SEE DBK. 3151 PG. 287)
CENTERLINE DIVISION AVENUE

STONE HOUSE ROAD
(50' WIDE PER REFERENCED SURVEY BY CARL B. SCHERZER)

USPEHB- URBEN LAND-PENN (HSG C)

PenC- PENN CHANNERY SILT LOAM (HSG B)