

A full storm review cannot be completed until all required documents are provided. Please be sure to include the following as part of the next submittal:

- Pre- and Post-Development Drainage Area Maps
- Soil map
- HGL calculations
- Gutter spread calculations (if applicable)
- Culvert calculations if applicable

Storm Drainage Calculations *Rolesville NC*

Frazier Farms Park Phase 1A / May 2023 / 2020110039



FRAZIER FARM PARK

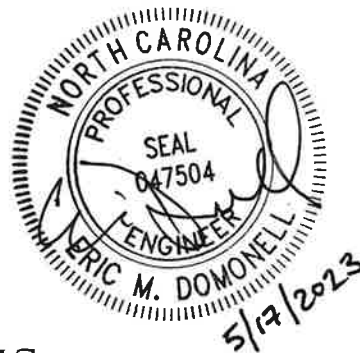
PHASE 1A

ROLESVILLE, NORTH CAROLINA

STORM DRAINAGE CALCULATIONS

PROJECT NUMBER: 2020110039
CERTIFIED BY: ERIC DOMONELL, PE

DATE: MAY 2023



MCADAMS
621 HILLSBOROUGH STREET
SUITE 500
RALEIGH, NORTH CAROLINA 27603
NC Lic. # C-0293



NOAA Atlas 14, Volume 2, Version 3
Location name: Wake Forest, North Carolina, USA*
Latitude: 35.9388°, Longitude: -78.4234°
Elevation: m/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/hour)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.84 (4.44-5.30)	5.62 (5.15-6.13)	6.40 (5.86-6.97)	7.19 (6.58-7.85)	7.99 (7.27-8.71)	8.64 (7.82-9.41)	9.20 (8.29-10.0)	9.72 (8.70-10.6)	10.3 (9.13-11.2)	10.8 (9.52-11.8)
10-min	3.86 (3.55-4.23)	4.49 (4.12-4.91)	5.12 (4.69-5.58)	5.75 (5.26-6.27)	6.37 (5.80-6.94)	6.88 (6.23-7.49)	7.31 (6.59-7.97)	7.70 (6.90-8.41)	8.14 (7.22-8.89)	8.51 (7.49-9.31)
15-min	3.22 (2.95-3.53)	3.76 (3.45-4.11)	4.32 (3.96-4.71)	4.85 (4.44-5.29)	5.38 (4.90-5.86)	5.80 (5.26-6.33)	6.16 (5.56-6.72)	6.48 (5.80-7.07)	6.82 (6.06-7.46)	7.12 (6.27-7.79)
30-min	2.21 (2.02-2.42)	2.60 (2.38-2.84)	3.07 (2.81-3.34)	3.51 (3.21-3.83)	3.98 (3.63-4.34)	4.37 (3.96-4.76)	4.72 (4.25-5.14)	5.04 (4.52-5.50)	5.43 (4.82-5.93)	5.76 (5.08-6.31)
60-min	1.38 (1.26-1.51)	1.63 (1.50-1.78)	1.97 (1.80-2.14)	2.29 (2.09-2.50)	2.65 (2.42-2.89)	2.96 (2.69-3.23)	3.25 (2.93-3.54)	3.54 (3.17-3.86)	3.90 (3.46-4.26)	4.21 (3.71-4.61)
2-hr	0.806 (0.733-0.889)	0.958 (0.874-1.05)	1.17 (1.06-1.28)	1.37 (1.25-1.51)	1.62 (1.46-1.77)	1.84 (1.65-2.00)	2.04 (1.82-2.23)	2.26 (2.00-2.47)	2.54 (2.23-2.77)	2.79 (2.43-3.05)
3-hr	0.569 (0.517-0.631)	0.677 (0.618-0.747)	0.827 (0.753-0.913)	0.982 (0.890-1.08)	1.17 (1.05-1.28)	1.34 (1.20-1.47)	1.50 (1.33-1.65)	1.68 (1.48-1.84)	1.91 (1.67-2.09)	2.13 (1.83-2.34)
6-hr	0.342 (0.312-0.379)	0.407 (0.372-0.449)	0.498 (0.454-0.548)	0.592 (0.538-0.650)	0.707 (0.638-0.774)	0.812 (0.728-0.888)	0.917 (0.815-1.00)	1.03 (0.905-1.12)	1.18 (1.02-1.29)	1.32 (1.13-1.44)
12-hr	0.201 (0.183-0.221)	0.239 (0.219-0.262)	0.293 (0.269-0.322)	0.350 (0.319-0.384)	0.421 (0.382-0.460)	0.487 (0.438-0.530)	0.554 (0.493-0.602)	0.626 (0.550-0.680)	0.725 (0.628-0.788)	0.818 (0.697-0.890)
24-hr	0.119 (0.111-0.128)	0.144 (0.134-0.155)	0.181 (0.168-0.195)	0.211 (0.195-0.227)	0.251 (0.232-0.270)	0.284 (0.261-0.305)	0.317 (0.291-0.342)	0.352 (0.322-0.380)	0.401 (0.364-0.433)	0.440 (0.398-0.476)
2-day	0.069 (0.064-0.074)	0.083 (0.078-0.090)	0.104 (0.097-0.112)	0.120 (0.112-0.129)	0.142 (0.132-0.153)	0.160 (0.148-0.172)	0.179 (0.164-0.192)	0.198 (0.181-0.213)	0.224 (0.204-0.242)	0.245 (0.222-0.266)
3-day	0.049 (0.046-0.052)	0.059 (0.055-0.063)	0.073 (0.068-0.078)	0.084 (0.078-0.090)	0.100 (0.092-0.107)	0.112 (0.103-0.120)	0.125 (0.115-0.134)	0.138 (0.126-0.148)	0.156 (0.142-0.168)	0.171 (0.154-0.184)
4-day	0.039 (0.036-0.041)	0.046 (0.043-0.050)	0.058 (0.054-0.061)	0.066 (0.062-0.071)	0.078 (0.073-0.084)	0.088 (0.081-0.094)	0.098 (0.090-0.105)	0.108 (0.099-0.116)	0.122 (0.111-0.131)	0.133 (0.121-0.143)
7-day	0.026 (0.024-0.027)	0.031 (0.029-0.033)	0.037 (0.035-0.040)	0.043 (0.040-0.046)	0.050 (0.047-0.054)	0.056 (0.052-0.060)	0.062 (0.058-0.067)	0.069 (0.063-0.074)	0.077 (0.071-0.083)	0.084 (0.077-0.091)
10-day	0.020 (0.019-0.022)	0.024 (0.023-0.026)	0.029 (0.028-0.031)	0.033 (0.031-0.035)	0.039 (0.036-0.041)	0.043 (0.040-0.046)	0.047 (0.044-0.050)	0.051 (0.048-0.055)	0.057 (0.053-0.062)	0.062 (0.057-0.067)
20-day	0.014 (0.013-0.015)	0.016 (0.015-0.017)	0.019 (0.018-0.020)	0.022 (0.020-0.023)	0.025 (0.023-0.026)	0.027 (0.026-0.029)	0.030 (0.028-0.032)	0.033 (0.030-0.035)	0.036 (0.033-0.039)	0.039 (0.036-0.042)
30-day	0.011 (0.011-0.012)	0.013 (0.013-0.014)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.020 (0.018-0.021)	0.021 (0.020-0.023)	0.023 (0.022-0.025)	0.025 (0.023-0.027)	0.027 (0.025-0.029)	0.029 (0.027-0.031)
45-day	0.010 (0.009-0.010)	0.011 (0.011-0.012)	0.013 (0.012-0.014)	0.014 (0.014-0.015)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.020)	0.020 (0.019-0.021)	0.021 (0.020-0.023)	0.023 (0.021-0.024)
60-day	0.009 (0.008-0.009)	0.010 (0.010-0.011)	0.012 (0.011-0.012)	0.013 (0.012-0.013)	0.014 (0.013-0.015)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.019)	0.019 (0.018-0.020)

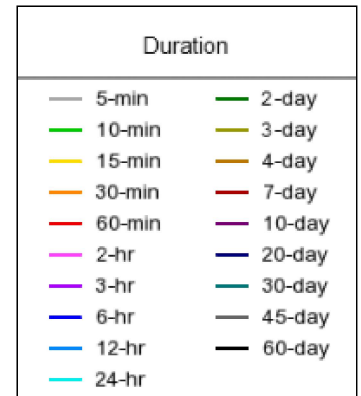
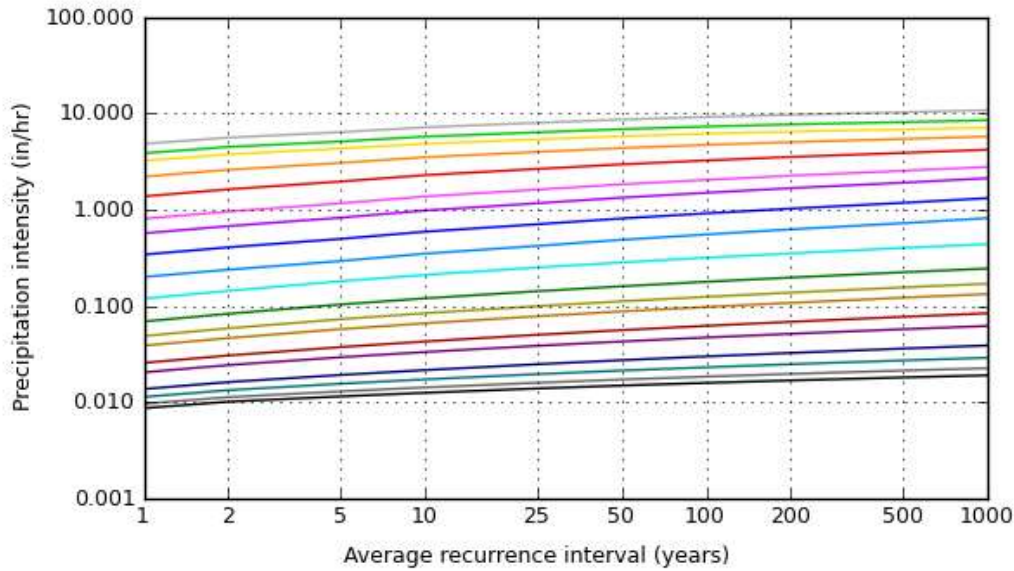
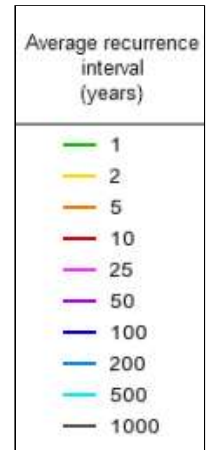
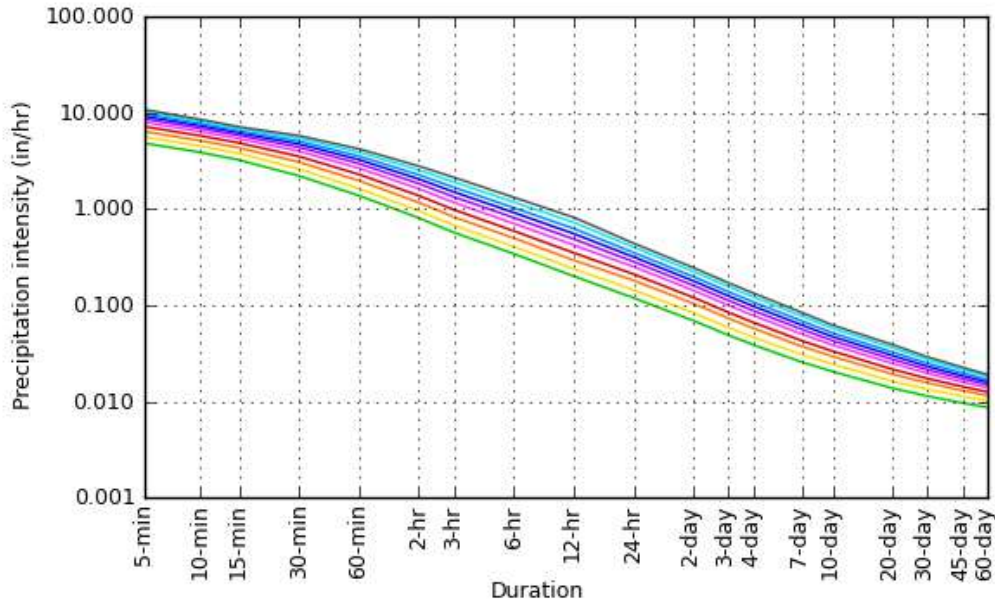
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average 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

PDS-based intensity-duration-frequency (IDF) curves

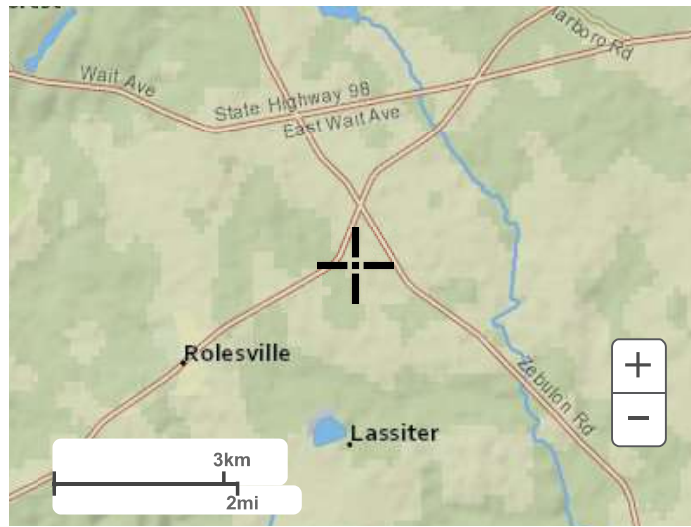
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Maps & aerials

Small scale terrain



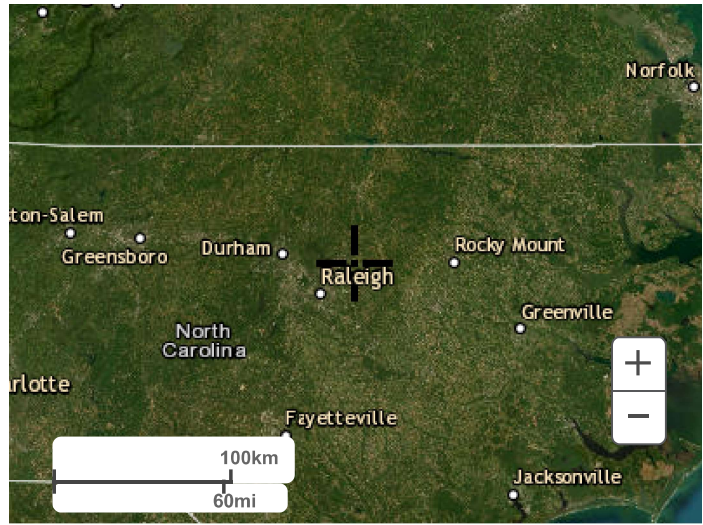
Large scale terrain



Large scale map



Large scale aerial



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McADAMS

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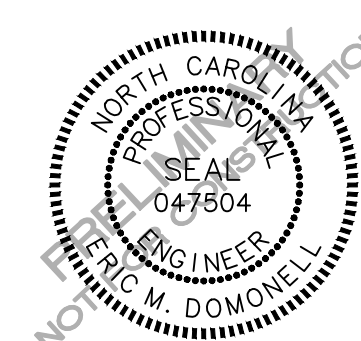
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CLIENT

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PHONE: 919.554.6582

FRAZIER FARM PARK
CONSTRUCTION DRAWINGS
PHASE 1A
11624 LOUISBURG ROAD
ROLESVILLE, NORTH CAROLINA



REVISIONS

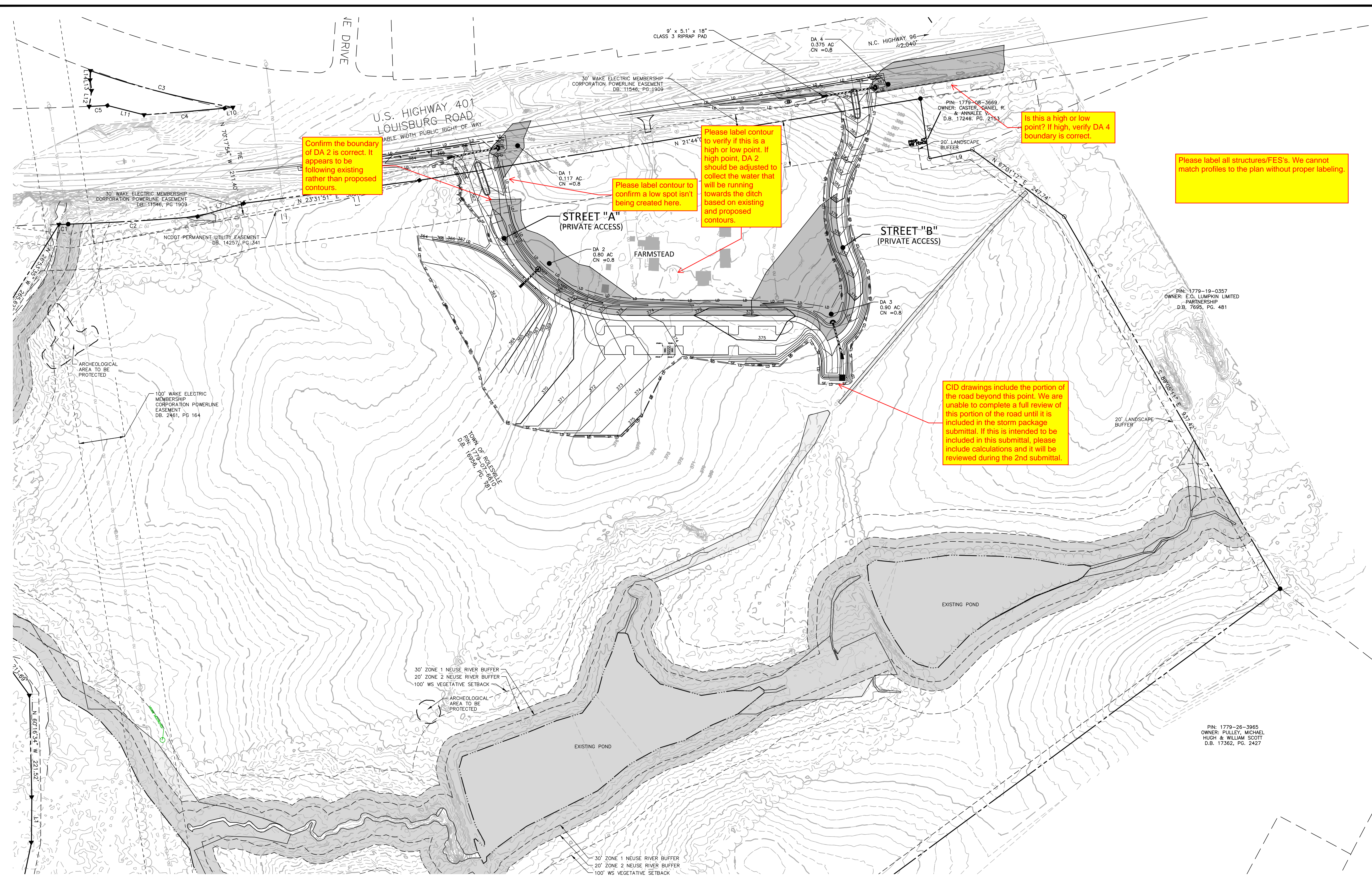
NO. DATE

PLAN INFORMATION

PROJECT NO. 202011039
FILENAME 2020110039-PH1-DA
CHECKED BY EMD
DRAWN BY SME
SCALE 1"=100'
DATE 03.22.2023

SHEET

DRAINAGE AREA MAP



Confirm the boundary of DA 2 is correct. It appears to be following existing rather than proposed contours.

Please label contour to confirm a low spot isn't being created here.

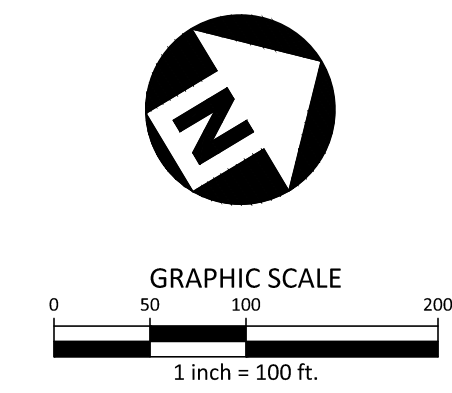
Please label contour to verify if this is a high or low point. If high point, DA 2 should be adjusted to collect the water that will be running towards the ditch based on existing and proposed contours.

Is this a high or low point? If high, verify DA 4 boundary is correct.

Please label all structures/FES's. We cannot match profiles to the plan without proper labeling.

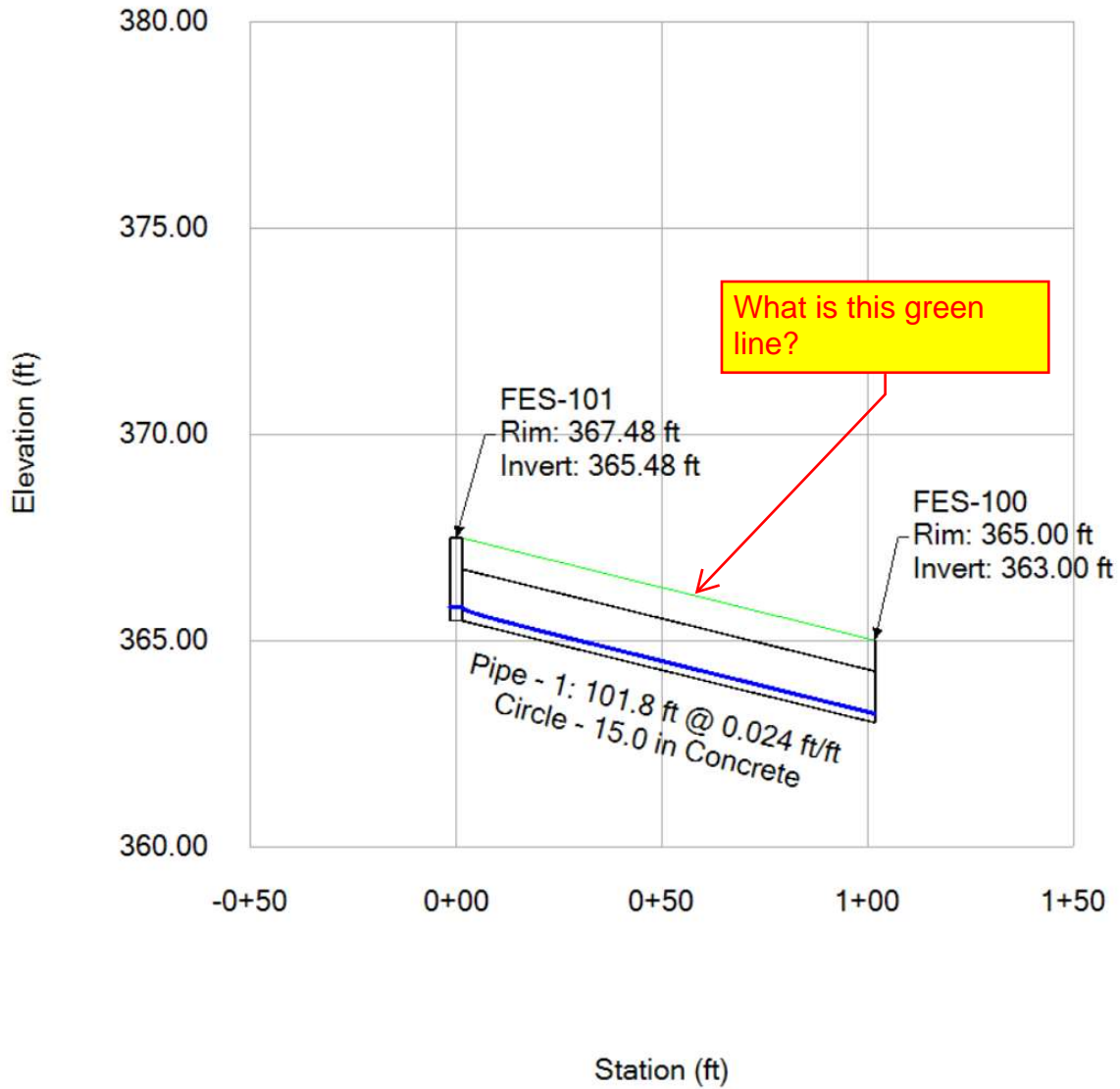
CID drawings include the portion of the road beyond this point. We are unable to complete a full review of this portion of the road until it is included in the storm package submittal. If this is intended to be included in this submittal, please include calculations and it will be reviewed during the 2nd submittal.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF ROLESVILLE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS



M:\Projects\WOL\2020110039 Frazier Farm Park\03-Technical Data\Cadd\Reports\Storm Drainage\2020110039-PH1-DA.dwg, 5/17/2023 11:58:13 PM, Liv Taylor

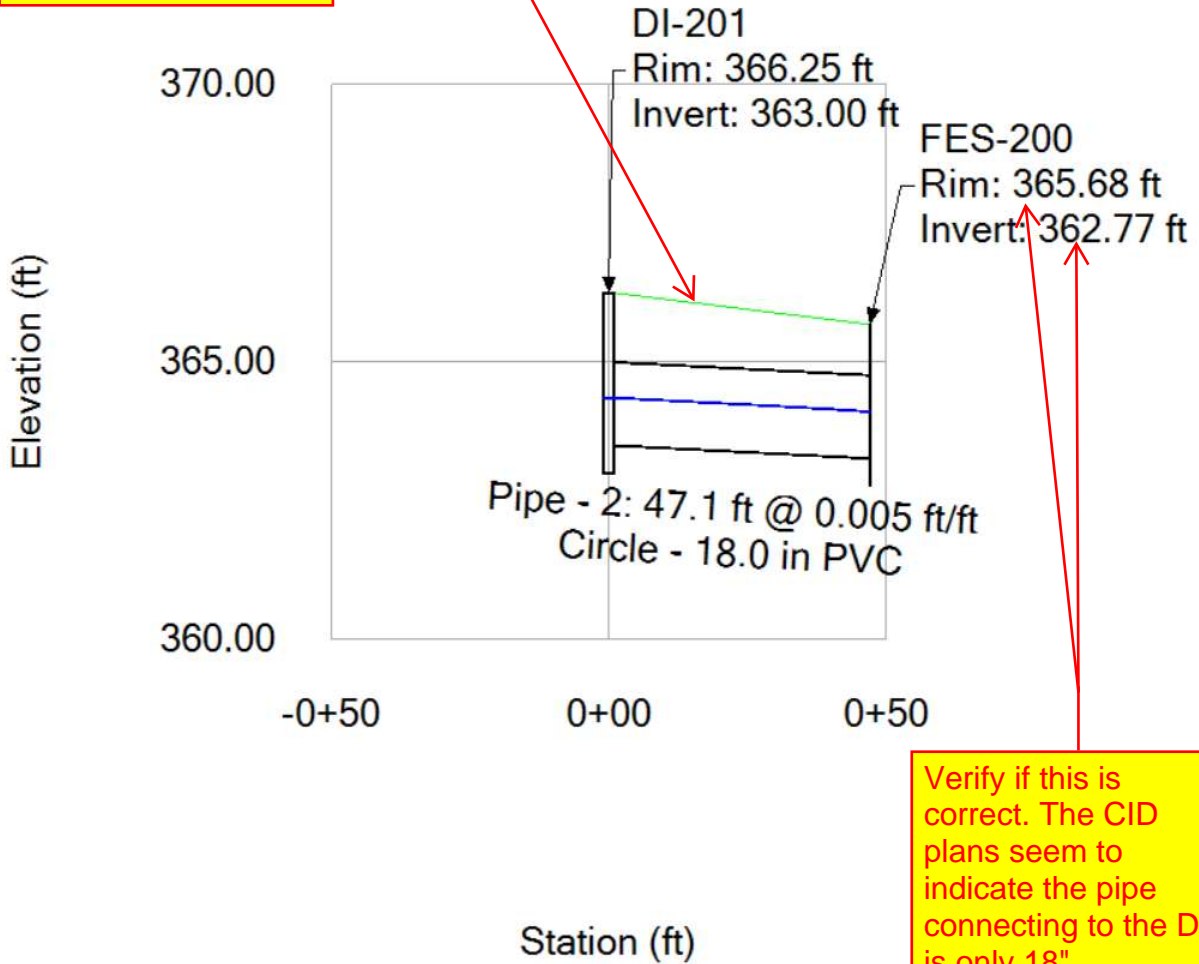
Please make sure plan view includes labels so we can match profiles to the plans.



What design storm is the designed for?
Please ensure outlet velocity is defined and calculations shown.

What is this green line? If it is meant to represent the proposed surface please verify it is correct. The surface does not appear to be linearly sloped.

Please make sure plan view includes labels so we can match profiles to the plans.

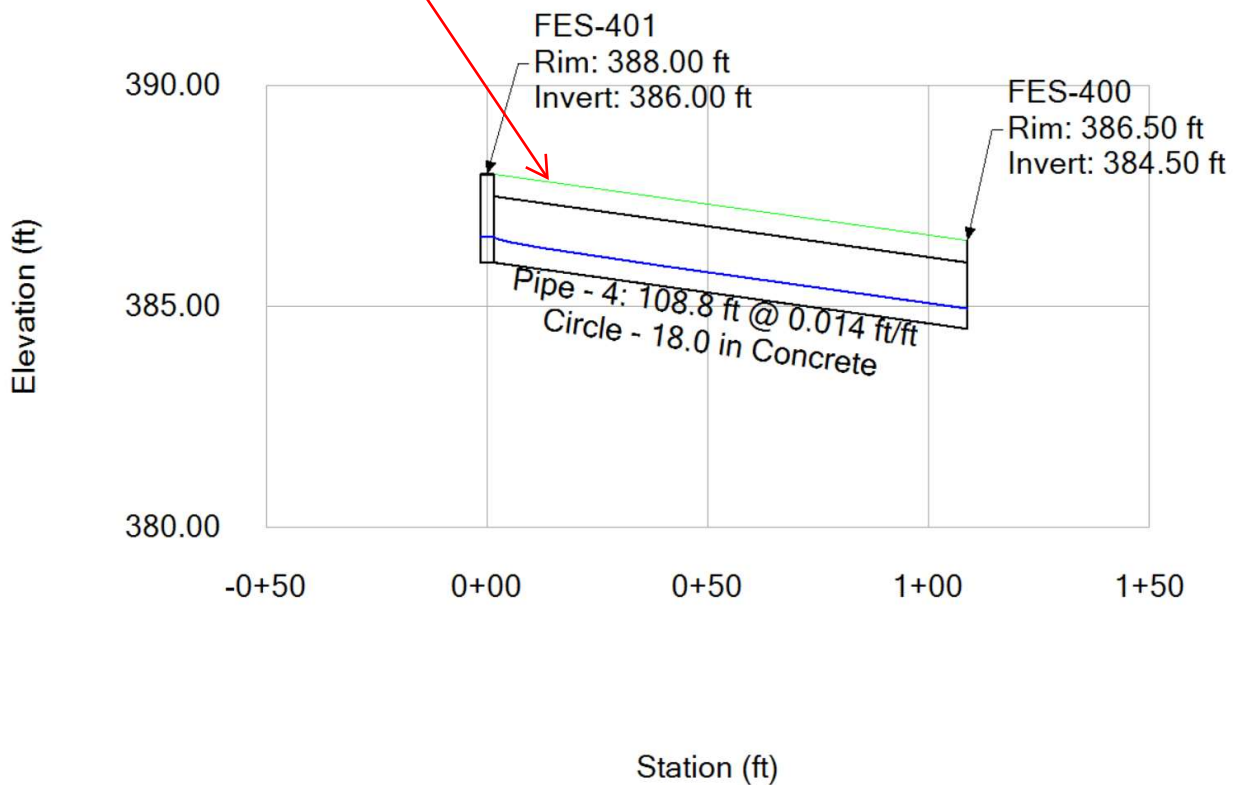
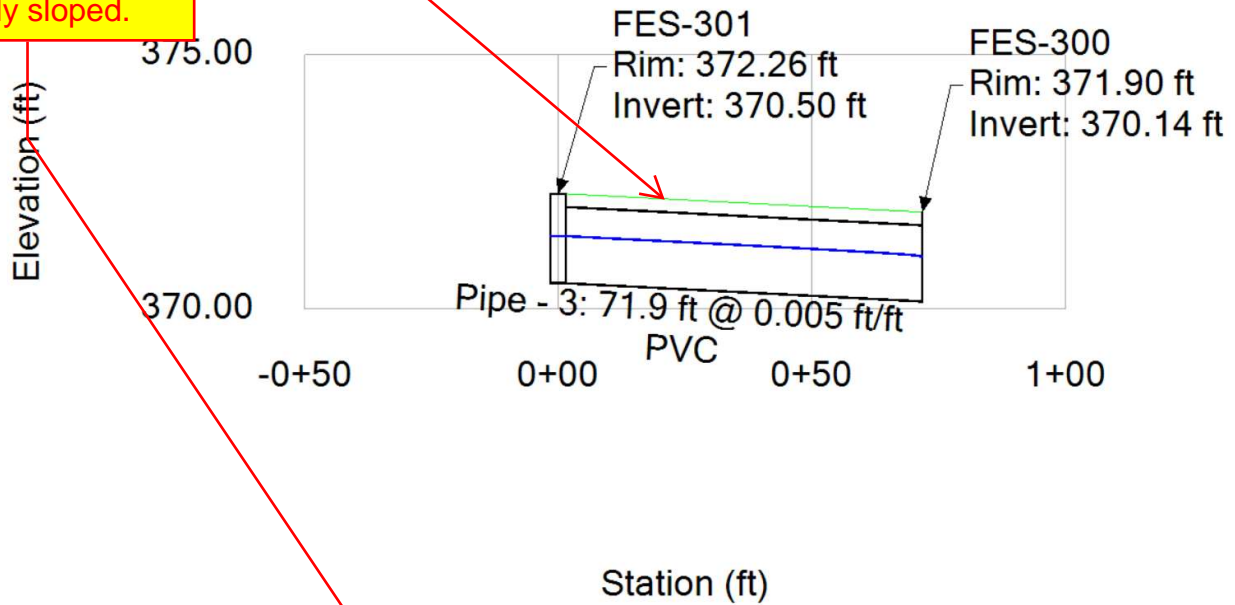


Verify if this is correct. The CID plans seem to indicate the pipe connecting to the DI is only 18"

What design storm is the designed for?
Please ensure outlet velocity is defined and calculations shown.

What is this green line? If it is meant to represent the proposed surface please verify it is correct. The surface does not appear to be linearly sloped.

Please make sure plan view includes labels so we can match profiles to the plans.



What design storm is the designed for?
Please ensure outlet velocity is defined and calculations shown.